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Translation of HLA–HIV Associations to the Cellular Level: HIV Adapts To Inflate CD8 T Cell Responses against Nef and HLA-Adapted Variant Epitopes

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Strong statistical associations between polymorphisms in HIV-1 population sequences and carriage of HLA class I alleles have been widely used to identify possible sites of CD8 T cell immune selection in vivo. However, there have been few attempts to prospectively and systematically test these genetic hypotheses arising from population-based studies at a cellular, functional level. We assayed CD8 T cell epitope-specific IFN- γ responses in 290 individuals from the same cohort, which gave rise to 874 HLA–HIV associations in genetic analyses, taking into account autologous viral sequences and individual HLA genotypes. We found immunological evidence for 58% of 374 associations tested as sites of primary immune selection and identified up to 50 novel HIV-1 epitopes using this reverse-genomics approach. Many HLA-adapted epitopes elicited equivalent or higher-magnitude IFN- γ responses than did the nonadapted epitopes, particularly in Nef. At a population level, inclusion of all of the immunoreactive variant CD8 T cell epitopes in Gag, Pol, Nef, and Env suggested that HIV adaptation leads to an inflation of Nef-directed immune responses relative to other proteins. We concluded that HLA–HIV associations mark viral epitopes subject to CD8 T cell selection. These results can be used to guide functional studies of specific epitopes and escape mutations, as well as to test, train, and evaluate analytical models of viral escape and fitness. The inflation of Nef and HLA-adapted variant responses may have negative effects on natural and vaccine immunity against HIV and, therefore, has implications for diversity coverage approaches in HIV vaccine design. *The Journal of Immunology*, 2011, 187: 2502–2513.

The dual challenges of HIV-1 diversity and evasion of human immunity have concentrated efforts in the vaccine field to optimize diversity coverage in vaccines on the one hand (1, 2), as well as to distinguish protective from nonprotective immune responses on the other hand (3). With respect to CD8 T cell immunity, diversity and immunogenicity considerations may well intersect if specific, predictable genetic variations in HIV-1 have important functional consequences for prevalent epitope-specific responses. HIV-1 mutational escape from cellular immune responses generated in acute and chronic infection contributes to HIV-1 diversity at the population level. In particular, HLA-restricted CD8 CTL responses are sufficiently suppressive to exert selection pressure on HIV quasiespecies; however, in most individuals, ongoing viral replication allows the eventual outgrowth of CTL-adapted viruses (4, 5). Therefore, such variations have func-

tional implications for immunogenicity, and if present in a vaccine immunogen, would effectively be preadapted to certain HLA types. Furthermore, the presence of escape mutations in a vaccine immunogen may influence the immunodominance of vaccine-induced CTL responses, as suggested by significant changes in immunodominance hierarchies that follow early viral evolution and diversification in natural infection (6). Understanding the immunological consequences of specific HIV variations may become increasingly important as more are incorporated into polyvalent vaccines designed to optimize population-diversity coverage (1, 7, 8).

Although information on specific variations can be derived from a number of observational CTL-escape studies (5, 9–11), the breadth of HLA backgrounds and viral mutations examined in these studies are narrow, relative to the great breadth of HLA

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The online version of this study contains supplemental material.

Abbreviations used in this article: AACTG, Adult AIDS Clinical Trial Group; IQR, interquartile range; LANL, Los Alamos National Laboratory; R10, RPMI 1640 and 10% heat-inactivated fetal calf serum; SFUs, spot-forming units.

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genotypes and HIV-1 diversity present in human populations. Since the first population-based HLA–HIV association study in 2002 (12), several large-scale studies have identified natural HIV-1 polymorphisms and networks of polymorphisms that seem to be significantly HLA allele-specific across the full HIV-1 subtype B and C proteomes, after accounting for viral phylogeny and linkage disequilibria in the MHC (13–19). These associations are not a functional demonstration of immune escape but, rather, may be considered individual hypotheses, based on a statistical association, of an *in vivo* biologic interaction between an HLA class I molecule and the viral epitope spanning the polymorphism or distant epitopes linked functionally to the polymorphic site. Although recent approaches have also sought to identify whole mutational networks involving multiple viral codons into the analyses (16), it is not possible to prove the order of consecutive changes by these analyses alone (i.e., it is possible that residues covary because of compensatory fitness-balancing interactions between viral residues or because of codominant targeting by the same HLA-restricted CTLs). These studies used published CTL epitope and escape data and known compensatory patterns to validate associations; however, the repertoire of confirmed, published epitopes are not complete, particularly for less-common HLA alleles, alleles associated with nonwhite Caucasian populations, and HLA-C in general. HLA-C–restricted responses may be particularly important in view of recent evidence linking levels of HLA-C cellular expression to better immunological control (20). There is even less viral escape data to validate the functional effect of all polymorphisms observed *in vivo*. Therefore, we sought to use population-derived HLA–HIV associations as starting hypotheses and systematically characterize the epitope-specific CD8 T cell responses that may account for them *in vivo*, as well as determine the functional effects of HLA-associated variations on T cell reactivity in individuals and in a population. Those HLA–HIV associations for which no evidence for direct influence on viral epitope T cell interactions could be found after systematic testing would also increase the likelihood of them being driven by compensatory interactions or networks within the HIV proteome. We used a previously published dataset of genome-wide HLA–HIV-1 associations derived from a large diverse population from the United States to predict the epitopic targets of prevalent CTL responses (19) and assayed these responses *ex vivo* in the same population. For each individual, we tested known and predicted nonadapted or immune-susceptible HIV-1 epitopes along with the paired adapted epitope sequence relevant to their own HLA-A, -B, and -C alleles and autologous viral epitope sequences. We primarily aimed to determine the proportion of HLA–HIV genetic associations that could be additionally explained or supported by T cell epitope data gained as a result of this systematic testing compared with using only published epitope information. Having carried out large-scale population-based cellular testing, we aimed to generally characterize the distribution of these prevalent T cell responses across the HIV proteome, their response rates, and magnitude. We also aimed to analyze how immune reactivity is influenced by the strength of the epitope-predication value, the autologous virus sequence, and clinical indices. Finally, we sought to determine the changes to reactivity caused by HLA-driven polymorphism on individual epitopes and overall patterns of immune reactivity at the population level that could impact vaccine-design considerations.

Materials and Methods

Study cohort and samples

The cohort of individuals examined in this study ($n = 414$) was a subset of the 555 individuals with chronic HIV-1 infection who were enrolled in

Adult AIDS Clinical Trials Group (AACTG) studies A5142 and A5128 from the United States. AACTG A5142 was a randomized clinical trial comparing three first-line antiretroviral drug regimens in individuals with no previous antiretroviral therapy and a viral load ≥ 2000 copies/ml plasma (21). There were no inclusion/exclusion criteria based on CD4 T cell counts. Subjects were recruited from 55 centers across the United States between 2003 and 2004 and were enrolled in A5128 if they provided consent for inclusion in the AIDS Clinical Trials Group human DNA bank (22). Baseline pretreatment viral load measurements were available. All participants provided written informed consent to these investigations, and the study was approved by the Institutional Review Board governing the AACTG prior to commencement.

The subset of 414 individuals had HIV-1 sequencing, HLA class I genotyping resolved to four-digit types in all but three cases, and participated in a previous population analysis involving 800 individuals that generated a dataset of 874 HLA allele-associated HIV-1 genome-wide subtype B polymorphisms (19). These study participants were selected based on availability of cryopreserved PBMCs for immunological studies. PBMCs obtained from baseline visits and before commencement of antiretroviral therapy had been cryopreserved in central AACTG facilities between 2003 and 2004 and were transported to the Centre for Clinical Immunology and Biomedical Statistics in 2008.

Formulation of HLA-based peptide sets

For every one of the 874 HLA associations identified in the previous genetic analysis involving the AACTG 5142/5128 cohort (19), we applied the EpiPred T cell epitope-prediction program (23; <http://atom.research.microsoft.com/bio/epipred.aspx>) to a sequence window of 13 aa residues flanking either side of the HLA-associated site in the population-consensus sequence to score the probability of CD8 T cell epitopes with a matching HLA allelic restriction. Scores were generated for the sequence containing the adapted amino acid, as well as the nonadapted amino acids, to predict the effect of the polymorphism on immune reactivity. The EpiPred prediction algorithm was trained on characteristics of known CD8 T cell epitopes, including HLA-specific peptide-binding motifs, TCR contact residues, epitope length, and flanking sequences, to generate a probability score for predicted epitopes relative to known, published epitopes assigned a score of 1. EpiPred used Bayes rule to compute the posterior probability that a viral sequence contains an epitope, assuming a prior probability of 10%. A detailed example of an EpiPred calculation for a single-input HLA allele–peptide sequence is provided in Supplemental Table I. All epitope sequences with a score ≥ 0.4 (representing $\geq 40\%$ positive predictive value of being a true epitope flanking an association, and a 4-fold increase from prior probability) were considered putative epitopes for immunological testing, even if they contained the HLA-adapted polymorphism. Peptides representing the paired HLA-adapted (resistant/escaped) or nonadapted (susceptible/wild-type) sequences were synthesized and tested to confirm HLA-restricted immune reactivity to the nonadapted epitope, as well as loss or reduction of reactivity due to specified HLA-associated epitope variations from that epitope.

Additional epitopes ($n = 137$) that were not spanning any HLA–HIV polymorphism associations in the genetic analysis (19) but were in the “A” (optimally defined/confirmed) or “B” (not optimally defined) lists of defined CD8 T cell epitopes published in the January 2009 update of the Los Alamos National Laboratory (LANL) HIV immunology database (<http://www.hiv.lanl.gov/content/immunology>) were added to the testing protocol to act as positive controls where possible (identified as “A and B list epitopes without HLA-HIV associations”).

Epitope selection was predicated by the HLA genotype of the subject. However, the number of predictions that was finally tested was constrained by the numbers of PBMCs available. For this reason, epitopes for each individual were ranked in order of preference for testing based first on being possible novel epitopes, second on EpiPred score, and third on sequence match to the autologous viral sequence. Ranked lists of epitopes for every individual in the cohort were generated electronically using an in-house database. PBMCs were thawed, rested overnight in RPMI 1640 and 10% heat-inactivated fetal calf serum (R10), and the number of cells was ascertained using a Vi-Cell XR (Beckman Coulter, Gladesville, NSW, Australia), as previously described (24). Epitopes were then selected for testing for each individual from the ranked lists based on the number of cells.

IFN- γ ELISPOT assays

IFN- γ responses to HIV-1–derived epitopes were quantified using Mabtech (Nacka Strand, Sweden) reagents in 96-well nitrocellulose-backed plates (Millipore, Bedford, MA). Plates coated with 2 $\mu\text{g/ml}$ anti-IFN- γ Ab were

blocked with R10 for a minimum of 30 min and washed using an ELx 405 washer (BioTek, Winooski, VT), after which 30,000–50,000 PBMCs, along with anti-CD28 Ab (BD Biosciences-Pharmingen, North Ryde, NSW, Australia) at a final concentration of 1 $\mu\text{g/ml}$, were added to each well (24). Lyophilized peptides (Invitrogen, Mulgrave, VIC, Australia) were reconstituted to 10 mg/ml in DMSO, from which 1 mg/ml aliquots were made and stored at -20°C before use. The 1 mg/ml peptide stocks were further diluted to 50 $\mu\text{g/ml}$ in R10 and tested in single or duplicate wells at a final concentration of 5 $\mu\text{g/ml}$. Where possible, triplicate wells of media alone served as negative controls, whereas anti-CD3 Ab was used as a positive control either in single or duplicate wells. After the addition of cells, peptides, and anti-CD3 Ab, the ELISPOT plates were incubated overnight at 37°C . Plates were then washed, and IFN- γ spots were developed with biotinylated Ab and streptavidin horseradish peroxidase, according to the manufacturer's instructions. IFN- γ spots were detected using 3, 3', 5, 5'-tetramethylbenzidine (24).

The large number of peptides, PBMC samples, and individualized testing required use of a previously described automated system (24), in which the electronically generated peptide lists for each individual were integrated with the Biomek FX automated sample-handling platform (Beckman Coulter), with software developed to electronically track the locations and volumes of all reagents, including peptides and PBMCs, on the 96-well nitrocellulose plate. Databases were created in-house to track reagent stock volumes and the number of freeze/thaw cycles of peptide stocks and document experimental procedures and results. Once optimized, epitope-specific IFN- γ responses were investigated in a maximum of 30 individuals in 1 d (24). The plates were read on an AID plate reader (Autoimmun Diagnostika, Strassberg, Germany), and the average count for the background was subtracted from all wells. Positive responses were defined as greater than twice the mean of the background and ≥ 100 spot-forming units (SFUs)/ 10^6 PBMCs (25). Very high spot counts for nine epitopes that could not be enumerated by the AID plate reader and were designated "too numerous to count" were assigned a value of 15,000 SFUs/ 10^6 PBMCs for all quantitative analyses, based on the uppermost limit of values actually enumerated in the study.

Statistical analyses

A number of predicted epitopes had more than one possible HLA restriction; in some cases, individuals carried two or more of the associated HLA alleles. In this case, Epipred scores were used to identify the most likely responding peptide–HLA combination in the individual. Therefore, IFN- γ responses were inherently more likely to be attributed to putative epitopes with high scores or known epitopes (where the Epipred score was assigned as 1) over putative epitopes with low scores as the most conservative approach to the analyses.

For each epitope, the proportion of responders was calculated as the proportion of individuals tested who had a response ≥ 100 SFUs/ 10^6 PBMCs (25). Selected analyses involving comparisons of relative magnitude of responses included all nonzero responses to account for the use of a predefined cut-off for positivity, as well as to avoid a zero-inflated distribution of responses given that nonzero responses were normally distributed on the log scale. Mann–Whitney tests were used for evaluation of group epitope-specific differences, Spearman correlations were used for assessment of correlations with Epipred scores, and generalized linear mixed models were used for assessing individual-specific associations using TIBCO Spotfire S+ 8.2 for Windows. All other analyses were performed using Prism 5.02 (GraphPad).

Results

Predicted CD8 T cell epitopes spanning HLA associations

There were 221 already-known CD8 T cell epitopes shown at or near sites of HLA–HIV associations with matching HLA restriction. There were an additional 53 epitopes that had minor variations in length or sequence to known epitopes, but these changes were not at sites of HLA-associated polymorphism. The remaining 157 epitopes seemed to be completely novel, giving a total of 431 epitopes with unique HLA restrictions and Epipred scores between 0.4 and 1 spanning 367 (of 874 total) HLA associations (Fig. 1). There were 507 HLA allele-specific polymorphisms, all with q -values [false-discovery rates (26)] < 0.2 following phylogenetic correction, for which no epitope sequence with predictive scores > 0.4 was detected within a 26-codon sequence spanning the association. Among the 431 epitopes associated with the HLA allele-specific polymorphisms, there was a markedly higher proportion of epitopes in Nef (37% of all predicted epitopes; 0.77 epitopes/codon) compared with all other proteins (Fig. 2A).

For 52 epitopes, the presence of the HLA-associated substitution in the epitope changed the Epipred score of the epitope from > 0.4 to < 0.4 , predicting reduced or lost immune reactivity and in keeping with CTL escape in vivo. However, we detected Epipred scores > 0.4 for 131 adapted epitopes, of which 25 had higher scores relative to the nonadapted epitope. In these cases, we presume that the HLA-adapted variant sequence retained characteristics of an epitope still predicted to elicit a T cell response by the Epipred program.

IFN- γ T cell responses to predicted epitopes spanning HLA associations

We then sought to test these predictions in assays of ex vivo epitope-specific T cell responses using the IFN- γ ELISPOT assay. Of the 414 patient-specific PBMC samples thawed and enumerated, 290 had cell counts $> 1.5 \times 10^5$ cells/ml, with an average viability of 82% (range, 33–100%) after thawing; these were used in subsequent immunological investigations. Using the known HLA class I alleles carried by individuals in the cohort with sufficient PBMCs available for testing ($n = 290$), we generated a list of known and putative CD8 T cell epitopes unique to each individual in the study. Of all 431 potential HLA/epitope combinations for testing arising from our genetic analysis, 320 (spanning 327 HLA–HIV associations) were ultimately tested; for the remainder, there were insufficient numbers of subjects with the relevant HLA or, less commonly, problems with synthesizing the peptide. Of these 327 HLA–HIV associations, only 35% were proximate to well-characterized, published CD8 T cell epitopes with the relevant HLA restriction.

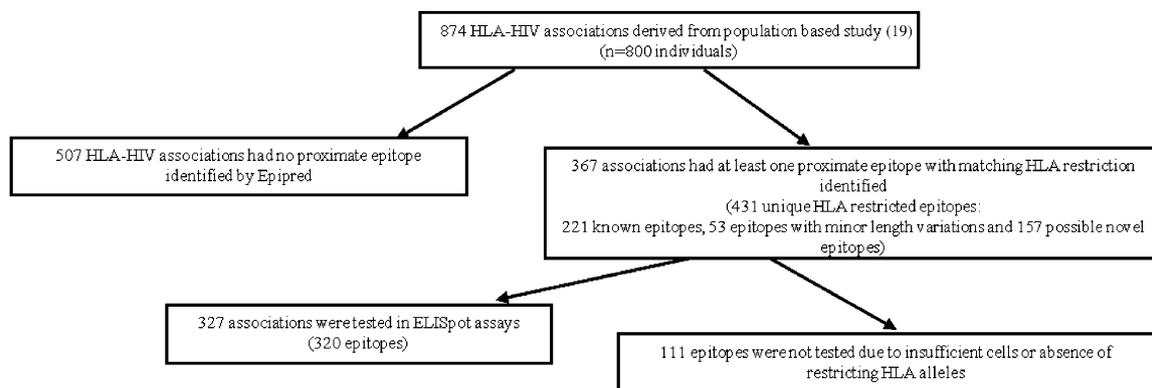


FIGURE 1. Summary of immunological investigations of 874 HLA–HIV associations in the study.

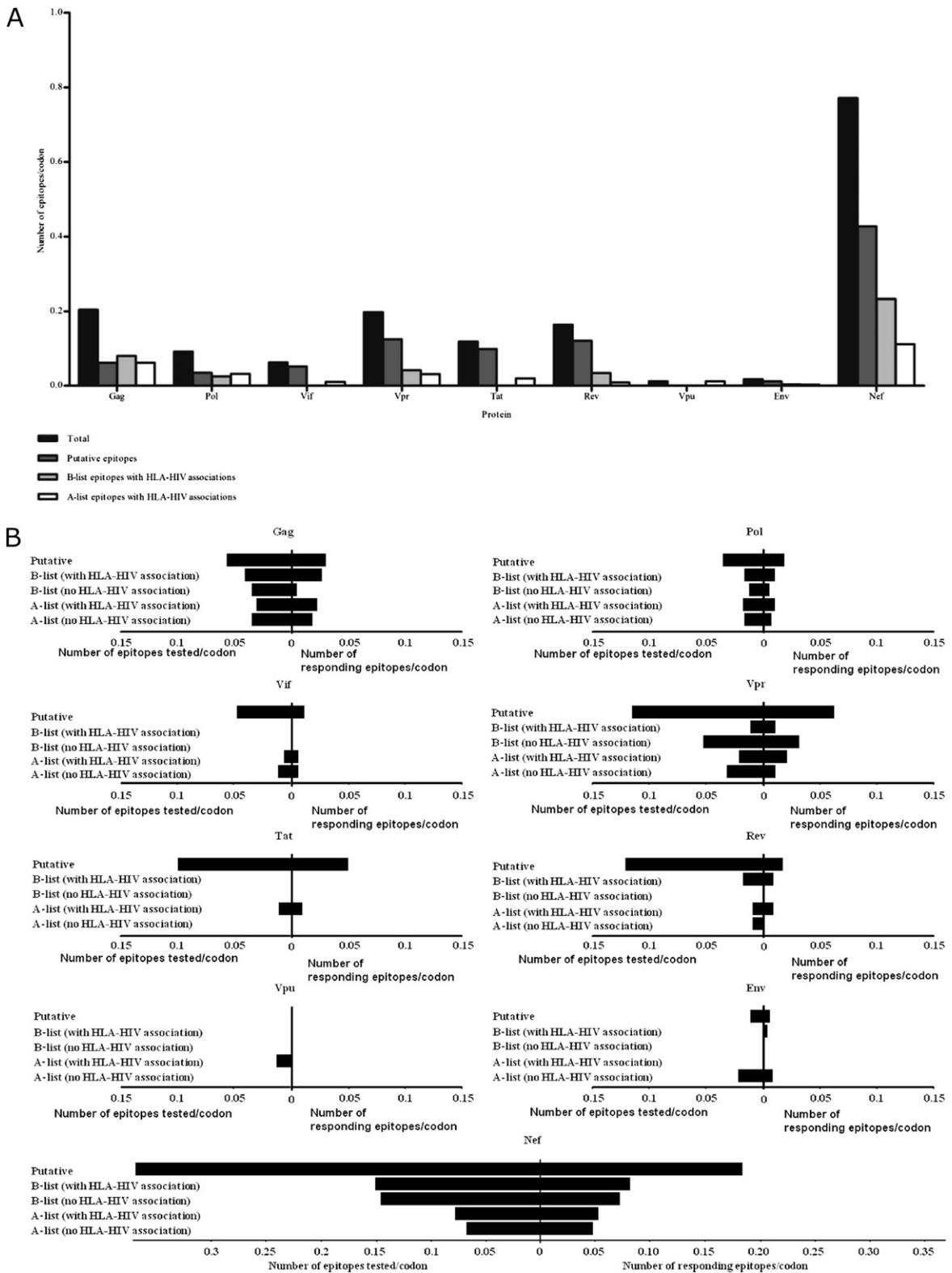


FIGURE 2. Distribution of epitopes predicted (A) and tested and targeted (B) across the HIV-1 proteome. A, Numbers of putative and known epitopes around sites of HLA-associated HIV adaptation are shown for each protein. B, The distribution of epitopes tested and eliciting positive IFN- γ responses spanning the nine viral proteins. The numbers of epitopes were adjusted for varying lengths of different proteins by dividing them by the number of codons in each protein.

CD8 T cell responses to these epitopes, together with A- and B-list epitopes without HLA-HIV associations, were investigated across 94 HLA-individualized 96-well plates for 290 individuals, with an average of 13 epitopes tested per individual (range, 1–56 epitopes). At least one positive IFN- γ response was elicited by

51% of the epitopes tested and in 140 of the 290 individuals investigated. The number of responses per individual ranged from 0 to 33, with an average of 2 epitope-specific responses. Among individuals who mounted positive responses, the median magnitude of their IFN- γ responses was 590 SFUs/10⁶ PBMCs (inter-

quartile range [IQR], 280–1440 SFUs/ 10^6 PBMCs); 128 individuals did not respond to any tested peptides, and 22 individuals failed to elicit a response to the anti-CD3 Ab control. These 22 individuals who did not respond to the positive control had an average cell viability of 67% compared with 84.1% in the remainder of the cohort ($p < 0.0001$; Mann–Whitney test).

Protein distribution of prevalent detected IFN- γ T cell responses

The protein distribution of responses was similar to the distribution of predicted epitopes, with epitopes in Nef eliciting the largest proportion of responses overall (38% of all epitope-specific responses); Nef also had the highest number of responding epitopes/codon compared with all other proteins (Fig. 2B), although the overall mean magnitude of responses was not significantly different among Gag, Nef, Tat, Pol, and Env (Fig. 3). Notably, no IFN- γ response was detected against Vpu epitopes, including the known Vpu epitope ER9 (EYRKILRQR) (27), although the genetic analyses identified the E29Q, I33L, and R37K mutations within the epitope associated with carriage of HLA-A*33 in this cohort (19).

On a within-individual basis, Nef-derived epitopes elicited the highest-magnitude response more commonly ($n = 74$ epitopes; median, 1780 SFUs/ 10^6 PBMCs; IQR, 750–4600 SFUs/ 10^6 PBMCs), whereas there were 31 epitopes in Gag (median, 980

SFUs/ 10^6 PBMCs; IQR, 300–4000 SFUs/ 10^6 PBMCs) and 26 epitopes in Pol (median, 680 SFUs/ 10^6 PBMCs; IQR, 360–1130 SFUs/ 10^6 PBMCs) that accounted for the highest-magnitude response in responding individuals. These patterns of reactivity both at the population and individual level largely reflected the distribution of HLA associations and epitope predictions, because there was a greater number of epitopes from Nef predicted (Fig. 2A) and tested (Fig. 2B). In a mixed-model regression analysis, which takes the numbers of epitopes tested into account, Nef epitopes were more likely to mount positive responses compared with Env ($p = 0.02$) but not compared with epitopes in Gag ($p > 0.9$) and Pol ($p = 0.1$). A slight majority (57%) of these “highest magnitude per individual” responses targeted known epitopes, whereas the remaining IFN- γ responses were directed against putative epitopes and minor variants of known epitopes. Of note, the number of individuals tested for each epitope was also a function of the prevalence of the restricting HLA allele, such that epitopes associated with rare alleles were tested less frequently. We identified a group of 33 epitopes that was tested in at least five individuals and elicited positive responses in $\geq 40\%$ of those individuals tested. In this group of prevalent “responding” epitopes, 61% were clustered in Nef (Fig. 4). We did not detect any statistically significant differences in the distribution of HLA restrictions between putative versus A- or B-list epitopes (data not shown).

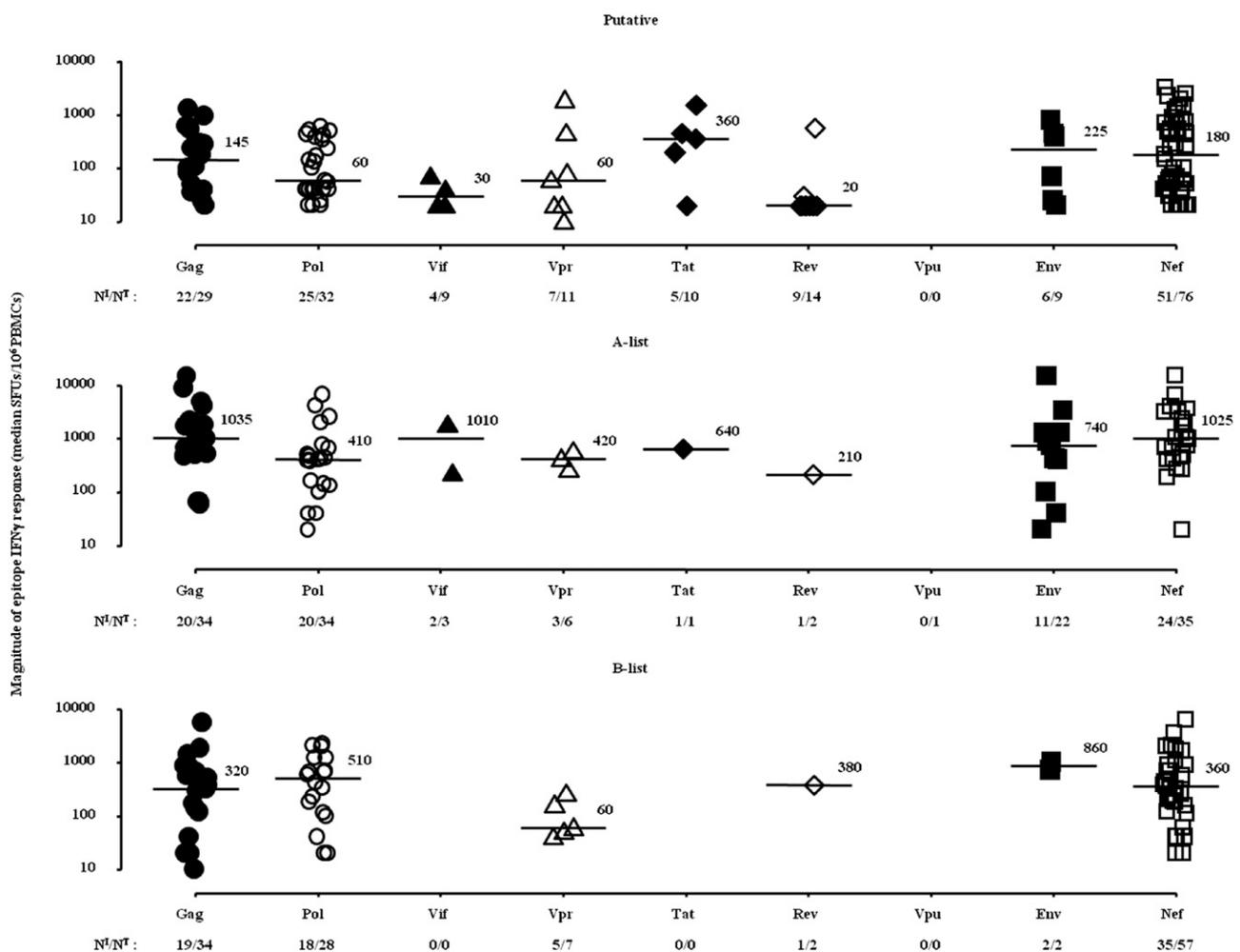


FIGURE 3. Magnitude of epitope-specific IFN- γ responses (median) across all HIV-1 proteins for putative, A-list, and B-list epitopes. The plots display the median magnitude of all nonzero IFN- γ responses for each epitope. Protein medians are annotated; N^I/N^T = number epitopes/number epitopes tested. No responses were detected against the four Vpu peptides tested.

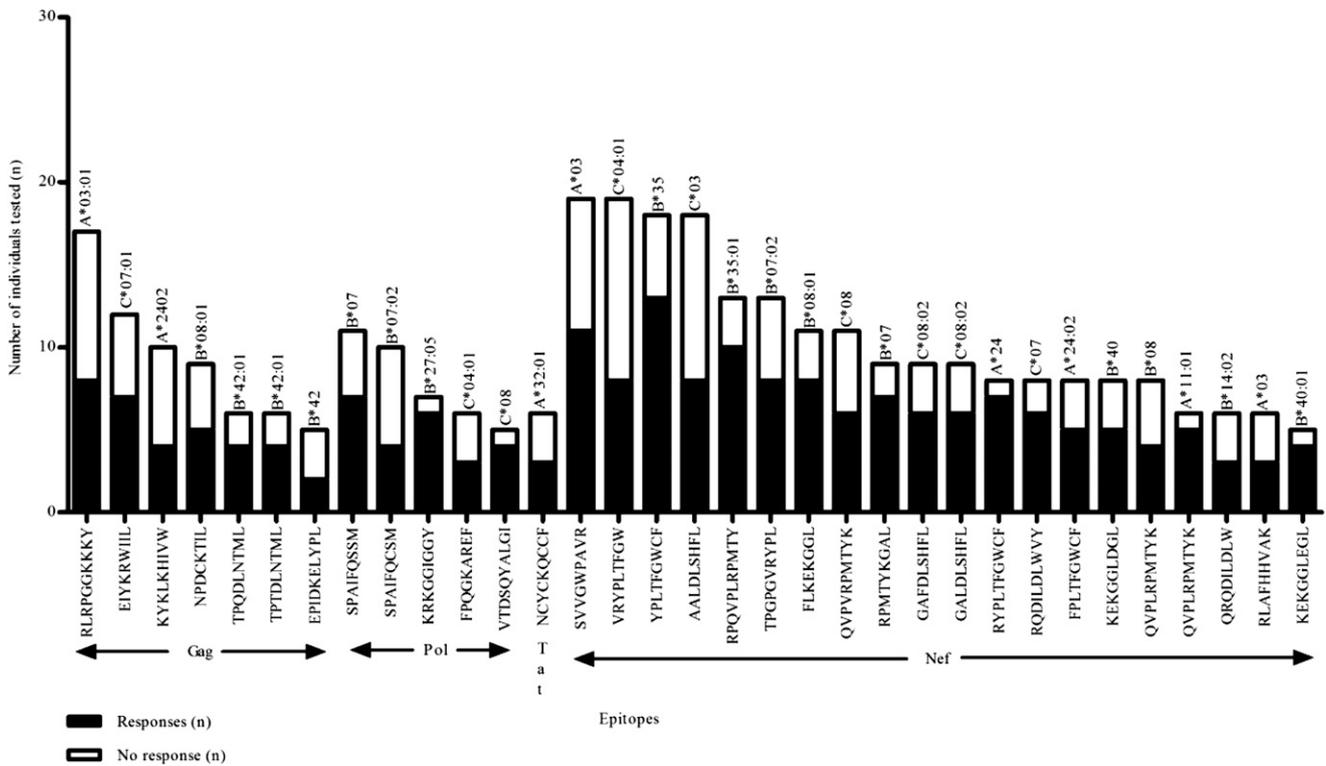


FIGURE 4. Immunogenic epitopes identified in IFN- γ ELISPOT assays. Epitopes that were tested in five or more individuals and had a positive response rate $\geq 40\%$ are shown on the x-axis, with the number of responders and nonresponders shown on the y-axis. The restricting HLA allele is shown above each bar. The majority of epitopes was identified from the central region of Nef.

HLA associations marking novel CD8 T cell epitopes

In the study cohort overall, positive IFN- γ responses were directed against a total of 143 known epitopes drawn from those associated with the HLA associations in the original genetic analyses or those added from the January 2009 LANL update and not associated with HLA-driven polymorphism. Of these, 73 A-list epitopes and 70 B-list epitopes elicited at least one IFN- γ response in this cohort. In general, known epitopes had an average response rate of 33%, with 122 known epitopes eliciting no responses at all. There were consistent responses against nine novel epitopes in individuals carrying the HLA allele predicted to restrict the epitope (Table I). These nine epitopes were considered “high-probability” novel epitopes because they were not listed in A- or B-lists of the January 2009 LANL update (<http://www.hiv.lanl.gov/content/immunology>), there was common carriage of only one HLA allele predicted to bind the epitope, there were at least five individuals tested, and the response rate among those tested was

$\geq 40\%$ and, therefore, comparable to the mean response rate (33%) seen for known epitopes. For example, the HLA-association studies identified HLA-C*04:01-driven polymorphism within FF9 (FPQGKAREF) in the Gag/Pol transframe region restricted by HLA-C*04:01. This epitope elicited responses in three of six individuals with carriage of HLA-C*04:01 tested (median, 380 SFUs/ 10^6 PBMCs; range, 340–1100 SFUs/ 10^6 PBMCs).

There were an additional 41 “possible” novel epitopes that were not listed in the LANL A- or B-lists and elicited at least one positive IFN- γ response in the study; however, fewer than five individuals were tested, or the response rate was $< 40\%$ (Table II). For example, HIV adaptation to HLA-B*14:02 was associated with a change from tyrosine (Y) at position 133 in Nef and was predicted to lie within the TW9 (TRYPLTFGW) epitope. IFN- γ responses were investigated in eight individuals with HLA-B*14:02; there were three responders (median magnitude, 480 SFUs/ 10^6 PBMCs; range, 400–740 SFUs/ 10^6 PBMCs).

Table I. High-probability novel epitopes

Protein	HLA	Epitope	No. of Individuals Tested	Positive Responses (%)
Gag	C*07:01	EIYKRWIIL	12	58
Gag	B*42	EPIDKELYPL	5	40
Pol	B*27:05	KRKGIGGY ^a	7	86
Pol	C*04:01	FPQGKAREF	6	50
Tat	A*32:01	NCYCKQCCF	6	50
Nef	A*03	SVVGGWPAVR	19	58
Nef	C*08	QVPVRPMTYK	11	55
Nef	B*14:02	QRQDILDW	6	50
Nef	C*04:01	VRYPLTFGW	19	42

High-probability novel epitopes are those for which the sequence or the HLA restriction was not published as at 2009 LANL update, were tested in five or more individuals, and had a positive response rate $\geq 40\%$.

^aThis epitope was not listed in the January 2009 update of A- or B-list epitopes from the LANL HIV immunology database, but it was described in Ref. 28.

Table II. Possible novel epitopes

Protein	Novel HLA Restrictions	Epitope	No. of Individuals Tested	Positive Responses (%)	Known Alternative HLA Restriction (Ref.)
Gag	B*57	HQAISPRTL	1	100	B*15 (15), B*1510 (29)
Gag	B*14:01	DRWEKIRLR	2	50	None
Gag	B*15:01	RLRPGGK(R)KKY	13 (15)	38 (7)	A*03 (30), A*0301 (31)
Gag	B*45:01	AEQASQDVKNW	5	20	B*44 (32), B*4402 (32)
Gag	C*03	RLRPGGKKKY	7	14	A*03 (30), A*0301 (31)
Gag	A*03:01	RAPRKKGCWK	27	4	None
Gag	A*31:01	TVKCFNCGK	6	17	None
Pol	B*35	FPQGKARE(K)F	37 (37)	27 (8)	None
Pol	B*35:12	VPLTEEAEI	13	15	None
Pol	A*68	LVDFRELNK	13	15	None
Pol	B*08:01	QVRDQAEHL	14	14	None
Pol	A*02:01	IIKIQNFRV	38	5	None
Pol	A*24	QYDQILIEI	19	5	None
Pol	B*07:02	FPQGKAREL(F)	26 (24)	12 (8)	None
Pol	A*33:01	YLS(A)WVPAHK	6 (4)	17 (25)	None
Vif	B*15	ISKKAKRWFY	18	6	None
Vpr	A*02:06	WTLELLEEL	4	25	None
Vpr	B*27:05	SRIGITRQR	5	20	None
Vpr	B*51:01	FPRVWLHGL	10	10	None
Tat	A*32:01	CCFHCQVCF	6	33	None
Tat	B*58:02	CCFHCQVCF	4	25	None
Tat	C*16:01	CCFHCQVCF	4	25	None
Tat	C*06	CCFHCQVCF	7	14	None
Tat	A*03	GLGISYGRK	30	17	None
Env	A*01:01	GPGPGRAFY	10	30	None
Env	A*01:01	SFEPIPI(S)HY	16 (16)	19 (6)	A*29 (33), A*2902 (34)
Nef	C*07:02	QVPLRPMTY(F)K	1 (20)	100 (25)	A*03 (35), A*0301 (36), A*1101 (37)
Nef	C*02:02	KRQDILDW	2	50	None
Nef	C*04:01	TRYPLTFGW	18	39	A*33 (15)
Nef	B*14:02	TRYPLTFGW	8	38	A*33 (15)
Nef	B*18:01	KEVLVWKF	17	35	None
Nef	C*03:03	QVPLRPMTFK	4	25	None
Nef	B*42:01	YPLTFGWCF	4	25	B*53 (38)
Nef	B*08:01	AFHHMAREL	14	21	None
Nef	A*31:01	DPEKEVLVWK	5	20	None
Nef	B*14	KRQDILDW	6	17	None
Nef	B*40:01	MEDPEKEVL	6	17	None
Nef	B*08:01	GALDLSHFL	10	10	None
Nef	B*44	KRRDILDW	23	9	None
Nef	C*04:01	GAFDLSHFL	31	6	None
Nef	B*44	GYFPDWQNY	17	6	None

These epitopes were either tested in less than five individuals, or the proportion of responders was <40%. Epitopes and variants were counted as a single possible novel epitope. Data on variants of these epitopes with the same HLA restriction are shown in parentheses. Identical peptide sequences with different HLA restrictions are listed separately.

Taking all responses detected against novel epitopes, known epitopes, and minor variants of known epitopes and presuming that the *ex vivo* peptide presentation was mediated by the predicted HLA allele, ELISPOT testing in this cohort confirmed 190 (58%) of 327 HLA associations that had a predicted epitope and were ultimately able to be directly tested in our study, given the relevant HLA types available. There were 137 HLA–HIV associations for which we could not show minimal support for marking a primary site of T cell selection based on our immunological studies involving HLA-directed ELISPOT screens of 290 individuals (Fig. 5). As previously mentioned, there were 507 HLA allele-specific polymorphisms identified in the original genetic analysis that did not have any known or putative epitope predicted in proximity to the association. Those HLA associations for which we could not assign any known epitope or any predicted novel epitope or find at least one positive IFN- γ response in the proteomic region spanning the association may be considered more likely to represent secondary/compensatory amino acid covariation or false-positive associations and are less likely to indicate a primary site of T cell escape.

Epitope-specific responses and associations with EpiPred scores, autologous viral sequences, viral loads, and CD4 counts

In the subset of epitopes tested in at least five individuals, higher proportions of individuals responded to known epitopes compared with putative epitopes (median proportion of responders: A-list = 33% and B-list = 19% versus putative = 7%; $p = 0.0003$ and $p = 0.003$ respectively; Mann–Whitney test; Fig. 6A). The magnitude of IFN- γ responses for known epitopes was also higher than the magnitude of responses for putative epitopes (median epitope-specific responses: A-list = 420 SFUs/ 10^6 PBMCs and B-list = 200 SFUs/ 10^6 PBMCs versus putative = 70 SFUs/ 10^6 PBMCs; $p = 0.003$ and $p = 0.02$ respectively, taking all nonzero responses into account; Mann–Whitney U test; Fig. 6B). Among putative epitopes, we did not detect a statistically significant correlation between EpiPred scores and either the proportion of positive responders (Spearman's $r = +0.06$; $p = 0.5$) or the magnitude of IFN- γ responses (Spearman's $r = +0.05$; $p = 0.6$).

At the individual level, baseline viral load and CD4 counts did not predict response ($p > 0.1$), but the probability of responding

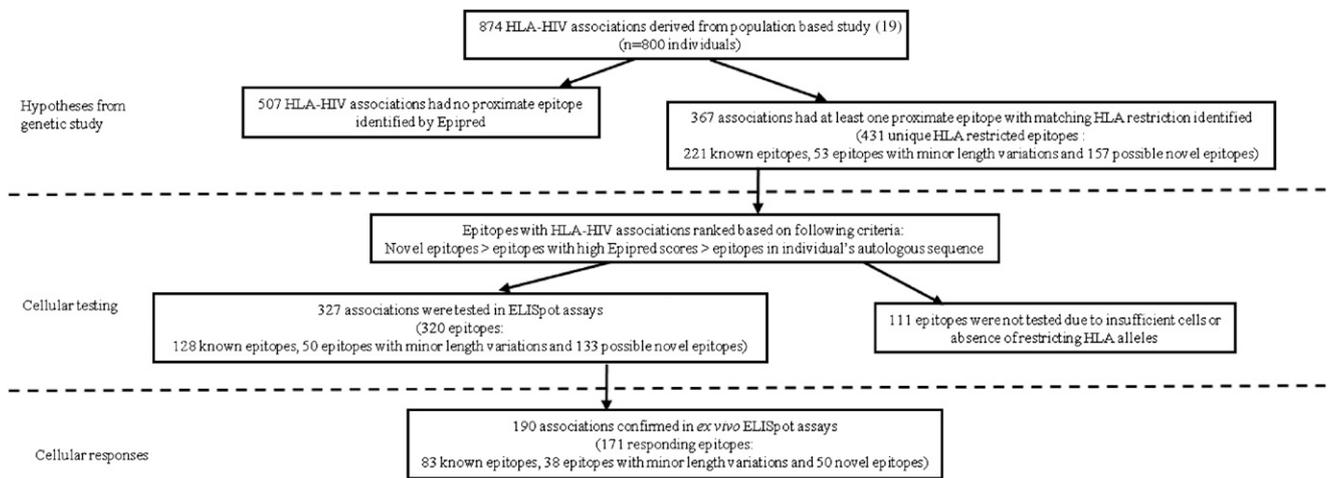


FIGURE 5. Summary of results of testing in IFN- γ ELISPOT assays.

was significantly higher for nonadapted epitope sequences that matched the autologous viral sequences ($p < 0.0001$; generalized linear mixed-effect models).

IFN- γ responses to HLA-adapted epitopes

For the majority of epitopes, peptides with the nonadapted (susceptible/wild-type) sequence and the adapted (resistant/escaped) sequence were synthesized and tested to confirm HLA-restricted immune reactivity to the nonadapted epitope, as well as loss or reduction of reactivity due to the specified HLA-associated epitope variation. For 76 nonadapted epitopes tested in parallel with the paired adapted epitope, the HLA-associated amino acid substitution occurred within the epitope; for 32 of these, complete loss of an IFN- γ response to the adapted epitope was seen in all cases. In the remainder, the HLA-adapted version of the epitope still elicited IFN- γ responses ≥ 100 SFUs/ 10^6 PBMCs.

HLA-associated polymorphisms occurred outside 66 epitopes tested in our study, representing potential sites of epitope-processing escape. IFN- γ responses were elicited by 30 of these

epitopes (median magnitude, 1090 SFUs/ 10^6 PBMCs; IQR, 420–2690 SFUs/ 10^6 PBMCs). In addition, in 26 cases, mutations occurring within one putative or known epitope resulted in predictions of new possible epitopes (Epipred scores ≥ 0.4) adjacent to or partially overlapping the original epitope and associated with the same allele, suggesting that some neo-epitopes may remain available for HLA and T cell engagement, despite being in an HLA-adapted state. For example, an HLA-A*24:02–driven change from tyrosine (Y) to phenylalanine (F) at codon 135 in Nef RF10 (RYPLTFGWCF) (39) was still associated with an Epipred prediction (score = 0.61) of HLA-A*24:02–mediated recognition of FF9 (FPLTFGWCF). Both epitopes were tested in six individuals with carriage of HLA-A*24:02, with five individuals responding to the nonadapted epitope (median, 1580 SFUs/ 10^6 PBMCs; range, 360–4560 SFUs/ 10^6 PBMCs) and IFN- γ responses elicited by the adapted epitope in three individuals (median, 440 SFUs/ 10^6 PBMCs; range, 200–520 SFUs/ 10^6 PBMCs).

A substantial number of adapted epitopes elicited IFN- γ responses ≥ 100 SFUs/ 10^6 PBMCs ($n = 74$), including 11 in which

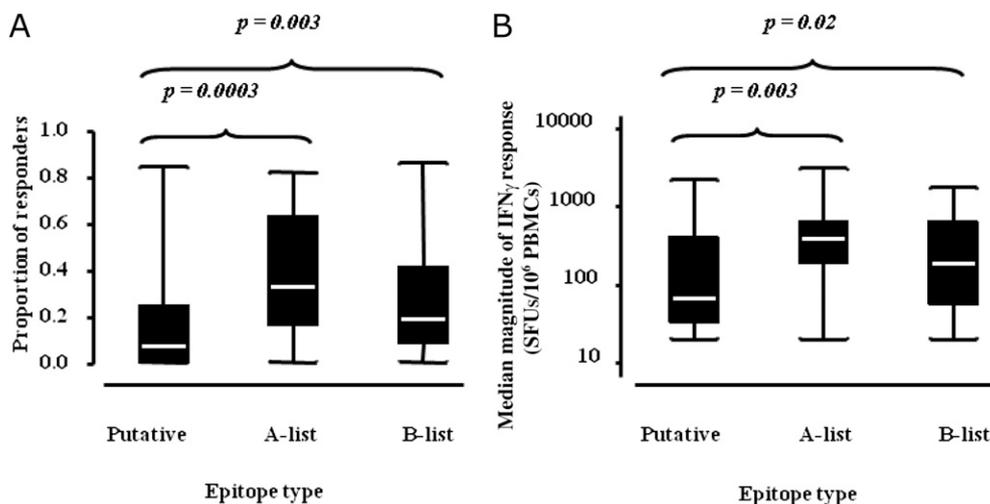


FIGURE 6. Proportions of responders and median magnitude of IFN- γ responses for putative and known epitopes tested in five or more individuals. The plots indicate sample medians (heavy white lines), IQRs (limits of black boxes), and value ranges (limits of whiskers). Median number of individuals tested per epitope: putative epitopes, 10 (IQR, 6–16); A-list epitopes, 10 (IQR, 6–16); B-list epitopes, 10.5 (IQR, 7–13). Median number of responses per epitope: putative epitopes, 2 (IQR, 1–5); A-list epitopes, 5 (IQR, 2–9); and B-list epitopes, 4 (IQR, 2–7). The proportions of responding individuals with epitope-specific responses ≥ 100 SFUs/ 10^6 PBMCs (A) and median magnitudes of all nonzero IFN- γ responses (B) elicited by putative epitopes were significantly lower compared with known epitopes with HLA–HIV associations (Mann–Whitney test).

the mean magnitude of the response was 2-fold higher for the adapted epitope relative to the nonadapted epitope in each individual tested. This seemed to be a general phenomenon, with examples in all proteins except Vpu, but it was very prominent in Nef (Fig. 7). There were some extremely complex patterns of new epitope creation resulting from HLA-associated changes in Nef, as described above for the HLA-A*24:02-restricted epitope, RF10. This was particularly evident in the central region of Nef, where a sequence of 77 aa (positions 71–148) contained 21 partially overlapping epitopes created by polymorphism, which elicited IFN- γ responses in our study cohort. Given the possible ramifications of this for vaccine-induced immunity, we compared the proportion of CD8 T cell epitopes that would be in Nef compared with Gag, Pol, and Env (as common vaccine Ags), if all HLA-specific variations and predicted epitopes were taken into account, versus the numbers of epitopes in these proteins in a single subtype B strain sequence (Fig. 8A, 8B). This indicated an inflation of Nef epitopes and contraction of Pol, Gag, and particularly, Env epitopes associated with diversity coverage at the population level. This was further replicated when comparing proportions of epitopes that induce IFN- γ responses, with Nef accounting for the greatest proportion of epitope-specific IFN- γ responses relative to the other proteins in individuals in this study (Fig. 8C).

To determine whether responses to HLA-adapted epitopes could reflect general cross-reactivity phenomena, as opposed to de novo responses to the adapted epitope specifically, we sought to determine whether responses to adapted epitopes were more likely when there was a response to the nonadapted epitope, despite a lack of match with the autologous viral epitope, and therefore, a more cross-reactive response. As noted above, the probability of responding, in general, was significantly higher for nonadapted epitope sequences that matched the autologous viral sequences ($p < 0.0001$; generalized linear mixed-effect model) and among those with demonstrated responses against a nonadapted epitope; those with match between the autologous sequence and nonadapted epitope sequence exhibited higher response rates to the adapted epitope (mean, adjusted for protein = 25%) compared with those where the individual's autologous viral sequence matched only the adapted epitope (14%; $p = 0.05$) or neither the nonadapted nor the adapted epitope (14%; $p = 0.02$).

Discussion

To our knowledge, this is the first large-scale reverse-genomics study in which the results of a genetic analysis were used to directly inform the selection and subsequent testing of particular viral Ags. Overall, we were able to provide immunological support for 190 HLA-associated polymorphisms in subtype B HIV-1 as being sites of direct T cell recognition in vivo based on ex vivo IFN- γ responses in the appropriate HLA background. This was 58% of the HLA associations tested in the study, representing an increase from only 35% that could have been explained by well-characterized published CD8 T cell epitopes alone, prior to any cellular testing. For nine high-probability epitopes, there was a sufficiently frequent HLA type to show that the most likely HLA restriction of the epitopic response in the cohort matched that of the prediction, and there was sufficient frequency of testing and responses in $\geq 40\%$ of cases to give the best level of evidence for immunoreactivity. An additional set of possible novel epitopes was defined with response rates $< 40\%$ but immunoreactivity in at least one individual with the predicted restricting HLA allele. However, it is noteworthy that even well-characterized published epitopes that have been used as a standard to validate genetic associations and as reagents in immunological studies had a mean response rate of only 33%. Therefore, we applied a higher standard of evidence for immunogenicity to potential novel epitopes compared with that observed for known epitopes in this study. The fact that cellular responsiveness was correlated with sequence match of the testing Ag to autologous virus, as shown in other studies (40), further confirmed that viral diversity does influence the specificity of cellular responses within the individual. These data, in general, provided experimental evidence of a direct biological basis for 190 strongly HLA-associated subtype B HIV-1 polymorphisms proteome-wide as sites of HIV-1 adaptation to HLA-restricted T cell responses and should serve to guide further epitope characterization and viral-escape studies.

HIV-1 Nef was associated with the greatest number of epitopes that elicited IFN- γ over the whole cohort and within individuals. This intense immunogenicity is in keeping with the extreme levels of HLA allele-specific selection in Nef shown in several population-based genetics studies (14, 19, 41) and mirrors the distribution of well-characterized epitopes defined by cellular

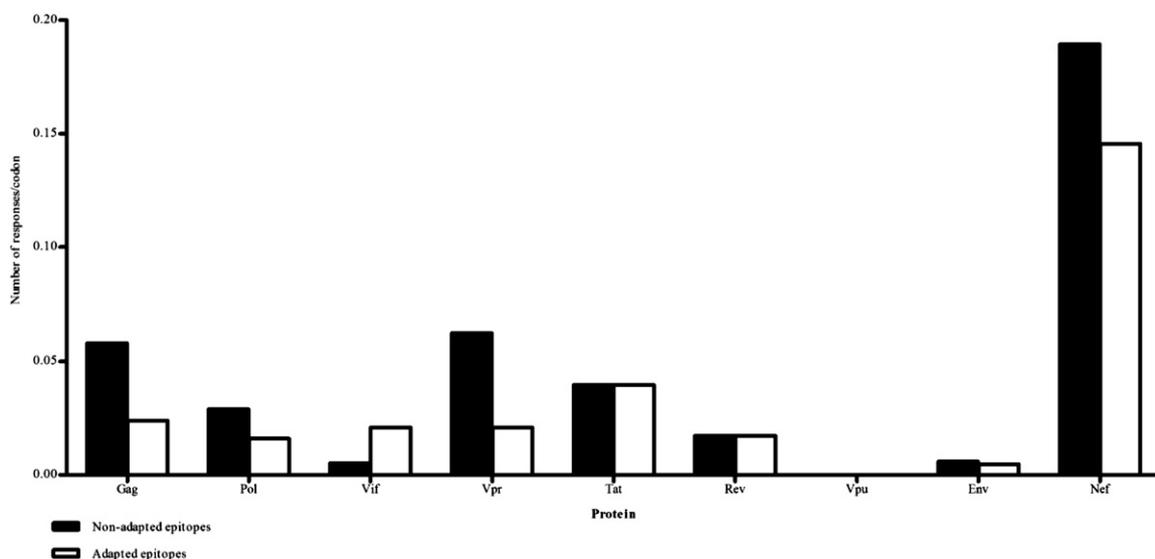


FIGURE 7. Comparison of responses to nonadapted and adapted epitopes. Number of positive IFN- γ responses to adapted and nonadapted epitopes across the HIV-1 proteome. Numbers were adjusted for varying protein length by dividing by the number of codons.

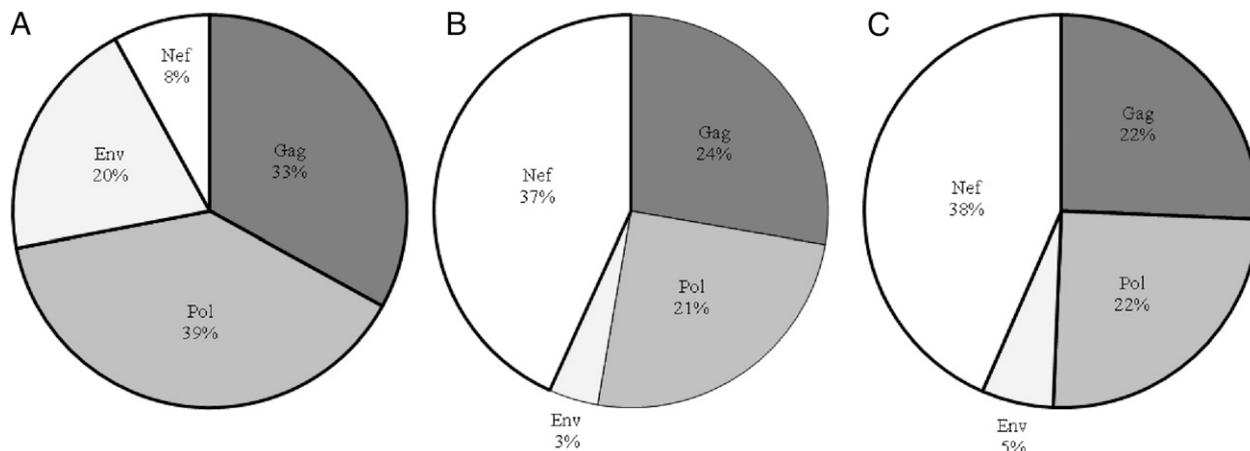


FIGURE 8. Marked inflation of Nef epitopes and Nef-specific IFN- γ responses associated with HIV diversity. The relative proportions of protein-specific epitopes in a single monovalent subtype B HIV-1 strain (A) compared with the proportions if all possible variants are included (B). C, Proportion of protein-specific IFN- γ responses derived from this study.

studies. Because the majority of putative epitopes were tested in parallel with their HLA-adapted pair, we were also able to determine whether any functional consequences of polymorphism within epitopes were apparent in a screening ELISPOT assay. Marked reductions in IFN- γ responses associated with the polymorphisms were seen in a proportion of cases, supporting a role for loss of TCR engagement or HLA-peptide binding in vivo in these examples. There were also instances in which the HLA-adapted or escaped version of the epitope elicited equivalent or higher magnitude responses than did the nonadapted versions. In a screening ELISPOT with excess peptide concentrations, it is possible that such reactivity patterns result from T cell cross-reactivity, although this seemed more likely to occur with Nef epitopes compared with other proteins, and it is not clear why TCR clonotypes specific for Nef epitopes should be inherently more cross-reactive than other TCRs. Furthermore, we did not find that responses that seemed more inherently cross-reactive, as indicated by lack of match with autologous viral sequences, were more likely to respond to the adapted epitopes. The general determinants of T cell recognition of viral variants have been explored in other studies (42, 43). It is important to emphasize that we tested specific epitope pairs based on population signals of adaptation. In all of these specific instances of positive responses to HLA-adapted epitopes, there was strong statistical evidence of the adapted residue being enriched in vivo in the selecting HLA context in the original HLA-associations analysis, suggesting that in our cellular studies, either the true differences in peptide avidity were not apparent at excess peptide concentrations and would diverge with serial peptide dilutions or, alternatively, that inducing immune responses to adapted variants provides some selective advantage to HIV-1 in vivo.

The formation of neo-epitopes as a result of T cell escape has been described in longitudinal studies (44), but our data suggested that this could be a reasonably common phenomenon. We described cases of HLA selection leading to high-avidity, neo-epitope-specific responses in chronic progressive HIV infection (45) and argued that this could represent a way for HIV mutations to promote “bad” immunodominance patterns in chronic infection and drive HIV evolution, not necessarily away from all immune recognition but to enhanced, but ineffective, recognition of a narrow range of epitopes. In this study, there were several extremely complex patterns of HLA-associated polymorphisms in Nef leading to formation of new epitope targets for the same and new HLA alleles that were partially overlapping or distant from the

original epitope. Given this combination of high variability with high density of reactive epitopes, including reactivity to many overlapping HLA-adapted variants, it is not surprising that Nef epitopes, as a proportion of all reactive epitopes, are relatively inflated, and the IFN- γ responses to Nef dominates over all others when considered at a population level. If these Nef responses lead to a relative reduction in targeting of more structurally or functionally constrained proteins, such as Gag or Pol, in vivo, where viral adaptations are more likely to incur fitness costs, then Nef-dominated immunity is conceivably more advantageous to the virus than to the host. Because these immunodominance patterns characterize chronic infection where immune control has manifestly failed, recapitulating such immune hierarchies by a vaccine immunogen would seem empirically undesirable, particularly for therapeutic vaccines that could serve to boost this inflation. It is not known whether broad poly-specific vaccine-induced responses prior to viral exposure could block, not block, or even enhance particular transmitting viral variants, although this data will emerge as more polyvalent strategies in preventative vaccines advance to clinical trials. Computational strategies that are based on conservation or are polyvalent but seek to minimize the inclusion of rare or unfavorable epitopes or are based on acute transmitted founder viruses may overcome this issue. This set of immunological data could be useful to help in scoring algorithms used to computationally optimize inclusion of important circulating acute variants and perhaps help to exclude particular variants that seem prone to interference or immunodominance phenomena in vivo.

Despite the large size of our study cohort, the extreme polymorphism of HLA molecules still limits the degree to which the HLA allele restriction of many responses could be defined analytically, and limited stored cellular material of our study cohort precluded further experimental studies. Because we assigned a higher ranking to known or high-probability HLA restrictions for those epitopes with overlapping HLA restrictions, our study is also inherently conservative, with a bias against assignment of novel epitope responses when there are limited numbers of individuals with that HLA. Furthermore, the use of an epitope-prediction program trained on characteristics of known epitopes will inevitably tend to predict epitopes more similar to known epitopes; therefore, the 507 associations for which no proximal epitope was predicted cannot be absolutely excluded as sites of true immune selection, particularly given the low mean response rate of even known epitopes shown in this study. However, the additional

peptide synthesis, sample, and assay requirement of assessing all possible epitopic regions and variants spanning all associations is prohibitive at a practical level.

The challenges of translating the findings of genetic HLA polymorphism-association studies to the functional, cellular level are considerable and include the extreme polymorphism of HLA and HIV-1, as discussed above (which necessitates large sample sizes), availability of samples and subjects for immunological testing; limitations in amount and quality of cryopreserved sample material (particularly from pretreatment time points); the general heterogeneity of T cell responses between subjects and over time; limitations of ex vivo-based assays and single biomarkers, such as IFN- γ ; and the false-discovery rate of associations arising from any genetic-associations study. Nevertheless, we were able to expand the base of immunological support for a number of subtype B HIV-1 polymorphisms being sites of immune selection. In addition to providing positive evidence for immune reactivity, the absence of any reactivity for some peptides can be useful in studies of secondary or compensatory mutational networks. Indeed, this study suggested that only the minority of HLA-HIV polymorphisms (given a q-value cut-off of 0.2, with adjustment for viral phylogeny) can be explained by primary escape or cotargeting of multiple epitopes, and many others are more likely secondary mutations affecting structurally or functionally interdependent residues. Mapping the mutational networks or genetic haplotypes in HIV-1 that determine viral fitness under diverse host environments will reveal more about the importance of specific residues in HIV replication and pathogenesis. The information provided in this study on mutations that are highly HLA allele specific but not within or near epitopes could help those modeling or studying such covariation networks for both vaccine research and identifying novel ligands for antiviral drugs. More HLA-association population-based studies will continue to be done in new and genetically diverse populations (46) and in larger populations, and the output from several studies have already been used as presumptive sites of viral escape in a number of secondary analyses. However, there is little value in generating vast numbers of hypotheses across these studies unless they are systemically tested and validated at the functional level, where possible. The results of such testing can be used to refine mapping of primary viral escape and compensatory pathways; iterate and validate analytical approaches to genetic studies; and understand the links between HIV polymorphism, adaptation, and immunogenicity.

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Disclosures

The authors have no financial conflicts of interest.

References

- Fischer, W., S. Perkins, J. Theiler, T. Bhattacharya, K. Yusim, R. Funkhouser, C. Kuiken, B. Haynes, N. L. Letvin, B. D. Walker, et al. 2007. Polyvalent vaccines for optimal coverage of potential T-cell epitopes in global HIV-1 variants. *Nat. Med.* 13: 100–106.
- Barouch, D. H., and B. Korber. 2010. HIV-1 vaccine development after STEP. *Annu. Rev. Med.* 61: 153–167.
- McElrath, M. J., and B. F. Haynes. 2010. Induction of immunity to human immunodeficiency virus type-1 by vaccination. *Immunity* 33: 542–554.
- Phillips, R. E., S. Rowland-Jones, D. F. Nixon, F. M. Gotch, J. P. Edwards, A. O. Ogunlesi, J. G. Elvin, J. A. Rothbard, C. R. Bangham, C. R. Rizza, et al. 1991. Human immunodeficiency virus genetic variation that can escape cytotoxic T cell recognition. *Nature* 354: 453–459.
- Goulder, P. J., and D. I. Watkins. 2008. Impact of MHC class I diversity on immune control of immunodeficiency virus replication. *Nat. Rev. Immunol.* 8: 619–630.
- Karlsson, A. C., A. K. Iversen, J. M. Chapman, T. de Oliveira, G. Spotts, A. J. McMichael, M. P. Davenport, F. M. Hecht, and D. F. Nixon. 2007. Sequential broadening of CTL responses in early HIV-1 infection is associated with viral escape. *PLoS ONE* 2: e225.
- Yerly, D., D. Heckerman, T. Allen, T. J. Suscovich, N. Jovic, C. Kadie, W. J. Pichler, A. Cerny, and C. Brander. 2008. Design, expression, and processing of epitomized hepatitis C virus-encoded CTL epitopes. *J. Immunol.* 181: 6361–6370.
- Barouch, D. H., K. L. O'Brien, N. L. Simmons, S. L. King, P. Abbink, L. F. Maxfield, Y. H. Sun, A. La Porte, A. M. Riggs, D. M. Lynch, et al. 2010. Mosaic HIV-1 vaccines expand the breadth and depth of cellular immune responses in rhesus monkeys. *Nat. Med.* 16: 319–323.
- Goulder, P. J., R. E. Phillips, R. A. Colbert, S. McAdam, G. Ogg, M. A. Nowak, P. Giangrande, G. Luzzi, B. Morgan, A. Edwards, et al. 1997. Late escape from an immunodominant cytotoxic T-lymphocyte response associated with progression to AIDS. *Nat. Med.* 3: 212–217.
- Price, D. A., P. J. Goulder, P. Klenerman, A. K. Sewell, P. J. Easterbrook, M. Troop, C. R. Bangham, and R. E. Phillips. 1997. Positive selection of HIV-1 cytotoxic T lymphocyte escape variants during primary infection. *Proc. Natl. Acad. Sci. USA* 94: 1890–1895.
- Kelleher, A. D., C. Long, E. C. Holmes, R. L. Allen, J. Wilson, C. Conlon, C. Workman, S. Shaunaik, K. Olson, P. Goulder, et al. 2001. Clustered mutations in HIV-1 gag are consistently required for escape from HLA-B27-restricted cytotoxic T lymphocyte responses. *J. Exp. Med.* 193: 375–386.
- Moore, C. B., M. John, I. R. James, F. T. Christiansen, C. S. Witt, and S. A. Mallal. 2002. Evidence of HIV-1 adaptation to HLA-restricted immune responses at a population level. *Science* 296: 1439–1443.
- Bhattacharya, T., M. Daniels, D. Heckerman, B. Foley, N. Frahm, C. Kadie, J. Carlson, K. Yusim, B. McMahon, B. Gaschen, et al. 2007. Founder effects in the assessment of HIV polymorphisms and HLA allele associations. *Science* 315: 1583–1586.
- Brumme, Z. L., C. J. Brumme, D. Heckerman, B. T. Korber, M. Daniels, J. Carlson, C. Kadie, T. Bhattacharya, C. Chui, J. Szinger, et al. 2007. Evidence of differential HLA class I-mediated viral evolution in functional and accessory/regulatory genes of HIV-1. *PLoS Pathog.* 3: e94.
- Brumme, Z. L., C. J. Brumme, J. Carlson, H. Streeck, M. John, Q. Eichbaum, B. L. Block, B. Baker, C. Kadie, M. Markowitz, et al. 2008. Marked epitope- and allele-specific differences in rates of mutation in human immunodeficiency type 1 (HIV-1) Gag, Pol, and Nef cytotoxic T-lymphocyte epitopes in acute/early HIV-1 infection. *J. Virol.* 82: 9216–9227.
- Carlson, J. M., Z. L. Brumme, C. M. Rousseau, C. J. Brumme, P. Matthews, C. Kadie, J. I. Mullins, B. D. Walker, P. R. Harrigan, P. J. Goulder, and D. Heckerman. 2008. Phylogenetic dependency networks: inferring patterns of CTL escape and codon covariation in HIV-1 Gag. *PLOS Comput. Biol.* 4: e1000225.
- Rousseau, C. M., M. G. Daniels, J. M. Carlson, C. Kadie, H. Crawford, A. Prendergast, P. Matthews, R. Payne, M. Rolland, D. N. Raugi, et al. 2008. HLA class I-driven evolution of human immunodeficiency virus type 1 subtype c proteome: immune escape and viral load. *J. Virol.* 82: 6434–6446.
- Wang, Y. E., B. Li, J. M. Carlson, H. Streeck, A. D. Gladden, R. Goodman, A. Schneidewind, K. A. Power, I. Toth, N. Frahm, et al. 2009. Protective HLA class I alleles that restrict acute-phase CD8+ T-cell responses are associated with viral escape mutations located in highly conserved regions of human immunodeficiency virus type 1. *J. Virol.* 83: 1845–1855.
- John, M., D. Heckerman, I. James, L. P. Park, J. M. Carlson, A. Chopra, S. Gaudieri, D. Nolan, D. W. Haas, S. A. Riddler, et al. 2010. Adaptive interactions between HLA and HIV-1: highly divergent selection imposed by HLA class I molecules with common supertype motifs. *J. Immunol.* 184: 4368–4377.
- Thomas, R., R. Apps, Y. Qi, X. Gao, V. Male, C. O'Uigin, G. O'Connor, D. Ge, J. Fellay, J. N. Martin, et al. 2009. HLA-C cell surface expression and control of HIV/AIDS correlate with a variant upstream of HLA-C. *Nat. Genet.* 41: 1290–1294.
- Riddler, S. A., R. Haubrich, A. G. DiRienzo, L. Peeples, W. G. Powderly, K. L. Klingman, K. W. Garren, T. George, J. F. Rooney, B. Brizz, et al; AIDS Clinical Trials Group Study A5142 Team. 2008. Class-sparing regimens for initial treatment of HIV-1 infection. *N. Engl. J. Med.* 358: 2095–2106.
- Haas, D. W., G. R. Wilkinson, D. R. Kuritzkes, D. D. Richman, J. Nicotera, L. F. Mahon, C. Sutcliffe, S. Siminski, J. Andersen, K. Coughlin, et al; Adult AIDS Clinical Trials Group. 2003. A multi-investigator/institutional DNA bank for AIDS-related human genetic studies: AACTG Protocol A5128. *HIV Clin. Trials* 4: 287–300.
- Heckerman, D., C. Kadie, and J. Listgarten. 2007. Leveraging information across HLA alleles/supertypes improves epitope prediction. *J. Comput. Biol.* 14: 736–746.
- Almeida, C. A., S. G. Roberts, R. Laird, E. McKinnon, I. Ahmed, K. Pfafferott, J. Turley, N. M. Keane, A. Lucas, B. Rushton, et al. 2009. Automation of the ELISPOT assay for high-throughput detection of antigen-specific T-cell responses. *J. Immunol. Methods* 344: 1–5.
- Smith, S. G., S. A. Joosten, V. Verscheure, A. A. Pathan, H. McShane, T. H. Ottenhoff, H. M. Dockrell, and F. Mascart. 2009. Identification of major

- factors influencing ELISpot-based monitoring of cellular responses to antigens from *Mycobacterium tuberculosis*. *PLoS ONE* 4: e7972.
26. Storey, J. D., and R. Tibshirani. 2003. Statistical significance for genomewide studies. *Proc. Natl. Acad. Sci. USA* 100: 9440–9445.
 27. Addo, M. M., M. Altfeld, A. Rathod, M. Yu, X. G. Yu, P. J. Goulder, E. S. Rosenberg, and B. D. Walker. 2002. HIV-1 Vpu represents a minor target for cytotoxic T lymphocytes in HIV-1-infection. *AIDS* 16: 1071–1073.
 28. Schellens, I. M., C. Keşmir, F. Miedema, D. van Baarle, and J. A. Borghans. 2008. An unanticipated lack of consensus cytotoxic T lymphocyte epitopes in HIV-1 databases: the contribution of prediction programs. *AIDS* 22: 33–37.
 29. Llano, A., N. Frahm, and C. Brander. 2009. How to optimally define optimal cytotoxic T lymphocyte epitopes in HIV infection? In *HIV Molecular Immunology 2009*. K. Yusim, B. Korber, C. Brander, B. F. Haynes, R. Koup, J. P. Moore, B. D. Walker, and D. I. Watkins, eds. Los Alamos National Laboratory, Los Alamos, NM, p. 3 ff.
 30. Goulder, P. J., Y. Tang, S. I. Pelton, and B. D. Walker. 2000. HLA-B57-restricted cytotoxic T-lymphocyte activity in a single infected subject toward two optimal epitopes, one of which is entirely contained within the other. *J. Virol.* 74: 5291–5299.
 31. Brander, C., and B. Walker. 1995. The HLA Class I Restricted CTL Response in HIV-1 Infection: Systematic Identification of Optimal Epitopes. In *HIV Molecular Immunology Database 1995*. B. Korber, C. Brander, B. Walker, R. Koup, J. Moore, B. Haynes, and G. Myers, eds. Los Alamos National Laboratory, Los Alamos, NM, p. IV–1–IV–9.
 32. Brander, C., and B. Walker. 1997. Systematic identification of optimal HIV-1 CTL epitopes. In *HIV Molecular Immunology Database 1997*. B. Korber, J. Moore, C. Brander, R. Koup, B. Haynes, and B. Walker, eds. Los Alamos National Laboratory, Los Alamos, NM, p. IV–1–IV–11.
 33. Altfeld, M., E. S. Rosenberg, R. Shankarappa, J. S. Mukherjee, F. M. Hecht, R. L. Eldridge, M. M. Addo, S. H. Poon, M. N. Phillips, G. K. Robbins, et al. 2001. Cellular immune responses and viral diversity in individuals treated during acute and early HIV-1 infection. *J. Exp. Med.* 193: 169–180.
 34. Jones, N. A., X. Wei, D. R. Flower, M. Wong, F. Michor, M. S. Saag, B. H. Hahn, M. A. Nowak, G. M. Shaw, and P. Borrow. 2004. Determinants of human immunodeficiency virus type 1 escape from the primary CD8+ cytotoxic T lymphocyte response. *J. Exp. Med.* 200: 1243–1256.
 35. Culmann, B., E. Gomard, M. P. Kiény, B. Guy, F. Dreyfus, A. G. Saimot, D. Sereni, D. Sicard, and J. P. Lévy. 1991. Six epitopes reacting with human cytotoxic CD8+ T cells in the central region of the HIV-1 NEF protein. *J. Immunol.* 146: 1560–1565.
 36. Koenig, S., T. R. Fuerst, L. V. Wood, R. M. Woods, J. A. Suzich, G. M. Jones, V. F. de la Cruz, R. T. Davey, Jr., S. Venkatesan, B. Moss, et al. 1990. Mapping the fine specificity of a cytolytic T cell response to HIV-1 nef protein. *J. Immunol.* 145: 127–135.
 37. Li, L., and M. Bouvier. 2004. Structures of HLA-A*1101 complexed with immunodominant nonamer and decamer HIV-1 epitopes clearly reveal the presence of a middle, secondary anchor residue. *J. Immunol.* 172: 6175–6184.
 38. Kiepiela, P., A. J. Leslie, I. Honeyborne, D. Ramduth, C. Thobakgale, S. Chetty, P. Rathnavalu, C. Moore, K. J. Pfafferoth, L. Hilton, et al. 2004. Dominant influence of HLA-B in mediating the potential co-evolution of HIV and HLA. *Nature* 432: 769–775.
 39. Tanuma, J., M. Fujiwara, K. Teruya, S. Matsuoka, H. Yamanaka, H. Gatanaga, N. Tachikawa, Y. Kikuchi, M. Takiguchi, and S. Oka. 2008. HLA-A*2402-restricted HIV-1-specific cytotoxic T lymphocytes and escape mutation after ART with structured treatment interruptions. *Microbes Infect.* 10: 689–698.
 40. Altfeld, M., M. M. Addo, R. Shankarappa, P. K. Lee, T. M. Allen, X. G. Yu, A. Rathod, J. Harlow, K. O'Sullivan, M. N. Johnston, et al. 2003. Enhanced detection of human immunodeficiency virus type 1-specific T-cell responses to highly variable regions by using peptides based on autologous virus sequences. *J. Virol.* 77: 7330–7340.
 41. Brumme, Z. L., M. John, J. M. Carlson, C. J. Brumme, D. Chan, M. A. Brockman, L. C. Swenson, I. Tao, S. Szeto, P. Rosato, et al. 2009. HLA-associated immune escape pathways in HIV-1 subtype B Gag, Pol and Nef proteins. *PLoS ONE* 4: e6687.
 42. Malhotra, U., J. Nolin, H. Horton, F. Li, L. Corey, J. I. Mullins, and M. J. McElrath. 2009. Functional properties and epitope characteristics of T-cells recognizing natural HIV-1 variants. *Vaccine* 27: 6678–6687.
 43. Hoof, I., C. L. Pérez, M. Buggert, R. K. Gustafsson, M. Nielsen, O. Lund, and A. C. Karlsson. 2010. Interdisciplinary analysis of HIV-specific CD8+ T cell responses against variant epitopes reveals restricted TCR promiscuity. *J. Immunol.* 184: 5383–5391.
 44. Allen, T. M., X. G. Yu, E. T. Kalife, L. L. Reyor, M. Lichterfeld, M. John, M. Cheng, R. L. Allgaier, S. Mui, N. Frahm, et al. 2005. De novo generation of escape variant-specific CD8+ T-cell responses following cytotoxic T-lymphocyte escape in chronic human immunodeficiency virus type 1 infection. *J. Virol.* 79: 12952–12960.
 45. Keane, N. M., S. G. Roberts, C.-A. Almeida, T. Krishnan, A. Chopra, E. Demaine, R. Laird, M. Tschochner, J. M. Carlson, S. Mallal, et al. 2011. High-avidity, high-IFN γ -producing CD8 T-cell responses following immune selection during HIV-1 infection. *Immunol. Cell Biol.* DOI: 10.1038/icb.2011.34.
 46. Avila-Rios, S., C. E. Ormsby, J. M. Carlson, H. Valenzuela-Ponce, J. Blanco-Heredia, D. Garrido-Rodriguez, C. Garcia-Morales, D. Heckerman, Z. L. Brumme, S. Mallal, et al. 2009. Unique features of HLA-mediated HIV evolution in a Mexican cohort: a comparative study. *Retrovirology* 6: 72.

putative peptide	TRYPLTFGW
HLA	C04
Peptide with Flanking amino acids	GTRYPLTFGWC
Generate all (6979) observed features from this input	SEE TAB 2
Pick previously learned predictor based on length of peptide (9 amino acids). A model is a set of features (13526), each with a weight	SEE TAB 3

For all features common to the input and the model, sum the features' weights

Sum of Observed Features
Prior For this Length
Posterior

LogOdds	As Probability
1.965936203	0.877173951
-1.098612289	0.25
0.867323914	0.704188555

Sum

1.965936203

Feature	Weight (if any) from model
HlaPreSeq1=Gly	-0.682168
HlaPreSeq6=Arg	-0.400078
HlaPreSeq9=Ser	
HlaPreSeq11=Ser	-0.225585
HlaPreSeq12=Val	-0.218504
HlaPreSeq14=Trp	
HlaPreSeq16=Gly	-0.162048
HlaPreSeq17=Arg	-0.124782
HlaPreSeq21=Arg	-0.0902305
HlaPreSeq24=Ala	-0.0430415
HlaPreSeq30=Asp	-0.0583658
HlaPreSeq32=Gln	-0.0364025
HlaPreSeq35=Arg	-0.0362292
HlaPreSeq41=Ala	-0.0230398
HlaPreSeq43=Pro	-0.00822293
HlaPreSeq44=Arg	
HlaPreSeq45=Gly	
HlaPreSeq46=Glu	-0.0280059
HlaPreSeq49=Glu	
HlaPreSeq52=Val	
HlaPreSeq56=Gly	-0.0133377
HlaPreSeq62=Arg	
HlaPreSeq63=Glu	
HlaPreSeq65=Gln	-0.0149776
HlaPreSeq66=Lys	-0.0207765
HlaPreSeq67=Tyr	
HlaPreSeq69=Arg	
HlaPreSeq70=Gln	
HlaPreSeq71=Ala	
HlaPreSeq73=Ala	
HlaPreSeq74=Asp	-0.0163807
HlaPreSeq76=Val	
HlaPreSeq77=Asn	-0.0202427
HlaPreSeq79=Arg	
HlaPreSeq80=Lys	
HlaPreSeq81=Leu	
HlaPreSeq82=Arg	
HlaPreSeq83=Gly	
HlaPreSeq90=Asp	0.00157819
HlaPreSeq91=Gly	
HlaPreSeq94=Thr	
HlaPreSeq95=Leu	
HlaPreSeq97=Arg	
HlaPreSeq99=Phe	

HlaPreSeq103=Leu	
HlaPreSeq105=Pro	-0.0325057
HlaPreSeq107=Gly	-0.0313098
HlaPreSeq109=Leu	
HlaPreSeq113=Tyr	
HlaPreSeq114=Asn	
HlaPreSeq116=Phe	
HlaPreSeq127=Asn	-0.0293463
HlaPreSeq131=Arg	
HlaPreSeq138=Thr	
HlaPreSeq142=Ile	-0.0265345
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HlaPreSeq144=Gln	
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HlaPreSeq152=Glu	
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HlaPreSeq158=Ala	0.00104165
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HlaPreSeq167=Trp	
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hydrophobic(HlaPreSeq56)	
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charged(HlaPreSeq62)	
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hydrophobic(HlaPreSeq99) && medium(E1)	
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cyclic(HlaPreSeq105) && medium(E1)	0.00140319
hydrophobic(HlaPreSeq105) && medium(E1)	0.00189378
medium(HlaPreSeq105) && medium(E1)	0.00240025
aliphatic(HlaPreSeq107) && medium(E1)	0.0118555
small(HlaPreSeq107) && medium(E1)	0.0123222
aliphatic(HlaPreSeq109) && medium(E1)	
hydrophobic(HlaPreSeq113) && medium(E1)	0.0107071
medium(HlaPreSeq114) && medium(E1)	
cyclic(HlaPreSeq116) && medium(E1)	
aromatic(HlaPreSeq116) && medium(E1)	
buried(HlaPreSeq116) && medium(E1)	0.0262109
hydrophobic(HlaPreSeq116) && medium(E1)	
large(HlaPreSeq116) && medium(E1)	
medium(HlaPreSeq127) && medium(E1)	
large(HlaPreSeq131) && medium(E1)	-0.0142768
positive(HlaPreSeq131) && medium(E1)	-0.0145403

charged(HIaPreSeq131) && medium(E1)	-0.0148569
medium(HIaPreSeq138) && medium(E1)	
polar(HIaPreSeq138) && medium(E1)	
aliphatic(HIaPreSeq142) && medium(E1)	0.00594205
buried(HIaPreSeq142) && medium(E1)	0.0060804
hydrophobic(HIaPreSeq142) && medium(E1)	0.00619246
large(HIaPreSeq142) && medium(E1)	0.00627396
medium(HIaPreSeq143) && medium(E1)	
positive(HIaPreSeq145) && medium(E1)	
charged(HIaPreSeq145) && medium(E1)	
polar(HIaPreSeq145) && medium(E1)	
cyclic(HIaPreSeq147) && medium(E1)	
aromatic(HIaPreSeq147) && medium(E1)	
aliphatic(HIaPreSeq149) && medium(E1)	
buried(HIaPreSeq149) && medium(E1)	
hydrophobic(HIaPreSeq149) && medium(E1)	
small(HIaPreSeq149) && medium(E1)	
small(HIaPreSeq150) && medium(E1)	
large(HIaPreSeq152) && medium(E1)	-0.0148298
negative(HIaPreSeq152) && medium(E1)	
charged(HIaPreSeq152) && medium(E1)	-0.0148427
polar(HIaPreSeq152) && medium(E1)	
large(HIaPreSeq156) && medium(E1)	0.00906132
positive(HIaPreSeq156) && medium(E1)	
charged(HIaPreSeq156) && medium(E1)	
polar(HIaPreSeq156) && medium(E1)	
aliphatic(HIaPreSeq158) && medium(E1)	
buried(HIaPreSeq158) && medium(E1)	
hydrophobic(HIaPreSeq158) && medium(E1)	
small(HIaPreSeq158) && medium(E1)	
large(HIaPreSeq161) && medium(E1)	
medium(HIaPreSeq163) && medium(E1)	0.0212493
polar(HIaPreSeq163) && medium(E1)	
large(HIaPreSeq166) && medium(E1)	
cyclic(HIaPreSeq167) && medium(E1)	
aromatic(HIaPreSeq167) && medium(E1)	
buried(HIaPreSeq167) && medium(E1)	
hydrophobic(HIaPreSeq167) && medium(E1)	
large(HIaPreSeq167) && medium(E1)	
hydrophobic(HIaPreSeq171) && medium(E1)	-0.0215309
negative(HIaPreSeq173) && medium(E1)	
polar(E1)	0.00951637
aliphatic(HIaPreSeq1) && polar(E1)	0.0204863
hydrophobic(HIaPreSeq1) && polar(E1)	0.0199438
small(HIaPreSeq1) && polar(E1)	0.0187453
small(HIaPreSeq9) && polar(E1)	
polar(HIaPreSeq9) && polar(E1)	

polar(HlaPreSeq11) && polar(E1)	0.0185802
aliphatic(HlaPreSeq12) && polar(E1)	
medium(HlaPreSeq12) && polar(E1)	
cyclic(HlaPreSeq14) && polar(E1)	
aromatic(HlaPreSeq14) && polar(E1)	
buried(HlaPreSeq14) && polar(E1)	
hydrophobic(HlaPreSeq14) && polar(E1)	
aliphatic(HlaPreSeq16) && polar(E1)	
hydrophobic(HlaPreSeq16) && polar(E1)	
large(HlaPreSeq17) && polar(E1)	
positive(HlaPreSeq17) && polar(E1)	
charged(HlaPreSeq17) && polar(E1)	
aliphatic(HlaPreSeq24) && polar(E1)	
buried(HlaPreSeq24) && polar(E1)	
hydrophobic(HlaPreSeq24) && polar(E1)	
small(HlaPreSeq24) && polar(E1)	
medium(HlaPreSeq30) && polar(E1)	
negative(HlaPreSeq30) && polar(E1)	
charged(HlaPreSeq30) && polar(E1)	
polar(HlaPreSeq30) && polar(E1)	
polar(HlaPreSeq32) && polar(E1)	
positive(HlaPreSeq35) && polar(E1)	
charged(HlaPreSeq35) && polar(E1)	
aliphatic(HlaPreSeq41) && polar(E1)	
buried(HlaPreSeq41) && polar(E1)	
hydrophobic(HlaPreSeq41) && polar(E1)	
small(HlaPreSeq41) && polar(E1)	
cyclic(HlaPreSeq43) && polar(E1)	
hydrophobic(HlaPreSeq43) && polar(E1)	
medium(HlaPreSeq43) && polar(E1)	
aliphatic(HlaPreSeq45) && polar(E1)	
hydrophobic(HlaPreSeq45) && polar(E1)	
small(HlaPreSeq45) && polar(E1)	
large(HlaPreSeq46) && polar(E1)	
negative(HlaPreSeq46) && polar(E1)	
charged(HlaPreSeq46) && polar(E1)	
polar(HlaPreSeq46) && polar(E1)	
large(HlaPreSeq49) && polar(E1)	
negative(HlaPreSeq49) && polar(E1)	
charged(HlaPreSeq49) && polar(E1)	
polar(HlaPreSeq49) && polar(E1)	
medium(HlaPreSeq52) && polar(E1)	
aliphatic(HlaPreSeq56) && polar(E1)	
hydrophobic(HlaPreSeq56) && polar(E1)	
small(HlaPreSeq56) && polar(E1)	
large(HlaPreSeq62) && polar(E1)	0.0225366
positive(HlaPreSeq62) && polar(E1)	

charged(HlaPreSeq62) && polar(E1)	0.0194175
polar(HlaPreSeq62) && polar(E1)	0.025125
large(HlaPreSeq63) && polar(E1)	-0.0135808
negative(HlaPreSeq63) && polar(E1)	-0.0109249
charged(HlaPreSeq63) && polar(E1)	-0.0109655
large(HlaPreSeq65) && polar(E1)	
polar(HlaPreSeq65) && polar(E1)	
large(HlaPreSeq66) && polar(E1)	
positive(HlaPreSeq66) && polar(E1)	
charged(HlaPreSeq66) && polar(E1)	
polar(HlaPreSeq66) && polar(E1)	
cyclic(HlaPreSeq67) && polar(E1)	
aromatic(HlaPreSeq67) && polar(E1)	
hydrophobic(HlaPreSeq67) && polar(E1)	
large(HlaPreSeq67) && polar(E1)	
large(HlaPreSeq69) && polar(E1)	
positive(HlaPreSeq69) && polar(E1)	
charged(HlaPreSeq69) && polar(E1)	
polar(HlaPreSeq69) && polar(E1)	
large(HlaPreSeq70) && polar(E1)	
aliphatic(HlaPreSeq71) && polar(E1)	
buried(HlaPreSeq71) && polar(E1)	
hydrophobic(HlaPreSeq71) && polar(E1)	
small(HlaPreSeq71) && polar(E1)	
aliphatic(HlaPreSeq73) && polar(E1)	
buried(HlaPreSeq73) && polar(E1)	
hydrophobic(HlaPreSeq73) && polar(E1)	
small(HlaPreSeq73) && polar(E1)	
medium(HlaPreSeq74) && polar(E1)	0.0185172
negative(HlaPreSeq74) && polar(E1)	0.0187359
charged(HlaPreSeq74) && polar(E1)	
polar(HlaPreSeq74) && polar(E1)	
aliphatic(HlaPreSeq76) && polar(E1)	
buried(HlaPreSeq76) && polar(E1)	
hydrophobic(HlaPreSeq76) && polar(E1)	
medium(HlaPreSeq76) && polar(E1)	
medium(HlaPreSeq77) && polar(E1)	
large(HlaPreSeq79) && polar(E1)	
positive(HlaPreSeq79) && polar(E1)	
charged(HlaPreSeq79) && polar(E1)	
polar(HlaPreSeq79) && polar(E1)	
large(HlaPreSeq80) && polar(E1)	
positive(HlaPreSeq80) && polar(E1)	
charged(HlaPreSeq80) && polar(E1)	
polar(HlaPreSeq80) && polar(E1)	
large(HlaPreSeq81) && polar(E1)	
positive(HlaPreSeq82) && polar(E1)	

charged(HlaPreSeq82) && polar(E1)	
polar(HlaPreSeq82) && polar(E1)	
aliphatic(HlaPreSeq83) && polar(E1)	
hydrophobic(HlaPreSeq83) && polar(E1)	
small(HlaPreSeq83) && polar(E1)	
medium(HlaPreSeq90) && polar(E1)	
negative(HlaPreSeq90) && polar(E1)	
charged(HlaPreSeq90) && polar(E1)	
polar(HlaPreSeq90) && polar(E1)	
aliphatic(HlaPreSeq91) && polar(E1)	0.00702398
hydrophobic(HlaPreSeq91) && polar(E1)	0.00582917
small(HlaPreSeq91) && polar(E1)	
medium(HlaPreSeq94) && polar(E1)	0.0111759
polar(HlaPreSeq94) && polar(E1)	0.00998584
aliphatic(HlaPreSeq95) && polar(E1)	
large(HlaPreSeq95) && polar(E1)	0.0103302
large(HlaPreSeq97) && polar(E1)	
positive(HlaPreSeq97) && polar(E1)	
charged(HlaPreSeq97) && polar(E1)	
polar(HlaPreSeq97) && polar(E1)	
cyclic(HlaPreSeq99) && polar(E1)	
aromatic(HlaPreSeq99) && polar(E1)	
buried(HlaPreSeq99) && polar(E1)	
hydrophobic(HlaPreSeq99) && polar(E1)	
large(HlaPreSeq99) && polar(E1)	
large(HlaPreSeq103) && polar(E1)	
cyclic(HlaPreSeq105) && polar(E1)	
hydrophobic(HlaPreSeq105) && polar(E1)	
medium(HlaPreSeq105) && polar(E1)	
aliphatic(HlaPreSeq107) && polar(E1)	
small(HlaPreSeq107) && polar(E1)	
aliphatic(HlaPreSeq109) && polar(E1)	
hydrophobic(HlaPreSeq113) && polar(E1)	
medium(HlaPreSeq114) && polar(E1)	
cyclic(HlaPreSeq116) && polar(E1)	
aromatic(HlaPreSeq116) && polar(E1)	
buried(HlaPreSeq116) && polar(E1)	
hydrophobic(HlaPreSeq116) && polar(E1)	
large(HlaPreSeq116) && polar(E1)	
medium(HlaPreSeq127) && polar(E1)	
large(HlaPreSeq131) && polar(E1)	
positive(HlaPreSeq131) && polar(E1)	
charged(HlaPreSeq131) && polar(E1)	
medium(HlaPreSeq138) && polar(E1)	
polar(HlaPreSeq138) && polar(E1)	
aliphatic(HlaPreSeq142) && polar(E1)	
buried(HlaPreSeq142) && polar(E1)	

hydrophobic(HIaPreSeq142) && polar(E1)	
large(HIaPreSeq142) && polar(E1)	
medium(HIaPreSeq143) && polar(E1)	
positive(HIaPreSeq145) && polar(E1)	
charged(HIaPreSeq145) && polar(E1)	
polar(HIaPreSeq145) && polar(E1)	
cyclic(HIaPreSeq147) && polar(E1)	
aromatic(HIaPreSeq147) && polar(E1)	
aliphatic(HIaPreSeq149) && polar(E1)	
buried(HIaPreSeq149) && polar(E1)	
hydrophobic(HIaPreSeq149) && polar(E1)	
small(HIaPreSeq149) && polar(E1)	
small(HIaPreSeq150) && polar(E1)	
large(HIaPreSeq152) && polar(E1)	
negative(HIaPreSeq152) && polar(E1)	
charged(HIaPreSeq152) && polar(E1)	
polar(HIaPreSeq152) && polar(E1)	
large(HIaPreSeq156) && polar(E1)	
positive(HIaPreSeq156) && polar(E1)	
charged(HIaPreSeq156) && polar(E1)	
polar(HIaPreSeq156) && polar(E1)	
aliphatic(HIaPreSeq158) && polar(E1)	
buried(HIaPreSeq158) && polar(E1)	
hydrophobic(HIaPreSeq158) && polar(E1)	
small(HIaPreSeq158) && polar(E1)	
large(HIaPreSeq161) && polar(E1)	
medium(HIaPreSeq163) && polar(E1)	0.0227621
polar(HIaPreSeq163) && polar(E1)	0.0134954
large(HIaPreSeq166) && polar(E1)	
cyclic(HIaPreSeq167) && polar(E1)	
aromatic(HIaPreSeq167) && polar(E1)	
buried(HIaPreSeq167) && polar(E1)	
hydrophobic(HIaPreSeq167) && polar(E1)	
large(HIaPreSeq167) && polar(E1)	
hydrophobic(HIaPreSeq171) && polar(E1)	
negative(HIaPreSeq173) && polar(E1)	
E2=Arg	0.0176193
HIaPreSeq1=Gly && E2=Arg	
HIaPreSeq6=Arg && E2=Arg	0.0176694
HIaPreSeq9=Ser && E2=Arg	
HIaPreSeq11=Ser && E2=Arg	0.0210284
HIaPreSeq12=Val && E2=Arg	0.0431737
HIaPreSeq14=Trp && E2=Arg	
HIaPreSeq16=Gly && E2=Arg	0.0178892
HIaPreSeq17=Arg && E2=Arg	0.0197484
HIaPreSeq21=Arg && E2=Arg	0.0146283
HIaPreSeq24=Ala && E2=Arg	-0.012724

HlaPreSeq30=Asp && E2=Arg	0.0239237
HlaPreSeq32=Gln && E2=Arg	
HlaPreSeq35=Arg && E2=Arg	0.0194417
HlaPreSeq41=Ala && E2=Arg	0.0274199
HlaPreSeq43=Pro && E2=Arg	0.016667
HlaPreSeq44=Arg && E2=Arg	0.0107035
HlaPreSeq45=Gly && E2=Arg	0.0147257
HlaPreSeq46=Glu && E2=Arg	0.0227538
HlaPreSeq49=Glu && E2=Arg	
HlaPreSeq52=Val && E2=Arg	0.0147236
HlaPreSeq56=Gly && E2=Arg	0.0210666
HlaPreSeq62=Arg && E2=Arg	0.0184715
HlaPreSeq63=Glu && E2=Arg	0.0301155
HlaPreSeq65=Gln && E2=Arg	0.0181685
HlaPreSeq66=Lys && E2=Arg	
HlaPreSeq67=Tyr && E2=Arg	0.0120222
HlaPreSeq69=Arg && E2=Arg	0.0147215
HlaPreSeq70=Gln && E2=Arg	
HlaPreSeq71=Ala && E2=Arg	0.0364522
HlaPreSeq73=Ala && E2=Arg	0.0123142
HlaPreSeq74=Asp && E2=Arg	0.0491454
HlaPreSeq76=Val && E2=Arg	
HlaPreSeq77=Asn && E2=Arg	
HlaPreSeq79=Arg && E2=Arg	0.0200724
HlaPreSeq80=Lys && E2=Arg	
HlaPreSeq81=Leu && E2=Arg	0.0257111
HlaPreSeq82=Arg && E2=Arg	
HlaPreSeq83=Gly && E2=Arg	
HlaPreSeq90=Asp && E2=Arg	0.016724
HlaPreSeq91=Gly && E2=Arg	0.0199405
HlaPreSeq94=Thr && E2=Arg	0.0248324
HlaPreSeq95=Leu && E2=Arg	0.0194101
HlaPreSeq97=Arg && E2=Arg	-0.0147872
HlaPreSeq99=Phe && E2=Arg	
HlaPreSeq103=Leu && E2=Arg	
HlaPreSeq105=Pro && E2=Arg	0.0308679
HlaPreSeq107=Gly && E2=Arg	0.023486
HlaPreSeq109=Leu && E2=Arg	0.0233579
HlaPreSeq113=Tyr && E2=Arg	0.0462987
HlaPreSeq114=Asn && E2=Arg	
HlaPreSeq116=Phe && E2=Arg	0.0131493
HlaPreSeq127=Asn && E2=Arg	0.0286812
HlaPreSeq131=Arg && E2=Arg	
HlaPreSeq138=Thr && E2=Arg	0.0169194
HlaPreSeq142=Ile && E2=Arg	0.0243196
HlaPreSeq143=Thr && E2=Arg	0.0237871
HlaPreSeq144=Gln && E2=Arg	0.02002

HlaPreSeq145=Arg && E2=Arg	0.0249679
HlaPreSeq147=Trp && E2=Arg	0.018709
HlaPreSeq149=Ala && E2=Arg	0.0230128
HlaPreSeq150=Ala && E2=Arg	0.0105145
HlaPreSeq151=Arg && E2=Arg	0.0210305
HlaPreSeq152=Glu && E2=Arg	
HlaPreSeq156=Arg && E2=Arg	0.0114291
HlaPreSeq158=Ala && E2=Arg	
HlaPreSeq161=Glu && E2=Arg	0.0236367
HlaPreSeq163=Thr && E2=Arg	
HlaPreSeq166=Glu && E2=Arg	0.0150561
HlaPreSeq167=Trp && E2=Arg	0.0189308
HlaPreSeq171=Tyr && E2=Arg	0.0227703
HlaPreSeq173=Glu && E2=Arg	0.0184137
large(E2)	
aliphatic(HlaPreSeq1) && large(E2)	0.0153108
hydrophobic(HlaPreSeq1) && large(E2)	0.0146205
small(HlaPreSeq1) && large(E2)	0.0135054
small(HlaPreSeq9) && large(E2)	
polar(HlaPreSeq9) && large(E2)	0.0262168
polar(HlaPreSeq11) && large(E2)	0.0192261
aliphatic(HlaPreSeq12) && large(E2)	0.0328889
medium(HlaPreSeq12) && large(E2)	0.0303304
cyclic(HlaPreSeq14) && large(E2)	
aromatic(HlaPreSeq14) && large(E2)	
buried(HlaPreSeq14) && large(E2)	
hydrophobic(HlaPreSeq14) && large(E2)	
aliphatic(HlaPreSeq16) && large(E2)	
hydrophobic(HlaPreSeq16) && large(E2)	
large(HlaPreSeq17) && large(E2)	
positive(HlaPreSeq17) && large(E2)	
charged(HlaPreSeq17) && large(E2)	
aliphatic(HlaPreSeq24) && large(E2)	-0.0355836
buried(HlaPreSeq24) && large(E2)	-0.0342505
hydrophobic(HlaPreSeq24) && large(E2)	-0.0324777
small(HlaPreSeq24) && large(E2)	-0.0150813
medium(HlaPreSeq30) && large(E2)	0.0116141
negative(HlaPreSeq30) && large(E2)	0.0111399
charged(HlaPreSeq30) && large(E2)	0.0105204
polar(HlaPreSeq30) && large(E2)	0.00964781
polar(HlaPreSeq32) && large(E2)	-0.00995324
positive(HlaPreSeq35) && large(E2)	0.0119345
charged(HlaPreSeq35) && large(E2)	0.0101947
aliphatic(HlaPreSeq41) && large(E2)	
buried(HlaPreSeq41) && large(E2)	
hydrophobic(HlaPreSeq41) && large(E2)	
small(HlaPreSeq41) && large(E2)	

cyclic(HlaPreSeq43) && large(E2)	
hydrophobic(HlaPreSeq43) && large(E2)	
medium(HlaPreSeq43) && large(E2)	
aliphatic(HlaPreSeq45) && large(E2)	
hydrophobic(HlaPreSeq45) && large(E2)	0.014748
small(HlaPreSeq45) && large(E2)	
large(HlaPreSeq46) && large(E2)	
negative(HlaPreSeq46) && large(E2)	
charged(HlaPreSeq46) && large(E2)	
polar(HlaPreSeq46) && large(E2)	
large(HlaPreSeq49) && large(E2)	
negative(HlaPreSeq49) && large(E2)	
charged(HlaPreSeq49) && large(E2)	
polar(HlaPreSeq49) && large(E2)	
medium(HlaPreSeq52) && large(E2)	
aliphatic(HlaPreSeq56) && large(E2)	
hydrophobic(HlaPreSeq56) && large(E2)	
small(HlaPreSeq56) && large(E2)	
large(HlaPreSeq62) && large(E2)	
positive(HlaPreSeq62) && large(E2)	-0.012882
charged(HlaPreSeq62) && large(E2)	-0.0200752
polar(HlaPreSeq62) && large(E2)	
large(HlaPreSeq63) && large(E2)	0.0581336
negative(HlaPreSeq63) && large(E2)	0.0459179
charged(HlaPreSeq63) && large(E2)	0.0413364
large(HlaPreSeq65) && large(E2)	-0.0266178
polar(HlaPreSeq65) && large(E2)	-0.0223477
large(HlaPreSeq66) && large(E2)	0.0305513
positive(HlaPreSeq66) && large(E2)	0.0232286
charged(HlaPreSeq66) && large(E2)	0.021214
polar(HlaPreSeq66) && large(E2)	-0.0117188
cyclic(HlaPreSeq67) && large(E2)	-0.047348
aromatic(HlaPreSeq67) && large(E2)	-0.0472694
hydrophobic(HlaPreSeq67) && large(E2)	-0.0567737
large(HlaPreSeq67) && large(E2)	-0.0511517
large(HlaPreSeq69) && large(E2)	
positive(HlaPreSeq69) && large(E2)	
charged(HlaPreSeq69) && large(E2)	
polar(HlaPreSeq69) && large(E2)	0.0115093
large(HlaPreSeq70) && large(E2)	0.0056757
aliphatic(HlaPreSeq71) && large(E2)	-0.021278
buried(HlaPreSeq71) && large(E2)	-0.0212196
hydrophobic(HlaPreSeq71) && large(E2)	-0.021144
small(HlaPreSeq71) && large(E2)	
aliphatic(HlaPreSeq73) && large(E2)	0.0103071
buried(HlaPreSeq73) && large(E2)	0.010288
hydrophobic(HlaPreSeq73) && large(E2)	0.0102681

small(HlaPreSeq73) && large(E2)	0.0101152
medium(HlaPreSeq74) && large(E2)	
negative(HlaPreSeq74) && large(E2)	
charged(HlaPreSeq74) && large(E2)	0.0104432
polar(HlaPreSeq74) && large(E2)	0.00850053
aliphatic(HlaPreSeq76) && large(E2)	
buried(HlaPreSeq76) && large(E2)	
hydrophobic(HlaPreSeq76) && large(E2)	
medium(HlaPreSeq76) && large(E2)	-0.0113231
medium(HlaPreSeq77) && large(E2)	
large(HlaPreSeq79) && large(E2)	
positive(HlaPreSeq79) && large(E2)	
charged(HlaPreSeq79) && large(E2)	
polar(HlaPreSeq79) && large(E2)	
large(HlaPreSeq80) && large(E2)	-0.0269231
positive(HlaPreSeq80) && large(E2)	
charged(HlaPreSeq80) && large(E2)	
polar(HlaPreSeq80) && large(E2)	0.00894218
large(HlaPreSeq81) && large(E2)	
positive(HlaPreSeq82) && large(E2)	-0.0164856
charged(HlaPreSeq82) && large(E2)	-0.0158735
polar(HlaPreSeq82) && large(E2)	-0.0149731
aliphatic(HlaPreSeq83) && large(E2)	-0.0138086
hydrophobic(HlaPreSeq83) && large(E2)	-0.012476
small(HlaPreSeq83) && large(E2)	-0.0110722
medium(HlaPreSeq90) && large(E2)	
negative(HlaPreSeq90) && large(E2)	
charged(HlaPreSeq90) && large(E2)	
polar(HlaPreSeq90) && large(E2)	
aliphatic(HlaPreSeq91) && large(E2)	
hydrophobic(HlaPreSeq91) && large(E2)	
small(HlaPreSeq91) && large(E2)	
medium(HlaPreSeq94) && large(E2)	0.0437197
polar(HlaPreSeq94) && large(E2)	0.039298
aliphatic(HlaPreSeq95) && large(E2)	
large(HlaPreSeq95) && large(E2)	-0.0121355
large(HlaPreSeq97) && large(E2)	0.0112522
positive(HlaPreSeq97) && large(E2)	-0.010418
charged(HlaPreSeq97) && large(E2)	
polar(HlaPreSeq97) && large(E2)	-0.0138654
cyclic(HlaPreSeq99) && large(E2)	
aromatic(HlaPreSeq99) && large(E2)	
buried(HlaPreSeq99) && large(E2)	0.00998747
hydrophobic(HlaPreSeq99) && large(E2)	
large(HlaPreSeq99) && large(E2)	
large(HlaPreSeq103) && large(E2)	-0.0166644
cyclic(HlaPreSeq105) && large(E2)	-0.0237206

hydrophobic(HIaPreSeq105) && large(E2)	-0.023124
medium(HIaPreSeq105) && large(E2)	-0.0224
aliphatic(HIaPreSeq107) && large(E2)	-0.00576035
small(HIaPreSeq107) && large(E2)	
aliphatic(HIaPreSeq109) && large(E2)	
hydrophobic(HIaPreSeq113) && large(E2)	0.0271632
medium(HIaPreSeq114) && large(E2)	-0.0176081
cyclic(HIaPreSeq116) && large(E2)	
aromatic(HIaPreSeq116) && large(E2)	
buried(HIaPreSeq116) && large(E2)	0.0174257
hydrophobic(HIaPreSeq116) && large(E2)	
large(HIaPreSeq116) && large(E2)	
medium(HIaPreSeq127) && large(E2)	
large(HIaPreSeq131) && large(E2)	
positive(HIaPreSeq131) && large(E2)	
charged(HIaPreSeq131) && large(E2)	
medium(HIaPreSeq138) && large(E2)	
polar(HIaPreSeq138) && large(E2)	
aliphatic(HIaPreSeq142) && large(E2)	
buried(HIaPreSeq142) && large(E2)	
hydrophobic(HIaPreSeq142) && large(E2)	
large(HIaPreSeq142) && large(E2)	
medium(HIaPreSeq143) && large(E2)	
positive(HIaPreSeq145) && large(E2)	
charged(HIaPreSeq145) && large(E2)	
polar(HIaPreSeq145) && large(E2)	
cyclic(HIaPreSeq147) && large(E2)	
aromatic(HIaPreSeq147) && large(E2)	
aliphatic(HIaPreSeq149) && large(E2)	0.00633486
buried(HIaPreSeq149) && large(E2)	
hydrophobic(HIaPreSeq149) && large(E2)	
small(HIaPreSeq149) && large(E2)	
small(HIaPreSeq150) && large(E2)	-0.0186511
large(HIaPreSeq152) && large(E2)	
negative(HIaPreSeq152) && large(E2)	
charged(HIaPreSeq152) && large(E2)	
polar(HIaPreSeq152) && large(E2)	
large(HIaPreSeq156) && large(E2)	
positive(HIaPreSeq156) && large(E2)	-0.0105119
charged(HIaPreSeq156) && large(E2)	-0.0109658
polar(HIaPreSeq156) && large(E2)	
aliphatic(HIaPreSeq158) && large(E2)	
buried(HIaPreSeq158) && large(E2)	
hydrophobic(HIaPreSeq158) && large(E2)	
small(HIaPreSeq158) && large(E2)	-0.0211178
large(HIaPreSeq161) && large(E2)	
medium(HIaPreSeq163) && large(E2)	0.0147603

polar(HIaPreSeq163) && large(E2)	0.021455
large(HIaPreSeq166) && large(E2)	-0.0233277
cyclic(HIaPreSeq167) && large(E2)	-0.021343
aromatic(HIaPreSeq167) && large(E2)	-0.0193112
buried(HIaPreSeq167) && large(E2)	-0.0171125
hydrophobic(HIaPreSeq167) && large(E2)	
large(HIaPreSeq167) && large(E2)	-0.0148989
hydrophobic(HIaPreSeq171) && large(E2)	
negative(HIaPreSeq173) && large(E2)	
positive(E2)	
aliphatic(HIaPreSeq1) && positive(E2)	-0.0206279
hydrophobic(HIaPreSeq1) && positive(E2)	-0.0207146
small(HIaPreSeq1) && positive(E2)	-0.0207944
small(HIaPreSeq9) && positive(E2)	-0.0136929
polar(HIaPreSeq9) && positive(E2)	
polar(HIaPreSeq11) && positive(E2)	-0.0106573
aliphatic(HIaPreSeq12) && positive(E2)	
medium(HIaPreSeq12) && positive(E2)	
cyclic(HIaPreSeq14) && positive(E2)	
aromatic(HIaPreSeq14) && positive(E2)	
buried(HIaPreSeq14) && positive(E2)	
hydrophobic(HIaPreSeq14) && positive(E2)	
aliphatic(HIaPreSeq16) && positive(E2)	-0.0159101
hydrophobic(HIaPreSeq16) && positive(E2)	-0.01605
large(HIaPreSeq17) && positive(E2)	-0.0134065
positive(HIaPreSeq17) && positive(E2)	-0.0134999
charged(HIaPreSeq17) && positive(E2)	-0.0135691
aliphatic(HIaPreSeq24) && positive(E2)	-0.0342508
buried(HIaPreSeq24) && positive(E2)	-0.0342474
hydrophobic(HIaPreSeq24) && positive(E2)	-0.0342439
small(HIaPreSeq24) && positive(E2)	-0.0114675
medium(HIaPreSeq30) && positive(E2)	
negative(HIaPreSeq30) && positive(E2)	
charged(HIaPreSeq30) && positive(E2)	
polar(HIaPreSeq30) && positive(E2)	
polar(HIaPreSeq32) && positive(E2)	-0.0146865
positive(HIaPreSeq35) && positive(E2)	-0.0185581
charged(HIaPreSeq35) && positive(E2)	-0.0185113
aliphatic(HIaPreSeq41) && positive(E2)	
buried(HIaPreSeq41) && positive(E2)	
hydrophobic(HIaPreSeq41) && positive(E2)	
small(HIaPreSeq41) && positive(E2)	
cyclic(HIaPreSeq43) && positive(E2)	0.0082112
hydrophobic(HIaPreSeq43) && positive(E2)	0.00810196
medium(HIaPreSeq43) && positive(E2)	0.00798735
aliphatic(HIaPreSeq45) && positive(E2)	0.0102417
hydrophobic(HIaPreSeq45) && positive(E2)	-0.0200928

small(HlaPreSeq45) && positive(E2)	0.0102406
large(HlaPreSeq46) && positive(E2)	
negative(HlaPreSeq46) && positive(E2)	
charged(HlaPreSeq46) && positive(E2)	
polar(HlaPreSeq46) && positive(E2)	
large(HlaPreSeq49) && positive(E2)	
negative(HlaPreSeq49) && positive(E2)	
charged(HlaPreSeq49) && positive(E2)	
polar(HlaPreSeq49) && positive(E2)	
medium(HlaPreSeq52) && positive(E2)	0.0102396
aliphatic(HlaPreSeq56) && positive(E2)	
hydrophobic(HlaPreSeq56) && positive(E2)	
small(HlaPreSeq56) && positive(E2)	
large(HlaPreSeq62) && positive(E2)	
positive(HlaPreSeq62) && positive(E2)	0.0120711
charged(HlaPreSeq62) && positive(E2)	
polar(HlaPreSeq62) && positive(E2)	
large(HlaPreSeq63) && positive(E2)	
negative(HlaPreSeq63) && positive(E2)	
charged(HlaPreSeq63) && positive(E2)	
large(HlaPreSeq65) && positive(E2)	
polar(HlaPreSeq65) && positive(E2)	
large(HlaPreSeq66) && positive(E2)	
positive(HlaPreSeq66) && positive(E2)	
charged(HlaPreSeq66) && positive(E2)	
polar(HlaPreSeq66) && positive(E2)	-0.0131608
cyclic(HlaPreSeq67) && positive(E2)	
aromatic(HlaPreSeq67) && positive(E2)	
hydrophobic(HlaPreSeq67) && positive(E2)	-0.0292753
large(HlaPreSeq67) && positive(E2)	
large(HlaPreSeq69) && positive(E2)	0.0102326
positive(HlaPreSeq69) && positive(E2)	0.0102317
charged(HlaPreSeq69) && positive(E2)	0.0102309
polar(HlaPreSeq69) && positive(E2)	
large(HlaPreSeq70) && positive(E2)	
aliphatic(HlaPreSeq71) && positive(E2)	0.0208818
buried(HlaPreSeq71) && positive(E2)	0.0208094
hydrophobic(HlaPreSeq71) && positive(E2)	0.020734
small(HlaPreSeq71) && positive(E2)	
aliphatic(HlaPreSeq73) && positive(E2)	
buried(HlaPreSeq73) && positive(E2)	
hydrophobic(HlaPreSeq73) && positive(E2)	
small(HlaPreSeq73) && positive(E2)	
medium(HlaPreSeq74) && positive(E2)	0.0132174
negative(HlaPreSeq74) && positive(E2)	0.0132893
charged(HlaPreSeq74) && positive(E2)	0.00597564
polar(HlaPreSeq74) && positive(E2)	0.00616897

aliphatic(HlaPreSeq76) && positive(E2)	
buried(HlaPreSeq76) && positive(E2)	
hydrophobic(HlaPreSeq76) && positive(E2)	
medium(HlaPreSeq76) && positive(E2)	
medium(HlaPreSeq77) && positive(E2)	-0.018863
large(HlaPreSeq79) && positive(E2)	0.0101502
positive(HlaPreSeq79) && positive(E2)	0.0100457
charged(HlaPreSeq79) && positive(E2)	0.00994323
polar(HlaPreSeq79) && positive(E2)	0.00984174
large(HlaPreSeq80) && positive(E2)	
positive(HlaPreSeq80) && positive(E2)	
charged(HlaPreSeq80) && positive(E2)	
polar(HlaPreSeq80) && positive(E2)	
large(HlaPreSeq81) && positive(E2)	0.00189791
positive(HlaPreSeq82) && positive(E2)	
charged(HlaPreSeq82) && positive(E2)	
polar(HlaPreSeq82) && positive(E2)	
aliphatic(HlaPreSeq83) && positive(E2)	
hydrophobic(HlaPreSeq83) && positive(E2)	
small(HlaPreSeq83) && positive(E2)	
medium(HlaPreSeq90) && positive(E2)	
negative(HlaPreSeq90) && positive(E2)	
charged(HlaPreSeq90) && positive(E2)	
polar(HlaPreSeq90) && positive(E2)	
aliphatic(HlaPreSeq91) && positive(E2)	
hydrophobic(HlaPreSeq91) && positive(E2)	
small(HlaPreSeq91) && positive(E2)	
medium(HlaPreSeq94) && positive(E2)	0.00243237
polar(HlaPreSeq94) && positive(E2)	0.00289355
aliphatic(HlaPreSeq95) && positive(E2)	
large(HlaPreSeq95) && positive(E2)	
large(HlaPreSeq97) && positive(E2)	-0.0189672
positive(HlaPreSeq97) && positive(E2)	
charged(HlaPreSeq97) && positive(E2)	
polar(HlaPreSeq97) && positive(E2)	
cyclic(HlaPreSeq99) && positive(E2)	
aromatic(HlaPreSeq99) && positive(E2)	
buried(HlaPreSeq99) && positive(E2)	
hydrophobic(HlaPreSeq99) && positive(E2)	
large(HlaPreSeq99) && positive(E2)	
large(HlaPreSeq103) && positive(E2)	-0.0116867
cyclic(HlaPreSeq105) && positive(E2)	0.0112183
hydrophobic(HlaPreSeq105) && positive(E2)	0.0116881
medium(HlaPreSeq105) && positive(E2)	0.0121908
aliphatic(HlaPreSeq107) && positive(E2)	
small(HlaPreSeq107) && positive(E2)	
aliphatic(HlaPreSeq109) && positive(E2)	0.0154657

hydrophobic(HlaPreSeq113) && positive(E2)	
medium(HlaPreSeq114) && positive(E2)	
cyclic(HlaPreSeq116) && positive(E2)	
aromatic(HlaPreSeq116) && positive(E2)	
buried(HlaPreSeq116) && positive(E2)	
hydrophobic(HlaPreSeq116) && positive(E2)	
large(HlaPreSeq116) && positive(E2)	
medium(HlaPreSeq127) && positive(E2)	0.00536459
large(HlaPreSeq131) && positive(E2)	-0.0213597
positive(HlaPreSeq131) && positive(E2)	-0.0212803
charged(HlaPreSeq131) && positive(E2)	-0.0212018
medium(HlaPreSeq138) && positive(E2)	
polar(HlaPreSeq138) && positive(E2)	0.00735322
aliphatic(HlaPreSeq142) && positive(E2)	
buried(HlaPreSeq142) && positive(E2)	
hydrophobic(HlaPreSeq142) && positive(E2)	
large(HlaPreSeq142) && positive(E2)	
medium(HlaPreSeq143) && positive(E2)	
positive(HlaPreSeq145) && positive(E2)	
charged(HlaPreSeq145) && positive(E2)	
polar(HlaPreSeq145) && positive(E2)	
cyclic(HlaPreSeq147) && positive(E2)	
aromatic(HlaPreSeq147) && positive(E2)	
aliphatic(HlaPreSeq149) && positive(E2)	
buried(HlaPreSeq149) && positive(E2)	
hydrophobic(HlaPreSeq149) && positive(E2)	
small(HlaPreSeq149) && positive(E2)	
small(HlaPreSeq150) && positive(E2)	
large(HlaPreSeq152) && positive(E2)	0.0190202
negative(HlaPreSeq152) && positive(E2)	0.0217827
charged(HlaPreSeq152) && positive(E2)	0.0189886
polar(HlaPreSeq152) && positive(E2)	0.0170245
large(HlaPreSeq156) && positive(E2)	0.00490607
positive(HlaPreSeq156) && positive(E2)	0.0112953
charged(HlaPreSeq156) && positive(E2)	
polar(HlaPreSeq156) && positive(E2)	-0.0145975
aliphatic(HlaPreSeq158) && positive(E2)	
buried(HlaPreSeq158) && positive(E2)	
hydrophobic(HlaPreSeq158) && positive(E2)	
small(HlaPreSeq158) && positive(E2)	-0.0208598
large(HlaPreSeq161) && positive(E2)	
medium(HlaPreSeq163) && positive(E2)	-0.011452
polar(HlaPreSeq163) && positive(E2)	
large(HlaPreSeq166) && positive(E2)	
cyclic(HlaPreSeq167) && positive(E2)	0.0092949
aromatic(HlaPreSeq167) && positive(E2)	0.009087
buried(HlaPreSeq167) && positive(E2)	0.00889505

hydrophobic(HIaPreSeq167) && positive(E2)	0.00401297
large(HIaPreSeq167) && positive(E2)	0.00871825
hydrophobic(HIaPreSeq171) && positive(E2)	
negative(HIaPreSeq173) && positive(E2)	
charged(E2)	
aliphatic(HIaPreSeq1) && charged(E2)	-0.012709
hydrophobic(HIaPreSeq1) && charged(E2)	-0.0117779
small(HIaPreSeq1) && charged(E2)	-0.010909
small(HIaPreSeq9) && charged(E2)	-0.018548
polar(HIaPreSeq9) && charged(E2)	0.01826
polar(HIaPreSeq11) && charged(E2)	
aliphatic(HIaPreSeq12) && charged(E2)	
medium(HIaPreSeq12) && charged(E2)	
cyclic(HIaPreSeq14) && charged(E2)	
aromatic(HIaPreSeq14) && charged(E2)	
buried(HIaPreSeq14) && charged(E2)	
hydrophobic(HIaPreSeq14) && charged(E2)	
aliphatic(HIaPreSeq16) && charged(E2)	
hydrophobic(HIaPreSeq16) && charged(E2)	
large(HIaPreSeq17) && charged(E2)	
positive(HIaPreSeq17) && charged(E2)	
charged(HIaPreSeq17) && charged(E2)	
aliphatic(HIaPreSeq24) && charged(E2)	-0.054011
buried(HIaPreSeq24) && charged(E2)	-0.0539975
hydrophobic(HIaPreSeq24) && charged(E2)	-0.053997
small(HIaPreSeq24) && charged(E2)	-0.0305319
medium(HIaPreSeq30) && charged(E2)	-0.0121652
negative(HIaPreSeq30) && charged(E2)	-0.0115357
charged(HIaPreSeq30) && charged(E2)	-0.0108984
polar(HIaPreSeq30) && charged(E2)	
polar(HIaPreSeq32) && charged(E2)	-0.0350887
positive(HIaPreSeq35) && charged(E2)	
charged(HIaPreSeq35) && charged(E2)	
aliphatic(HIaPreSeq41) && charged(E2)	-0.0190994
buried(HIaPreSeq41) && charged(E2)	-0.0189332
hydrophobic(HIaPreSeq41) && charged(E2)	-0.0187418
small(HIaPreSeq41) && charged(E2)	-0.0185197
cyclic(HIaPreSeq43) && charged(E2)	0.0155799
hydrophobic(HIaPreSeq43) && charged(E2)	0.0158478
medium(HIaPreSeq43) && charged(E2)	0.0160551
aliphatic(HIaPreSeq45) && charged(E2)	
hydrophobic(HIaPreSeq45) && charged(E2)	-0.0302388
small(HIaPreSeq45) && charged(E2)	
large(HIaPreSeq46) && charged(E2)	0.0110562
negative(HIaPreSeq46) && charged(E2)	0.0119841
charged(HIaPreSeq46) && charged(E2)	0.0128858
polar(HIaPreSeq46) && charged(E2)	0.0137314

large(HlaPreSeq49) && charged(E2)	
negative(HlaPreSeq49) && charged(E2)	
charged(HlaPreSeq49) && charged(E2)	
polar(HlaPreSeq49) && charged(E2)	
medium(HlaPreSeq52) && charged(E2)	
aliphatic(HlaPreSeq56) && charged(E2)	
hydrophobic(HlaPreSeq56) && charged(E2)	
small(HlaPreSeq56) && charged(E2)	
large(HlaPreSeq62) && charged(E2)	0.0100951
positive(HlaPreSeq62) && charged(E2)	0.0222437
charged(HlaPreSeq62) && charged(E2)	0.0189343
polar(HlaPreSeq62) && charged(E2)	0.0090086
large(HlaPreSeq63) && charged(E2)	0.0105613
negative(HlaPreSeq63) && charged(E2)	0.00893151
charged(HlaPreSeq63) && charged(E2)	0.0094799
large(HlaPreSeq65) && charged(E2)	0.0130149
polar(HlaPreSeq65) && charged(E2)	0.0134783
large(HlaPreSeq66) && charged(E2)	0.0284874
positive(HlaPreSeq66) && charged(E2)	
charged(HlaPreSeq66) && charged(E2)	
polar(HlaPreSeq66) && charged(E2)	-0.0219953
cyclic(HlaPreSeq67) && charged(E2)	-0.0285079
aromatic(HlaPreSeq67) && charged(E2)	-0.0284951
hydrophobic(HlaPreSeq67) && charged(E2)	-0.0511431
large(HlaPreSeq67) && charged(E2)	-0.0283291
large(HlaPreSeq69) && charged(E2)	
positive(HlaPreSeq69) && charged(E2)	
charged(HlaPreSeq69) && charged(E2)	
polar(HlaPreSeq69) && charged(E2)	0.0200013
large(HlaPreSeq70) && charged(E2)	
aliphatic(HlaPreSeq71) && charged(E2)	
buried(HlaPreSeq71) && charged(E2)	
hydrophobic(HlaPreSeq71) && charged(E2)	
small(HlaPreSeq71) && charged(E2)	-0.0171342
aliphatic(HlaPreSeq73) && charged(E2)	
buried(HlaPreSeq73) && charged(E2)	
hydrophobic(HlaPreSeq73) && charged(E2)	
small(HlaPreSeq73) && charged(E2)	
medium(HlaPreSeq74) && charged(E2)	
negative(HlaPreSeq74) && charged(E2)	
charged(HlaPreSeq74) && charged(E2)	
polar(HlaPreSeq74) && charged(E2)	
aliphatic(HlaPreSeq76) && charged(E2)	
buried(HlaPreSeq76) && charged(E2)	
hydrophobic(HlaPreSeq76) && charged(E2)	
medium(HlaPreSeq76) && charged(E2)	-0.0132593
medium(HlaPreSeq77) && charged(E2)	-0.0187275

large(HlaPreSeq79) && charged(E2)	
positive(HlaPreSeq79) && charged(E2)	
charged(HlaPreSeq79) && charged(E2)	
polar(HlaPreSeq79) && charged(E2)	
large(HlaPreSeq80) && charged(E2)	-0.0175341
positive(HlaPreSeq80) && charged(E2)	
charged(HlaPreSeq80) && charged(E2)	
polar(HlaPreSeq80) && charged(E2)	0.0194719
large(HlaPreSeq81) && charged(E2)	0.0170957
positive(HlaPreSeq82) && charged(E2)	
charged(HlaPreSeq82) && charged(E2)	
polar(HlaPreSeq82) && charged(E2)	
aliphatic(HlaPreSeq83) && charged(E2)	
hydrophobic(HlaPreSeq83) && charged(E2)	
small(HlaPreSeq83) && charged(E2)	
medium(HlaPreSeq90) && charged(E2)	
negative(HlaPreSeq90) && charged(E2)	
charged(HlaPreSeq90) && charged(E2)	
polar(HlaPreSeq90) && charged(E2)	
aliphatic(HlaPreSeq91) && charged(E2)	
hydrophobic(HlaPreSeq91) && charged(E2)	
small(HlaPreSeq91) && charged(E2)	
medium(HlaPreSeq94) && charged(E2)	0.0158437
polar(HlaPreSeq94) && charged(E2)	0.0159952
aliphatic(HlaPreSeq95) && charged(E2)	
large(HlaPreSeq95) && charged(E2)	
large(HlaPreSeq97) && charged(E2)	
positive(HlaPreSeq97) && charged(E2)	0.0286864
charged(HlaPreSeq97) && charged(E2)	0.0285018
polar(HlaPreSeq97) && charged(E2)	0.0326089
cyclic(HlaPreSeq99) && charged(E2)	
aromatic(HlaPreSeq99) && charged(E2)	
buried(HlaPreSeq99) && charged(E2)	
hydrophobic(HlaPreSeq99) && charged(E2)	
large(HlaPreSeq99) && charged(E2)	
large(HlaPreSeq103) && charged(E2)	-0.0230546
cyclic(HlaPreSeq105) && charged(E2)	0.0203657
hydrophobic(HlaPreSeq105) && charged(E2)	0.0209532
medium(HlaPreSeq105) && charged(E2)	0.0215118
aliphatic(HlaPreSeq107) && charged(E2)	
small(HlaPreSeq107) && charged(E2)	
aliphatic(HlaPreSeq109) && charged(E2)	0.0217812
hydrophobic(HlaPreSeq113) && charged(E2)	0.0162576
medium(HlaPreSeq114) && charged(E2)	
cyclic(HlaPreSeq116) && charged(E2)	
aromatic(HlaPreSeq116) && charged(E2)	
buried(HlaPreSeq116) && charged(E2)	

hydrophobic(HlaPreSeq116) && charged(E2)	
large(HlaPreSeq116) && charged(E2)	
medium(HlaPreSeq127) && charged(E2)	0.0189708
large(HlaPreSeq131) && charged(E2)	-0.0153896
positive(HlaPreSeq131) && charged(E2)	-0.0156704
charged(HlaPreSeq131) && charged(E2)	-0.0159731
medium(HlaPreSeq138) && charged(E2)	0.0131643
polar(HlaPreSeq138) && charged(E2)	0.0149384
aliphatic(HlaPreSeq142) && charged(E2)	
buried(HlaPreSeq142) && charged(E2)	
hydrophobic(HlaPreSeq142) && charged(E2)	
large(HlaPreSeq142) && charged(E2)	
medium(HlaPreSeq143) && charged(E2)	
positive(HlaPreSeq145) && charged(E2)	
charged(HlaPreSeq145) && charged(E2)	
polar(HlaPreSeq145) && charged(E2)	
cyclic(HlaPreSeq147) && charged(E2)	
aromatic(HlaPreSeq147) && charged(E2)	
aliphatic(HlaPreSeq149) && charged(E2)	
buried(HlaPreSeq149) && charged(E2)	
hydrophobic(HlaPreSeq149) && charged(E2)	
small(HlaPreSeq149) && charged(E2)	
small(HlaPreSeq150) && charged(E2)	
large(HlaPreSeq152) && charged(E2)	
negative(HlaPreSeq152) && charged(E2)	
charged(HlaPreSeq152) && charged(E2)	
polar(HlaPreSeq152) && charged(E2)	
large(HlaPreSeq156) && charged(E2)	
positive(HlaPreSeq156) && charged(E2)	
charged(HlaPreSeq156) && charged(E2)	0.00810761
polar(HlaPreSeq156) && charged(E2)	
aliphatic(HlaPreSeq158) && charged(E2)	
buried(HlaPreSeq158) && charged(E2)	
hydrophobic(HlaPreSeq158) && charged(E2)	
small(HlaPreSeq158) && charged(E2)	-0.00630738
large(HlaPreSeq161) && charged(E2)	
medium(HlaPreSeq163) && charged(E2)	
polar(HlaPreSeq163) && charged(E2)	
large(HlaPreSeq166) && charged(E2)	
cyclic(HlaPreSeq167) && charged(E2)	-0.00125655
aromatic(HlaPreSeq167) && charged(E2)	-0.00208961
buried(HlaPreSeq167) && charged(E2)	-0.00288573
hydrophobic(HlaPreSeq167) && charged(E2)	-0.00745765
large(HlaPreSeq167) && charged(E2)	-0.00363194
hydrophobic(HlaPreSeq171) && charged(E2)	
negative(HlaPreSeq173) && charged(E2)	
polar(E2)	

aliphatic(HIaPreSeq1) && polar(E2)	
hydrophobic(HIaPreSeq1) && polar(E2)	
small(HIaPreSeq1) && polar(E2)	
small(HIaPreSeq9) && polar(E2)	-0.0177954
polar(HIaPreSeq9) && polar(E2)	0.00297966
polar(HIaPreSeq11) && polar(E2)	-0.0110541
aliphatic(HIaPreSeq12) && polar(E2)	
medium(HIaPreSeq12) && polar(E2)	
cyclic(HIaPreSeq14) && polar(E2)	
aromatic(HIaPreSeq14) && polar(E2)	
buried(HIaPreSeq14) && polar(E2)	
hydrophobic(HIaPreSeq14) && polar(E2)	
aliphatic(HIaPreSeq16) && polar(E2)	
hydrophobic(HIaPreSeq16) && polar(E2)	
large(HIaPreSeq17) && polar(E2)	
positive(HIaPreSeq17) && polar(E2)	
charged(HIaPreSeq17) && polar(E2)	
aliphatic(HIaPreSeq24) && polar(E2)	-0.0374213
buried(HIaPreSeq24) && polar(E2)	-0.0380296
hydrophobic(HIaPreSeq24) && polar(E2)	-0.0383377
small(HIaPreSeq24) && polar(E2)	-0.0197156
medium(HIaPreSeq30) && polar(E2)	
negative(HIaPreSeq30) && polar(E2)	
charged(HIaPreSeq30) && polar(E2)	
polar(HIaPreSeq30) && polar(E2)	
polar(HIaPreSeq32) && polar(E2)	-0.0159013
positive(HIaPreSeq35) && polar(E2)	
charged(HIaPreSeq35) && polar(E2)	
aliphatic(HIaPreSeq41) && polar(E2)	
buried(HIaPreSeq41) && polar(E2)	
hydrophobic(HIaPreSeq41) && polar(E2)	
small(HIaPreSeq41) && polar(E2)	
cyclic(HIaPreSeq43) && polar(E2)	
hydrophobic(HIaPreSeq43) && polar(E2)	
medium(HIaPreSeq43) && polar(E2)	
aliphatic(HIaPreSeq45) && polar(E2)	
hydrophobic(HIaPreSeq45) && polar(E2)	
small(HIaPreSeq45) && polar(E2)	
large(HIaPreSeq46) && polar(E2)	
negative(HIaPreSeq46) && polar(E2)	
charged(HIaPreSeq46) && polar(E2)	
polar(HIaPreSeq46) && polar(E2)	
large(HIaPreSeq49) && polar(E2)	
negative(HIaPreSeq49) && polar(E2)	
charged(HIaPreSeq49) && polar(E2)	
polar(HIaPreSeq49) && polar(E2)	
medium(HIaPreSeq52) && polar(E2)	

aliphatic(HlaPreSeq56) && polar(E2)	
hydrophobic(HlaPreSeq56) && polar(E2)	
small(HlaPreSeq56) && polar(E2)	
large(HlaPreSeq62) && polar(E2)	0.00508641
positive(HlaPreSeq62) && polar(E2)	-0.00619177
charged(HlaPreSeq62) && polar(E2)	-0.0174043
polar(HlaPreSeq62) && polar(E2)	0.00516216
large(HlaPreSeq63) && polar(E2)	0.0328481
negative(HlaPreSeq63) && polar(E2)	0.0312296
charged(HlaPreSeq63) && polar(E2)	0.0307901
large(HlaPreSeq65) && polar(E2)	0.0129959
polar(HlaPreSeq65) && polar(E2)	0.011115
large(HlaPreSeq66) && polar(E2)	-0.027292
positive(HlaPreSeq66) && polar(E2)	-0.01963
charged(HlaPreSeq66) && polar(E2)	-0.01973
polar(HlaPreSeq66) && polar(E2)	
cyclic(HlaPreSeq67) && polar(E2)	-0.0526704
aromatic(HlaPreSeq67) && polar(E2)	-0.0527771
hydrophobic(HlaPreSeq67) && polar(E2)	-0.0509612
large(HlaPreSeq67) && polar(E2)	-0.0246371
large(HlaPreSeq69) && polar(E2)	
positive(HlaPreSeq69) && polar(E2)	
charged(HlaPreSeq69) && polar(E2)	
polar(HlaPreSeq69) && polar(E2)	0.00328764
large(HlaPreSeq70) && polar(E2)	-0.0212512
aliphatic(HlaPreSeq71) && polar(E2)	
buried(HlaPreSeq71) && polar(E2)	
hydrophobic(HlaPreSeq71) && polar(E2)	
small(HlaPreSeq71) && polar(E2)	-0.0128034
aliphatic(HlaPreSeq73) && polar(E2)	
buried(HlaPreSeq73) && polar(E2)	
hydrophobic(HlaPreSeq73) && polar(E2)	
small(HlaPreSeq73) && polar(E2)	
medium(HlaPreSeq74) && polar(E2)	0.00396624
negative(HlaPreSeq74) && polar(E2)	0.00512046
charged(HlaPreSeq74) && polar(E2)	
polar(HlaPreSeq74) && polar(E2)	
aliphatic(HlaPreSeq76) && polar(E2)	
buried(HlaPreSeq76) && polar(E2)	
hydrophobic(HlaPreSeq76) && polar(E2)	
medium(HlaPreSeq76) && polar(E2)	
medium(HlaPreSeq77) && polar(E2)	
large(HlaPreSeq79) && polar(E2)	
positive(HlaPreSeq79) && polar(E2)	
charged(HlaPreSeq79) && polar(E2)	
polar(HlaPreSeq79) && polar(E2)	
large(HlaPreSeq80) && polar(E2)	-0.0170147

positive(HlaPreSeq80) && polar(E2)	
charged(HlaPreSeq80) && polar(E2)	
polar(HlaPreSeq80) && polar(E2)	0.0140363
large(HlaPreSeq81) && polar(E2)	0.0105188
positive(HlaPreSeq82) && polar(E2)	
charged(HlaPreSeq82) && polar(E2)	
polar(HlaPreSeq82) && polar(E2)	
aliphatic(HlaPreSeq83) && polar(E2)	
hydrophobic(HlaPreSeq83) && polar(E2)	
small(HlaPreSeq83) && polar(E2)	
medium(HlaPreSeq90) && polar(E2)	0.00619371
negative(HlaPreSeq90) && polar(E2)	0.00625133
charged(HlaPreSeq90) && polar(E2)	0.00632272
polar(HlaPreSeq90) && polar(E2)	0.00640829
aliphatic(HlaPreSeq91) && polar(E2)	
hydrophobic(HlaPreSeq91) && polar(E2)	
small(HlaPreSeq91) && polar(E2)	
medium(HlaPreSeq94) && polar(E2)	
polar(HlaPreSeq94) && polar(E2)	
aliphatic(HlaPreSeq95) && polar(E2)	
large(HlaPreSeq95) && polar(E2)	0.0151007
large(HlaPreSeq97) && polar(E2)	
positive(HlaPreSeq97) && polar(E2)	
charged(HlaPreSeq97) && polar(E2)	
polar(HlaPreSeq97) && polar(E2)	-0.0156147
cyclic(HlaPreSeq99) && polar(E2)	
aromatic(HlaPreSeq99) && polar(E2)	
buried(HlaPreSeq99) && polar(E2)	-0.0169197
hydrophobic(HlaPreSeq99) && polar(E2)	
large(HlaPreSeq99) && polar(E2)	
large(HlaPreSeq103) && polar(E2)	-0.0164605
cyclic(HlaPreSeq105) && polar(E2)	0.02941
hydrophobic(HlaPreSeq105) && polar(E2)	0.0288573
medium(HlaPreSeq105) && polar(E2)	0.0279553
aliphatic(HlaPreSeq107) && polar(E2)	0.0137187
small(HlaPreSeq107) && polar(E2)	0.0123732
aliphatic(HlaPreSeq109) && polar(E2)	
hydrophobic(HlaPreSeq113) && polar(E2)	0.0150724
medium(HlaPreSeq114) && polar(E2)	
cyclic(HlaPreSeq116) && polar(E2)	
aromatic(HlaPreSeq116) && polar(E2)	
buried(HlaPreSeq116) && polar(E2)	0.0236457
hydrophobic(HlaPreSeq116) && polar(E2)	
large(HlaPreSeq116) && polar(E2)	
medium(HlaPreSeq127) && polar(E2)	0.0172303
large(HlaPreSeq131) && polar(E2)	-0.0226244
positive(HlaPreSeq131) && polar(E2)	-0.0234013

charged(HlaPreSeq131) && polar(E2)	-0.0239461
medium(HlaPreSeq138) && polar(E2)	
polar(HlaPreSeq138) && polar(E2)	
aliphatic(HlaPreSeq142) && polar(E2)	
buried(HlaPreSeq142) && polar(E2)	
hydrophobic(HlaPreSeq142) && polar(E2)	
large(HlaPreSeq142) && polar(E2)	
medium(HlaPreSeq143) && polar(E2)	
positive(HlaPreSeq145) && polar(E2)	-0.0139781
charged(HlaPreSeq145) && polar(E2)	-0.0143178
polar(HlaPreSeq145) && polar(E2)	-0.0142498
cyclic(HlaPreSeq147) && polar(E2)	
aromatic(HlaPreSeq147) && polar(E2)	
aliphatic(HlaPreSeq149) && polar(E2)	
buried(HlaPreSeq149) && polar(E2)	
hydrophobic(HlaPreSeq149) && polar(E2)	
small(HlaPreSeq149) && polar(E2)	
small(HlaPreSeq150) && polar(E2)	
large(HlaPreSeq152) && polar(E2)	-0.0148194
negative(HlaPreSeq152) && polar(E2)	-0.0164275
charged(HlaPreSeq152) && polar(E2)	-0.0148582
polar(HlaPreSeq152) && polar(E2)	
large(HlaPreSeq156) && polar(E2)	-0.0114156
positive(HlaPreSeq156) && polar(E2)	0.0113263
charged(HlaPreSeq156) && polar(E2)	0.0139179
polar(HlaPreSeq156) && polar(E2)	
aliphatic(HlaPreSeq158) && polar(E2)	-0.0159376
buried(HlaPreSeq158) && polar(E2)	-0.0149589
hydrophobic(HlaPreSeq158) && polar(E2)	
small(HlaPreSeq158) && polar(E2)	
large(HlaPreSeq161) && polar(E2)	
medium(HlaPreSeq163) && polar(E2)	0.0149009
polar(HlaPreSeq163) && polar(E2)	
large(HlaPreSeq166) && polar(E2)	0.00918409
cyclic(HlaPreSeq167) && polar(E2)	
aromatic(HlaPreSeq167) && polar(E2)	
buried(HlaPreSeq167) && polar(E2)	
hydrophobic(HlaPreSeq167) && polar(E2)	
large(HlaPreSeq167) && polar(E2)	
hydrophobic(HlaPreSeq171) && polar(E2)	
negative(HlaPreSeq173) && polar(E2)	
E3=Tyr	
HlaPreSeq1=Gly && E3=Tyr	
HlaPreSeq6=Arg && E3=Tyr	
HlaPreSeq9=Ser && E3=Tyr	
HlaPreSeq11=Ser && E3=Tyr	
HlaPreSeq12=Val && E3=Tyr	

HlaPreSeq14=Trp && E3=Tyr	
HlaPreSeq16=Gly && E3=Tyr	
HlaPreSeq17=Arg && E3=Tyr	0.0175506
HlaPreSeq21=Arg && E3=Tyr	
HlaPreSeq24=Ala && E3=Tyr	0.0238419
HlaPreSeq30=Asp && E3=Tyr	0.0167263
HlaPreSeq32=Gln && E3=Tyr	0.0174428
HlaPreSeq35=Arg && E3=Tyr	0.0154552
HlaPreSeq41=Ala && E3=Tyr	0.0157694
HlaPreSeq43=Pro && E3=Tyr	
HlaPreSeq44=Arg && E3=Tyr	0.0149788
HlaPreSeq45=Gly && E3=Tyr	
HlaPreSeq46=Glu && E3=Tyr	0.0188877
HlaPreSeq49=Glu && E3=Tyr	
HlaPreSeq52=Val && E3=Tyr	
HlaPreSeq56=Gly && E3=Tyr	0.0171909
HlaPreSeq62=Arg && E3=Tyr	
HlaPreSeq63=Glu && E3=Tyr	
HlaPreSeq65=Gln && E3=Tyr	
HlaPreSeq66=Lys && E3=Tyr	
HlaPreSeq67=Tyr && E3=Tyr	
HlaPreSeq69=Arg && E3=Tyr	
HlaPreSeq70=Gln && E3=Tyr	
HlaPreSeq71=Ala && E3=Tyr	
HlaPreSeq73=Ala && E3=Tyr	
HlaPreSeq74=Asp && E3=Tyr	0.0217909
HlaPreSeq76=Val && E3=Tyr	0.0192431
HlaPreSeq77=Asn && E3=Tyr	
HlaPreSeq79=Arg && E3=Tyr	
HlaPreSeq80=Lys && E3=Tyr	
HlaPreSeq81=Leu && E3=Tyr	0.0125219
HlaPreSeq82=Arg && E3=Tyr	0.0149568
HlaPreSeq83=Gly && E3=Tyr	0.0149504
HlaPreSeq90=Asp && E3=Tyr	
HlaPreSeq91=Gly && E3=Tyr	0.0145435
HlaPreSeq94=Thr && E3=Tyr	0.0138177
HlaPreSeq95=Leu && E3=Tyr	
HlaPreSeq97=Arg && E3=Tyr	
HlaPreSeq99=Phe && E3=Tyr	
HlaPreSeq103=Leu && E3=Tyr	
HlaPreSeq105=Pro && E3=Tyr	
HlaPreSeq107=Gly && E3=Tyr	0.0133392
HlaPreSeq109=Leu && E3=Tyr	
HlaPreSeq113=Tyr && E3=Tyr	0.0233519
HlaPreSeq114=Asn && E3=Tyr	
HlaPreSeq116=Phe && E3=Tyr	
HlaPreSeq127=Asn && E3=Tyr	0.0125595

HlaPreSeq131=Arg && E3=Tyr	0.0226965
HlaPreSeq138=Thr && E3=Tyr	
HlaPreSeq142=Ile && E3=Tyr	0.0134028
HlaPreSeq143=Thr && E3=Tyr	0.0138809
HlaPreSeq144=Gln && E3=Tyr	
HlaPreSeq145=Arg && E3=Tyr	0.0134581
HlaPreSeq147=Trp && E3=Tyr	0.0140434
HlaPreSeq149=Ala && E3=Tyr	0.015302
HlaPreSeq150=Ala && E3=Tyr	0.0149975
HlaPreSeq151=Arg && E3=Tyr	
HlaPreSeq152=Glu && E3=Tyr	
HlaPreSeq156=Arg && E3=Tyr	
HlaPreSeq158=Ala && E3=Tyr	0.0187904
HlaPreSeq161=Glu && E3=Tyr	0.0127775
HlaPreSeq163=Thr && E3=Tyr	
HlaPreSeq166=Glu && E3=Tyr	0.0144083
HlaPreSeq167=Trp && E3=Tyr	0.0157422
HlaPreSeq171=Tyr && E3=Tyr	
HlaPreSeq173=Glu && E3=Tyr	0.0132847
cyclic(E3)	
aliphatic(HlaPreSeq1) && cyclic(E3)	
hydrophobic(HlaPreSeq1) && cyclic(E3)	
small(HlaPreSeq1) && cyclic(E3)	
small(HlaPreSeq9) && cyclic(E3)	
polar(HlaPreSeq9) && cyclic(E3)	
polar(HlaPreSeq11) && cyclic(E3)	0.00375292
aliphatic(HlaPreSeq12) && cyclic(E3)	0.0110569
medium(HlaPreSeq12) && cyclic(E3)	0.0112867
cyclic(HlaPreSeq14) && cyclic(E3)	
aromatic(HlaPreSeq14) && cyclic(E3)	
buried(HlaPreSeq14) && cyclic(E3)	
hydrophobic(HlaPreSeq14) && cyclic(E3)	
aliphatic(HlaPreSeq16) && cyclic(E3)	
hydrophobic(HlaPreSeq16) && cyclic(E3)	
large(HlaPreSeq17) && cyclic(E3)	
positive(HlaPreSeq17) && cyclic(E3)	
charged(HlaPreSeq17) && cyclic(E3)	
aliphatic(HlaPreSeq24) && cyclic(E3)	
buried(HlaPreSeq24) && cyclic(E3)	
hydrophobic(HlaPreSeq24) && cyclic(E3)	
small(HlaPreSeq24) && cyclic(E3)	
medium(HlaPreSeq30) && cyclic(E3)	
negative(HlaPreSeq30) && cyclic(E3)	
charged(HlaPreSeq30) && cyclic(E3)	
polar(HlaPreSeq30) && cyclic(E3)	
polar(HlaPreSeq32) && cyclic(E3)	
positive(HlaPreSeq35) && cyclic(E3)	

charged(HlaPreSeq35) && cyclic(E3)	
aliphatic(HlaPreSeq41) && cyclic(E3)	
buried(HlaPreSeq41) && cyclic(E3)	
hydrophobic(HlaPreSeq41) && cyclic(E3)	
small(HlaPreSeq41) && cyclic(E3)	
cyclic(HlaPreSeq43) && cyclic(E3)	
hydrophobic(HlaPreSeq43) && cyclic(E3)	
medium(HlaPreSeq43) && cyclic(E3)	
aliphatic(HlaPreSeq45) && cyclic(E3)	
hydrophobic(HlaPreSeq45) && cyclic(E3)	
small(HlaPreSeq45) && cyclic(E3)	
large(HlaPreSeq46) && cyclic(E3)	
negative(HlaPreSeq46) && cyclic(E3)	
charged(HlaPreSeq46) && cyclic(E3)	
polar(HlaPreSeq46) && cyclic(E3)	
large(HlaPreSeq49) && cyclic(E3)	
negative(HlaPreSeq49) && cyclic(E3)	
charged(HlaPreSeq49) && cyclic(E3)	
polar(HlaPreSeq49) && cyclic(E3)	
medium(HlaPreSeq52) && cyclic(E3)	
aliphatic(HlaPreSeq56) && cyclic(E3)	
hydrophobic(HlaPreSeq56) && cyclic(E3)	
small(HlaPreSeq56) && cyclic(E3)	
large(HlaPreSeq62) && cyclic(E3)	
positive(HlaPreSeq62) && cyclic(E3)	
charged(HlaPreSeq62) && cyclic(E3)	-0.0107263
polar(HlaPreSeq62) && cyclic(E3)	
large(HlaPreSeq63) && cyclic(E3)	0.0204687
negative(HlaPreSeq63) && cyclic(E3)	0.0183562
charged(HlaPreSeq63) && cyclic(E3)	0.018292
large(HlaPreSeq65) && cyclic(E3)	
polar(HlaPreSeq65) && cyclic(E3)	
large(HlaPreSeq66) && cyclic(E3)	
positive(HlaPreSeq66) && cyclic(E3)	
charged(HlaPreSeq66) && cyclic(E3)	
polar(HlaPreSeq66) && cyclic(E3)	
cyclic(HlaPreSeq67) && cyclic(E3)	
aromatic(HlaPreSeq67) && cyclic(E3)	
hydrophobic(HlaPreSeq67) && cyclic(E3)	
large(HlaPreSeq67) && cyclic(E3)	
large(HlaPreSeq69) && cyclic(E3)	
positive(HlaPreSeq69) && cyclic(E3)	
charged(HlaPreSeq69) && cyclic(E3)	
polar(HlaPreSeq69) && cyclic(E3)	
large(HlaPreSeq70) && cyclic(E3)	
aliphatic(HlaPreSeq71) && cyclic(E3)	
buried(HlaPreSeq71) && cyclic(E3)	

hydrophobic(HIaPreSeq71) && cyclic(E3)	
small(HIaPreSeq71) && cyclic(E3)	
aliphatic(HIaPreSeq73) && cyclic(E3)	
buried(HIaPreSeq73) && cyclic(E3)	
hydrophobic(HIaPreSeq73) && cyclic(E3)	
small(HIaPreSeq73) && cyclic(E3)	
medium(HIaPreSeq74) && cyclic(E3)	
negative(HIaPreSeq74) && cyclic(E3)	
charged(HIaPreSeq74) && cyclic(E3)	
polar(HIaPreSeq74) && cyclic(E3)	
aliphatic(HIaPreSeq76) && cyclic(E3)	
buried(HIaPreSeq76) && cyclic(E3)	
hydrophobic(HIaPreSeq76) && cyclic(E3)	
medium(HIaPreSeq76) && cyclic(E3)	
medium(HIaPreSeq77) && cyclic(E3)	
large(HIaPreSeq79) && cyclic(E3)	
positive(HIaPreSeq79) && cyclic(E3)	
charged(HIaPreSeq79) && cyclic(E3)	
polar(HIaPreSeq79) && cyclic(E3)	
large(HIaPreSeq80) && cyclic(E3)	
positive(HIaPreSeq80) && cyclic(E3)	
charged(HIaPreSeq80) && cyclic(E3)	
polar(HIaPreSeq80) && cyclic(E3)	-0.0148072
large(HIaPreSeq81) && cyclic(E3)	
positive(HIaPreSeq82) && cyclic(E3)	-0.0133375
charged(HIaPreSeq82) && cyclic(E3)	-0.0133953
polar(HIaPreSeq82) && cyclic(E3)	-0.0134234
aliphatic(HIaPreSeq83) && cyclic(E3)	-0.0134098
hydrophobic(HIaPreSeq83) && cyclic(E3)	-0.0133464
small(HIaPreSeq83) && cyclic(E3)	-0.0132285
medium(HIaPreSeq90) && cyclic(E3)	
negative(HIaPreSeq90) && cyclic(E3)	
charged(HIaPreSeq90) && cyclic(E3)	
polar(HIaPreSeq90) && cyclic(E3)	
aliphatic(HIaPreSeq91) && cyclic(E3)	
hydrophobic(HIaPreSeq91) && cyclic(E3)	
small(HIaPreSeq91) && cyclic(E3)	
medium(HIaPreSeq94) && cyclic(E3)	0.0124356
polar(HIaPreSeq94) && cyclic(E3)	0.0126978
aliphatic(HIaPreSeq95) && cyclic(E3)	
large(HIaPreSeq95) && cyclic(E3)	
large(HIaPreSeq97) && cyclic(E3)	
positive(HIaPreSeq97) && cyclic(E3)	-0.0240754
charged(HIaPreSeq97) && cyclic(E3)	-0.024082
polar(HIaPreSeq97) && cyclic(E3)	
cyclic(HIaPreSeq99) && cyclic(E3)	
aromatic(HIaPreSeq99) && cyclic(E3)	

buried(HlaPreSeq99) && cyclic(E3)	
hydrophobic(HlaPreSeq99) && cyclic(E3)	
large(HlaPreSeq99) && cyclic(E3)	
large(HlaPreSeq103) && cyclic(E3)	-0.0142747
cyclic(HlaPreSeq105) && cyclic(E3)	
hydrophobic(HlaPreSeq105) && cyclic(E3)	
medium(HlaPreSeq105) && cyclic(E3)	
aliphatic(HlaPreSeq107) && cyclic(E3)	
small(HlaPreSeq107) && cyclic(E3)	
aliphatic(HlaPreSeq109) && cyclic(E3)	
hydrophobic(HlaPreSeq113) && cyclic(E3)	
medium(HlaPreSeq114) && cyclic(E3)	
cyclic(HlaPreSeq116) && cyclic(E3)	
aromatic(HlaPreSeq116) && cyclic(E3)	
buried(HlaPreSeq116) && cyclic(E3)	
hydrophobic(HlaPreSeq116) && cyclic(E3)	
large(HlaPreSeq116) && cyclic(E3)	
medium(HlaPreSeq127) && cyclic(E3)	0.0133999
large(HlaPreSeq131) && cyclic(E3)	
positive(HlaPreSeq131) && cyclic(E3)	
charged(HlaPreSeq131) && cyclic(E3)	
medium(HlaPreSeq138) && cyclic(E3)	
polar(HlaPreSeq138) && cyclic(E3)	
aliphatic(HlaPreSeq142) && cyclic(E3)	
buried(HlaPreSeq142) && cyclic(E3)	
hydrophobic(HlaPreSeq142) && cyclic(E3)	
large(HlaPreSeq142) && cyclic(E3)	
medium(HlaPreSeq143) && cyclic(E3)	
positive(HlaPreSeq145) && cyclic(E3)	
charged(HlaPreSeq145) && cyclic(E3)	
polar(HlaPreSeq145) && cyclic(E3)	
cyclic(HlaPreSeq147) && cyclic(E3)	
aromatic(HlaPreSeq147) && cyclic(E3)	
aliphatic(HlaPreSeq149) && cyclic(E3)	
buried(HlaPreSeq149) && cyclic(E3)	
hydrophobic(HlaPreSeq149) && cyclic(E3)	
small(HlaPreSeq149) && cyclic(E3)	
small(HlaPreSeq150) && cyclic(E3)	
large(HlaPreSeq152) && cyclic(E3)	0.0199019
negative(HlaPreSeq152) && cyclic(E3)	0.0251264
charged(HlaPreSeq152) && cyclic(E3)	0.0198172
polar(HlaPreSeq152) && cyclic(E3)	0.017384
large(HlaPreSeq156) && cyclic(E3)	
positive(HlaPreSeq156) && cyclic(E3)	
charged(HlaPreSeq156) && cyclic(E3)	
polar(HlaPreSeq156) && cyclic(E3)	
aliphatic(HlaPreSeq158) && cyclic(E3)	

buried(HlaPreSeq158) && cyclic(E3)	
hydrophobic(HlaPreSeq158) && cyclic(E3)	
small(HlaPreSeq158) && cyclic(E3)	
large(HlaPreSeq161) && cyclic(E3)	-0.0126935
medium(HlaPreSeq163) && cyclic(E3)	
polar(HlaPreSeq163) && cyclic(E3)	
large(HlaPreSeq166) && cyclic(E3)	
cyclic(HlaPreSeq167) && cyclic(E3)	
aromatic(HlaPreSeq167) && cyclic(E3)	
buried(HlaPreSeq167) && cyclic(E3)	
hydrophobic(HlaPreSeq167) && cyclic(E3)	
large(HlaPreSeq167) && cyclic(E3)	
hydrophobic(HlaPreSeq171) && cyclic(E3)	-0.0159759
negative(HlaPreSeq173) && cyclic(E3)	
aromatic(E3)	
aliphatic(HlaPreSeq1) && aromatic(E3)	
hydrophobic(HlaPreSeq1) && aromatic(E3)	
small(HlaPreSeq1) && aromatic(E3)	
small(HlaPreSeq9) && aromatic(E3)	
polar(HlaPreSeq9) && aromatic(E3)	
polar(HlaPreSeq11) && aromatic(E3)	0.0181829
aliphatic(HlaPreSeq12) && aromatic(E3)	0.021933
medium(HlaPreSeq12) && aromatic(E3)	0.0221338
cyclic(HlaPreSeq14) && aromatic(E3)	
aromatic(HlaPreSeq14) && aromatic(E3)	
buried(HlaPreSeq14) && aromatic(E3)	
hydrophobic(HlaPreSeq14) && aromatic(E3)	
aliphatic(HlaPreSeq16) && aromatic(E3)	
hydrophobic(HlaPreSeq16) && aromatic(E3)	
large(HlaPreSeq17) && aromatic(E3)	
positive(HlaPreSeq17) && aromatic(E3)	
charged(HlaPreSeq17) && aromatic(E3)	
aliphatic(HlaPreSeq24) && aromatic(E3)	0.0220841
buried(HlaPreSeq24) && aromatic(E3)	0.0221079
hydrophobic(HlaPreSeq24) && aromatic(E3)	
small(HlaPreSeq24) && aromatic(E3)	
medium(HlaPreSeq30) && aromatic(E3)	
negative(HlaPreSeq30) && aromatic(E3)	
charged(HlaPreSeq30) && aromatic(E3)	
polar(HlaPreSeq30) && aromatic(E3)	
polar(HlaPreSeq32) && aromatic(E3)	
positive(HlaPreSeq35) && aromatic(E3)	
charged(HlaPreSeq35) && aromatic(E3)	
aliphatic(HlaPreSeq41) && aromatic(E3)	
buried(HlaPreSeq41) && aromatic(E3)	
hydrophobic(HlaPreSeq41) && aromatic(E3)	
small(HlaPreSeq41) && aromatic(E3)	

cyclic(HIaPreSeq43) && aromatic(E3)	
hydrophobic(HIaPreSeq43) && aromatic(E3)	
medium(HIaPreSeq43) && aromatic(E3)	
aliphatic(HIaPreSeq45) && aromatic(E3)	
hydrophobic(HIaPreSeq45) && aromatic(E3)	
small(HIaPreSeq45) && aromatic(E3)	
large(HIaPreSeq46) && aromatic(E3)	
negative(HIaPreSeq46) && aromatic(E3)	
charged(HIaPreSeq46) && aromatic(E3)	
polar(HIaPreSeq46) && aromatic(E3)	
large(HIaPreSeq49) && aromatic(E3)	
negative(HIaPreSeq49) && aromatic(E3)	
charged(HIaPreSeq49) && aromatic(E3)	
polar(HIaPreSeq49) && aromatic(E3)	
medium(HIaPreSeq52) && aromatic(E3)	
aliphatic(HIaPreSeq56) && aromatic(E3)	
hydrophobic(HIaPreSeq56) && aromatic(E3)	
small(HIaPreSeq56) && aromatic(E3)	
large(HIaPreSeq62) && aromatic(E3)	
positive(HIaPreSeq62) && aromatic(E3)	
charged(HIaPreSeq62) && aromatic(E3)	-0.0143641
polar(HIaPreSeq62) && aromatic(E3)	
large(HIaPreSeq63) && aromatic(E3)	
negative(HIaPreSeq63) && aromatic(E3)	
charged(HIaPreSeq63) && aromatic(E3)	
large(HIaPreSeq65) && aromatic(E3)	
polar(HIaPreSeq65) && aromatic(E3)	
large(HIaPreSeq66) && aromatic(E3)	
positive(HIaPreSeq66) && aromatic(E3)	
charged(HIaPreSeq66) && aromatic(E3)	
polar(HIaPreSeq66) && aromatic(E3)	
cyclic(HIaPreSeq67) && aromatic(E3)	-0.0152215
aromatic(HIaPreSeq67) && aromatic(E3)	-0.0152138
hydrophobic(HIaPreSeq67) && aromatic(E3)	0.00446178
large(HIaPreSeq67) && aromatic(E3)	-0.0159396
large(HIaPreSeq69) && aromatic(E3)	
positive(HIaPreSeq69) && aromatic(E3)	
charged(HIaPreSeq69) && aromatic(E3)	
polar(HIaPreSeq69) && aromatic(E3)	
large(HIaPreSeq70) && aromatic(E3)	
aliphatic(HIaPreSeq71) && aromatic(E3)	
buried(HIaPreSeq71) && aromatic(E3)	
hydrophobic(HIaPreSeq71) && aromatic(E3)	
small(HIaPreSeq71) && aromatic(E3)	
aliphatic(HIaPreSeq73) && aromatic(E3)	
buried(HIaPreSeq73) && aromatic(E3)	
hydrophobic(HIaPreSeq73) && aromatic(E3)	

small(HIaPreSeq73) && aromatic(E3)	
medium(HIaPreSeq74) && aromatic(E3)	
negative(HIaPreSeq74) && aromatic(E3)	
charged(HIaPreSeq74) && aromatic(E3)	
polar(HIaPreSeq74) && aromatic(E3)	
aliphatic(HIaPreSeq76) && aromatic(E3)	
buried(HIaPreSeq76) && aromatic(E3)	
hydrophobic(HIaPreSeq76) && aromatic(E3)	
medium(HIaPreSeq76) && aromatic(E3)	0.0254875
medium(HIaPreSeq77) && aromatic(E3)	
large(HIaPreSeq79) && aromatic(E3)	
positive(HIaPreSeq79) && aromatic(E3)	
charged(HIaPreSeq79) && aromatic(E3)	
polar(HIaPreSeq79) && aromatic(E3)	
large(HIaPreSeq80) && aromatic(E3)	
positive(HIaPreSeq80) && aromatic(E3)	
charged(HIaPreSeq80) && aromatic(E3)	
polar(HIaPreSeq80) && aromatic(E3)	
large(HIaPreSeq81) && aromatic(E3)	
positive(HIaPreSeq82) && aromatic(E3)	
charged(HIaPreSeq82) && aromatic(E3)	
polar(HIaPreSeq82) && aromatic(E3)	
aliphatic(HIaPreSeq83) && aromatic(E3)	
hydrophobic(HIaPreSeq83) && aromatic(E3)	
small(HIaPreSeq83) && aromatic(E3)	
medium(HIaPreSeq90) && aromatic(E3)	
negative(HIaPreSeq90) && aromatic(E3)	
charged(HIaPreSeq90) && aromatic(E3)	
polar(HIaPreSeq90) && aromatic(E3)	
aliphatic(HIaPreSeq91) && aromatic(E3)	
hydrophobic(HIaPreSeq91) && aromatic(E3)	
small(HIaPreSeq91) && aromatic(E3)	
medium(HIaPreSeq94) && aromatic(E3)	
polar(HIaPreSeq94) && aromatic(E3)	
aliphatic(HIaPreSeq95) && aromatic(E3)	
large(HIaPreSeq95) && aromatic(E3)	
large(HIaPreSeq97) && aromatic(E3)	
positive(HIaPreSeq97) && aromatic(E3)	
charged(HIaPreSeq97) && aromatic(E3)	
polar(HIaPreSeq97) && aromatic(E3)	
cyclic(HIaPreSeq99) && aromatic(E3)	
aromatic(HIaPreSeq99) && aromatic(E3)	
buried(HIaPreSeq99) && aromatic(E3)	
hydrophobic(HIaPreSeq99) && aromatic(E3)	
large(HIaPreSeq99) && aromatic(E3)	
large(HIaPreSeq103) && aromatic(E3)	
cyclic(HIaPreSeq105) && aromatic(E3)	

hydrophobic(HIaPreSeq105) && aromatic(E3)	
medium(HIaPreSeq105) && aromatic(E3)	
aliphatic(HIaPreSeq107) && aromatic(E3)	
small(HIaPreSeq107) && aromatic(E3)	
aliphatic(HIaPreSeq109) && aromatic(E3)	
hydrophobic(HIaPreSeq113) && aromatic(E3)	0.0246267
medium(HIaPreSeq114) && aromatic(E3)	-0.0186479
cyclic(HIaPreSeq116) && aromatic(E3)	
aromatic(HIaPreSeq116) && aromatic(E3)	
buried(HIaPreSeq116) && aromatic(E3)	
hydrophobic(HIaPreSeq116) && aromatic(E3)	
large(HIaPreSeq116) && aromatic(E3)	
medium(HIaPreSeq127) && aromatic(E3)	
large(HIaPreSeq131) && aromatic(E3)	-0.00140707
positive(HIaPreSeq131) && aromatic(E3)	-0.00163025
charged(HIaPreSeq131) && aromatic(E3)	-0.00189684
medium(HIaPreSeq138) && aromatic(E3)	
polar(HIaPreSeq138) && aromatic(E3)	
aliphatic(HIaPreSeq142) && aromatic(E3)	
buried(HIaPreSeq142) && aromatic(E3)	
hydrophobic(HIaPreSeq142) && aromatic(E3)	
large(HIaPreSeq142) && aromatic(E3)	
medium(HIaPreSeq143) && aromatic(E3)	
positive(HIaPreSeq145) && aromatic(E3)	
charged(HIaPreSeq145) && aromatic(E3)	
polar(HIaPreSeq145) && aromatic(E3)	
cyclic(HIaPreSeq147) && aromatic(E3)	
aromatic(HIaPreSeq147) && aromatic(E3)	
aliphatic(HIaPreSeq149) && aromatic(E3)	
buried(HIaPreSeq149) && aromatic(E3)	
hydrophobic(HIaPreSeq149) && aromatic(E3)	
small(HIaPreSeq149) && aromatic(E3)	
small(HIaPreSeq150) && aromatic(E3)	
large(HIaPreSeq152) && aromatic(E3)	0.0176873
negative(HIaPreSeq152) && aromatic(E3)	0.0194393
charged(HIaPreSeq152) && aromatic(E3)	0.0176694
polar(HIaPreSeq152) && aromatic(E3)	0.0154521
large(HIaPreSeq156) && aromatic(E3)	
positive(HIaPreSeq156) && aromatic(E3)	
charged(HIaPreSeq156) && aromatic(E3)	-0.0189781
polar(HIaPreSeq156) && aromatic(E3)	-0.0196078
aliphatic(HIaPreSeq158) && aromatic(E3)	
buried(HIaPreSeq158) && aromatic(E3)	
hydrophobic(HIaPreSeq158) && aromatic(E3)	
small(HIaPreSeq158) && aromatic(E3)	
large(HIaPreSeq161) && aromatic(E3)	-0.0105729
medium(HIaPreSeq163) && aromatic(E3)	

polar(HlaPreSeq163) && aromatic(E3)	
large(HlaPreSeq166) && aromatic(E3)	
cyclic(HlaPreSeq167) && aromatic(E3)	
aromatic(HlaPreSeq167) && aromatic(E3)	
buried(HlaPreSeq167) && aromatic(E3)	
hydrophobic(HlaPreSeq167) && aromatic(E3)	
large(HlaPreSeq167) && aromatic(E3)	
hydrophobic(HlaPreSeq171) && aromatic(E3)	-0.0176088
negative(HlaPreSeq173) && aromatic(E3)	
hydrophobic(E3)	-0.0260472
aliphatic(HlaPreSeq1) && hydrophobic(E3)	-0.0218314
hydrophobic(HlaPreSeq1) && hydrophobic(E3)	-0.0202683
small(HlaPreSeq1) && hydrophobic(E3)	-0.0184326
small(HlaPreSeq9) && hydrophobic(E3)	-0.0130384
polar(HlaPreSeq9) && hydrophobic(E3)	-0.0134556
polar(HlaPreSeq11) && hydrophobic(E3)	-0.0222332
aliphatic(HlaPreSeq12) && hydrophobic(E3)	-0.0222837
medium(HlaPreSeq12) && hydrophobic(E3)	-0.0209923
cyclic(HlaPreSeq14) && hydrophobic(E3)	
aromatic(HlaPreSeq14) && hydrophobic(E3)	
buried(HlaPreSeq14) && hydrophobic(E3)	
hydrophobic(HlaPreSeq14) && hydrophobic(E3)	
aliphatic(HlaPreSeq16) && hydrophobic(E3)	
hydrophobic(HlaPreSeq16) && hydrophobic(E3)	
large(HlaPreSeq17) && hydrophobic(E3)	
positive(HlaPreSeq17) && hydrophobic(E3)	
charged(HlaPreSeq17) && hydrophobic(E3)	
aliphatic(HlaPreSeq24) && hydrophobic(E3)	-0.0209573
buried(HlaPreSeq24) && hydrophobic(E3)	-0.0195602
hydrophobic(HlaPreSeq24) && hydrophobic(E3)	-0.0178512
small(HlaPreSeq24) && hydrophobic(E3)	
medium(HlaPreSeq30) && hydrophobic(E3)	
negative(HlaPreSeq30) && hydrophobic(E3)	
charged(HlaPreSeq30) && hydrophobic(E3)	
polar(HlaPreSeq30) && hydrophobic(E3)	
polar(HlaPreSeq32) && hydrophobic(E3)	
positive(HlaPreSeq35) && hydrophobic(E3)	0.00791265
charged(HlaPreSeq35) && hydrophobic(E3)	
aliphatic(HlaPreSeq41) && hydrophobic(E3)	
buried(HlaPreSeq41) && hydrophobic(E3)	
hydrophobic(HlaPreSeq41) && hydrophobic(E3)	
small(HlaPreSeq41) && hydrophobic(E3)	
cyclic(HlaPreSeq43) && hydrophobic(E3)	
hydrophobic(HlaPreSeq43) && hydrophobic(E3)	
medium(HlaPreSeq43) && hydrophobic(E3)	
aliphatic(HlaPreSeq45) && hydrophobic(E3)	
hydrophobic(HlaPreSeq45) && hydrophobic(E3)	-0.0114981

small(HlaPreSeq45) && hydrophobic(E3)	
large(HlaPreSeq46) && hydrophobic(E3)	
negative(HlaPreSeq46) && hydrophobic(E3)	
charged(HlaPreSeq46) && hydrophobic(E3)	
polar(HlaPreSeq46) && hydrophobic(E3)	
large(HlaPreSeq49) && hydrophobic(E3)	
negative(HlaPreSeq49) && hydrophobic(E3)	
charged(HlaPreSeq49) && hydrophobic(E3)	
polar(HlaPreSeq49) && hydrophobic(E3)	
medium(HlaPreSeq52) && hydrophobic(E3)	
aliphatic(HlaPreSeq56) && hydrophobic(E3)	
hydrophobic(HlaPreSeq56) && hydrophobic(E3)	
small(HlaPreSeq56) && hydrophobic(E3)	
large(HlaPreSeq62) && hydrophobic(E3)	
positive(HlaPreSeq62) && hydrophobic(E3)	-0.017728
charged(HlaPreSeq62) && hydrophobic(E3)	
polar(HlaPreSeq62) && hydrophobic(E3)	
large(HlaPreSeq63) && hydrophobic(E3)	
negative(HlaPreSeq63) && hydrophobic(E3)	
charged(HlaPreSeq63) && hydrophobic(E3)	
large(HlaPreSeq65) && hydrophobic(E3)	
polar(HlaPreSeq65) && hydrophobic(E3)	
large(HlaPreSeq66) && hydrophobic(E3)	
positive(HlaPreSeq66) && hydrophobic(E3)	
charged(HlaPreSeq66) && hydrophobic(E3)	
polar(HlaPreSeq66) && hydrophobic(E3)	
cyclic(HlaPreSeq67) && hydrophobic(E3)	
aromatic(HlaPreSeq67) && hydrophobic(E3)	
hydrophobic(HlaPreSeq67) && hydrophobic(E3)	
large(HlaPreSeq67) && hydrophobic(E3)	
large(HlaPreSeq69) && hydrophobic(E3)	
positive(HlaPreSeq69) && hydrophobic(E3)	
charged(HlaPreSeq69) && hydrophobic(E3)	
polar(HlaPreSeq69) && hydrophobic(E3)	
large(HlaPreSeq70) && hydrophobic(E3)	
aliphatic(HlaPreSeq71) && hydrophobic(E3)	
buried(HlaPreSeq71) && hydrophobic(E3)	
hydrophobic(HlaPreSeq71) && hydrophobic(E3)	
small(HlaPreSeq71) && hydrophobic(E3)	
aliphatic(HlaPreSeq73) && hydrophobic(E3)	
buried(HlaPreSeq73) && hydrophobic(E3)	
hydrophobic(HlaPreSeq73) && hydrophobic(E3)	
small(HlaPreSeq73) && hydrophobic(E3)	
medium(HlaPreSeq74) && hydrophobic(E3)	
negative(HlaPreSeq74) && hydrophobic(E3)	
charged(HlaPreSeq74) && hydrophobic(E3)	
polar(HlaPreSeq74) && hydrophobic(E3)	

aliphatic(HlaPreSeq76) && hydrophobic(E3)	
buried(HlaPreSeq76) && hydrophobic(E3)	
hydrophobic(HlaPreSeq76) && hydrophobic(E3)	
medium(HlaPreSeq76) && hydrophobic(E3)	0.021055
medium(HlaPreSeq77) && hydrophobic(E3)	
large(HlaPreSeq79) && hydrophobic(E3)	
positive(HlaPreSeq79) && hydrophobic(E3)	
charged(HlaPreSeq79) && hydrophobic(E3)	
polar(HlaPreSeq79) && hydrophobic(E3)	
large(HlaPreSeq80) && hydrophobic(E3)	
positive(HlaPreSeq80) && hydrophobic(E3)	
charged(HlaPreSeq80) && hydrophobic(E3)	
polar(HlaPreSeq80) && hydrophobic(E3)	
large(HlaPreSeq81) && hydrophobic(E3)	
positive(HlaPreSeq82) && hydrophobic(E3)	
charged(HlaPreSeq82) && hydrophobic(E3)	
polar(HlaPreSeq82) && hydrophobic(E3)	
aliphatic(HlaPreSeq83) && hydrophobic(E3)	
hydrophobic(HlaPreSeq83) && hydrophobic(E3)	
small(HlaPreSeq83) && hydrophobic(E3)	
medium(HlaPreSeq90) && hydrophobic(E3)	
negative(HlaPreSeq90) && hydrophobic(E3)	
charged(HlaPreSeq90) && hydrophobic(E3)	
polar(HlaPreSeq90) && hydrophobic(E3)	
aliphatic(HlaPreSeq91) && hydrophobic(E3)	
hydrophobic(HlaPreSeq91) && hydrophobic(E3)	
small(HlaPreSeq91) && hydrophobic(E3)	
medium(HlaPreSeq94) && hydrophobic(E3)	
polar(HlaPreSeq94) && hydrophobic(E3)	
aliphatic(HlaPreSeq95) && hydrophobic(E3)	
large(HlaPreSeq95) && hydrophobic(E3)	
large(HlaPreSeq97) && hydrophobic(E3)	
positive(HlaPreSeq97) && hydrophobic(E3)	-0.0115525
charged(HlaPreSeq97) && hydrophobic(E3)	-0.0113602
polar(HlaPreSeq97) && hydrophobic(E3)	
cyclic(HlaPreSeq99) && hydrophobic(E3)	
aromatic(HlaPreSeq99) && hydrophobic(E3)	
buried(HlaPreSeq99) && hydrophobic(E3)	
hydrophobic(HlaPreSeq99) && hydrophobic(E3)	
large(HlaPreSeq99) && hydrophobic(E3)	
large(HlaPreSeq103) && hydrophobic(E3)	-0.0140909
cyclic(HlaPreSeq105) && hydrophobic(E3)	
hydrophobic(HlaPreSeq105) && hydrophobic(E3)	
medium(HlaPreSeq105) && hydrophobic(E3)	
aliphatic(HlaPreSeq107) && hydrophobic(E3)	
small(HlaPreSeq107) && hydrophobic(E3)	
aliphatic(HlaPreSeq109) && hydrophobic(E3)	

hydrophobic(HlaPreSeq113) && hydrophobic(E3)	
medium(HlaPreSeq114) && hydrophobic(E3)	
cyclic(HlaPreSeq116) && hydrophobic(E3)	
aromatic(HlaPreSeq116) && hydrophobic(E3)	
buried(HlaPreSeq116) && hydrophobic(E3)	-0.0185715
hydrophobic(HlaPreSeq116) && hydrophobic(E3)	
large(HlaPreSeq116) && hydrophobic(E3)	-0.0173882
medium(HlaPreSeq127) && hydrophobic(E3)	
large(HlaPreSeq131) && hydrophobic(E3)	
positive(HlaPreSeq131) && hydrophobic(E3)	
charged(HlaPreSeq131) && hydrophobic(E3)	
medium(HlaPreSeq138) && hydrophobic(E3)	
polar(HlaPreSeq138) && hydrophobic(E3)	
aliphatic(HlaPreSeq142) && hydrophobic(E3)	
buried(HlaPreSeq142) && hydrophobic(E3)	
hydrophobic(HlaPreSeq142) && hydrophobic(E3)	
large(HlaPreSeq142) && hydrophobic(E3)	
medium(HlaPreSeq143) && hydrophobic(E3)	
positive(HlaPreSeq145) && hydrophobic(E3)	
charged(HlaPreSeq145) && hydrophobic(E3)	
polar(HlaPreSeq145) && hydrophobic(E3)	
cyclic(HlaPreSeq147) && hydrophobic(E3)	
aromatic(HlaPreSeq147) && hydrophobic(E3)	
aliphatic(HlaPreSeq149) && hydrophobic(E3)	
buried(HlaPreSeq149) && hydrophobic(E3)	
hydrophobic(HlaPreSeq149) && hydrophobic(E3)	
small(HlaPreSeq149) && hydrophobic(E3)	
small(HlaPreSeq150) && hydrophobic(E3)	
large(HlaPreSeq152) && hydrophobic(E3)	
negative(HlaPreSeq152) && hydrophobic(E3)	
charged(HlaPreSeq152) && hydrophobic(E3)	
polar(HlaPreSeq152) && hydrophobic(E3)	
large(HlaPreSeq156) && hydrophobic(E3)	
positive(HlaPreSeq156) && hydrophobic(E3)	
charged(HlaPreSeq156) && hydrophobic(E3)	
polar(HlaPreSeq156) && hydrophobic(E3)	
aliphatic(HlaPreSeq158) && hydrophobic(E3)	
buried(HlaPreSeq158) && hydrophobic(E3)	
hydrophobic(HlaPreSeq158) && hydrophobic(E3)	
small(HlaPreSeq158) && hydrophobic(E3)	0.0202472
large(HlaPreSeq161) && hydrophobic(E3)	
medium(HlaPreSeq163) && hydrophobic(E3)	-0.0117745
polar(HlaPreSeq163) && hydrophobic(E3)	-0.0170027
large(HlaPreSeq166) && hydrophobic(E3)	
cyclic(HlaPreSeq167) && hydrophobic(E3)	
aromatic(HlaPreSeq167) && hydrophobic(E3)	
buried(HlaPreSeq167) && hydrophobic(E3)	

hydrophobic(HlaPreSeq167) && hydrophobic(E3)	
large(HlaPreSeq167) && hydrophobic(E3)	
hydrophobic(HlaPreSeq171) && hydrophobic(E3)	
negative(HlaPreSeq173) && hydrophobic(E3)	
large(E3)	
aliphatic(HlaPreSeq1) && large(E3)	
hydrophobic(HlaPreSeq1) && large(E3)	
small(HlaPreSeq1) && large(E3)	
small(HlaPreSeq9) && large(E3)	-0.0142613
polar(HlaPreSeq9) && large(E3)	
polar(HlaPreSeq11) && large(E3)	
aliphatic(HlaPreSeq12) && large(E3)	
medium(HlaPreSeq12) && large(E3)	
cyclic(HlaPreSeq14) && large(E3)	
aromatic(HlaPreSeq14) && large(E3)	
buried(HlaPreSeq14) && large(E3)	
hydrophobic(HlaPreSeq14) && large(E3)	
aliphatic(HlaPreSeq16) && large(E3)	
hydrophobic(HlaPreSeq16) && large(E3)	
large(HlaPreSeq17) && large(E3)	
positive(HlaPreSeq17) && large(E3)	
charged(HlaPreSeq17) && large(E3)	
aliphatic(HlaPreSeq24) && large(E3)	-0.00724387
buried(HlaPreSeq24) && large(E3)	-0.00836725
hydrophobic(HlaPreSeq24) && large(E3)	-0.00904958
small(HlaPreSeq24) && large(E3)	
medium(HlaPreSeq30) && large(E3)	
negative(HlaPreSeq30) && large(E3)	
charged(HlaPreSeq30) && large(E3)	
polar(HlaPreSeq30) && large(E3)	
polar(HlaPreSeq32) && large(E3)	
positive(HlaPreSeq35) && large(E3)	
charged(HlaPreSeq35) && large(E3)	
aliphatic(HlaPreSeq41) && large(E3)	0.014271
buried(HlaPreSeq41) && large(E3)	0.0123219
hydrophobic(HlaPreSeq41) && large(E3)	0.0109346
small(HlaPreSeq41) && large(E3)	
cyclic(HlaPreSeq43) && large(E3)	
hydrophobic(HlaPreSeq43) && large(E3)	
medium(HlaPreSeq43) && large(E3)	
aliphatic(HlaPreSeq45) && large(E3)	
hydrophobic(HlaPreSeq45) && large(E3)	-0.0222467
small(HlaPreSeq45) && large(E3)	
large(HlaPreSeq46) && large(E3)	
negative(HlaPreSeq46) && large(E3)	
charged(HlaPreSeq46) && large(E3)	
polar(HlaPreSeq46) && large(E3)	

large(HlaPreSeq49) && large(E3)	
negative(HlaPreSeq49) && large(E3)	
charged(HlaPreSeq49) && large(E3)	
polar(HlaPreSeq49) && large(E3)	
medium(HlaPreSeq52) && large(E3)	
aliphatic(HlaPreSeq56) && large(E3)	
hydrophobic(HlaPreSeq56) && large(E3)	
small(HlaPreSeq56) && large(E3)	
large(HlaPreSeq62) && large(E3)	0.00934374
positive(HlaPreSeq62) && large(E3)	
charged(HlaPreSeq62) && large(E3)	-0.0167955
polar(HlaPreSeq62) && large(E3)	0.0176252
large(HlaPreSeq63) && large(E3)	-0.0265004
negative(HlaPreSeq63) && large(E3)	-0.0183063
charged(HlaPreSeq63) && large(E3)	-0.0171323
large(HlaPreSeq65) && large(E3)	
polar(HlaPreSeq65) && large(E3)	
large(HlaPreSeq66) && large(E3)	-0.00994759
positive(HlaPreSeq66) && large(E3)	
charged(HlaPreSeq66) && large(E3)	
polar(HlaPreSeq66) && large(E3)	-0.00840564
cyclic(HlaPreSeq67) && large(E3)	
aromatic(HlaPreSeq67) && large(E3)	
hydrophobic(HlaPreSeq67) && large(E3)	
large(HlaPreSeq67) && large(E3)	
large(HlaPreSeq69) && large(E3)	
positive(HlaPreSeq69) && large(E3)	
charged(HlaPreSeq69) && large(E3)	
polar(HlaPreSeq69) && large(E3)	
large(HlaPreSeq70) && large(E3)	
aliphatic(HlaPreSeq71) && large(E3)	
buried(HlaPreSeq71) && large(E3)	
hydrophobic(HlaPreSeq71) && large(E3)	
small(HlaPreSeq71) && large(E3)	
aliphatic(HlaPreSeq73) && large(E3)	0.0149168
buried(HlaPreSeq73) && large(E3)	0.0148857
hydrophobic(HlaPreSeq73) && large(E3)	0.0148545
small(HlaPreSeq73) && large(E3)	
medium(HlaPreSeq74) && large(E3)	0.0115931
negative(HlaPreSeq74) && large(E3)	0.0113868
charged(HlaPreSeq74) && large(E3)	
polar(HlaPreSeq74) && large(E3)	
aliphatic(HlaPreSeq76) && large(E3)	
buried(HlaPreSeq76) && large(E3)	
hydrophobic(HlaPreSeq76) && large(E3)	
medium(HlaPreSeq76) && large(E3)	
medium(HlaPreSeq77) && large(E3)	

large(HlaPreSeq79) && large(E3)	
positive(HlaPreSeq79) && large(E3)	
charged(HlaPreSeq79) && large(E3)	
polar(HlaPreSeq79) && large(E3)	
large(HlaPreSeq80) && large(E3)	
positive(HlaPreSeq80) && large(E3)	
charged(HlaPreSeq80) && large(E3)	
polar(HlaPreSeq80) && large(E3)	
large(HlaPreSeq81) && large(E3)	
positive(HlaPreSeq82) && large(E3)	
charged(HlaPreSeq82) && large(E3)	
polar(HlaPreSeq82) && large(E3)	
aliphatic(HlaPreSeq83) && large(E3)	
hydrophobic(HlaPreSeq83) && large(E3)	
small(HlaPreSeq83) && large(E3)	
medium(HlaPreSeq90) && large(E3)	
negative(HlaPreSeq90) && large(E3)	
charged(HlaPreSeq90) && large(E3)	
polar(HlaPreSeq90) && large(E3)	
aliphatic(HlaPreSeq91) && large(E3)	
hydrophobic(HlaPreSeq91) && large(E3)	
small(HlaPreSeq91) && large(E3)	
medium(HlaPreSeq94) && large(E3)	
polar(HlaPreSeq94) && large(E3)	
aliphatic(HlaPreSeq95) && large(E3)	0.0100912
large(HlaPreSeq95) && large(E3)	
large(HlaPreSeq97) && large(E3)	
positive(HlaPreSeq97) && large(E3)	
charged(HlaPreSeq97) && large(E3)	
polar(HlaPreSeq97) && large(E3)	
cyclic(HlaPreSeq99) && large(E3)	
aromatic(HlaPreSeq99) && large(E3)	
buried(HlaPreSeq99) && large(E3)	
hydrophobic(HlaPreSeq99) && large(E3)	
large(HlaPreSeq99) && large(E3)	
large(HlaPreSeq103) && large(E3)	-0.0123324
cyclic(HlaPreSeq105) && large(E3)	0.0101735
hydrophobic(HlaPreSeq105) && large(E3)	0.0112447
medium(HlaPreSeq105) && large(E3)	0.0119662
aliphatic(HlaPreSeq107) && large(E3)	
small(HlaPreSeq107) && large(E3)	
aliphatic(HlaPreSeq109) && large(E3)	
hydrophobic(HlaPreSeq113) && large(E3)	
medium(HlaPreSeq114) && large(E3)	-0.0106002
cyclic(HlaPreSeq116) && large(E3)	-0.0217004
aromatic(HlaPreSeq116) && large(E3)	-0.0198282
buried(HlaPreSeq116) && large(E3)	

hydrophobic(HlaPreSeq116) && large(E3)	-0.0196978
large(HlaPreSeq116) && large(E3)	-0.0209063
medium(HlaPreSeq127) && large(E3)	0.0204534
large(HlaPreSeq131) && large(E3)	
positive(HlaPreSeq131) && large(E3)	
charged(HlaPreSeq131) && large(E3)	
medium(HlaPreSeq138) && large(E3)	
polar(HlaPreSeq138) && large(E3)	
aliphatic(HlaPreSeq142) && large(E3)	0.0152902
buried(HlaPreSeq142) && large(E3)	0.0138954
hydrophobic(HlaPreSeq142) && large(E3)	0.0124402
large(HlaPreSeq142) && large(E3)	
medium(HlaPreSeq143) && large(E3)	
positive(HlaPreSeq145) && large(E3)	
charged(HlaPreSeq145) && large(E3)	
polar(HlaPreSeq145) && large(E3)	
cyclic(HlaPreSeq147) && large(E3)	
aromatic(HlaPreSeq147) && large(E3)	
aliphatic(HlaPreSeq149) && large(E3)	
buried(HlaPreSeq149) && large(E3)	
hydrophobic(HlaPreSeq149) && large(E3)	
small(HlaPreSeq149) && large(E3)	
small(HlaPreSeq150) && large(E3)	
large(HlaPreSeq152) && large(E3)	
negative(HlaPreSeq152) && large(E3)	
charged(HlaPreSeq152) && large(E3)	
polar(HlaPreSeq152) && large(E3)	-0.0149924
large(HlaPreSeq156) && large(E3)	
positive(HlaPreSeq156) && large(E3)	-0.0133249
charged(HlaPreSeq156) && large(E3)	
polar(HlaPreSeq156) && large(E3)	
aliphatic(HlaPreSeq158) && large(E3)	
buried(HlaPreSeq158) && large(E3)	
hydrophobic(HlaPreSeq158) && large(E3)	
small(HlaPreSeq158) && large(E3)	
large(HlaPreSeq161) && large(E3)	
medium(HlaPreSeq163) && large(E3)	
polar(HlaPreSeq163) && large(E3)	
large(HlaPreSeq166) && large(E3)	
cyclic(HlaPreSeq167) && large(E3)	
aromatic(HlaPreSeq167) && large(E3)	
buried(HlaPreSeq167) && large(E3)	
hydrophobic(HlaPreSeq167) && large(E3)	
large(HlaPreSeq167) && large(E3)	
hydrophobic(HlaPreSeq171) && large(E3)	-0.01209
negative(HlaPreSeq173) && large(E3)	
E4=Pro	

HlaPreSeq1=Gly && E4=Pro	
HlaPreSeq6=Arg && E4=Pro	
HlaPreSeq9=Ser && E4=Pro	
HlaPreSeq11=Ser && E4=Pro	
HlaPreSeq12=Val && E4=Pro	
HlaPreSeq14=Trp && E4=Pro	
HlaPreSeq16=Gly && E4=Pro	
HlaPreSeq17=Arg && E4=Pro	
HlaPreSeq21=Arg && E4=Pro	
HlaPreSeq24=Ala && E4=Pro	0.040074
HlaPreSeq30=Asp && E4=Pro	
HlaPreSeq32=Gln && E4=Pro	0.0333319
HlaPreSeq35=Arg && E4=Pro	
HlaPreSeq41=Ala && E4=Pro	0.034656
HlaPreSeq43=Pro && E4=Pro	
HlaPreSeq44=Arg && E4=Pro	0.0274013
HlaPreSeq45=Gly && E4=Pro	
HlaPreSeq46=Glu && E4=Pro	
HlaPreSeq49=Glu && E4=Pro	
HlaPreSeq52=Val && E4=Pro	
HlaPreSeq56=Gly && E4=Pro	
HlaPreSeq62=Arg && E4=Pro	
HlaPreSeq63=Glu && E4=Pro	0.00128835
HlaPreSeq65=Gln && E4=Pro	
HlaPreSeq66=Lys && E4=Pro	
HlaPreSeq67=Tyr && E4=Pro	
HlaPreSeq69=Arg && E4=Pro	
HlaPreSeq70=Gln && E4=Pro	
HlaPreSeq71=Ala && E4=Pro	
HlaPreSeq73=Ala && E4=Pro	
HlaPreSeq74=Asp && E4=Pro	
HlaPreSeq76=Val && E4=Pro	
HlaPreSeq77=Asn && E4=Pro	
HlaPreSeq79=Arg && E4=Pro	
HlaPreSeq80=Lys && E4=Pro	
HlaPreSeq81=Leu && E4=Pro	
HlaPreSeq82=Arg && E4=Pro	
HlaPreSeq83=Gly && E4=Pro	
HlaPreSeq90=Asp && E4=Pro	
HlaPreSeq91=Gly && E4=Pro	
HlaPreSeq94=Thr && E4=Pro	
HlaPreSeq95=Leu && E4=Pro	
HlaPreSeq97=Arg && E4=Pro	
HlaPreSeq99=Phe && E4=Pro	
HlaPreSeq103=Leu && E4=Pro	
HlaPreSeq105=Pro && E4=Pro	
HlaPreSeq107=Gly && E4=Pro	

HlaPreSeq109=Leu && E4=Pro	
HlaPreSeq113=Tyr && E4=Pro	
HlaPreSeq114=Asn && E4=Pro	
HlaPreSeq116=Phe && E4=Pro	
HlaPreSeq127=Asn && E4=Pro	
HlaPreSeq131=Arg && E4=Pro	
HlaPreSeq138=Thr && E4=Pro	
HlaPreSeq142=Ile && E4=Pro	
HlaPreSeq143=Thr && E4=Pro	
HlaPreSeq144=Gln && E4=Pro	
HlaPreSeq145=Arg && E4=Pro	
HlaPreSeq147=Trp && E4=Pro	
HlaPreSeq149=Ala && E4=Pro	
HlaPreSeq150=Ala && E4=Pro	0.0273166
HlaPreSeq151=Arg && E4=Pro	
HlaPreSeq152=Glu && E4=Pro	
HlaPreSeq156=Arg && E4=Pro	
HlaPreSeq158=Ala && E4=Pro	0.0275311
HlaPreSeq161=Glu && E4=Pro	0.0294259
HlaPreSeq163=Thr && E4=Pro	
HlaPreSeq166=Glu && E4=Pro	
HlaPreSeq167=Trp && E4=Pro	0.0289531
HlaPreSeq171=Tyr && E4=Pro	
HlaPreSeq173=Glu && E4=Pro	
cyclic(E4)	0.02008
aliphatic(HlaPreSeq1) && cyclic(E4)	
hydrophobic(HlaPreSeq1) && cyclic(E4)	
small(HlaPreSeq1) && cyclic(E4)	
small(HlaPreSeq9) && cyclic(E4)	
polar(HlaPreSeq9) && cyclic(E4)	
polar(HlaPreSeq11) && cyclic(E4)	
aliphatic(HlaPreSeq12) && cyclic(E4)	
medium(HlaPreSeq12) && cyclic(E4)	
cyclic(HlaPreSeq14) && cyclic(E4)	
aromatic(HlaPreSeq14) && cyclic(E4)	
buried(HlaPreSeq14) && cyclic(E4)	
hydrophobic(HlaPreSeq14) && cyclic(E4)	
aliphatic(HlaPreSeq16) && cyclic(E4)	
hydrophobic(HlaPreSeq16) && cyclic(E4)	
large(HlaPreSeq17) && cyclic(E4)	0.018998
positive(HlaPreSeq17) && cyclic(E4)	
charged(HlaPreSeq17) && cyclic(E4)	
aliphatic(HlaPreSeq24) && cyclic(E4)	0.0232627
buried(HlaPreSeq24) && cyclic(E4)	0.0230718
hydrophobic(HlaPreSeq24) && cyclic(E4)	0.022806
small(HlaPreSeq24) && cyclic(E4)	
medium(HlaPreSeq30) && cyclic(E4)	

negative(HlaPreSeq30) && cyclic(E4)
charged(HlaPreSeq30) && cyclic(E4)
polar(HlaPreSeq30) && cyclic(E4)
polar(HlaPreSeq32) && cyclic(E4)
positive(HlaPreSeq35) && cyclic(E4)
charged(HlaPreSeq35) && cyclic(E4)
aliphatic(HlaPreSeq41) && cyclic(E4)
buried(HlaPreSeq41) && cyclic(E4)
hydrophobic(HlaPreSeq41) && cyclic(E4)
small(HlaPreSeq41) && cyclic(E4)
cyclic(HlaPreSeq43) && cyclic(E4)
hydrophobic(HlaPreSeq43) && cyclic(E4)
medium(HlaPreSeq43) && cyclic(E4)
aliphatic(HlaPreSeq45) && cyclic(E4)
hydrophobic(HlaPreSeq45) && cyclic(E4)
small(HlaPreSeq45) && cyclic(E4)
large(HlaPreSeq46) && cyclic(E4)
negative(HlaPreSeq46) && cyclic(E4)
charged(HlaPreSeq46) && cyclic(E4)
polar(HlaPreSeq46) && cyclic(E4)
large(HlaPreSeq49) && cyclic(E4)
negative(HlaPreSeq49) && cyclic(E4)
charged(HlaPreSeq49) && cyclic(E4)
polar(HlaPreSeq49) && cyclic(E4)
medium(HlaPreSeq52) && cyclic(E4)
aliphatic(HlaPreSeq56) && cyclic(E4)
hydrophobic(HlaPreSeq56) && cyclic(E4)
small(HlaPreSeq56) && cyclic(E4)
large(HlaPreSeq62) && cyclic(E4)
positive(HlaPreSeq62) && cyclic(E4)
charged(HlaPreSeq62) && cyclic(E4)
polar(HlaPreSeq62) && cyclic(E4)
large(HlaPreSeq63) && cyclic(E4)
negative(HlaPreSeq63) && cyclic(E4)
charged(HlaPreSeq63) && cyclic(E4)
large(HlaPreSeq65) && cyclic(E4)
polar(HlaPreSeq65) && cyclic(E4)
large(HlaPreSeq66) && cyclic(E4)
positive(HlaPreSeq66) && cyclic(E4)
charged(HlaPreSeq66) && cyclic(E4)
polar(HlaPreSeq66) && cyclic(E4)
cyclic(HlaPreSeq67) && cyclic(E4)
aromatic(HlaPreSeq67) && cyclic(E4)
hydrophobic(HlaPreSeq67) && cyclic(E4)
large(HlaPreSeq67) && cyclic(E4)
large(HlaPreSeq69) && cyclic(E4)
positive(HlaPreSeq69) && cyclic(E4)

charged(HlaPreSeq69) && cyclic(E4)	
polar(HlaPreSeq69) && cyclic(E4)	
large(HlaPreSeq70) && cyclic(E4)	
aliphatic(HlaPreSeq71) && cyclic(E4)	
buried(HlaPreSeq71) && cyclic(E4)	
hydrophobic(HlaPreSeq71) && cyclic(E4)	
small(HlaPreSeq71) && cyclic(E4)	
aliphatic(HlaPreSeq73) && cyclic(E4)	
buried(HlaPreSeq73) && cyclic(E4)	
hydrophobic(HlaPreSeq73) && cyclic(E4)	
small(HlaPreSeq73) && cyclic(E4)	
medium(HlaPreSeq74) && cyclic(E4)	0.0363234
negative(HlaPreSeq74) && cyclic(E4)	0.0364032
charged(HlaPreSeq74) && cyclic(E4)	0.034789
polar(HlaPreSeq74) && cyclic(E4)	0.0342372
aliphatic(HlaPreSeq76) && cyclic(E4)	
buried(HlaPreSeq76) && cyclic(E4)	
hydrophobic(HlaPreSeq76) && cyclic(E4)	
medium(HlaPreSeq76) && cyclic(E4)	
medium(HlaPreSeq77) && cyclic(E4)	-0.00513439
large(HlaPreSeq79) && cyclic(E4)	
positive(HlaPreSeq79) && cyclic(E4)	
charged(HlaPreSeq79) && cyclic(E4)	
polar(HlaPreSeq79) && cyclic(E4)	
large(HlaPreSeq80) && cyclic(E4)	
positive(HlaPreSeq80) && cyclic(E4)	
charged(HlaPreSeq80) && cyclic(E4)	
polar(HlaPreSeq80) && cyclic(E4)	
large(HlaPreSeq81) && cyclic(E4)	
positive(HlaPreSeq82) && cyclic(E4)	
charged(HlaPreSeq82) && cyclic(E4)	
polar(HlaPreSeq82) && cyclic(E4)	
aliphatic(HlaPreSeq83) && cyclic(E4)	
hydrophobic(HlaPreSeq83) && cyclic(E4)	
small(HlaPreSeq83) && cyclic(E4)	
medium(HlaPreSeq90) && cyclic(E4)	
negative(HlaPreSeq90) && cyclic(E4)	
charged(HlaPreSeq90) && cyclic(E4)	
polar(HlaPreSeq90) && cyclic(E4)	
aliphatic(HlaPreSeq91) && cyclic(E4)	
hydrophobic(HlaPreSeq91) && cyclic(E4)	
small(HlaPreSeq91) && cyclic(E4)	
medium(HlaPreSeq94) && cyclic(E4)	
polar(HlaPreSeq94) && cyclic(E4)	
aliphatic(HlaPreSeq95) && cyclic(E4)	
large(HlaPreSeq95) && cyclic(E4)	0.0269951
large(HlaPreSeq97) && cyclic(E4)	0.00456889

positive(HIaPreSeq97) && cyclic(E4)	
charged(HIaPreSeq97) && cyclic(E4)	
polar(HIaPreSeq97) && cyclic(E4)	
cyclic(HIaPreSeq99) && cyclic(E4)	
aromatic(HIaPreSeq99) && cyclic(E4)	
buried(HIaPreSeq99) && cyclic(E4)	
hydrophobic(HIaPreSeq99) && cyclic(E4)	
large(HIaPreSeq99) && cyclic(E4)	
large(HIaPreSeq103) && cyclic(E4)	
cyclic(HIaPreSeq105) && cyclic(E4)	
hydrophobic(HIaPreSeq105) && cyclic(E4)	
medium(HIaPreSeq105) && cyclic(E4)	
aliphatic(HIaPreSeq107) && cyclic(E4)	
small(HIaPreSeq107) && cyclic(E4)	
aliphatic(HIaPreSeq109) && cyclic(E4)	
hydrophobic(HIaPreSeq113) && cyclic(E4)	
medium(HIaPreSeq114) && cyclic(E4)	
cyclic(HIaPreSeq116) && cyclic(E4)	0.0200638
aromatic(HIaPreSeq116) && cyclic(E4)	0.0202865
buried(HIaPreSeq116) && cyclic(E4)	
hydrophobic(HIaPreSeq116) && cyclic(E4)	0.018409
large(HIaPreSeq116) && cyclic(E4)	0.0196266
medium(HIaPreSeq127) && cyclic(E4)	
large(HIaPreSeq131) && cyclic(E4)	
positive(HIaPreSeq131) && cyclic(E4)	
charged(HIaPreSeq131) && cyclic(E4)	
medium(HIaPreSeq138) && cyclic(E4)	
polar(HIaPreSeq138) && cyclic(E4)	
aliphatic(HIaPreSeq142) && cyclic(E4)	
buried(HIaPreSeq142) && cyclic(E4)	
hydrophobic(HIaPreSeq142) && cyclic(E4)	
large(HIaPreSeq142) && cyclic(E4)	
medium(HIaPreSeq143) && cyclic(E4)	
positive(HIaPreSeq145) && cyclic(E4)	
charged(HIaPreSeq145) && cyclic(E4)	
polar(HIaPreSeq145) && cyclic(E4)	
cyclic(HIaPreSeq147) && cyclic(E4)	
aromatic(HIaPreSeq147) && cyclic(E4)	
aliphatic(HIaPreSeq149) && cyclic(E4)	
buried(HIaPreSeq149) && cyclic(E4)	
hydrophobic(HIaPreSeq149) && cyclic(E4)	
small(HIaPreSeq149) && cyclic(E4)	
small(HIaPreSeq150) && cyclic(E4)	
large(HIaPreSeq152) && cyclic(E4)	
negative(HIaPreSeq152) && cyclic(E4)	
charged(HIaPreSeq152) && cyclic(E4)	
polar(HIaPreSeq152) && cyclic(E4)	

large(HIaPreSeq156) && cyclic(E4)	
positive(HIaPreSeq156) && cyclic(E4)	
charged(HIaPreSeq156) && cyclic(E4)	
polar(HIaPreSeq156) && cyclic(E4)	
aliphatic(HIaPreSeq158) && cyclic(E4)	
buried(HIaPreSeq158) && cyclic(E4)	
hydrophobic(HIaPreSeq158) && cyclic(E4)	
small(HIaPreSeq158) && cyclic(E4)	
large(HIaPreSeq161) && cyclic(E4)	
medium(HIaPreSeq163) && cyclic(E4)	
polar(HIaPreSeq163) && cyclic(E4)	
large(HIaPreSeq166) && cyclic(E4)	
cyclic(HIaPreSeq167) && cyclic(E4)	
aromatic(HIaPreSeq167) && cyclic(E4)	
buried(HIaPreSeq167) && cyclic(E4)	
hydrophobic(HIaPreSeq167) && cyclic(E4)	
large(HIaPreSeq167) && cyclic(E4)	
hydrophobic(HIaPreSeq171) && cyclic(E4)	0.000666928
negative(HIaPreSeq173) && cyclic(E4)	
hydrophobic(E4)	
aliphatic(HIaPreSeq1) && hydrophobic(E4)	
hydrophobic(HIaPreSeq1) && hydrophobic(E4)	
small(HIaPreSeq1) && hydrophobic(E4)	
small(HIaPreSeq9) && hydrophobic(E4)	-0.0169525
polar(HIaPreSeq9) && hydrophobic(E4)	-0.0279997
polar(HIaPreSeq11) && hydrophobic(E4)	
aliphatic(HIaPreSeq12) && hydrophobic(E4)	
medium(HIaPreSeq12) && hydrophobic(E4)	
cyclic(HIaPreSeq14) && hydrophobic(E4)	
aromatic(HIaPreSeq14) && hydrophobic(E4)	
buried(HIaPreSeq14) && hydrophobic(E4)	
hydrophobic(HIaPreSeq14) && hydrophobic(E4)	
aliphatic(HIaPreSeq16) && hydrophobic(E4)	
hydrophobic(HIaPreSeq16) && hydrophobic(E4)	
large(HIaPreSeq17) && hydrophobic(E4)	
positive(HIaPreSeq17) && hydrophobic(E4)	
charged(HIaPreSeq17) && hydrophobic(E4)	
aliphatic(HIaPreSeq24) && hydrophobic(E4)	
buried(HIaPreSeq24) && hydrophobic(E4)	
hydrophobic(HIaPreSeq24) && hydrophobic(E4)	
small(HIaPreSeq24) && hydrophobic(E4)	
medium(HIaPreSeq30) && hydrophobic(E4)	
negative(HIaPreSeq30) && hydrophobic(E4)	
charged(HIaPreSeq30) && hydrophobic(E4)	
polar(HIaPreSeq30) && hydrophobic(E4)	
polar(HIaPreSeq32) && hydrophobic(E4)	
positive(HIaPreSeq35) && hydrophobic(E4)	

charged(HlaPreSeq35) && hydrophobic(E4)	
aliphatic(HlaPreSeq41) && hydrophobic(E4)	
buried(HlaPreSeq41) && hydrophobic(E4)	
hydrophobic(HlaPreSeq41) && hydrophobic(E4)	
small(HlaPreSeq41) && hydrophobic(E4)	
cyclic(HlaPreSeq43) && hydrophobic(E4)	
hydrophobic(HlaPreSeq43) && hydrophobic(E4)	
medium(HlaPreSeq43) && hydrophobic(E4)	
aliphatic(HlaPreSeq45) && hydrophobic(E4)	
hydrophobic(HlaPreSeq45) && hydrophobic(E4)	
small(HlaPreSeq45) && hydrophobic(E4)	
large(HlaPreSeq46) && hydrophobic(E4)	
negative(HlaPreSeq46) && hydrophobic(E4)	
charged(HlaPreSeq46) && hydrophobic(E4)	
polar(HlaPreSeq46) && hydrophobic(E4)	
large(HlaPreSeq49) && hydrophobic(E4)	
negative(HlaPreSeq49) && hydrophobic(E4)	
charged(HlaPreSeq49) && hydrophobic(E4)	
polar(HlaPreSeq49) && hydrophobic(E4)	
medium(HlaPreSeq52) && hydrophobic(E4)	
aliphatic(HlaPreSeq56) && hydrophobic(E4)	
hydrophobic(HlaPreSeq56) && hydrophobic(E4)	
small(HlaPreSeq56) && hydrophobic(E4)	
large(HlaPreSeq62) && hydrophobic(E4)	
positive(HlaPreSeq62) && hydrophobic(E4)	0.00501715
charged(HlaPreSeq62) && hydrophobic(E4)	-0.0087263
polar(HlaPreSeq62) && hydrophobic(E4)	
large(HlaPreSeq63) && hydrophobic(E4)	
negative(HlaPreSeq63) && hydrophobic(E4)	
charged(HlaPreSeq63) && hydrophobic(E4)	
large(HlaPreSeq65) && hydrophobic(E4)	
polar(HlaPreSeq65) && hydrophobic(E4)	
large(HlaPreSeq66) && hydrophobic(E4)	
positive(HlaPreSeq66) && hydrophobic(E4)	
charged(HlaPreSeq66) && hydrophobic(E4)	
polar(HlaPreSeq66) && hydrophobic(E4)	0.00189084
cyclic(HlaPreSeq67) && hydrophobic(E4)	-0.0153582
aromatic(HlaPreSeq67) && hydrophobic(E4)	-0.0155904
hydrophobic(HlaPreSeq67) && hydrophobic(E4)	
large(HlaPreSeq67) && hydrophobic(E4)	
large(HlaPreSeq69) && hydrophobic(E4)	
positive(HlaPreSeq69) && hydrophobic(E4)	
charged(HlaPreSeq69) && hydrophobic(E4)	
polar(HlaPreSeq69) && hydrophobic(E4)	
large(HlaPreSeq70) && hydrophobic(E4)	
aliphatic(HlaPreSeq71) && hydrophobic(E4)	
buried(HlaPreSeq71) && hydrophobic(E4)	

hydrophobic(HlaPreSeq71) && hydrophobic(E4)	
small(HlaPreSeq71) && hydrophobic(E4)	
aliphatic(HlaPreSeq73) && hydrophobic(E4)	
buried(HlaPreSeq73) && hydrophobic(E4)	
hydrophobic(HlaPreSeq73) && hydrophobic(E4)	
small(HlaPreSeq73) && hydrophobic(E4)	
medium(HlaPreSeq74) && hydrophobic(E4)	0.0056573
negative(HlaPreSeq74) && hydrophobic(E4)	0.00544439
charged(HlaPreSeq74) && hydrophobic(E4)	
polar(HlaPreSeq74) && hydrophobic(E4)	
aliphatic(HlaPreSeq76) && hydrophobic(E4)	0.0146378
buried(HlaPreSeq76) && hydrophobic(E4)	0.0152321
hydrophobic(HlaPreSeq76) && hydrophobic(E4)	0.015529
medium(HlaPreSeq76) && hydrophobic(E4)	0.0286965
medium(HlaPreSeq77) && hydrophobic(E4)	-0.0254739
large(HlaPreSeq79) && hydrophobic(E4)	
positive(HlaPreSeq79) && hydrophobic(E4)	
charged(HlaPreSeq79) && hydrophobic(E4)	
polar(HlaPreSeq79) && hydrophobic(E4)	
large(HlaPreSeq80) && hydrophobic(E4)	
positive(HlaPreSeq80) && hydrophobic(E4)	
charged(HlaPreSeq80) && hydrophobic(E4)	
polar(HlaPreSeq80) && hydrophobic(E4)	
large(HlaPreSeq81) && hydrophobic(E4)	
positive(HlaPreSeq82) && hydrophobic(E4)	
charged(HlaPreSeq82) && hydrophobic(E4)	
polar(HlaPreSeq82) && hydrophobic(E4)	
aliphatic(HlaPreSeq83) && hydrophobic(E4)	
hydrophobic(HlaPreSeq83) && hydrophobic(E4)	
small(HlaPreSeq83) && hydrophobic(E4)	
medium(HlaPreSeq90) && hydrophobic(E4)	
negative(HlaPreSeq90) && hydrophobic(E4)	
charged(HlaPreSeq90) && hydrophobic(E4)	
polar(HlaPreSeq90) && hydrophobic(E4)	
aliphatic(HlaPreSeq91) && hydrophobic(E4)	
hydrophobic(HlaPreSeq91) && hydrophobic(E4)	
small(HlaPreSeq91) && hydrophobic(E4)	
medium(HlaPreSeq94) && hydrophobic(E4)	
polar(HlaPreSeq94) && hydrophobic(E4)	
aliphatic(HlaPreSeq95) && hydrophobic(E4)	
large(HlaPreSeq95) && hydrophobic(E4)	-0.0184028
large(HlaPreSeq97) && hydrophobic(E4)	-0.0149764
positive(HlaPreSeq97) && hydrophobic(E4)	
charged(HlaPreSeq97) && hydrophobic(E4)	
polar(HlaPreSeq97) && hydrophobic(E4)	
cyclic(HlaPreSeq99) && hydrophobic(E4)	
aromatic(HlaPreSeq99) && hydrophobic(E4)	

buried(HlaPreSeq99) && hydrophobic(E4)
hydrophobic(HlaPreSeq99) && hydrophobic(E4)
large(HlaPreSeq99) && hydrophobic(E4)
large(HlaPreSeq103) && hydrophobic(E4)
cyclic(HlaPreSeq105) && hydrophobic(E4)
hydrophobic(HlaPreSeq105) && hydrophobic(E4)
medium(HlaPreSeq105) && hydrophobic(E4)
aliphatic(HlaPreSeq107) && hydrophobic(E4)
small(HlaPreSeq107) && hydrophobic(E4)
aliphatic(HlaPreSeq109) && hydrophobic(E4)
hydrophobic(HlaPreSeq113) && hydrophobic(E4)
medium(HlaPreSeq114) && hydrophobic(E4)
cyclic(HlaPreSeq116) && hydrophobic(E4)
aromatic(HlaPreSeq116) && hydrophobic(E4)
buried(HlaPreSeq116) && hydrophobic(E4)
hydrophobic(HlaPreSeq116) && hydrophobic(E4)
large(HlaPreSeq116) && hydrophobic(E4)
medium(HlaPreSeq127) && hydrophobic(E4)
large(HlaPreSeq131) && hydrophobic(E4)
positive(HlaPreSeq131) && hydrophobic(E4)
charged(HlaPreSeq131) && hydrophobic(E4)
medium(HlaPreSeq138) && hydrophobic(E4)
polar(HlaPreSeq138) && hydrophobic(E4)
aliphatic(HlaPreSeq142) && hydrophobic(E4)
buried(HlaPreSeq142) && hydrophobic(E4)
hydrophobic(HlaPreSeq142) && hydrophobic(E4)
large(HlaPreSeq142) && hydrophobic(E4)
medium(HlaPreSeq143) && hydrophobic(E4)
positive(HlaPreSeq145) && hydrophobic(E4)
charged(HlaPreSeq145) && hydrophobic(E4)
polar(HlaPreSeq145) && hydrophobic(E4)
cyclic(HlaPreSeq147) && hydrophobic(E4)
aromatic(HlaPreSeq147) && hydrophobic(E4)
aliphatic(HlaPreSeq149) && hydrophobic(E4)
buried(HlaPreSeq149) && hydrophobic(E4)
hydrophobic(HlaPreSeq149) && hydrophobic(E4)
small(HlaPreSeq149) && hydrophobic(E4)
small(HlaPreSeq150) && hydrophobic(E4)
large(HlaPreSeq152) && hydrophobic(E4)
negative(HlaPreSeq152) && hydrophobic(E4)
charged(HlaPreSeq152) && hydrophobic(E4)
polar(HlaPreSeq152) && hydrophobic(E4)
large(HlaPreSeq156) && hydrophobic(E4)
positive(HlaPreSeq156) && hydrophobic(E4)
charged(HlaPreSeq156) && hydrophobic(E4)
polar(HlaPreSeq156) && hydrophobic(E4)
aliphatic(HlaPreSeq158) && hydrophobic(E4)

buried(HlaPreSeq158) && hydrophobic(E4)	
hydrophobic(HlaPreSeq158) && hydrophobic(E4)	
small(HlaPreSeq158) && hydrophobic(E4)	
large(HlaPreSeq161) && hydrophobic(E4)	
medium(HlaPreSeq163) && hydrophobic(E4)	
polar(HlaPreSeq163) && hydrophobic(E4)	
large(HlaPreSeq166) && hydrophobic(E4)	
cyclic(HlaPreSeq167) && hydrophobic(E4)	
aromatic(HlaPreSeq167) && hydrophobic(E4)	
buried(HlaPreSeq167) && hydrophobic(E4)	
hydrophobic(HlaPreSeq167) && hydrophobic(E4)	
large(HlaPreSeq167) && hydrophobic(E4)	
hydrophobic(HlaPreSeq171) && hydrophobic(E4)	
negative(HlaPreSeq173) && hydrophobic(E4)	
medium(E4)	
aliphatic(HlaPreSeq1) && medium(E4)	
hydrophobic(HlaPreSeq1) && medium(E4)	
small(HlaPreSeq1) && medium(E4)	
small(HlaPreSeq9) && medium(E4)	
polar(HlaPreSeq9) && medium(E4)	
polar(HlaPreSeq11) && medium(E4)	
aliphatic(HlaPreSeq12) && medium(E4)	0.0122175
medium(HlaPreSeq12) && medium(E4)	0.0122188
cyclic(HlaPreSeq14) && medium(E4)	
aromatic(HlaPreSeq14) && medium(E4)	
buried(HlaPreSeq14) && medium(E4)	
hydrophobic(HlaPreSeq14) && medium(E4)	
aliphatic(HlaPreSeq16) && medium(E4)	
hydrophobic(HlaPreSeq16) && medium(E4)	
large(HlaPreSeq17) && medium(E4)	
positive(HlaPreSeq17) && medium(E4)	
charged(HlaPreSeq17) && medium(E4)	
aliphatic(HlaPreSeq24) && medium(E4)	0.025133
buried(HlaPreSeq24) && medium(E4)	0.0250205
hydrophobic(HlaPreSeq24) && medium(E4)	0.0247373
small(HlaPreSeq24) && medium(E4)	
medium(HlaPreSeq30) && medium(E4)	0.0132903
negative(HlaPreSeq30) && medium(E4)	
charged(HlaPreSeq30) && medium(E4)	
polar(HlaPreSeq30) && medium(E4)	
polar(HlaPreSeq32) && medium(E4)	
positive(HlaPreSeq35) && medium(E4)	
charged(HlaPreSeq35) && medium(E4)	
aliphatic(HlaPreSeq41) && medium(E4)	
buried(HlaPreSeq41) && medium(E4)	
hydrophobic(HlaPreSeq41) && medium(E4)	
small(HlaPreSeq41) && medium(E4)	

cyclic(HlaPreSeq43) && medium(E4)	
hydrophobic(HlaPreSeq43) && medium(E4)	
medium(HlaPreSeq43) && medium(E4)	
aliphatic(HlaPreSeq45) && medium(E4)	
hydrophobic(HlaPreSeq45) && medium(E4)	
small(HlaPreSeq45) && medium(E4)	
large(HlaPreSeq46) && medium(E4)	
negative(HlaPreSeq46) && medium(E4)	
charged(HlaPreSeq46) && medium(E4)	
polar(HlaPreSeq46) && medium(E4)	
large(HlaPreSeq49) && medium(E4)	
negative(HlaPreSeq49) && medium(E4)	
charged(HlaPreSeq49) && medium(E4)	
polar(HlaPreSeq49) && medium(E4)	
medium(HlaPreSeq52) && medium(E4)	
aliphatic(HlaPreSeq56) && medium(E4)	
hydrophobic(HlaPreSeq56) && medium(E4)	
small(HlaPreSeq56) && medium(E4)	
large(HlaPreSeq62) && medium(E4)	
positive(HlaPreSeq62) && medium(E4)	
charged(HlaPreSeq62) && medium(E4)	
polar(HlaPreSeq62) && medium(E4)	
large(HlaPreSeq63) && medium(E4)	
negative(HlaPreSeq63) && medium(E4)	-0.0111796
charged(HlaPreSeq63) && medium(E4)	-0.0111499
large(HlaPreSeq65) && medium(E4)	
polar(HlaPreSeq65) && medium(E4)	
large(HlaPreSeq66) && medium(E4)	
positive(HlaPreSeq66) && medium(E4)	
charged(HlaPreSeq66) && medium(E4)	
polar(HlaPreSeq66) && medium(E4)	
cyclic(HlaPreSeq67) && medium(E4)	0.0125869
aromatic(HlaPreSeq67) && medium(E4)	0.0126134
hydrophobic(HlaPreSeq67) && medium(E4)	0.016806
large(HlaPreSeq67) && medium(E4)	
large(HlaPreSeq69) && medium(E4)	
positive(HlaPreSeq69) && medium(E4)	
charged(HlaPreSeq69) && medium(E4)	
polar(HlaPreSeq69) && medium(E4)	
large(HlaPreSeq70) && medium(E4)	0.0110085
aliphatic(HlaPreSeq71) && medium(E4)	
buried(HlaPreSeq71) && medium(E4)	
hydrophobic(HlaPreSeq71) && medium(E4)	
small(HlaPreSeq71) && medium(E4)	
aliphatic(HlaPreSeq73) && medium(E4)	
buried(HlaPreSeq73) && medium(E4)	
hydrophobic(HlaPreSeq73) && medium(E4)	

small(HlaPreSeq73) && medium(E4)	
medium(HlaPreSeq74) && medium(E4)	0.015504
negative(HlaPreSeq74) && medium(E4)	0.0157047
charged(HlaPreSeq74) && medium(E4)	
polar(HlaPreSeq74) && medium(E4)	
aliphatic(HlaPreSeq76) && medium(E4)	
buried(HlaPreSeq76) && medium(E4)	
hydrophobic(HlaPreSeq76) && medium(E4)	
medium(HlaPreSeq76) && medium(E4)	-0.00795445
medium(HlaPreSeq77) && medium(E4)	-0.0204437
large(HlaPreSeq79) && medium(E4)	
positive(HlaPreSeq79) && medium(E4)	
charged(HlaPreSeq79) && medium(E4)	
polar(HlaPreSeq79) && medium(E4)	
large(HlaPreSeq80) && medium(E4)	-0.0185666
positive(HlaPreSeq80) && medium(E4)	
charged(HlaPreSeq80) && medium(E4)	
polar(HlaPreSeq80) && medium(E4)	
large(HlaPreSeq81) && medium(E4)	
positive(HlaPreSeq82) && medium(E4)	
charged(HlaPreSeq82) && medium(E4)	
polar(HlaPreSeq82) && medium(E4)	
aliphatic(HlaPreSeq83) && medium(E4)	
hydrophobic(HlaPreSeq83) && medium(E4)	
small(HlaPreSeq83) && medium(E4)	
medium(HlaPreSeq90) && medium(E4)	-0.0134048
negative(HlaPreSeq90) && medium(E4)	-0.0133812
charged(HlaPreSeq90) && medium(E4)	-0.0133546
polar(HlaPreSeq90) && medium(E4)	-0.0133251
aliphatic(HlaPreSeq91) && medium(E4)	
hydrophobic(HlaPreSeq91) && medium(E4)	
small(HlaPreSeq91) && medium(E4)	
medium(HlaPreSeq94) && medium(E4)	-0.0144587
polar(HlaPreSeq94) && medium(E4)	-0.0146362
aliphatic(HlaPreSeq95) && medium(E4)	
large(HlaPreSeq95) && medium(E4)	
large(HlaPreSeq97) && medium(E4)	
positive(HlaPreSeq97) && medium(E4)	
charged(HlaPreSeq97) && medium(E4)	
polar(HlaPreSeq97) && medium(E4)	
cyclic(HlaPreSeq99) && medium(E4)	
aromatic(HlaPreSeq99) && medium(E4)	
buried(HlaPreSeq99) && medium(E4)	
hydrophobic(HlaPreSeq99) && medium(E4)	
large(HlaPreSeq99) && medium(E4)	
large(HlaPreSeq103) && medium(E4)	0.0201559
cyclic(HlaPreSeq105) && medium(E4)	

hydrophobic(HIaPreSeq105) && medium(E4)	
medium(HIaPreSeq105) && medium(E4)	
aliphatic(HIaPreSeq107) && medium(E4)	
small(HIaPreSeq107) && medium(E4)	
aliphatic(HIaPreSeq109) && medium(E4)	
hydrophobic(HIaPreSeq113) && medium(E4)	
medium(HIaPreSeq114) && medium(E4)	
cyclic(HIaPreSeq116) && medium(E4)	
aromatic(HIaPreSeq116) && medium(E4)	
buried(HIaPreSeq116) && medium(E4)	0.0116061
hydrophobic(HIaPreSeq116) && medium(E4)	
large(HIaPreSeq116) && medium(E4)	
medium(HIaPreSeq127) && medium(E4)	
large(HIaPreSeq131) && medium(E4)	
positive(HIaPreSeq131) && medium(E4)	
charged(HIaPreSeq131) && medium(E4)	
medium(HIaPreSeq138) && medium(E4)	
polar(HIaPreSeq138) && medium(E4)	
aliphatic(HIaPreSeq142) && medium(E4)	
buried(HIaPreSeq142) && medium(E4)	
hydrophobic(HIaPreSeq142) && medium(E4)	
large(HIaPreSeq142) && medium(E4)	
medium(HIaPreSeq143) && medium(E4)	
positive(HIaPreSeq145) && medium(E4)	
charged(HIaPreSeq145) && medium(E4)	
polar(HIaPreSeq145) && medium(E4)	
cyclic(HIaPreSeq147) && medium(E4)	
aromatic(HIaPreSeq147) && medium(E4)	
aliphatic(HIaPreSeq149) && medium(E4)	
buried(HIaPreSeq149) && medium(E4)	
hydrophobic(HIaPreSeq149) && medium(E4)	
small(HIaPreSeq149) && medium(E4)	
small(HIaPreSeq150) && medium(E4)	
large(HIaPreSeq152) && medium(E4)	
negative(HIaPreSeq152) && medium(E4)	-0.00786818
charged(HIaPreSeq152) && medium(E4)	
polar(HIaPreSeq152) && medium(E4)	-0.00457508
large(HIaPreSeq156) && medium(E4)	
positive(HIaPreSeq156) && medium(E4)	
charged(HIaPreSeq156) && medium(E4)	
polar(HIaPreSeq156) && medium(E4)	
aliphatic(HIaPreSeq158) && medium(E4)	
buried(HIaPreSeq158) && medium(E4)	
hydrophobic(HIaPreSeq158) && medium(E4)	
small(HIaPreSeq158) && medium(E4)	
large(HIaPreSeq161) && medium(E4)	0.0144661
medium(HIaPreSeq163) && medium(E4)	-0.00757858

polar(HlaPreSeq163) && medium(E4)	
large(HlaPreSeq166) && medium(E4)	
cyclic(HlaPreSeq167) && medium(E4)	
aromatic(HlaPreSeq167) && medium(E4)	
buried(HlaPreSeq167) && medium(E4)	
hydrophobic(HlaPreSeq167) && medium(E4)	
large(HlaPreSeq167) && medium(E4)	
hydrophobic(HlaPreSeq171) && medium(E4)	
negative(HlaPreSeq173) && medium(E4)	
E5=Leu	
HlaPreSeq1=Gly && E5=Leu	-0.0122171
HlaPreSeq6=Arg && E5=Leu	
HlaPreSeq9=Ser && E5=Leu	
HlaPreSeq11=Ser && E5=Leu	
HlaPreSeq12=Val && E5=Leu	
HlaPreSeq14=Trp && E5=Leu	
HlaPreSeq16=Gly && E5=Leu	
HlaPreSeq17=Arg && E5=Leu	
HlaPreSeq21=Arg && E5=Leu	
HlaPreSeq24=Ala && E5=Leu	-0.0170644
HlaPreSeq30=Asp && E5=Leu	
HlaPreSeq32=Gln && E5=Leu	
HlaPreSeq35=Arg && E5=Leu	
HlaPreSeq41=Ala && E5=Leu	
HlaPreSeq43=Pro && E5=Leu	
HlaPreSeq44=Arg && E5=Leu	
HlaPreSeq45=Gly && E5=Leu	0.0159766
HlaPreSeq46=Glu && E5=Leu	
HlaPreSeq49=Glu && E5=Leu	
HlaPreSeq52=Val && E5=Leu	0.0159776
HlaPreSeq56=Gly && E5=Leu	-0.0125007
HlaPreSeq62=Arg && E5=Leu	
HlaPreSeq63=Glu && E5=Leu	
HlaPreSeq65=Gln && E5=Leu	
HlaPreSeq66=Lys && E5=Leu	0.0173949
HlaPreSeq67=Tyr && E5=Leu	0.0146811
HlaPreSeq69=Arg && E5=Leu	0.0159615
HlaPreSeq70=Gln && E5=Leu	
HlaPreSeq71=Ala && E5=Leu	0.0141985
HlaPreSeq73=Ala && E5=Leu	0.0186683
HlaPreSeq74=Asp && E5=Leu	
HlaPreSeq76=Val && E5=Leu	
HlaPreSeq77=Asn && E5=Leu	0.0164633
HlaPreSeq79=Arg && E5=Leu	
HlaPreSeq80=Lys && E5=Leu	0.0179967
HlaPreSeq81=Leu && E5=Leu	
HlaPreSeq82=Arg && E5=Leu	

HlaPreSeq83=Gly && E5=Leu	
HlaPreSeq90=Asp && E5=Leu	0.0110668
HlaPreSeq91=Gly && E5=Leu	
HlaPreSeq94=Thr && E5=Leu	
HlaPreSeq95=Leu && E5=Leu	
HlaPreSeq97=Arg && E5=Leu	
HlaPreSeq99=Phe && E5=Leu	
HlaPreSeq103=Leu && E5=Leu	0.0152816
HlaPreSeq105=Pro && E5=Leu	
HlaPreSeq107=Gly && E5=Leu	
HlaPreSeq109=Leu && E5=Leu	
HlaPreSeq113=Tyr && E5=Leu	0.0122182
HlaPreSeq114=Asn && E5=Leu	
HlaPreSeq116=Phe && E5=Leu	
HlaPreSeq127=Asn && E5=Leu	-0.0140354
HlaPreSeq131=Arg && E5=Leu	
HlaPreSeq138=Thr && E5=Leu	
HlaPreSeq142=Ile && E5=Leu	-0.0149649
HlaPreSeq143=Thr && E5=Leu	
HlaPreSeq144=Gln && E5=Leu	
HlaPreSeq145=Arg && E5=Leu	-0.0170346
HlaPreSeq147=Trp && E5=Leu	
HlaPreSeq149=Ala && E5=Leu	
HlaPreSeq150=Ala && E5=Leu	
HlaPreSeq151=Arg && E5=Leu	
HlaPreSeq152=Glu && E5=Leu	-0.0149798
HlaPreSeq156=Arg && E5=Leu	
HlaPreSeq158=Ala && E5=Leu	
HlaPreSeq161=Glu && E5=Leu	
HlaPreSeq163=Thr && E5=Leu	0.0137805
HlaPreSeq166=Glu && E5=Leu	
HlaPreSeq167=Trp && E5=Leu	
HlaPreSeq171=Tyr && E5=Leu	
HlaPreSeq173=Glu && E5=Leu	
aliphatic(E5)	
aliphatic(HlaPreSeq1) && aliphatic(E5)	
hydrophobic(HlaPreSeq1) && aliphatic(E5)	
small(HlaPreSeq1) && aliphatic(E5)	
small(HlaPreSeq9) && aliphatic(E5)	
polar(HlaPreSeq9) && aliphatic(E5)	
polar(HlaPreSeq11) && aliphatic(E5)	
aliphatic(HlaPreSeq12) && aliphatic(E5)	
medium(HlaPreSeq12) && aliphatic(E5)	
cyclic(HlaPreSeq14) && aliphatic(E5)	
aromatic(HlaPreSeq14) && aliphatic(E5)	
buried(HlaPreSeq14) && aliphatic(E5)	
hydrophobic(HlaPreSeq14) && aliphatic(E5)	

aliphatic(HlaPreSeq16) && aliphatic(E5)	
hydrophobic(HlaPreSeq16) && aliphatic(E5)	
large(HlaPreSeq17) && aliphatic(E5)	
positive(HlaPreSeq17) && aliphatic(E5)	
charged(HlaPreSeq17) && aliphatic(E5)	
aliphatic(HlaPreSeq24) && aliphatic(E5)	
buried(HlaPreSeq24) && aliphatic(E5)	
hydrophobic(HlaPreSeq24) && aliphatic(E5)	
small(HlaPreSeq24) && aliphatic(E5)	
medium(HlaPreSeq30) && aliphatic(E5)	
negative(HlaPreSeq30) && aliphatic(E5)	
charged(HlaPreSeq30) && aliphatic(E5)	
polar(HlaPreSeq30) && aliphatic(E5)	
polar(HlaPreSeq32) && aliphatic(E5)	
positive(HlaPreSeq35) && aliphatic(E5)	
charged(HlaPreSeq35) && aliphatic(E5)	
aliphatic(HlaPreSeq41) && aliphatic(E5)	
buried(HlaPreSeq41) && aliphatic(E5)	
hydrophobic(HlaPreSeq41) && aliphatic(E5)	
small(HlaPreSeq41) && aliphatic(E5)	
cyclic(HlaPreSeq43) && aliphatic(E5)	
hydrophobic(HlaPreSeq43) && aliphatic(E5)	
medium(HlaPreSeq43) && aliphatic(E5)	
aliphatic(HlaPreSeq45) && aliphatic(E5)	
hydrophobic(HlaPreSeq45) && aliphatic(E5)	
small(HlaPreSeq45) && aliphatic(E5)	
large(HlaPreSeq46) && aliphatic(E5)	
negative(HlaPreSeq46) && aliphatic(E5)	
charged(HlaPreSeq46) && aliphatic(E5)	
polar(HlaPreSeq46) && aliphatic(E5)	
large(HlaPreSeq49) && aliphatic(E5)	
negative(HlaPreSeq49) && aliphatic(E5)	
charged(HlaPreSeq49) && aliphatic(E5)	
polar(HlaPreSeq49) && aliphatic(E5)	
medium(HlaPreSeq52) && aliphatic(E5)	
aliphatic(HlaPreSeq56) && aliphatic(E5)	
hydrophobic(HlaPreSeq56) && aliphatic(E5)	
small(HlaPreSeq56) && aliphatic(E5)	
large(HlaPreSeq62) && aliphatic(E5)	
positive(HlaPreSeq62) && aliphatic(E5)	0.0216208
charged(HlaPreSeq62) && aliphatic(E5)	0.00980927
polar(HlaPreSeq62) && aliphatic(E5)	
large(HlaPreSeq63) && aliphatic(E5)	
negative(HlaPreSeq63) && aliphatic(E5)	
charged(HlaPreSeq63) && aliphatic(E5)	
large(HlaPreSeq65) && aliphatic(E5)	
polar(HlaPreSeq65) && aliphatic(E5)	

large(HlaPreSeq66) && aliphatic(E5)	0.0152646
positive(HlaPreSeq66) && aliphatic(E5)	
charged(HlaPreSeq66) && aliphatic(E5)	
polar(HlaPreSeq66) && aliphatic(E5)	
cyclic(HlaPreSeq67) && aliphatic(E5)	0.0183739
aromatic(HlaPreSeq67) && aliphatic(E5)	0.0182496
hydrophobic(HlaPreSeq67) && aliphatic(E5)	
large(HlaPreSeq67) && aliphatic(E5)	0.0187374
large(HlaPreSeq69) && aliphatic(E5)	
positive(HlaPreSeq69) && aliphatic(E5)	
charged(HlaPreSeq69) && aliphatic(E5)	
polar(HlaPreSeq69) && aliphatic(E5)	
large(HlaPreSeq70) && aliphatic(E5)	0.0182052
aliphatic(HlaPreSeq71) && aliphatic(E5)	
buried(HlaPreSeq71) && aliphatic(E5)	
hydrophobic(HlaPreSeq71) && aliphatic(E5)	
small(HlaPreSeq71) && aliphatic(E5)	
aliphatic(HlaPreSeq73) && aliphatic(E5)	
buried(HlaPreSeq73) && aliphatic(E5)	
hydrophobic(HlaPreSeq73) && aliphatic(E5)	
small(HlaPreSeq73) && aliphatic(E5)	
medium(HlaPreSeq74) && aliphatic(E5)	
negative(HlaPreSeq74) && aliphatic(E5)	
charged(HlaPreSeq74) && aliphatic(E5)	
polar(HlaPreSeq74) && aliphatic(E5)	
aliphatic(HlaPreSeq76) && aliphatic(E5)	0.00675429
buried(HlaPreSeq76) && aliphatic(E5)	0.00693908
hydrophobic(HlaPreSeq76) && aliphatic(E5)	0.00724124
medium(HlaPreSeq76) && aliphatic(E5)	
medium(HlaPreSeq77) && aliphatic(E5)	
large(HlaPreSeq79) && aliphatic(E5)	
positive(HlaPreSeq79) && aliphatic(E5)	
charged(HlaPreSeq79) && aliphatic(E5)	
polar(HlaPreSeq79) && aliphatic(E5)	
large(HlaPreSeq80) && aliphatic(E5)	
positive(HlaPreSeq80) && aliphatic(E5)	
charged(HlaPreSeq80) && aliphatic(E5)	
polar(HlaPreSeq80) && aliphatic(E5)	
large(HlaPreSeq81) && aliphatic(E5)	
positive(HlaPreSeq82) && aliphatic(E5)	
charged(HlaPreSeq82) && aliphatic(E5)	
polar(HlaPreSeq82) && aliphatic(E5)	
aliphatic(HlaPreSeq83) && aliphatic(E5)	
hydrophobic(HlaPreSeq83) && aliphatic(E5)	
small(HlaPreSeq83) && aliphatic(E5)	
medium(HlaPreSeq90) && aliphatic(E5)	
negative(HlaPreSeq90) && aliphatic(E5)	

charged(HlaPreSeq90) && aliphatic(E5)	
polar(HlaPreSeq90) && aliphatic(E5)	
aliphatic(HlaPreSeq91) && aliphatic(E5)	
hydrophobic(HlaPreSeq91) && aliphatic(E5)	
small(HlaPreSeq91) && aliphatic(E5)	
medium(HlaPreSeq94) && aliphatic(E5)	
polar(HlaPreSeq94) && aliphatic(E5)	
aliphatic(HlaPreSeq95) && aliphatic(E5)	
large(HlaPreSeq95) && aliphatic(E5)	
large(HlaPreSeq97) && aliphatic(E5)	
positive(HlaPreSeq97) && aliphatic(E5)	
charged(HlaPreSeq97) && aliphatic(E5)	
polar(HlaPreSeq97) && aliphatic(E5)	0.0179824
cyclic(HlaPreSeq99) && aliphatic(E5)	
aromatic(HlaPreSeq99) && aliphatic(E5)	
buried(HlaPreSeq99) && aliphatic(E5)	
hydrophobic(HlaPreSeq99) && aliphatic(E5)	
large(HlaPreSeq99) && aliphatic(E5)	
large(HlaPreSeq103) && aliphatic(E5)	
cyclic(HlaPreSeq105) && aliphatic(E5)	
hydrophobic(HlaPreSeq105) && aliphatic(E5)	
medium(HlaPreSeq105) && aliphatic(E5)	
aliphatic(HlaPreSeq107) && aliphatic(E5)	-0.0143967
small(HlaPreSeq107) && aliphatic(E5)	-0.0156484
aliphatic(HlaPreSeq109) && aliphatic(E5)	
hydrophobic(HlaPreSeq113) && aliphatic(E5)	
medium(HlaPreSeq114) && aliphatic(E5)	
cyclic(HlaPreSeq116) && aliphatic(E5)	
aromatic(HlaPreSeq116) && aliphatic(E5)	
buried(HlaPreSeq116) && aliphatic(E5)	
hydrophobic(HlaPreSeq116) && aliphatic(E5)	
large(HlaPreSeq116) && aliphatic(E5)	
medium(HlaPreSeq127) && aliphatic(E5)	
large(HlaPreSeq131) && aliphatic(E5)	
positive(HlaPreSeq131) && aliphatic(E5)	
charged(HlaPreSeq131) && aliphatic(E5)	
medium(HlaPreSeq138) && aliphatic(E5)	
polar(HlaPreSeq138) && aliphatic(E5)	
aliphatic(HlaPreSeq142) && aliphatic(E5)	-0.0193432
buried(HlaPreSeq142) && aliphatic(E5)	-0.0199436
hydrophobic(HlaPreSeq142) && aliphatic(E5)	-0.0201675
large(HlaPreSeq142) && aliphatic(E5)	-0.0200482
medium(HlaPreSeq143) && aliphatic(E5)	
positive(HlaPreSeq145) && aliphatic(E5)	
charged(HlaPreSeq145) && aliphatic(E5)	
polar(HlaPreSeq145) && aliphatic(E5)	
cyclic(HlaPreSeq147) && aliphatic(E5)	

aromatic(HlaPreSeq147) && aliphatic(E5)	
aliphatic(HlaPreSeq149) && aliphatic(E5)	
buried(HlaPreSeq149) && aliphatic(E5)	
hydrophobic(HlaPreSeq149) && aliphatic(E5)	
small(HlaPreSeq149) && aliphatic(E5)	
small(HlaPreSeq150) && aliphatic(E5)	-0.00954818
large(HlaPreSeq152) && aliphatic(E5)	
negative(HlaPreSeq152) && aliphatic(E5)	
charged(HlaPreSeq152) && aliphatic(E5)	
polar(HlaPreSeq152) && aliphatic(E5)	
large(HlaPreSeq156) && aliphatic(E5)	
positive(HlaPreSeq156) && aliphatic(E5)	0.0193188
charged(HlaPreSeq156) && aliphatic(E5)	
polar(HlaPreSeq156) && aliphatic(E5)	
aliphatic(HlaPreSeq158) && aliphatic(E5)	
buried(HlaPreSeq158) && aliphatic(E5)	
hydrophobic(HlaPreSeq158) && aliphatic(E5)	
small(HlaPreSeq158) && aliphatic(E5)	-0.0098598
large(HlaPreSeq161) && aliphatic(E5)	
medium(HlaPreSeq163) && aliphatic(E5)	
polar(HlaPreSeq163) && aliphatic(E5)	
large(HlaPreSeq166) && aliphatic(E5)	
cyclic(HlaPreSeq167) && aliphatic(E5)	
aromatic(HlaPreSeq167) && aliphatic(E5)	
buried(HlaPreSeq167) && aliphatic(E5)	
hydrophobic(HlaPreSeq167) && aliphatic(E5)	
large(HlaPreSeq167) && aliphatic(E5)	
hydrophobic(HlaPreSeq171) && aliphatic(E5)	
negative(HlaPreSeq173) && aliphatic(E5)	
buried(E5)	
aliphatic(HlaPreSeq1) && buried(E5)	
hydrophobic(HlaPreSeq1) && buried(E5)	
small(HlaPreSeq1) && buried(E5)	
small(HlaPreSeq9) && buried(E5)	
polar(HlaPreSeq9) && buried(E5)	
polar(HlaPreSeq11) && buried(E5)	
aliphatic(HlaPreSeq12) && buried(E5)	
medium(HlaPreSeq12) && buried(E5)	
cyclic(HlaPreSeq14) && buried(E5)	
aromatic(HlaPreSeq14) && buried(E5)	
buried(HlaPreSeq14) && buried(E5)	
hydrophobic(HlaPreSeq14) && buried(E5)	
aliphatic(HlaPreSeq16) && buried(E5)	
hydrophobic(HlaPreSeq16) && buried(E5)	
large(HlaPreSeq17) && buried(E5)	
positive(HlaPreSeq17) && buried(E5)	
charged(HlaPreSeq17) && buried(E5)	

aliphatic(HIaPreSeq24) && buried(E5)	
buried(HIaPreSeq24) && buried(E5)	
hydrophobic(HIaPreSeq24) && buried(E5)	
small(HIaPreSeq24) && buried(E5)	
medium(HIaPreSeq30) && buried(E5)	
negative(HIaPreSeq30) && buried(E5)	
charged(HIaPreSeq30) && buried(E5)	
polar(HIaPreSeq30) && buried(E5)	
polar(HIaPreSeq32) && buried(E5)	
positive(HIaPreSeq35) && buried(E5)	
charged(HIaPreSeq35) && buried(E5)	
aliphatic(HIaPreSeq41) && buried(E5)	
buried(HIaPreSeq41) && buried(E5)	
hydrophobic(HIaPreSeq41) && buried(E5)	
small(HIaPreSeq41) && buried(E5)	
cyclic(HIaPreSeq43) && buried(E5)	
hydrophobic(HIaPreSeq43) && buried(E5)	
medium(HIaPreSeq43) && buried(E5)	
aliphatic(HIaPreSeq45) && buried(E5)	
hydrophobic(HIaPreSeq45) && buried(E5)	
small(HIaPreSeq45) && buried(E5)	
large(HIaPreSeq46) && buried(E5)	
negative(HIaPreSeq46) && buried(E5)	
charged(HIaPreSeq46) && buried(E5)	
polar(HIaPreSeq46) && buried(E5)	
large(HIaPreSeq49) && buried(E5)	
negative(HIaPreSeq49) && buried(E5)	
charged(HIaPreSeq49) && buried(E5)	
polar(HIaPreSeq49) && buried(E5)	
medium(HIaPreSeq52) && buried(E5)	
aliphatic(HIaPreSeq56) && buried(E5)	
hydrophobic(HIaPreSeq56) && buried(E5)	
small(HIaPreSeq56) && buried(E5)	
large(HIaPreSeq62) && buried(E5)	0.0354224
positive(HIaPreSeq62) && buried(E5)	0.0305367
charged(HIaPreSeq62) && buried(E5)	0.0246688
polar(HIaPreSeq62) && buried(E5)	0.0289694
large(HIaPreSeq63) && buried(E5)	
negative(HIaPreSeq63) && buried(E5)	-0.0135784
charged(HIaPreSeq63) && buried(E5)	-0.0131109
large(HIaPreSeq65) && buried(E5)	
polar(HIaPreSeq65) && buried(E5)	
large(HIaPreSeq66) && buried(E5)	
positive(HIaPreSeq66) && buried(E5)	
charged(HIaPreSeq66) && buried(E5)	
polar(HIaPreSeq66) && buried(E5)	
cyclic(HIaPreSeq67) && buried(E5)	

aromatic(HIaPreSeq67) && buried(E5)	
hydrophobic(HIaPreSeq67) && buried(E5)	
large(HIaPreSeq67) && buried(E5)	
large(HIaPreSeq69) && buried(E5)	
positive(HIaPreSeq69) && buried(E5)	
charged(HIaPreSeq69) && buried(E5)	
polar(HIaPreSeq69) && buried(E5)	
large(HIaPreSeq70) && buried(E5)	0.0137096
aliphatic(HIaPreSeq71) && buried(E5)	
buried(HIaPreSeq71) && buried(E5)	
hydrophobic(HIaPreSeq71) && buried(E5)	
small(HIaPreSeq71) && buried(E5)	
aliphatic(HIaPreSeq73) && buried(E5)	
buried(HIaPreSeq73) && buried(E5)	
hydrophobic(HIaPreSeq73) && buried(E5)	
small(HIaPreSeq73) && buried(E5)	
medium(HIaPreSeq74) && buried(E5)	0.0306069
negative(HIaPreSeq74) && buried(E5)	0.0312523
charged(HIaPreSeq74) && buried(E5)	
polar(HIaPreSeq74) && buried(E5)	
aliphatic(HIaPreSeq76) && buried(E5)	
buried(HIaPreSeq76) && buried(E5)	
hydrophobic(HIaPreSeq76) && buried(E5)	
medium(HIaPreSeq76) && buried(E5)	
medium(HIaPreSeq77) && buried(E5)	
large(HIaPreSeq79) && buried(E5)	0.006097
positive(HIaPreSeq79) && buried(E5)	0.00715634
charged(HIaPreSeq79) && buried(E5)	0.0080846
polar(HIaPreSeq79) && buried(E5)	0.00885518
large(HIaPreSeq80) && buried(E5)	
positive(HIaPreSeq80) && buried(E5)	
charged(HIaPreSeq80) && buried(E5)	
polar(HIaPreSeq80) && buried(E5)	
large(HIaPreSeq81) && buried(E5)	
positive(HIaPreSeq82) && buried(E5)	
charged(HIaPreSeq82) && buried(E5)	
polar(HIaPreSeq82) && buried(E5)	
aliphatic(HIaPreSeq83) && buried(E5)	
hydrophobic(HIaPreSeq83) && buried(E5)	
small(HIaPreSeq83) && buried(E5)	
medium(HIaPreSeq90) && buried(E5)	
negative(HIaPreSeq90) && buried(E5)	
charged(HIaPreSeq90) && buried(E5)	
polar(HIaPreSeq90) && buried(E5)	
aliphatic(HIaPreSeq91) && buried(E5)	
hydrophobic(HIaPreSeq91) && buried(E5)	
small(HIaPreSeq91) && buried(E5)	

medium(HIaPreSeq94) && buried(E5)	
polar(HIaPreSeq94) && buried(E5)	
aliphatic(HIaPreSeq95) && buried(E5)	
large(HIaPreSeq95) && buried(E5)	0.0182947
large(HIaPreSeq97) && buried(E5)	0.0174885
positive(HIaPreSeq97) && buried(E5)	
charged(HIaPreSeq97) && buried(E5)	
polar(HIaPreSeq97) && buried(E5)	
cyclic(HIaPreSeq99) && buried(E5)	
aromatic(HIaPreSeq99) && buried(E5)	
buried(HIaPreSeq99) && buried(E5)	
hydrophobic(HIaPreSeq99) && buried(E5)	
large(HIaPreSeq99) && buried(E5)	
large(HIaPreSeq103) && buried(E5)	
cyclic(HIaPreSeq105) && buried(E5)	
hydrophobic(HIaPreSeq105) && buried(E5)	
medium(HIaPreSeq105) && buried(E5)	
aliphatic(HIaPreSeq107) && buried(E5)	0.0230449
small(HIaPreSeq107) && buried(E5)	0.0214746
aliphatic(HIaPreSeq109) && buried(E5)	
hydrophobic(HIaPreSeq113) && buried(E5)	
medium(HIaPreSeq114) && buried(E5)	
cyclic(HIaPreSeq116) && buried(E5)	
aromatic(HIaPreSeq116) && buried(E5)	
buried(HIaPreSeq116) && buried(E5)	0.018112
hydrophobic(HIaPreSeq116) && buried(E5)	
large(HIaPreSeq116) && buried(E5)	
medium(HIaPreSeq127) && buried(E5)	
large(HIaPreSeq131) && buried(E5)	-0.0113786
positive(HIaPreSeq131) && buried(E5)	-0.0121947
charged(HIaPreSeq131) && buried(E5)	-0.0126883
medium(HIaPreSeq138) && buried(E5)	
polar(HIaPreSeq138) && buried(E5)	
aliphatic(HIaPreSeq142) && buried(E5)	
buried(HIaPreSeq142) && buried(E5)	
hydrophobic(HIaPreSeq142) && buried(E5)	
large(HIaPreSeq142) && buried(E5)	
medium(HIaPreSeq143) && buried(E5)	
positive(HIaPreSeq145) && buried(E5)	
charged(HIaPreSeq145) && buried(E5)	
polar(HIaPreSeq145) && buried(E5)	
cyclic(HIaPreSeq147) && buried(E5)	0.0127968
aromatic(HIaPreSeq147) && buried(E5)	
aliphatic(HIaPreSeq149) && buried(E5)	
buried(HIaPreSeq149) && buried(E5)	
hydrophobic(HIaPreSeq149) && buried(E5)	
small(HIaPreSeq149) && buried(E5)	

small(HIaPreSeq150) && buried(E5)	
large(HIaPreSeq152) && buried(E5)	
negative(HIaPreSeq152) && buried(E5)	0.0149683
charged(HIaPreSeq152) && buried(E5)	0.0123977
polar(HIaPreSeq152) && buried(E5)	0.013982
large(HIaPreSeq156) && buried(E5)	0.0149644
positive(HIaPreSeq156) && buried(E5)	
charged(HIaPreSeq156) && buried(E5)	
polar(HIaPreSeq156) && buried(E5)	
aliphatic(HIaPreSeq158) && buried(E5)	
buried(HIaPreSeq158) && buried(E5)	
hydrophobic(HIaPreSeq158) && buried(E5)	
small(HIaPreSeq158) && buried(E5)	
large(HIaPreSeq161) && buried(E5)	
medium(HIaPreSeq163) && buried(E5)	
polar(HIaPreSeq163) && buried(E5)	
large(HIaPreSeq166) && buried(E5)	
cyclic(HIaPreSeq167) && buried(E5)	
aromatic(HIaPreSeq167) && buried(E5)	
buried(HIaPreSeq167) && buried(E5)	
hydrophobic(HIaPreSeq167) && buried(E5)	
large(HIaPreSeq167) && buried(E5)	
hydrophobic(HIaPreSeq171) && buried(E5)	
negative(HIaPreSeq173) && buried(E5)	
hydrophobic(E5)	
aliphatic(HIaPreSeq1) && hydrophobic(E5)	0.0128106
hydrophobic(HIaPreSeq1) && hydrophobic(E5)	0.0139789
small(HIaPreSeq1) && hydrophobic(E5)	0.0141222
small(HIaPreSeq9) && hydrophobic(E5)	-0.0211472
polar(HIaPreSeq9) && hydrophobic(E5)	
polar(HIaPreSeq11) && hydrophobic(E5)	
aliphatic(HIaPreSeq12) && hydrophobic(E5)	
medium(HIaPreSeq12) && hydrophobic(E5)	
cyclic(HIaPreSeq14) && hydrophobic(E5)	
aromatic(HIaPreSeq14) && hydrophobic(E5)	
buried(HIaPreSeq14) && hydrophobic(E5)	
hydrophobic(HIaPreSeq14) && hydrophobic(E5)	
aliphatic(HIaPreSeq16) && hydrophobic(E5)	
hydrophobic(HIaPreSeq16) && hydrophobic(E5)	
large(HIaPreSeq17) && hydrophobic(E5)	
positive(HIaPreSeq17) && hydrophobic(E5)	
charged(HIaPreSeq17) && hydrophobic(E5)	
aliphatic(HIaPreSeq24) && hydrophobic(E5)	
buried(HIaPreSeq24) && hydrophobic(E5)	
hydrophobic(HIaPreSeq24) && hydrophobic(E5)	
small(HIaPreSeq24) && hydrophobic(E5)	
medium(HIaPreSeq30) && hydrophobic(E5)	

negative(HlaPreSeq30) && hydrophobic(E5)
charged(HlaPreSeq30) && hydrophobic(E5)
polar(HlaPreSeq30) && hydrophobic(E5)
polar(HlaPreSeq32) && hydrophobic(E5)
positive(HlaPreSeq35) && hydrophobic(E5)
charged(HlaPreSeq35) && hydrophobic(E5)
aliphatic(HlaPreSeq41) && hydrophobic(E5)
buried(HlaPreSeq41) && hydrophobic(E5)
hydrophobic(HlaPreSeq41) && hydrophobic(E5)
small(HlaPreSeq41) && hydrophobic(E5)
cyclic(HlaPreSeq43) && hydrophobic(E5)
hydrophobic(HlaPreSeq43) && hydrophobic(E5)
medium(HlaPreSeq43) && hydrophobic(E5)
aliphatic(HlaPreSeq45) && hydrophobic(E5)
hydrophobic(HlaPreSeq45) && hydrophobic(E5)
small(HlaPreSeq45) && hydrophobic(E5)
large(HlaPreSeq46) && hydrophobic(E5)
negative(HlaPreSeq46) && hydrophobic(E5)
charged(HlaPreSeq46) && hydrophobic(E5)
polar(HlaPreSeq46) && hydrophobic(E5)
large(HlaPreSeq49) && hydrophobic(E5)
negative(HlaPreSeq49) && hydrophobic(E5)
charged(HlaPreSeq49) && hydrophobic(E5)
polar(HlaPreSeq49) && hydrophobic(E5)
medium(HlaPreSeq52) && hydrophobic(E5)
aliphatic(HlaPreSeq56) && hydrophobic(E5)
hydrophobic(HlaPreSeq56) && hydrophobic(E5)
small(HlaPreSeq56) && hydrophobic(E5)
large(HlaPreSeq62) && hydrophobic(E5)
positive(HlaPreSeq62) && hydrophobic(E5)
charged(HlaPreSeq62) && hydrophobic(E5)
polar(HlaPreSeq62) && hydrophobic(E5)
large(HlaPreSeq63) && hydrophobic(E5)
negative(HlaPreSeq63) && hydrophobic(E5)
charged(HlaPreSeq63) && hydrophobic(E5)
large(HlaPreSeq65) && hydrophobic(E5)
polar(HlaPreSeq65) && hydrophobic(E5)
large(HlaPreSeq66) && hydrophobic(E5)
positive(HlaPreSeq66) && hydrophobic(E5)
charged(HlaPreSeq66) && hydrophobic(E5)
polar(HlaPreSeq66) && hydrophobic(E5)
cyclic(HlaPreSeq67) && hydrophobic(E5)
aromatic(HlaPreSeq67) && hydrophobic(E5)
hydrophobic(HlaPreSeq67) && hydrophobic(E5)
large(HlaPreSeq67) && hydrophobic(E5)
large(HlaPreSeq69) && hydrophobic(E5)
positive(HlaPreSeq69) && hydrophobic(E5)

charged(HIaPreSeq69) && hydrophobic(E5)	
polar(HIaPreSeq69) && hydrophobic(E5)	
large(HIaPreSeq70) && hydrophobic(E5)	0.00983148
aliphatic(HIaPreSeq71) && hydrophobic(E5)	
buried(HIaPreSeq71) && hydrophobic(E5)	
hydrophobic(HIaPreSeq71) && hydrophobic(E5)	
small(HIaPreSeq71) && hydrophobic(E5)	
aliphatic(HIaPreSeq73) && hydrophobic(E5)	
buried(HIaPreSeq73) && hydrophobic(E5)	
hydrophobic(HIaPreSeq73) && hydrophobic(E5)	
small(HIaPreSeq73) && hydrophobic(E5)	
medium(HIaPreSeq74) && hydrophobic(E5)	
negative(HIaPreSeq74) && hydrophobic(E5)	
charged(HIaPreSeq74) && hydrophobic(E5)	
polar(HIaPreSeq74) && hydrophobic(E5)	
aliphatic(HIaPreSeq76) && hydrophobic(E5)	
buried(HIaPreSeq76) && hydrophobic(E5)	
hydrophobic(HIaPreSeq76) && hydrophobic(E5)	
medium(HIaPreSeq76) && hydrophobic(E5)	
medium(HIaPreSeq77) && hydrophobic(E5)	
large(HIaPreSeq79) && hydrophobic(E5)	
positive(HIaPreSeq79) && hydrophobic(E5)	
charged(HIaPreSeq79) && hydrophobic(E5)	
polar(HIaPreSeq79) && hydrophobic(E5)	
large(HIaPreSeq80) && hydrophobic(E5)	
positive(HIaPreSeq80) && hydrophobic(E5)	
charged(HIaPreSeq80) && hydrophobic(E5)	
polar(HIaPreSeq80) && hydrophobic(E5)	
large(HIaPreSeq81) && hydrophobic(E5)	
positive(HIaPreSeq82) && hydrophobic(E5)	
charged(HIaPreSeq82) && hydrophobic(E5)	
polar(HIaPreSeq82) && hydrophobic(E5)	
aliphatic(HIaPreSeq83) && hydrophobic(E5)	
hydrophobic(HIaPreSeq83) && hydrophobic(E5)	
small(HIaPreSeq83) && hydrophobic(E5)	
medium(HIaPreSeq90) && hydrophobic(E5)	
negative(HIaPreSeq90) && hydrophobic(E5)	
charged(HIaPreSeq90) && hydrophobic(E5)	
polar(HIaPreSeq90) && hydrophobic(E5)	
aliphatic(HIaPreSeq91) && hydrophobic(E5)	
hydrophobic(HIaPreSeq91) && hydrophobic(E5)	
small(HIaPreSeq91) && hydrophobic(E5)	
medium(HIaPreSeq94) && hydrophobic(E5)	
polar(HIaPreSeq94) && hydrophobic(E5)	
aliphatic(HIaPreSeq95) && hydrophobic(E5)	-0.0198623
large(HIaPreSeq95) && hydrophobic(E5)	
large(HIaPreSeq97) && hydrophobic(E5)	

positive(HlaPreSeq97) && hydrophobic(E5)	
charged(HlaPreSeq97) && hydrophobic(E5)	
polar(HlaPreSeq97) && hydrophobic(E5)	
cyclic(HlaPreSeq99) && hydrophobic(E5)	
aromatic(HlaPreSeq99) && hydrophobic(E5)	
buried(HlaPreSeq99) && hydrophobic(E5)	
hydrophobic(HlaPreSeq99) && hydrophobic(E5)	
large(HlaPreSeq99) && hydrophobic(E5)	
large(HlaPreSeq103) && hydrophobic(E5)	
cyclic(HlaPreSeq105) && hydrophobic(E5)	
hydrophobic(HlaPreSeq105) && hydrophobic(E5)	
medium(HlaPreSeq105) && hydrophobic(E5)	
aliphatic(HlaPreSeq107) && hydrophobic(E5)	
small(HlaPreSeq107) && hydrophobic(E5)	
aliphatic(HlaPreSeq109) && hydrophobic(E5)	
hydrophobic(HlaPreSeq113) && hydrophobic(E5)	
medium(HlaPreSeq114) && hydrophobic(E5)	
cyclic(HlaPreSeq116) && hydrophobic(E5)	
aromatic(HlaPreSeq116) && hydrophobic(E5)	
buried(HlaPreSeq116) && hydrophobic(E5)	
hydrophobic(HlaPreSeq116) && hydrophobic(E5)	
large(HlaPreSeq116) && hydrophobic(E5)	
medium(HlaPreSeq127) && hydrophobic(E5)	
large(HlaPreSeq131) && hydrophobic(E5)	-0.00927708
positive(HlaPreSeq131) && hydrophobic(E5)	
charged(HlaPreSeq131) && hydrophobic(E5)	
medium(HlaPreSeq138) && hydrophobic(E5)	
polar(HlaPreSeq138) && hydrophobic(E5)	
aliphatic(HlaPreSeq142) && hydrophobic(E5)	
buried(HlaPreSeq142) && hydrophobic(E5)	
hydrophobic(HlaPreSeq142) && hydrophobic(E5)	
large(HlaPreSeq142) && hydrophobic(E5)	
medium(HlaPreSeq143) && hydrophobic(E5)	
positive(HlaPreSeq145) && hydrophobic(E5)	
charged(HlaPreSeq145) && hydrophobic(E5)	
polar(HlaPreSeq145) && hydrophobic(E5)	
cyclic(HlaPreSeq147) && hydrophobic(E5)	
aromatic(HlaPreSeq147) && hydrophobic(E5)	
aliphatic(HlaPreSeq149) && hydrophobic(E5)	
buried(HlaPreSeq149) && hydrophobic(E5)	
hydrophobic(HlaPreSeq149) && hydrophobic(E5)	
small(HlaPreSeq149) && hydrophobic(E5)	
small(HlaPreSeq150) && hydrophobic(E5)	
large(HlaPreSeq152) && hydrophobic(E5)	
negative(HlaPreSeq152) && hydrophobic(E5)	
charged(HlaPreSeq152) && hydrophobic(E5)	
polar(HlaPreSeq152) && hydrophobic(E5)	

large(HIaPreSeq156) && hydrophobic(E5)	
positive(HIaPreSeq156) && hydrophobic(E5)	
charged(HIaPreSeq156) && hydrophobic(E5)	
polar(HIaPreSeq156) && hydrophobic(E5)	
aliphatic(HIaPreSeq158) && hydrophobic(E5)	
buried(HIaPreSeq158) && hydrophobic(E5)	
hydrophobic(HIaPreSeq158) && hydrophobic(E5)	
small(HIaPreSeq158) && hydrophobic(E5)	
large(HIaPreSeq161) && hydrophobic(E5)	
medium(HIaPreSeq163) && hydrophobic(E5)	-0.0164439
polar(HIaPreSeq163) && hydrophobic(E5)	
large(HIaPreSeq166) && hydrophobic(E5)	
cyclic(HIaPreSeq167) && hydrophobic(E5)	
aromatic(HIaPreSeq167) && hydrophobic(E5)	
buried(HIaPreSeq167) && hydrophobic(E5)	
hydrophobic(HIaPreSeq167) && hydrophobic(E5)	
large(HIaPreSeq167) && hydrophobic(E5)	
hydrophobic(HIaPreSeq171) && hydrophobic(E5)	
negative(HIaPreSeq173) && hydrophobic(E5)	
large(E5)	
aliphatic(HIaPreSeq1) && large(E5)	0.0106899
hydrophobic(HIaPreSeq1) && large(E5)	0.0099014
small(HIaPreSeq1) && large(E5)	0.00898275
small(HIaPreSeq9) && large(E5)	
polar(HIaPreSeq9) && large(E5)	0.0163417
polar(HIaPreSeq11) && large(E5)	
aliphatic(HIaPreSeq12) && large(E5)	
medium(HIaPreSeq12) && large(E5)	
cyclic(HIaPreSeq14) && large(E5)	
aromatic(HIaPreSeq14) && large(E5)	
buried(HIaPreSeq14) && large(E5)	
hydrophobic(HIaPreSeq14) && large(E5)	
aliphatic(HIaPreSeq16) && large(E5)	
hydrophobic(HIaPreSeq16) && large(E5)	
large(HIaPreSeq17) && large(E5)	
positive(HIaPreSeq17) && large(E5)	
charged(HIaPreSeq17) && large(E5)	
aliphatic(HIaPreSeq24) && large(E5)	
buried(HIaPreSeq24) && large(E5)	
hydrophobic(HIaPreSeq24) && large(E5)	
small(HIaPreSeq24) && large(E5)	
medium(HIaPreSeq30) && large(E5)	
negative(HIaPreSeq30) && large(E5)	
charged(HIaPreSeq30) && large(E5)	
polar(HIaPreSeq30) && large(E5)	
polar(HIaPreSeq32) && large(E5)	
positive(HIaPreSeq35) && large(E5)	

charged(HlaPreSeq35) && large(E5)	
aliphatic(HlaPreSeq41) && large(E5)	
buried(HlaPreSeq41) && large(E5)	
hydrophobic(HlaPreSeq41) && large(E5)	
small(HlaPreSeq41) && large(E5)	
cyclic(HlaPreSeq43) && large(E5)	
hydrophobic(HlaPreSeq43) && large(E5)	
medium(HlaPreSeq43) && large(E5)	
aliphatic(HlaPreSeq45) && large(E5)	
hydrophobic(HlaPreSeq45) && large(E5)	
small(HlaPreSeq45) && large(E5)	
large(HlaPreSeq46) && large(E5)	
negative(HlaPreSeq46) && large(E5)	
charged(HlaPreSeq46) && large(E5)	
polar(HlaPreSeq46) && large(E5)	
large(HlaPreSeq49) && large(E5)	
negative(HlaPreSeq49) && large(E5)	
charged(HlaPreSeq49) && large(E5)	
polar(HlaPreSeq49) && large(E5)	
medium(HlaPreSeq52) && large(E5)	
aliphatic(HlaPreSeq56) && large(E5)	
hydrophobic(HlaPreSeq56) && large(E5)	
small(HlaPreSeq56) && large(E5)	
large(HlaPreSeq62) && large(E5)	
positive(HlaPreSeq62) && large(E5)	
charged(HlaPreSeq62) && large(E5)	
polar(HlaPreSeq62) && large(E5)	
large(HlaPreSeq63) && large(E5)	
negative(HlaPreSeq63) && large(E5)	
charged(HlaPreSeq63) && large(E5)	
large(HlaPreSeq65) && large(E5)	
polar(HlaPreSeq65) && large(E5)	
large(HlaPreSeq66) && large(E5)	
positive(HlaPreSeq66) && large(E5)	
charged(HlaPreSeq66) && large(E5)	
polar(HlaPreSeq66) && large(E5)	
cyclic(HlaPreSeq67) && large(E5)	-0.0207466
aromatic(HlaPreSeq67) && large(E5)	-0.0208185
hydrophobic(HlaPreSeq67) && large(E5)	
large(HlaPreSeq67) && large(E5)	
large(HlaPreSeq69) && large(E5)	
positive(HlaPreSeq69) && large(E5)	
charged(HlaPreSeq69) && large(E5)	
polar(HlaPreSeq69) && large(E5)	
large(HlaPreSeq70) && large(E5)	
aliphatic(HlaPreSeq71) && large(E5)	
buried(HlaPreSeq71) && large(E5)	

hydrophobic(HIaPreSeq71) && large(E5)	
small(HIaPreSeq71) && large(E5)	
aliphatic(HIaPreSeq73) && large(E5)	
buried(HIaPreSeq73) && large(E5)	
hydrophobic(HIaPreSeq73) && large(E5)	
small(HIaPreSeq73) && large(E5)	
medium(HIaPreSeq74) && large(E5)	0.0243268
negative(HIaPreSeq74) && large(E5)	
charged(HIaPreSeq74) && large(E5)	0.0205502
polar(HIaPreSeq74) && large(E5)	
aliphatic(HIaPreSeq76) && large(E5)	
buried(HIaPreSeq76) && large(E5)	
hydrophobic(HIaPreSeq76) && large(E5)	
medium(HIaPreSeq76) && large(E5)	
medium(HIaPreSeq77) && large(E5)	
large(HIaPreSeq79) && large(E5)	
positive(HIaPreSeq79) && large(E5)	
charged(HIaPreSeq79) && large(E5)	
polar(HIaPreSeq79) && large(E5)	
large(HIaPreSeq80) && large(E5)	-0.0175448
positive(HIaPreSeq80) && large(E5)	
charged(HIaPreSeq80) && large(E5)	
polar(HIaPreSeq80) && large(E5)	
large(HIaPreSeq81) && large(E5)	
positive(HIaPreSeq82) && large(E5)	
charged(HIaPreSeq82) && large(E5)	
polar(HIaPreSeq82) && large(E5)	
aliphatic(HIaPreSeq83) && large(E5)	
hydrophobic(HIaPreSeq83) && large(E5)	
small(HIaPreSeq83) && large(E5)	
medium(HIaPreSeq90) && large(E5)	
negative(HIaPreSeq90) && large(E5)	
charged(HIaPreSeq90) && large(E5)	
polar(HIaPreSeq90) && large(E5)	
aliphatic(HIaPreSeq91) && large(E5)	
hydrophobic(HIaPreSeq91) && large(E5)	
small(HIaPreSeq91) && large(E5)	
medium(HIaPreSeq94) && large(E5)	
polar(HIaPreSeq94) && large(E5)	
aliphatic(HIaPreSeq95) && large(E5)	
large(HIaPreSeq95) && large(E5)	-0.00342456
large(HIaPreSeq97) && large(E5)	
positive(HIaPreSeq97) && large(E5)	
charged(HIaPreSeq97) && large(E5)	
polar(HIaPreSeq97) && large(E5)	
cyclic(HIaPreSeq99) && large(E5)	
aromatic(HIaPreSeq99) && large(E5)	

buried(HlaPreSeq99) && large(E5)	
hydrophobic(HlaPreSeq99) && large(E5)	
large(HlaPreSeq99) && large(E5)	
large(HlaPreSeq103) && large(E5)	
cyclic(HlaPreSeq105) && large(E5)	
hydrophobic(HlaPreSeq105) && large(E5)	
medium(HlaPreSeq105) && large(E5)	
aliphatic(HlaPreSeq107) && large(E5)	
small(HlaPreSeq107) && large(E5)	
aliphatic(HlaPreSeq109) && large(E5)	
hydrophobic(HlaPreSeq113) && large(E5)	
medium(HlaPreSeq114) && large(E5)	
cyclic(HlaPreSeq116) && large(E5)	
aromatic(HlaPreSeq116) && large(E5)	
buried(HlaPreSeq116) && large(E5)	
hydrophobic(HlaPreSeq116) && large(E5)	
large(HlaPreSeq116) && large(E5)	
medium(HlaPreSeq127) && large(E5)	
large(HlaPreSeq131) && large(E5)	
positive(HlaPreSeq131) && large(E5)	
charged(HlaPreSeq131) && large(E5)	
medium(HlaPreSeq138) && large(E5)	
polar(HlaPreSeq138) && large(E5)	
aliphatic(HlaPreSeq142) && large(E5)	
buried(HlaPreSeq142) && large(E5)	
hydrophobic(HlaPreSeq142) && large(E5)	
large(HlaPreSeq142) && large(E5)	
medium(HlaPreSeq143) && large(E5)	
positive(HlaPreSeq145) && large(E5)	
charged(HlaPreSeq145) && large(E5)	
polar(HlaPreSeq145) && large(E5)	
cyclic(HlaPreSeq147) && large(E5)	
aromatic(HlaPreSeq147) && large(E5)	
aliphatic(HlaPreSeq149) && large(E5)	
buried(HlaPreSeq149) && large(E5)	
hydrophobic(HlaPreSeq149) && large(E5)	
small(HlaPreSeq149) && large(E5)	
small(HlaPreSeq150) && large(E5)	
large(HlaPreSeq152) && large(E5)	
negative(HlaPreSeq152) && large(E5)	
charged(HlaPreSeq152) && large(E5)	
polar(HlaPreSeq152) && large(E5)	
large(HlaPreSeq156) && large(E5)	-0.00735608
positive(HlaPreSeq156) && large(E5)	
charged(HlaPreSeq156) && large(E5)	
polar(HlaPreSeq156) && large(E5)	
aliphatic(HlaPreSeq158) && large(E5)	

buried(HlaPreSeq158) && large(E5)	
hydrophobic(HlaPreSeq158) && large(E5)	
small(HlaPreSeq158) && large(E5)	
large(HlaPreSeq161) && large(E5)	
medium(HlaPreSeq163) && large(E5)	0.022577
polar(HlaPreSeq163) && large(E5)	
large(HlaPreSeq166) && large(E5)	
cyclic(HlaPreSeq167) && large(E5)	
aromatic(HlaPreSeq167) && large(E5)	
buried(HlaPreSeq167) && large(E5)	
hydrophobic(HlaPreSeq167) && large(E5)	
large(HlaPreSeq167) && large(E5)	
hydrophobic(HlaPreSeq171) && large(E5)	
negative(HlaPreSeq173) && large(E5)	
E6=Thr	
HlaPreSeq1=Gly && E6=Thr	
HlaPreSeq6=Arg && E6=Thr	
HlaPreSeq9=Ser && E6=Thr	
HlaPreSeq11=Ser && E6=Thr	
HlaPreSeq12=Val && E6=Thr	0.0214882
HlaPreSeq14=Trp && E6=Thr	
HlaPreSeq16=Gly && E6=Thr	
HlaPreSeq17=Arg && E6=Thr	
HlaPreSeq21=Arg && E6=Thr	
HlaPreSeq24=Ala && E6=Thr	
HlaPreSeq30=Asp && E6=Thr	
HlaPreSeq32=Gln && E6=Thr	
HlaPreSeq35=Arg && E6=Thr	
HlaPreSeq41=Ala && E6=Thr	
HlaPreSeq43=Pro && E6=Thr	
HlaPreSeq44=Arg && E6=Thr	
HlaPreSeq45=Gly && E6=Thr	
HlaPreSeq46=Glu && E6=Thr	
HlaPreSeq49=Glu && E6=Thr	
HlaPreSeq52=Val && E6=Thr	
HlaPreSeq56=Gly && E6=Thr	
HlaPreSeq62=Arg && E6=Thr	
HlaPreSeq63=Glu && E6=Thr	
HlaPreSeq65=Gln && E6=Thr	
HlaPreSeq66=Lys && E6=Thr	
HlaPreSeq67=Tyr && E6=Thr	
HlaPreSeq69=Arg && E6=Thr	
HlaPreSeq70=Gln && E6=Thr	
HlaPreSeq71=Ala && E6=Thr	0.0117277
HlaPreSeq73=Ala && E6=Thr	
HlaPreSeq74=Asp && E6=Thr	0.0179896
HlaPreSeq76=Val && E6=Thr	

HlaPreSeq77=Asn && E6=Thr	
HlaPreSeq79=Arg && E6=Thr	
HlaPreSeq80=Lys && E6=Thr	
HlaPreSeq81=Leu && E6=Thr	
HlaPreSeq82=Arg && E6=Thr	
HlaPreSeq83=Gly && E6=Thr	
HlaPreSeq90=Asp && E6=Thr	
HlaPreSeq91=Gly && E6=Thr	
HlaPreSeq94=Thr && E6=Thr	0.0117613
HlaPreSeq95=Leu && E6=Thr	0.0130287
HlaPreSeq97=Arg && E6=Thr	
HlaPreSeq99=Phe && E6=Thr	
HlaPreSeq103=Leu && E6=Thr	
HlaPreSeq105=Pro && E6=Thr	0.0212947
HlaPreSeq107=Gly && E6=Thr	0.0140523
HlaPreSeq109=Leu && E6=Thr	
HlaPreSeq113=Tyr && E6=Thr	0.0144838
HlaPreSeq114=Asn && E6=Thr	0.0110764
HlaPreSeq116=Phe && E6=Thr	0.0227405
HlaPreSeq127=Asn && E6=Thr	0.0161971
HlaPreSeq131=Arg && E6=Thr	
HlaPreSeq138=Thr && E6=Thr	
HlaPreSeq142=Ile && E6=Thr	0.0153573
HlaPreSeq143=Thr && E6=Thr	
HlaPreSeq144=Gln && E6=Thr	
HlaPreSeq145=Arg && E6=Thr	0.0128946
HlaPreSeq147=Trp && E6=Thr	0.0103852
HlaPreSeq149=Ala && E6=Thr	
HlaPreSeq150=Ala && E6=Thr	
HlaPreSeq151=Arg && E6=Thr	
HlaPreSeq152=Glu && E6=Thr	
HlaPreSeq156=Arg && E6=Thr	0.0187264
HlaPreSeq158=Ala && E6=Thr	
HlaPreSeq161=Glu && E6=Thr	0.0121967
HlaPreSeq163=Thr && E6=Thr	
HlaPreSeq166=Glu && E6=Thr	
HlaPreSeq167=Trp && E6=Thr	
HlaPreSeq171=Tyr && E6=Thr	
HlaPreSeq173=Glu && E6=Thr	
medium(E6)	0.00922356
aliphatic(HlaPreSeq1) && medium(E6)	0.0122809
hydrophobic(HlaPreSeq1) && medium(E6)	0.013259
small(HlaPreSeq1) && medium(E6)	0.013852
small(HlaPreSeq9) && medium(E6)	
polar(HlaPreSeq9) && medium(E6)	-0.0107794
polar(HlaPreSeq11) && medium(E6)	0.0221266
aliphatic(HlaPreSeq12) && medium(E6)	0.0318603

medium(HlaPreSeq12) && medium(E6)	0.0305996
cyclic(HlaPreSeq14) && medium(E6)	
aromatic(HlaPreSeq14) && medium(E6)	
buried(HlaPreSeq14) && medium(E6)	
hydrophobic(HlaPreSeq14) && medium(E6)	
aliphatic(HlaPreSeq16) && medium(E6)	
hydrophobic(HlaPreSeq16) && medium(E6)	
large(HlaPreSeq17) && medium(E6)	
positive(HlaPreSeq17) && medium(E6)	
charged(HlaPreSeq17) && medium(E6)	
aliphatic(HlaPreSeq24) && medium(E6)	
buried(HlaPreSeq24) && medium(E6)	
hydrophobic(HlaPreSeq24) && medium(E6)	
small(HlaPreSeq24) && medium(E6)	
medium(HlaPreSeq30) && medium(E6)	-0.00604989
negative(HlaPreSeq30) && medium(E6)	-0.00755864
charged(HlaPreSeq30) && medium(E6)	-0.00875659
polar(HlaPreSeq30) && medium(E6)	-0.00962588
polar(HlaPreSeq32) && medium(E6)	
positive(HlaPreSeq35) && medium(E6)	
charged(HlaPreSeq35) && medium(E6)	
aliphatic(HlaPreSeq41) && medium(E6)	
buried(HlaPreSeq41) && medium(E6)	
hydrophobic(HlaPreSeq41) && medium(E6)	
small(HlaPreSeq41) && medium(E6)	
cyclic(HlaPreSeq43) && medium(E6)	
hydrophobic(HlaPreSeq43) && medium(E6)	
medium(HlaPreSeq43) && medium(E6)	
aliphatic(HlaPreSeq45) && medium(E6)	
hydrophobic(HlaPreSeq45) && medium(E6)	0.0163846
small(HlaPreSeq45) && medium(E6)	
large(HlaPreSeq46) && medium(E6)	-0.013333
negative(HlaPreSeq46) && medium(E6)	-0.0137106
charged(HlaPreSeq46) && medium(E6)	-0.0137938
polar(HlaPreSeq46) && medium(E6)	-0.013619
large(HlaPreSeq49) && medium(E6)	
negative(HlaPreSeq49) && medium(E6)	
charged(HlaPreSeq49) && medium(E6)	
polar(HlaPreSeq49) && medium(E6)	
medium(HlaPreSeq52) && medium(E6)	
aliphatic(HlaPreSeq56) && medium(E6)	
hydrophobic(HlaPreSeq56) && medium(E6)	
small(HlaPreSeq56) && medium(E6)	
large(HlaPreSeq62) && medium(E6)	
positive(HlaPreSeq62) && medium(E6)	
charged(HlaPreSeq62) && medium(E6)	
polar(HlaPreSeq62) && medium(E6)	

large(HlaPreSeq63) && medium(E6)	
negative(HlaPreSeq63) && medium(E6)	
charged(HlaPreSeq63) && medium(E6)	
large(HlaPreSeq65) && medium(E6)	
polar(HlaPreSeq65) && medium(E6)	
large(HlaPreSeq66) && medium(E6)	
positive(HlaPreSeq66) && medium(E6)	
charged(HlaPreSeq66) && medium(E6)	
polar(HlaPreSeq66) && medium(E6)	0.0100408
cyclic(HlaPreSeq67) && medium(E6)	
aromatic(HlaPreSeq67) && medium(E6)	
hydrophobic(HlaPreSeq67) && medium(E6)	
large(HlaPreSeq67) && medium(E6)	
large(HlaPreSeq69) && medium(E6)	
positive(HlaPreSeq69) && medium(E6)	
charged(HlaPreSeq69) && medium(E6)	
polar(HlaPreSeq69) && medium(E6)	
large(HlaPreSeq70) && medium(E6)	
aliphatic(HlaPreSeq71) && medium(E6)	0.0195601
buried(HlaPreSeq71) && medium(E6)	0.0195525
hydrophobic(HlaPreSeq71) && medium(E6)	0.0195414
small(HlaPreSeq71) && medium(E6)	0.0171374
aliphatic(HlaPreSeq73) && medium(E6)	
buried(HlaPreSeq73) && medium(E6)	
hydrophobic(HlaPreSeq73) && medium(E6)	
small(HlaPreSeq73) && medium(E6)	
medium(HlaPreSeq74) && medium(E6)	
negative(HlaPreSeq74) && medium(E6)	
charged(HlaPreSeq74) && medium(E6)	
polar(HlaPreSeq74) && medium(E6)	
aliphatic(HlaPreSeq76) && medium(E6)	
buried(HlaPreSeq76) && medium(E6)	
hydrophobic(HlaPreSeq76) && medium(E6)	
medium(HlaPreSeq76) && medium(E6)	
medium(HlaPreSeq77) && medium(E6)	-0.0267454
large(HlaPreSeq79) && medium(E6)	
positive(HlaPreSeq79) && medium(E6)	
charged(HlaPreSeq79) && medium(E6)	
polar(HlaPreSeq79) && medium(E6)	
large(HlaPreSeq80) && medium(E6)	
positive(HlaPreSeq80) && medium(E6)	
charged(HlaPreSeq80) && medium(E6)	
polar(HlaPreSeq80) && medium(E6)	
large(HlaPreSeq81) && medium(E6)	
positive(HlaPreSeq82) && medium(E6)	
charged(HlaPreSeq82) && medium(E6)	
polar(HlaPreSeq82) && medium(E6)	

aliphatic(HlaPreSeq83) && medium(E6)	
hydrophobic(HlaPreSeq83) && medium(E6)	
small(HlaPreSeq83) && medium(E6)	
medium(HlaPreSeq90) && medium(E6)	
negative(HlaPreSeq90) && medium(E6)	
charged(HlaPreSeq90) && medium(E6)	
polar(HlaPreSeq90) && medium(E6)	
aliphatic(HlaPreSeq91) && medium(E6)	
hydrophobic(HlaPreSeq91) && medium(E6)	
small(HlaPreSeq91) && medium(E6)	
medium(HlaPreSeq94) && medium(E6)	
polar(HlaPreSeq94) && medium(E6)	
aliphatic(HlaPreSeq95) && medium(E6)	
large(HlaPreSeq95) && medium(E6)	-0.0151571
large(HlaPreSeq97) && medium(E6)	0.0156009
positive(HlaPreSeq97) && medium(E6)	0.0165456
charged(HlaPreSeq97) && medium(E6)	0.0167177
polar(HlaPreSeq97) && medium(E6)	
cyclic(HlaPreSeq99) && medium(E6)	
aromatic(HlaPreSeq99) && medium(E6)	
buried(HlaPreSeq99) && medium(E6)	
hydrophobic(HlaPreSeq99) && medium(E6)	
large(HlaPreSeq99) && medium(E6)	
large(HlaPreSeq103) && medium(E6)	
cyclic(HlaPreSeq105) && medium(E6)	0.010328
hydrophobic(HlaPreSeq105) && medium(E6)	0.0105554
medium(HlaPreSeq105) && medium(E6)	0.0107354
aliphatic(HlaPreSeq107) && medium(E6)	
small(HlaPreSeq107) && medium(E6)	
aliphatic(HlaPreSeq109) && medium(E6)	
hydrophobic(HlaPreSeq113) && medium(E6)	
medium(HlaPreSeq114) && medium(E6)	0.00773696
cyclic(HlaPreSeq116) && medium(E6)	
aromatic(HlaPreSeq116) && medium(E6)	
buried(HlaPreSeq116) && medium(E6)	0.0249588
hydrophobic(HlaPreSeq116) && medium(E6)	
large(HlaPreSeq116) && medium(E6)	
medium(HlaPreSeq127) && medium(E6)	
large(HlaPreSeq131) && medium(E6)	-0.00456122
positive(HlaPreSeq131) && medium(E6)	-0.00431878
charged(HlaPreSeq131) && medium(E6)	-0.00408306
medium(HlaPreSeq138) && medium(E6)	
polar(HlaPreSeq138) && medium(E6)	
aliphatic(HlaPreSeq142) && medium(E6)	
buried(HlaPreSeq142) && medium(E6)	
hydrophobic(HlaPreSeq142) && medium(E6)	
large(HlaPreSeq142) && medium(E6)	

medium(HIaPreSeq143) && medium(E6)	
positive(HIaPreSeq145) && medium(E6)	
charged(HIaPreSeq145) && medium(E6)	
polar(HIaPreSeq145) && medium(E6)	
cyclic(HIaPreSeq147) && medium(E6)	
aromatic(HIaPreSeq147) && medium(E6)	
aliphatic(HIaPreSeq149) && medium(E6)	
buried(HIaPreSeq149) && medium(E6)	
hydrophobic(HIaPreSeq149) && medium(E6)	
small(HIaPreSeq149) && medium(E6)	
small(HIaPreSeq150) && medium(E6)	-0.0106056
large(HIaPreSeq152) && medium(E6)	-0.0141736
negative(HIaPreSeq152) && medium(E6)	-0.0155407
charged(HIaPreSeq152) && medium(E6)	-0.014333
polar(HIaPreSeq152) && medium(E6)	
large(HIaPreSeq156) && medium(E6)	0.0269339
positive(HIaPreSeq156) && medium(E6)	0.0324438
charged(HIaPreSeq156) && medium(E6)	
polar(HIaPreSeq156) && medium(E6)	
aliphatic(HIaPreSeq158) && medium(E6)	
buried(HIaPreSeq158) && medium(E6)	
hydrophobic(HIaPreSeq158) && medium(E6)	
small(HIaPreSeq158) && medium(E6)	-0.0107662
large(HIaPreSeq161) && medium(E6)	0.0211218
medium(HIaPreSeq163) && medium(E6)	
polar(HIaPreSeq163) && medium(E6)	
large(HIaPreSeq166) && medium(E6)	
cyclic(HIaPreSeq167) && medium(E6)	
aromatic(HIaPreSeq167) && medium(E6)	
buried(HIaPreSeq167) && medium(E6)	
hydrophobic(HIaPreSeq167) && medium(E6)	
large(HIaPreSeq167) && medium(E6)	
hydrophobic(HIaPreSeq171) && medium(E6)	-0.00918193
negative(HIaPreSeq173) && medium(E6)	
polar(E6)	-0.0172014
aliphatic(HIaPreSeq1) && polar(E6)	
hydrophobic(HIaPreSeq1) && polar(E6)	-0.00756456
small(HIaPreSeq1) && polar(E6)	-0.00783521
small(HIaPreSeq9) && polar(E6)	
polar(HIaPreSeq9) && polar(E6)	-0.0238071
polar(HIaPreSeq11) && polar(E6)	-0.0182893
aliphatic(HIaPreSeq12) && polar(E6)	
medium(HIaPreSeq12) && polar(E6)	
cyclic(HIaPreSeq14) && polar(E6)	
aromatic(HIaPreSeq14) && polar(E6)	
buried(HIaPreSeq14) && polar(E6)	
hydrophobic(HIaPreSeq14) && polar(E6)	

aliphatic(HIaPreSeq16) && polar(E6)	-0.0115179
hydrophobic(HIaPreSeq16) && polar(E6)	-0.0100729
large(HIaPreSeq17) && polar(E6)	
positive(HIaPreSeq17) && polar(E6)	
charged(HIaPreSeq17) && polar(E6)	
aliphatic(HIaPreSeq24) && polar(E6)	
buried(HIaPreSeq24) && polar(E6)	
hydrophobic(HIaPreSeq24) && polar(E6)	
small(HIaPreSeq24) && polar(E6)	
medium(HIaPreSeq30) && polar(E6)	
negative(HIaPreSeq30) && polar(E6)	
charged(HIaPreSeq30) && polar(E6)	
polar(HIaPreSeq30) && polar(E6)	
polar(HIaPreSeq32) && polar(E6)	
positive(HIaPreSeq35) && polar(E6)	-0.0208418
charged(HIaPreSeq35) && polar(E6)	-0.0185329
aliphatic(HIaPreSeq41) && polar(E6)	
buried(HIaPreSeq41) && polar(E6)	
hydrophobic(HIaPreSeq41) && polar(E6)	
small(HIaPreSeq41) && polar(E6)	
cyclic(HIaPreSeq43) && polar(E6)	
hydrophobic(HIaPreSeq43) && polar(E6)	
medium(HIaPreSeq43) && polar(E6)	
aliphatic(HIaPreSeq45) && polar(E6)	
hydrophobic(HIaPreSeq45) && polar(E6)	
small(HIaPreSeq45) && polar(E6)	
large(HIaPreSeq46) && polar(E6)	
negative(HIaPreSeq46) && polar(E6)	
charged(HIaPreSeq46) && polar(E6)	
polar(HIaPreSeq46) && polar(E6)	
large(HIaPreSeq49) && polar(E6)	
negative(HIaPreSeq49) && polar(E6)	
charged(HIaPreSeq49) && polar(E6)	
polar(HIaPreSeq49) && polar(E6)	
medium(HIaPreSeq52) && polar(E6)	
aliphatic(HIaPreSeq56) && polar(E6)	
hydrophobic(HIaPreSeq56) && polar(E6)	
small(HIaPreSeq56) && polar(E6)	
large(HIaPreSeq62) && polar(E6)	
positive(HIaPreSeq62) && polar(E6)	
charged(HIaPreSeq62) && polar(E6)	
polar(HIaPreSeq62) && polar(E6)	
large(HIaPreSeq63) && polar(E6)	
negative(HIaPreSeq63) && polar(E6)	
charged(HIaPreSeq63) && polar(E6)	
large(HIaPreSeq65) && polar(E6)	
polar(HIaPreSeq65) && polar(E6)	

large(HIaPreSeq66) && polar(E6)	
positive(HIaPreSeq66) && polar(E6)	
charged(HIaPreSeq66) && polar(E6)	
polar(HIaPreSeq66) && polar(E6)	
cyclic(HIaPreSeq67) && polar(E6)	0.0113928
aromatic(HIaPreSeq67) && polar(E6)	0.0113876
hydrophobic(HIaPreSeq67) && polar(E6)	
large(HIaPreSeq67) && polar(E6)	
large(HIaPreSeq69) && polar(E6)	
positive(HIaPreSeq69) && polar(E6)	
charged(HIaPreSeq69) && polar(E6)	
polar(HIaPreSeq69) && polar(E6)	
large(HIaPreSeq70) && polar(E6)	
aliphatic(HIaPreSeq71) && polar(E6)	
buried(HIaPreSeq71) && polar(E6)	
hydrophobic(HIaPreSeq71) && polar(E6)	
small(HIaPreSeq71) && polar(E6)	
aliphatic(HIaPreSeq73) && polar(E6)	
buried(HIaPreSeq73) && polar(E6)	
hydrophobic(HIaPreSeq73) && polar(E6)	
small(HIaPreSeq73) && polar(E6)	
medium(HIaPreSeq74) && polar(E6)	
negative(HIaPreSeq74) && polar(E6)	
charged(HIaPreSeq74) && polar(E6)	
polar(HIaPreSeq74) && polar(E6)	
aliphatic(HIaPreSeq76) && polar(E6)	
buried(HIaPreSeq76) && polar(E6)	
hydrophobic(HIaPreSeq76) && polar(E6)	
medium(HIaPreSeq76) && polar(E6)	
medium(HIaPreSeq77) && polar(E6)	
large(HIaPreSeq79) && polar(E6)	
positive(HIaPreSeq79) && polar(E6)	
charged(HIaPreSeq79) && polar(E6)	
polar(HIaPreSeq79) && polar(E6)	
large(HIaPreSeq80) && polar(E6)	
positive(HIaPreSeq80) && polar(E6)	
charged(HIaPreSeq80) && polar(E6)	
polar(HIaPreSeq80) && polar(E6)	
large(HIaPreSeq81) && polar(E6)	
positive(HIaPreSeq82) && polar(E6)	
charged(HIaPreSeq82) && polar(E6)	
polar(HIaPreSeq82) && polar(E6)	
aliphatic(HIaPreSeq83) && polar(E6)	
hydrophobic(HIaPreSeq83) && polar(E6)	
small(HIaPreSeq83) && polar(E6)	
medium(HIaPreSeq90) && polar(E6)	
negative(HIaPreSeq90) && polar(E6)	

charged(HlaPreSeq90) && polar(E6)	
polar(HlaPreSeq90) && polar(E6)	
aliphatic(HlaPreSeq91) && polar(E6)	
hydrophobic(HlaPreSeq91) && polar(E6)	
small(HlaPreSeq91) && polar(E6)	
medium(HlaPreSeq94) && polar(E6)	
polar(HlaPreSeq94) && polar(E6)	
aliphatic(HlaPreSeq95) && polar(E6)	
large(HlaPreSeq95) && polar(E6)	-0.0143295
large(HlaPreSeq97) && polar(E6)	
positive(HlaPreSeq97) && polar(E6)	-0.00671364
charged(HlaPreSeq97) && polar(E6)	-0.00628675
polar(HlaPreSeq97) && polar(E6)	-0.0092315
cyclic(HlaPreSeq99) && polar(E6)	
aromatic(HlaPreSeq99) && polar(E6)	
buried(HlaPreSeq99) && polar(E6)	
hydrophobic(HlaPreSeq99) && polar(E6)	
large(HlaPreSeq99) && polar(E6)	
large(HlaPreSeq103) && polar(E6)	
cyclic(HlaPreSeq105) && polar(E6)	
hydrophobic(HlaPreSeq105) && polar(E6)	
medium(HlaPreSeq105) && polar(E6)	
aliphatic(HlaPreSeq107) && polar(E6)	
small(HlaPreSeq107) && polar(E6)	
aliphatic(HlaPreSeq109) && polar(E6)	
hydrophobic(HlaPreSeq113) && polar(E6)	0.009293
medium(HlaPreSeq114) && polar(E6)	
cyclic(HlaPreSeq116) && polar(E6)	0.012981
aromatic(HlaPreSeq116) && polar(E6)	0.0126125
buried(HlaPreSeq116) && polar(E6)	
hydrophobic(HlaPreSeq116) && polar(E6)	0.0169612
large(HlaPreSeq116) && polar(E6)	0.0133718
medium(HlaPreSeq127) && polar(E6)	
large(HlaPreSeq131) && polar(E6)	
positive(HlaPreSeq131) && polar(E6)	
charged(HlaPreSeq131) && polar(E6)	
medium(HlaPreSeq138) && polar(E6)	
polar(HlaPreSeq138) && polar(E6)	
aliphatic(HlaPreSeq142) && polar(E6)	
buried(HlaPreSeq142) && polar(E6)	
hydrophobic(HlaPreSeq142) && polar(E6)	
large(HlaPreSeq142) && polar(E6)	
medium(HlaPreSeq143) && polar(E6)	
positive(HlaPreSeq145) && polar(E6)	
charged(HlaPreSeq145) && polar(E6)	
polar(HlaPreSeq145) && polar(E6)	
cyclic(HlaPreSeq147) && polar(E6)	

aromatic(HIaPreSeq147) && polar(E6)	
aliphatic(HIaPreSeq149) && polar(E6)	
buried(HIaPreSeq149) && polar(E6)	
hydrophobic(HIaPreSeq149) && polar(E6)	
small(HIaPreSeq149) && polar(E6)	
small(HIaPreSeq150) && polar(E6)	
large(HIaPreSeq152) && polar(E6)	
negative(HIaPreSeq152) && polar(E6)	
charged(HIaPreSeq152) && polar(E6)	
polar(HIaPreSeq152) && polar(E6)	
large(HIaPreSeq156) && polar(E6)	
positive(HIaPreSeq156) && polar(E6)	0.0175563
charged(HIaPreSeq156) && polar(E6)	
polar(HIaPreSeq156) && polar(E6)	0.015964
aliphatic(HIaPreSeq158) && polar(E6)	
buried(HIaPreSeq158) && polar(E6)	
hydrophobic(HIaPreSeq158) && polar(E6)	
small(HIaPreSeq158) && polar(E6)	
large(HIaPreSeq161) && polar(E6)	
medium(HIaPreSeq163) && polar(E6)	
polar(HIaPreSeq163) && polar(E6)	
large(HIaPreSeq166) && polar(E6)	
cyclic(HIaPreSeq167) && polar(E6)	
aromatic(HIaPreSeq167) && polar(E6)	
buried(HIaPreSeq167) && polar(E6)	
hydrophobic(HIaPreSeq167) && polar(E6)	
large(HIaPreSeq167) && polar(E6)	
hydrophobic(HIaPreSeq171) && polar(E6)	
negative(HIaPreSeq173) && polar(E6)	
E7=Phe	
HIaPreSeq1=Gly && E7=Phe	
HIaPreSeq6=Arg && E7=Phe	
HIaPreSeq9=Ser && E7=Phe	
HIaPreSeq11=Ser && E7=Phe	
HIaPreSeq12=Val && E7=Phe	
HIaPreSeq14=Trp && E7=Phe	
HIaPreSeq16=Gly && E7=Phe	
HIaPreSeq17=Arg && E7=Phe	
HIaPreSeq21=Arg && E7=Phe	
HIaPreSeq24=Ala && E7=Phe	
HIaPreSeq30=Asp && E7=Phe	
HIaPreSeq32=Gln && E7=Phe	
HIaPreSeq35=Arg && E7=Phe	
HIaPreSeq41=Ala && E7=Phe	
HIaPreSeq43=Pro && E7=Phe	
HIaPreSeq44=Arg && E7=Phe	
HIaPreSeq45=Gly && E7=Phe	

HlaPreSeq46=Glu && E7=Phe	
HlaPreSeq49=Glu && E7=Phe	
HlaPreSeq52=Val && E7=Phe	
HlaPreSeq56=Gly && E7=Phe	
HlaPreSeq62=Arg && E7=Phe	
HlaPreSeq63=Glu && E7=Phe	-0.015938
HlaPreSeq65=Gln && E7=Phe	
HlaPreSeq66=Lys && E7=Phe	-0.012549
HlaPreSeq67=Tyr && E7=Phe	
HlaPreSeq69=Arg && E7=Phe	
HlaPreSeq70=Gln && E7=Phe	
HlaPreSeq71=Ala && E7=Phe	
HlaPreSeq73=Ala && E7=Phe	
HlaPreSeq74=Asp && E7=Phe	
HlaPreSeq76=Val && E7=Phe	
HlaPreSeq77=Asn && E7=Phe	
HlaPreSeq79=Arg && E7=Phe	
HlaPreSeq80=Lys && E7=Phe	
HlaPreSeq81=Leu && E7=Phe	
HlaPreSeq82=Arg && E7=Phe	
HlaPreSeq83=Gly && E7=Phe	
HlaPreSeq90=Asp && E7=Phe	
HlaPreSeq91=Gly && E7=Phe	
HlaPreSeq94=Thr && E7=Phe	
HlaPreSeq95=Leu && E7=Phe	
HlaPreSeq97=Arg && E7=Phe	-0.00990896
HlaPreSeq99=Phe && E7=Phe	
HlaPreSeq103=Leu && E7=Phe	
HlaPreSeq105=Pro && E7=Phe	
HlaPreSeq107=Gly && E7=Phe	
HlaPreSeq109=Leu && E7=Phe	
HlaPreSeq113=Tyr && E7=Phe	
HlaPreSeq114=Asn && E7=Phe	
HlaPreSeq116=Phe && E7=Phe	
HlaPreSeq127=Asn && E7=Phe	-0.00121586
HlaPreSeq131=Arg && E7=Phe	
HlaPreSeq138=Thr && E7=Phe	
HlaPreSeq142=Ile && E7=Phe	
HlaPreSeq143=Thr && E7=Phe	
HlaPreSeq144=Gln && E7=Phe	
HlaPreSeq145=Arg && E7=Phe	
HlaPreSeq147=Trp && E7=Phe	
HlaPreSeq149=Ala && E7=Phe	
HlaPreSeq150=Ala && E7=Phe	
HlaPreSeq151=Arg && E7=Phe	
HlaPreSeq152=Glu && E7=Phe	
HlaPreSeq156=Arg && E7=Phe	

HlaPreSeq158=Ala && E7=Phe	
HlaPreSeq161=Glu && E7=Phe	
HlaPreSeq163=Thr && E7=Phe	
HlaPreSeq166=Glu && E7=Phe	
HlaPreSeq167=Trp && E7=Phe	
HlaPreSeq171=Tyr && E7=Phe	
HlaPreSeq173=Glu && E7=Phe	
cyclic(E7)	
aliphatic(HlaPreSeq1) && cyclic(E7)	
hydrophobic(HlaPreSeq1) && cyclic(E7)	
small(HlaPreSeq1) && cyclic(E7)	
small(HlaPreSeq9) && cyclic(E7)	
polar(HlaPreSeq9) && cyclic(E7)	
polar(HlaPreSeq11) && cyclic(E7)	0.0106565
aliphatic(HlaPreSeq12) && cyclic(E7)	
medium(HlaPreSeq12) && cyclic(E7)	
cyclic(HlaPreSeq14) && cyclic(E7)	
aromatic(HlaPreSeq14) && cyclic(E7)	
buried(HlaPreSeq14) && cyclic(E7)	
hydrophobic(HlaPreSeq14) && cyclic(E7)	
aliphatic(HlaPreSeq16) && cyclic(E7)	0.00842759
hydrophobic(HlaPreSeq16) && cyclic(E7)	0.00916672
large(HlaPreSeq17) && cyclic(E7)	0.011203
positive(HlaPreSeq17) && cyclic(E7)	0.0116314
charged(HlaPreSeq17) && cyclic(E7)	0.0119196
aliphatic(HlaPreSeq24) && cyclic(E7)	
buried(HlaPreSeq24) && cyclic(E7)	
hydrophobic(HlaPreSeq24) && cyclic(E7)	
small(HlaPreSeq24) && cyclic(E7)	
medium(HlaPreSeq30) && cyclic(E7)	
negative(HlaPreSeq30) && cyclic(E7)	
charged(HlaPreSeq30) && cyclic(E7)	
polar(HlaPreSeq30) && cyclic(E7)	
polar(HlaPreSeq32) && cyclic(E7)	
positive(HlaPreSeq35) && cyclic(E7)	
charged(HlaPreSeq35) && cyclic(E7)	
aliphatic(HlaPreSeq41) && cyclic(E7)	
buried(HlaPreSeq41) && cyclic(E7)	
hydrophobic(HlaPreSeq41) && cyclic(E7)	
small(HlaPreSeq41) && cyclic(E7)	
cyclic(HlaPreSeq43) && cyclic(E7)	
hydrophobic(HlaPreSeq43) && cyclic(E7)	
medium(HlaPreSeq43) && cyclic(E7)	
aliphatic(HlaPreSeq45) && cyclic(E7)	
hydrophobic(HlaPreSeq45) && cyclic(E7)	
small(HlaPreSeq45) && cyclic(E7)	
large(HlaPreSeq46) && cyclic(E7)	

negative(HlaPreSeq46) && cyclic(E7)	
charged(HlaPreSeq46) && cyclic(E7)	
polar(HlaPreSeq46) && cyclic(E7)	
large(HlaPreSeq49) && cyclic(E7)	
negative(HlaPreSeq49) && cyclic(E7)	
charged(HlaPreSeq49) && cyclic(E7)	
polar(HlaPreSeq49) && cyclic(E7)	
medium(HlaPreSeq52) && cyclic(E7)	
aliphatic(HlaPreSeq56) && cyclic(E7)	
hydrophobic(HlaPreSeq56) && cyclic(E7)	
small(HlaPreSeq56) && cyclic(E7)	
large(HlaPreSeq62) && cyclic(E7)	
positive(HlaPreSeq62) && cyclic(E7)	
charged(HlaPreSeq62) && cyclic(E7)	
polar(HlaPreSeq62) && cyclic(E7)	
large(HlaPreSeq63) && cyclic(E7)	
negative(HlaPreSeq63) && cyclic(E7)	
charged(HlaPreSeq63) && cyclic(E7)	
large(HlaPreSeq65) && cyclic(E7)	
polar(HlaPreSeq65) && cyclic(E7)	
large(HlaPreSeq66) && cyclic(E7)	
positive(HlaPreSeq66) && cyclic(E7)	
charged(HlaPreSeq66) && cyclic(E7)	
polar(HlaPreSeq66) && cyclic(E7)	
cyclic(HlaPreSeq67) && cyclic(E7)	
aromatic(HlaPreSeq67) && cyclic(E7)	
hydrophobic(HlaPreSeq67) && cyclic(E7)	0.0246181
large(HlaPreSeq67) && cyclic(E7)	
large(HlaPreSeq69) && cyclic(E7)	
positive(HlaPreSeq69) && cyclic(E7)	
charged(HlaPreSeq69) && cyclic(E7)	
polar(HlaPreSeq69) && cyclic(E7)	
large(HlaPreSeq70) && cyclic(E7)	
aliphatic(HlaPreSeq71) && cyclic(E7)	
buried(HlaPreSeq71) && cyclic(E7)	
hydrophobic(HlaPreSeq71) && cyclic(E7)	
small(HlaPreSeq71) && cyclic(E7)	
aliphatic(HlaPreSeq73) && cyclic(E7)	
buried(HlaPreSeq73) && cyclic(E7)	
hydrophobic(HlaPreSeq73) && cyclic(E7)	
small(HlaPreSeq73) && cyclic(E7)	
medium(HlaPreSeq74) && cyclic(E7)	
negative(HlaPreSeq74) && cyclic(E7)	
charged(HlaPreSeq74) && cyclic(E7)	
polar(HlaPreSeq74) && cyclic(E7)	
aliphatic(HlaPreSeq76) && cyclic(E7)	
buried(HlaPreSeq76) && cyclic(E7)	

hydrophobic(HlaPreSeq76) && cyclic(E7)
medium(HlaPreSeq76) && cyclic(E7)
medium(HlaPreSeq77) && cyclic(E7)
large(HlaPreSeq79) && cyclic(E7)
positive(HlaPreSeq79) && cyclic(E7)
charged(HlaPreSeq79) && cyclic(E7)
polar(HlaPreSeq79) && cyclic(E7)
large(HlaPreSeq80) && cyclic(E7)
positive(HlaPreSeq80) && cyclic(E7)
charged(HlaPreSeq80) && cyclic(E7)
polar(HlaPreSeq80) && cyclic(E7)
large(HlaPreSeq81) && cyclic(E7)
positive(HlaPreSeq82) && cyclic(E7)
charged(HlaPreSeq82) && cyclic(E7)
polar(HlaPreSeq82) && cyclic(E7)
aliphatic(HlaPreSeq83) && cyclic(E7)
hydrophobic(HlaPreSeq83) && cyclic(E7)
small(HlaPreSeq83) && cyclic(E7)
medium(HlaPreSeq90) && cyclic(E7)
negative(HlaPreSeq90) && cyclic(E7)
charged(HlaPreSeq90) && cyclic(E7)
polar(HlaPreSeq90) && cyclic(E7)
aliphatic(HlaPreSeq91) && cyclic(E7)
hydrophobic(HlaPreSeq91) && cyclic(E7)
small(HlaPreSeq91) && cyclic(E7)
medium(HlaPreSeq94) && cyclic(E7)
polar(HlaPreSeq94) && cyclic(E7)
aliphatic(HlaPreSeq95) && cyclic(E7)
large(HlaPreSeq95) && cyclic(E7)
large(HlaPreSeq97) && cyclic(E7)
positive(HlaPreSeq97) && cyclic(E7)
charged(HlaPreSeq97) && cyclic(E7)
polar(HlaPreSeq97) && cyclic(E7)
cyclic(HlaPreSeq99) && cyclic(E7)
aromatic(HlaPreSeq99) && cyclic(E7)
buried(HlaPreSeq99) && cyclic(E7)
hydrophobic(HlaPreSeq99) && cyclic(E7)
large(HlaPreSeq99) && cyclic(E7)
large(HlaPreSeq103) && cyclic(E7)
cyclic(HlaPreSeq105) && cyclic(E7)
hydrophobic(HlaPreSeq105) && cyclic(E7)
medium(HlaPreSeq105) && cyclic(E7)
aliphatic(HlaPreSeq107) && cyclic(E7)
small(HlaPreSeq107) && cyclic(E7)
aliphatic(HlaPreSeq109) && cyclic(E7)
hydrophobic(HlaPreSeq113) && cyclic(E7)
medium(HlaPreSeq114) && cyclic(E7)

cyclic(HlaPreSeq116) && cyclic(E7)	
aromatic(HlaPreSeq116) && cyclic(E7)	
buried(HlaPreSeq116) && cyclic(E7)	
hydrophobic(HlaPreSeq116) && cyclic(E7)	
large(HlaPreSeq116) && cyclic(E7)	
medium(HlaPreSeq127) && cyclic(E7)	
large(HlaPreSeq131) && cyclic(E7)	
positive(HlaPreSeq131) && cyclic(E7)	
charged(HlaPreSeq131) && cyclic(E7)	
medium(HlaPreSeq138) && cyclic(E7)	
polar(HlaPreSeq138) && cyclic(E7)	
aliphatic(HlaPreSeq142) && cyclic(E7)	
buried(HlaPreSeq142) && cyclic(E7)	
hydrophobic(HlaPreSeq142) && cyclic(E7)	
large(HlaPreSeq142) && cyclic(E7)	
medium(HlaPreSeq143) && cyclic(E7)	
positive(HlaPreSeq145) && cyclic(E7)	
charged(HlaPreSeq145) && cyclic(E7)	
polar(HlaPreSeq145) && cyclic(E7)	
cyclic(HlaPreSeq147) && cyclic(E7)	
aromatic(HlaPreSeq147) && cyclic(E7)	
aliphatic(HlaPreSeq149) && cyclic(E7)	
buried(HlaPreSeq149) && cyclic(E7)	
hydrophobic(HlaPreSeq149) && cyclic(E7)	
small(HlaPreSeq149) && cyclic(E7)	
small(HlaPreSeq150) && cyclic(E7)	
large(HlaPreSeq152) && cyclic(E7)	-0.0210795
negative(HlaPreSeq152) && cyclic(E7)	-0.0192558
charged(HlaPreSeq152) && cyclic(E7)	-0.0211734
polar(HlaPreSeq152) && cyclic(E7)	-0.0255726
large(HlaPreSeq156) && cyclic(E7)	
positive(HlaPreSeq156) && cyclic(E7)	
charged(HlaPreSeq156) && cyclic(E7)	
polar(HlaPreSeq156) && cyclic(E7)	
aliphatic(HlaPreSeq158) && cyclic(E7)	
buried(HlaPreSeq158) && cyclic(E7)	
hydrophobic(HlaPreSeq158) && cyclic(E7)	
small(HlaPreSeq158) && cyclic(E7)	
large(HlaPreSeq161) && cyclic(E7)	
medium(HlaPreSeq163) && cyclic(E7)	
polar(HlaPreSeq163) && cyclic(E7)	
large(HlaPreSeq166) && cyclic(E7)	
cyclic(HlaPreSeq167) && cyclic(E7)	
aromatic(HlaPreSeq167) && cyclic(E7)	
buried(HlaPreSeq167) && cyclic(E7)	
hydrophobic(HlaPreSeq167) && cyclic(E7)	
large(HlaPreSeq167) && cyclic(E7)	

hydrophobic(HIaPreSeq171) && cyclic(E7)	
negative(HIaPreSeq173) && cyclic(E7)	
aromatic(E7)	
aliphatic(HIaPreSeq1) && aromatic(E7)	
hydrophobic(HIaPreSeq1) && aromatic(E7)	
small(HIaPreSeq1) && aromatic(E7)	
small(HIaPreSeq9) && aromatic(E7)	
polar(HIaPreSeq9) && aromatic(E7)	0.011453
polar(HIaPreSeq11) && aromatic(E7)	
aliphatic(HIaPreSeq12) && aromatic(E7)	
medium(HIaPreSeq12) && aromatic(E7)	
cyclic(HIaPreSeq14) && aromatic(E7)	
aromatic(HIaPreSeq14) && aromatic(E7)	
buried(HIaPreSeq14) && aromatic(E7)	
hydrophobic(HIaPreSeq14) && aromatic(E7)	
aliphatic(HIaPreSeq16) && aromatic(E7)	
hydrophobic(HIaPreSeq16) && aromatic(E7)	
large(HIaPreSeq17) && aromatic(E7)	
positive(HIaPreSeq17) && aromatic(E7)	
charged(HIaPreSeq17) && aromatic(E7)	
aliphatic(HIaPreSeq24) && aromatic(E7)	
buried(HIaPreSeq24) && aromatic(E7)	
hydrophobic(HIaPreSeq24) && aromatic(E7)	
small(HIaPreSeq24) && aromatic(E7)	
medium(HIaPreSeq30) && aromatic(E7)	
negative(HIaPreSeq30) && aromatic(E7)	
charged(HIaPreSeq30) && aromatic(E7)	
polar(HIaPreSeq30) && aromatic(E7)	
polar(HIaPreSeq32) && aromatic(E7)	
positive(HIaPreSeq35) && aromatic(E7)	
charged(HIaPreSeq35) && aromatic(E7)	
aliphatic(HIaPreSeq41) && aromatic(E7)	
buried(HIaPreSeq41) && aromatic(E7)	
hydrophobic(HIaPreSeq41) && aromatic(E7)	
small(HIaPreSeq41) && aromatic(E7)	
cyclic(HIaPreSeq43) && aromatic(E7)	
hydrophobic(HIaPreSeq43) && aromatic(E7)	
medium(HIaPreSeq43) && aromatic(E7)	
aliphatic(HIaPreSeq45) && aromatic(E7)	
hydrophobic(HIaPreSeq45) && aromatic(E7)	
small(HIaPreSeq45) && aromatic(E7)	
large(HIaPreSeq46) && aromatic(E7)	
negative(HIaPreSeq46) && aromatic(E7)	
charged(HIaPreSeq46) && aromatic(E7)	
polar(HIaPreSeq46) && aromatic(E7)	
large(HIaPreSeq49) && aromatic(E7)	
negative(HIaPreSeq49) && aromatic(E7)	

charged(HlaPreSeq49) && aromatic(E7)	
polar(HlaPreSeq49) && aromatic(E7)	
medium(HlaPreSeq52) && aromatic(E7)	
aliphatic(HlaPreSeq56) && aromatic(E7)	
hydrophobic(HlaPreSeq56) && aromatic(E7)	
small(HlaPreSeq56) && aromatic(E7)	
large(HlaPreSeq62) && aromatic(E7)	
positive(HlaPreSeq62) && aromatic(E7)	
charged(HlaPreSeq62) && aromatic(E7)	
polar(HlaPreSeq62) && aromatic(E7)	
large(HlaPreSeq63) && aromatic(E7)	
negative(HlaPreSeq63) && aromatic(E7)	
charged(HlaPreSeq63) && aromatic(E7)	
large(HlaPreSeq65) && aromatic(E7)	
polar(HlaPreSeq65) && aromatic(E7)	
large(HlaPreSeq66) && aromatic(E7)	0.0297162
positive(HlaPreSeq66) && aromatic(E7)	0.0272738
charged(HlaPreSeq66) && aromatic(E7)	0.0271363
polar(HlaPreSeq66) && aromatic(E7)	
cyclic(HlaPreSeq67) && aromatic(E7)	0.00648903
aromatic(HlaPreSeq67) && aromatic(E7)	0.00648465
hydrophobic(HlaPreSeq67) && aromatic(E7)	
large(HlaPreSeq67) && aromatic(E7)	
large(HlaPreSeq69) && aromatic(E7)	
positive(HlaPreSeq69) && aromatic(E7)	
charged(HlaPreSeq69) && aromatic(E7)	
polar(HlaPreSeq69) && aromatic(E7)	
large(HlaPreSeq70) && aromatic(E7)	
aliphatic(HlaPreSeq71) && aromatic(E7)	
buried(HlaPreSeq71) && aromatic(E7)	
hydrophobic(HlaPreSeq71) && aromatic(E7)	
small(HlaPreSeq71) && aromatic(E7)	
aliphatic(HlaPreSeq73) && aromatic(E7)	
buried(HlaPreSeq73) && aromatic(E7)	
hydrophobic(HlaPreSeq73) && aromatic(E7)	
small(HlaPreSeq73) && aromatic(E7)	
medium(HlaPreSeq74) && aromatic(E7)	
negative(HlaPreSeq74) && aromatic(E7)	
charged(HlaPreSeq74) && aromatic(E7)	
polar(HlaPreSeq74) && aromatic(E7)	
aliphatic(HlaPreSeq76) && aromatic(E7)	
buried(HlaPreSeq76) && aromatic(E7)	
hydrophobic(HlaPreSeq76) && aromatic(E7)	
medium(HlaPreSeq76) && aromatic(E7)	
medium(HlaPreSeq77) && aromatic(E7)	
large(HlaPreSeq79) && aromatic(E7)	
positive(HlaPreSeq79) && aromatic(E7)	

charged(HlaPreSeq79) && aromatic(E7)	
polar(HlaPreSeq79) && aromatic(E7)	
large(HlaPreSeq80) && aromatic(E7)	
positive(HlaPreSeq80) && aromatic(E7)	
charged(HlaPreSeq80) && aromatic(E7)	
polar(HlaPreSeq80) && aromatic(E7)	
large(HlaPreSeq81) && aromatic(E7)	
positive(HlaPreSeq82) && aromatic(E7)	
charged(HlaPreSeq82) && aromatic(E7)	
polar(HlaPreSeq82) && aromatic(E7)	
aliphatic(HlaPreSeq83) && aromatic(E7)	
hydrophobic(HlaPreSeq83) && aromatic(E7)	
small(HlaPreSeq83) && aromatic(E7)	
medium(HlaPreSeq90) && aromatic(E7)	
negative(HlaPreSeq90) && aromatic(E7)	
charged(HlaPreSeq90) && aromatic(E7)	
polar(HlaPreSeq90) && aromatic(E7)	
aliphatic(HlaPreSeq91) && aromatic(E7)	
hydrophobic(HlaPreSeq91) && aromatic(E7)	
small(HlaPreSeq91) && aromatic(E7)	
medium(HlaPreSeq94) && aromatic(E7)	
polar(HlaPreSeq94) && aromatic(E7)	
aliphatic(HlaPreSeq95) && aromatic(E7)	
large(HlaPreSeq95) && aromatic(E7)	-0.0198261
large(HlaPreSeq97) && aromatic(E7)	
positive(HlaPreSeq97) && aromatic(E7)	
charged(HlaPreSeq97) && aromatic(E7)	
polar(HlaPreSeq97) && aromatic(E7)	0.027381
cyclic(HlaPreSeq99) && aromatic(E7)	
aromatic(HlaPreSeq99) && aromatic(E7)	
buried(HlaPreSeq99) && aromatic(E7)	
hydrophobic(HlaPreSeq99) && aromatic(E7)	
large(HlaPreSeq99) && aromatic(E7)	
large(HlaPreSeq103) && aromatic(E7)	
cyclic(HlaPreSeq105) && aromatic(E7)	
hydrophobic(HlaPreSeq105) && aromatic(E7)	
medium(HlaPreSeq105) && aromatic(E7)	
aliphatic(HlaPreSeq107) && aromatic(E7)	-0.0176072
small(HlaPreSeq107) && aromatic(E7)	-0.0176805
aliphatic(HlaPreSeq109) && aromatic(E7)	
hydrophobic(HlaPreSeq113) && aromatic(E7)	
medium(HlaPreSeq114) && aromatic(E7)	
cyclic(HlaPreSeq116) && aromatic(E7)	
aromatic(HlaPreSeq116) && aromatic(E7)	
buried(HlaPreSeq116) && aromatic(E7)	
hydrophobic(HlaPreSeq116) && aromatic(E7)	
large(HlaPreSeq116) && aromatic(E7)	

medium(HlaPreSeq127) && aromatic(E7)	
large(HlaPreSeq131) && aromatic(E7)	
positive(HlaPreSeq131) && aromatic(E7)	
charged(HlaPreSeq131) && aromatic(E7)	
medium(HlaPreSeq138) && aromatic(E7)	
polar(HlaPreSeq138) && aromatic(E7)	
aliphatic(HlaPreSeq142) && aromatic(E7)	
buried(HlaPreSeq142) && aromatic(E7)	
hydrophobic(HlaPreSeq142) && aromatic(E7)	
large(HlaPreSeq142) && aromatic(E7)	
medium(HlaPreSeq143) && aromatic(E7)	
positive(HlaPreSeq145) && aromatic(E7)	
charged(HlaPreSeq145) && aromatic(E7)	
polar(HlaPreSeq145) && aromatic(E7)	
cyclic(HlaPreSeq147) && aromatic(E7)	
aromatic(HlaPreSeq147) && aromatic(E7)	
aliphatic(HlaPreSeq149) && aromatic(E7)	
buried(HlaPreSeq149) && aromatic(E7)	
hydrophobic(HlaPreSeq149) && aromatic(E7)	
small(HlaPreSeq149) && aromatic(E7)	
small(HlaPreSeq150) && aromatic(E7)	
large(HlaPreSeq152) && aromatic(E7)	-0.0134837
negative(HlaPreSeq152) && aromatic(E7)	
charged(HlaPreSeq152) && aromatic(E7)	-0.0135175
polar(HlaPreSeq152) && aromatic(E7)	-0.0174447
large(HlaPreSeq156) && aromatic(E7)	
positive(HlaPreSeq156) && aromatic(E7)	
charged(HlaPreSeq156) && aromatic(E7)	
polar(HlaPreSeq156) && aromatic(E7)	
aliphatic(HlaPreSeq158) && aromatic(E7)	
buried(HlaPreSeq158) && aromatic(E7)	
hydrophobic(HlaPreSeq158) && aromatic(E7)	
small(HlaPreSeq158) && aromatic(E7)	
large(HlaPreSeq161) && aromatic(E7)	
medium(HlaPreSeq163) && aromatic(E7)	
polar(HlaPreSeq163) && aromatic(E7)	
large(HlaPreSeq166) && aromatic(E7)	
cyclic(HlaPreSeq167) && aromatic(E7)	
aromatic(HlaPreSeq167) && aromatic(E7)	
buried(HlaPreSeq167) && aromatic(E7)	
hydrophobic(HlaPreSeq167) && aromatic(E7)	
large(HlaPreSeq167) && aromatic(E7)	
hydrophobic(HlaPreSeq171) && aromatic(E7)	
negative(HlaPreSeq173) && aromatic(E7)	
buried(E7)	
aliphatic(HlaPreSeq1) && buried(E7)	
hydrophobic(HlaPreSeq1) && buried(E7)	

small(HIaPreSeq1) && buried(E7)	
small(HIaPreSeq9) && buried(E7)	
polar(HIaPreSeq9) && buried(E7)	
polar(HIaPreSeq11) && buried(E7)	
aliphatic(HIaPreSeq12) && buried(E7)	0.0165496
medium(HIaPreSeq12) && buried(E7)	0.0177784
cyclic(HIaPreSeq14) && buried(E7)	
aromatic(HIaPreSeq14) && buried(E7)	
buried(HIaPreSeq14) && buried(E7)	
hydrophobic(HIaPreSeq14) && buried(E7)	
aliphatic(HIaPreSeq16) && buried(E7)	
hydrophobic(HIaPreSeq16) && buried(E7)	
large(HIaPreSeq17) && buried(E7)	
positive(HIaPreSeq17) && buried(E7)	
charged(HIaPreSeq17) && buried(E7)	
aliphatic(HIaPreSeq24) && buried(E7)	0.0231482
buried(HIaPreSeq24) && buried(E7)	0.0237345
hydrophobic(HIaPreSeq24) && buried(E7)	0.0237245
small(HIaPreSeq24) && buried(E7)	
medium(HIaPreSeq30) && buried(E7)	
negative(HIaPreSeq30) && buried(E7)	
charged(HIaPreSeq30) && buried(E7)	
polar(HIaPreSeq30) && buried(E7)	
polar(HIaPreSeq32) && buried(E7)	
positive(HIaPreSeq35) && buried(E7)	
charged(HIaPreSeq35) && buried(E7)	
aliphatic(HIaPreSeq41) && buried(E7)	
buried(HIaPreSeq41) && buried(E7)	
hydrophobic(HIaPreSeq41) && buried(E7)	
small(HIaPreSeq41) && buried(E7)	
cyclic(HIaPreSeq43) && buried(E7)	
hydrophobic(HIaPreSeq43) && buried(E7)	
medium(HIaPreSeq43) && buried(E7)	
aliphatic(HIaPreSeq45) && buried(E7)	
hydrophobic(HIaPreSeq45) && buried(E7)	
small(HIaPreSeq45) && buried(E7)	
large(HIaPreSeq46) && buried(E7)	
negative(HIaPreSeq46) && buried(E7)	
charged(HIaPreSeq46) && buried(E7)	
polar(HIaPreSeq46) && buried(E7)	
large(HIaPreSeq49) && buried(E7)	
negative(HIaPreSeq49) && buried(E7)	
charged(HIaPreSeq49) && buried(E7)	
polar(HIaPreSeq49) && buried(E7)	
medium(HIaPreSeq52) && buried(E7)	
aliphatic(HIaPreSeq56) && buried(E7)	
hydrophobic(HIaPreSeq56) && buried(E7)	

small(HIaPreSeq56) && buried(E7)	
large(HIaPreSeq62) && buried(E7)	0.000401289
positive(HIaPreSeq62) && buried(E7)	
charged(HIaPreSeq62) && buried(E7)	
polar(HIaPreSeq62) && buried(E7)	-0.0113994
large(HIaPreSeq63) && buried(E7)	0.0220306
negative(HIaPreSeq63) && buried(E7)	
charged(HIaPreSeq63) && buried(E7)	
large(HIaPreSeq65) && buried(E7)	
polar(HIaPreSeq65) && buried(E7)	
large(HIaPreSeq66) && buried(E7)	0.0182299
positive(HIaPreSeq66) && buried(E7)	0.0169039
charged(HIaPreSeq66) && buried(E7)	0.0171805
polar(HIaPreSeq66) && buried(E7)	
cyclic(HIaPreSeq67) && buried(E7)	
aromatic(HIaPreSeq67) && buried(E7)	
hydrophobic(HIaPreSeq67) && buried(E7)	
large(HIaPreSeq67) && buried(E7)	
large(HIaPreSeq69) && buried(E7)	
positive(HIaPreSeq69) && buried(E7)	
charged(HIaPreSeq69) && buried(E7)	
polar(HIaPreSeq69) && buried(E7)	
large(HIaPreSeq70) && buried(E7)	
aliphatic(HIaPreSeq71) && buried(E7)	
buried(HIaPreSeq71) && buried(E7)	
hydrophobic(HIaPreSeq71) && buried(E7)	
small(HIaPreSeq71) && buried(E7)	
aliphatic(HIaPreSeq73) && buried(E7)	
buried(HIaPreSeq73) && buried(E7)	
hydrophobic(HIaPreSeq73) && buried(E7)	
small(HIaPreSeq73) && buried(E7)	
medium(HIaPreSeq74) && buried(E7)	
negative(HIaPreSeq74) && buried(E7)	
charged(HIaPreSeq74) && buried(E7)	
polar(HIaPreSeq74) && buried(E7)	
aliphatic(HIaPreSeq76) && buried(E7)	0.0143589
buried(HIaPreSeq76) && buried(E7)	0.0145256
hydrophobic(HIaPreSeq76) && buried(E7)	0.0145196
medium(HIaPreSeq76) && buried(E7)	
medium(HIaPreSeq77) && buried(E7)	
large(HIaPreSeq79) && buried(E7)	
positive(HIaPreSeq79) && buried(E7)	
charged(HIaPreSeq79) && buried(E7)	
polar(HIaPreSeq79) && buried(E7)	
large(HIaPreSeq80) && buried(E7)	
positive(HIaPreSeq80) && buried(E7)	
charged(HIaPreSeq80) && buried(E7)	

polar(HlaPreSeq80) && buried(E7)	
large(HlaPreSeq81) && buried(E7)	
positive(HlaPreSeq82) && buried(E7)	
charged(HlaPreSeq82) && buried(E7)	
polar(HlaPreSeq82) && buried(E7)	
aliphatic(HlaPreSeq83) && buried(E7)	
hydrophobic(HlaPreSeq83) && buried(E7)	
small(HlaPreSeq83) && buried(E7)	
medium(HlaPreSeq90) && buried(E7)	
negative(HlaPreSeq90) && buried(E7)	
charged(HlaPreSeq90) && buried(E7)	
polar(HlaPreSeq90) && buried(E7)	
aliphatic(HlaPreSeq91) && buried(E7)	
hydrophobic(HlaPreSeq91) && buried(E7)	
small(HlaPreSeq91) && buried(E7)	
medium(HlaPreSeq94) && buried(E7)	
polar(HlaPreSeq94) && buried(E7)	
aliphatic(HlaPreSeq95) && buried(E7)	
large(HlaPreSeq95) && buried(E7)	-0.00923466
large(HlaPreSeq97) && buried(E7)	
positive(HlaPreSeq97) && buried(E7)	0.0221416
charged(HlaPreSeq97) && buried(E7)	0.0211073
polar(HlaPreSeq97) && buried(E7)	
cyclic(HlaPreSeq99) && buried(E7)	
aromatic(HlaPreSeq99) && buried(E7)	
buried(HlaPreSeq99) && buried(E7)	
hydrophobic(HlaPreSeq99) && buried(E7)	
large(HlaPreSeq99) && buried(E7)	
large(HlaPreSeq103) && buried(E7)	0.00387159
cyclic(HlaPreSeq105) && buried(E7)	-0.00866005
hydrophobic(HlaPreSeq105) && buried(E7)	-0.00889681
medium(HlaPreSeq105) && buried(E7)	-0.00908378
aliphatic(HlaPreSeq107) && buried(E7)	-0.0041078
small(HlaPreSeq107) && buried(E7)	-0.00497329
aliphatic(HlaPreSeq109) && buried(E7)	
hydrophobic(HlaPreSeq113) && buried(E7)	0.0161513
medium(HlaPreSeq114) && buried(E7)	
cyclic(HlaPreSeq116) && buried(E7)	
aromatic(HlaPreSeq116) && buried(E7)	
buried(HlaPreSeq116) && buried(E7)	0.0229449
hydrophobic(HlaPreSeq116) && buried(E7)	0.0209977
large(HlaPreSeq116) && buried(E7)	
medium(HlaPreSeq127) && buried(E7)	
large(HlaPreSeq131) && buried(E7)	
positive(HlaPreSeq131) && buried(E7)	
charged(HlaPreSeq131) && buried(E7)	
medium(HlaPreSeq138) && buried(E7)	

polar(HIaPreSeq138) && buried(E7)	
aliphatic(HIaPreSeq142) && buried(E7)	-0.00900883
buried(HIaPreSeq142) && buried(E7)	-0.00951659
hydrophobic(HIaPreSeq142) && buried(E7)	-0.00979565
large(HIaPreSeq142) && buried(E7)	-0.00986539
medium(HIaPreSeq143) && buried(E7)	
positive(HIaPreSeq145) && buried(E7)	
charged(HIaPreSeq145) && buried(E7)	
polar(HIaPreSeq145) && buried(E7)	
cyclic(HIaPreSeq147) && buried(E7)	
aromatic(HIaPreSeq147) && buried(E7)	
aliphatic(HIaPreSeq149) && buried(E7)	
buried(HIaPreSeq149) && buried(E7)	
hydrophobic(HIaPreSeq149) && buried(E7)	
small(HIaPreSeq149) && buried(E7)	
small(HIaPreSeq150) && buried(E7)	
large(HIaPreSeq152) && buried(E7)	
negative(HIaPreSeq152) && buried(E7)	
charged(HIaPreSeq152) && buried(E7)	
polar(HIaPreSeq152) && buried(E7)	
large(HIaPreSeq156) && buried(E7)	
positive(HIaPreSeq156) && buried(E7)	
charged(HIaPreSeq156) && buried(E7)	
polar(HIaPreSeq156) && buried(E7)	
aliphatic(HIaPreSeq158) && buried(E7)	
buried(HIaPreSeq158) && buried(E7)	
hydrophobic(HIaPreSeq158) && buried(E7)	
small(HIaPreSeq158) && buried(E7)	0.00101233
large(HIaPreSeq161) && buried(E7)	
medium(HIaPreSeq163) && buried(E7)	
polar(HIaPreSeq163) && buried(E7)	
large(HIaPreSeq166) && buried(E7)	
cyclic(HIaPreSeq167) && buried(E7)	
aromatic(HIaPreSeq167) && buried(E7)	
buried(HIaPreSeq167) && buried(E7)	
hydrophobic(HIaPreSeq167) && buried(E7)	
large(HIaPreSeq167) && buried(E7)	
hydrophobic(HIaPreSeq171) && buried(E7)	
negative(HIaPreSeq173) && buried(E7)	
hydrophobic(E7)	-0.00216903
aliphatic(HIaPreSeq1) && hydrophobic(E7)	0.00688371
hydrophobic(HIaPreSeq1) && hydrophobic(E7)	0.00856492
small(HIaPreSeq1) && hydrophobic(E7)	0.00944935
small(HIaPreSeq9) && hydrophobic(E7)	
polar(HIaPreSeq9) && hydrophobic(E7)	-0.0159533
polar(HIaPreSeq11) && hydrophobic(E7)	0.0160918
aliphatic(HIaPreSeq12) && hydrophobic(E7)	

medium(HlaPreSeq12) && hydrophobic(E7)
cyclic(HlaPreSeq14) && hydrophobic(E7)
aromatic(HlaPreSeq14) && hydrophobic(E7)
buried(HlaPreSeq14) && hydrophobic(E7)
hydrophobic(HlaPreSeq14) && hydrophobic(E7)
aliphatic(HlaPreSeq16) && hydrophobic(E7)
hydrophobic(HlaPreSeq16) && hydrophobic(E7)
large(HlaPreSeq17) && hydrophobic(E7)
positive(HlaPreSeq17) && hydrophobic(E7)
charged(HlaPreSeq17) && hydrophobic(E7)
aliphatic(HlaPreSeq24) && hydrophobic(E7)
buried(HlaPreSeq24) && hydrophobic(E7)
hydrophobic(HlaPreSeq24) && hydrophobic(E7)
small(HlaPreSeq24) && hydrophobic(E7)
medium(HlaPreSeq30) && hydrophobic(E7)
negative(HlaPreSeq30) && hydrophobic(E7)
charged(HlaPreSeq30) && hydrophobic(E7)
polar(HlaPreSeq30) && hydrophobic(E7)
polar(HlaPreSeq32) && hydrophobic(E7)
positive(HlaPreSeq35) && hydrophobic(E7)
charged(HlaPreSeq35) && hydrophobic(E7)
aliphatic(HlaPreSeq41) && hydrophobic(E7)
buried(HlaPreSeq41) && hydrophobic(E7)
hydrophobic(HlaPreSeq41) && hydrophobic(E7)
small(HlaPreSeq41) && hydrophobic(E7)
cyclic(HlaPreSeq43) && hydrophobic(E7)
hydrophobic(HlaPreSeq43) && hydrophobic(E7)
medium(HlaPreSeq43) && hydrophobic(E7)
aliphatic(HlaPreSeq45) && hydrophobic(E7)
hydrophobic(HlaPreSeq45) && hydrophobic(E7)
small(HlaPreSeq45) && hydrophobic(E7)
large(HlaPreSeq46) && hydrophobic(E7)
negative(HlaPreSeq46) && hydrophobic(E7)
charged(HlaPreSeq46) && hydrophobic(E7)
polar(HlaPreSeq46) && hydrophobic(E7)
large(HlaPreSeq49) && hydrophobic(E7)
negative(HlaPreSeq49) && hydrophobic(E7)
charged(HlaPreSeq49) && hydrophobic(E7)
polar(HlaPreSeq49) && hydrophobic(E7)
medium(HlaPreSeq52) && hydrophobic(E7)
aliphatic(HlaPreSeq56) && hydrophobic(E7)
hydrophobic(HlaPreSeq56) && hydrophobic(E7)
small(HlaPreSeq56) && hydrophobic(E7)
large(HlaPreSeq62) && hydrophobic(E7)
positive(HlaPreSeq62) && hydrophobic(E7)
charged(HlaPreSeq62) && hydrophobic(E7)
polar(HlaPreSeq62) && hydrophobic(E7)

large(HlaPreSeq63) && hydrophobic(E7)	
negative(HlaPreSeq63) && hydrophobic(E7)	
charged(HlaPreSeq63) && hydrophobic(E7)	
large(HlaPreSeq65) && hydrophobic(E7)	
polar(HlaPreSeq65) && hydrophobic(E7)	
large(HlaPreSeq66) && hydrophobic(E7)	
positive(HlaPreSeq66) && hydrophobic(E7)	
charged(HlaPreSeq66) && hydrophobic(E7)	
polar(HlaPreSeq66) && hydrophobic(E7)	
cyclic(HlaPreSeq67) && hydrophobic(E7)	
aromatic(HlaPreSeq67) && hydrophobic(E7)	
hydrophobic(HlaPreSeq67) && hydrophobic(E7)	
large(HlaPreSeq67) && hydrophobic(E7)	-0.00256123
large(HlaPreSeq69) && hydrophobic(E7)	
positive(HlaPreSeq69) && hydrophobic(E7)	
charged(HlaPreSeq69) && hydrophobic(E7)	
polar(HlaPreSeq69) && hydrophobic(E7)	
large(HlaPreSeq70) && hydrophobic(E7)	
aliphatic(HlaPreSeq71) && hydrophobic(E7)	
buried(HlaPreSeq71) && hydrophobic(E7)	
hydrophobic(HlaPreSeq71) && hydrophobic(E7)	
small(HlaPreSeq71) && hydrophobic(E7)	
aliphatic(HlaPreSeq73) && hydrophobic(E7)	
buried(HlaPreSeq73) && hydrophobic(E7)	
hydrophobic(HlaPreSeq73) && hydrophobic(E7)	
small(HlaPreSeq73) && hydrophobic(E7)	
medium(HlaPreSeq74) && hydrophobic(E7)	
negative(HlaPreSeq74) && hydrophobic(E7)	
charged(HlaPreSeq74) && hydrophobic(E7)	
polar(HlaPreSeq74) && hydrophobic(E7)	
aliphatic(HlaPreSeq76) && hydrophobic(E7)	
buried(HlaPreSeq76) && hydrophobic(E7)	
hydrophobic(HlaPreSeq76) && hydrophobic(E7)	
medium(HlaPreSeq76) && hydrophobic(E7)	
medium(HlaPreSeq77) && hydrophobic(E7)	
large(HlaPreSeq79) && hydrophobic(E7)	
positive(HlaPreSeq79) && hydrophobic(E7)	
charged(HlaPreSeq79) && hydrophobic(E7)	
polar(HlaPreSeq79) && hydrophobic(E7)	
large(HlaPreSeq80) && hydrophobic(E7)	
positive(HlaPreSeq80) && hydrophobic(E7)	
charged(HlaPreSeq80) && hydrophobic(E7)	
polar(HlaPreSeq80) && hydrophobic(E7)	
large(HlaPreSeq81) && hydrophobic(E7)	
positive(HlaPreSeq82) && hydrophobic(E7)	
charged(HlaPreSeq82) && hydrophobic(E7)	
polar(HlaPreSeq82) && hydrophobic(E7)	

aliphatic(HIaPreSeq83) && hydrophobic(E7)	
hydrophobic(HIaPreSeq83) && hydrophobic(E7)	
small(HIaPreSeq83) && hydrophobic(E7)	
medium(HIaPreSeq90) && hydrophobic(E7)	-0.0215711
negative(HIaPreSeq90) && hydrophobic(E7)	-0.0217036
charged(HIaPreSeq90) && hydrophobic(E7)	-0.0218419
polar(HIaPreSeq90) && hydrophobic(E7)	-0.0219843
aliphatic(HIaPreSeq91) && hydrophobic(E7)	
hydrophobic(HIaPreSeq91) && hydrophobic(E7)	
small(HIaPreSeq91) && hydrophobic(E7)	
medium(HIaPreSeq94) && hydrophobic(E7)	
polar(HIaPreSeq94) && hydrophobic(E7)	
aliphatic(HIaPreSeq95) && hydrophobic(E7)	
large(HIaPreSeq95) && hydrophobic(E7)	
large(HIaPreSeq97) && hydrophobic(E7)	
positive(HIaPreSeq97) && hydrophobic(E7)	
charged(HIaPreSeq97) && hydrophobic(E7)	
polar(HIaPreSeq97) && hydrophobic(E7)	
cyclic(HIaPreSeq99) && hydrophobic(E7)	
aromatic(HIaPreSeq99) && hydrophobic(E7)	
buried(HIaPreSeq99) && hydrophobic(E7)	
hydrophobic(HIaPreSeq99) && hydrophobic(E7)	
large(HIaPreSeq99) && hydrophobic(E7)	
large(HIaPreSeq103) && hydrophobic(E7)	0.00812265
cyclic(HIaPreSeq105) && hydrophobic(E7)	-0.00533427
hydrophobic(HIaPreSeq105) && hydrophobic(E7)	-0.00617662
medium(HIaPreSeq105) && hydrophobic(E7)	-0.00686821
aliphatic(HIaPreSeq107) && hydrophobic(E7)	
small(HIaPreSeq107) && hydrophobic(E7)	
aliphatic(HIaPreSeq109) && hydrophobic(E7)	
hydrophobic(HIaPreSeq113) && hydrophobic(E7)	
medium(HIaPreSeq114) && hydrophobic(E7)	
cyclic(HIaPreSeq116) && hydrophobic(E7)	
aromatic(HIaPreSeq116) && hydrophobic(E7)	
buried(HIaPreSeq116) && hydrophobic(E7)	0.0243181
hydrophobic(HIaPreSeq116) && hydrophobic(E7)	
large(HIaPreSeq116) && hydrophobic(E7)	
medium(HIaPreSeq127) && hydrophobic(E7)	
large(HIaPreSeq131) && hydrophobic(E7)	
positive(HIaPreSeq131) && hydrophobic(E7)	
charged(HIaPreSeq131) && hydrophobic(E7)	
medium(HIaPreSeq138) && hydrophobic(E7)	
polar(HIaPreSeq138) && hydrophobic(E7)	
aliphatic(HIaPreSeq142) && hydrophobic(E7)	
buried(HIaPreSeq142) && hydrophobic(E7)	
hydrophobic(HIaPreSeq142) && hydrophobic(E7)	
large(HIaPreSeq142) && hydrophobic(E7)	

medium(HlaPreSeq143) && hydrophobic(E7)	
positive(HlaPreSeq145) && hydrophobic(E7)	
charged(HlaPreSeq145) && hydrophobic(E7)	
polar(HlaPreSeq145) && hydrophobic(E7)	
cyclic(HlaPreSeq147) && hydrophobic(E7)	
aromatic(HlaPreSeq147) && hydrophobic(E7)	
aliphatic(HlaPreSeq149) && hydrophobic(E7)	
buried(HlaPreSeq149) && hydrophobic(E7)	
hydrophobic(HlaPreSeq149) && hydrophobic(E7)	
small(HlaPreSeq149) && hydrophobic(E7)	
small(HlaPreSeq150) && hydrophobic(E7)	
large(HlaPreSeq152) && hydrophobic(E7)	
negative(HlaPreSeq152) && hydrophobic(E7)	
charged(HlaPreSeq152) && hydrophobic(E7)	
polar(HlaPreSeq152) && hydrophobic(E7)	
large(HlaPreSeq156) && hydrophobic(E7)	
positive(HlaPreSeq156) && hydrophobic(E7)	0.024608
charged(HlaPreSeq156) && hydrophobic(E7)	0.0212761
polar(HlaPreSeq156) && hydrophobic(E7)	
aliphatic(HlaPreSeq158) && hydrophobic(E7)	
buried(HlaPreSeq158) && hydrophobic(E7)	
hydrophobic(HlaPreSeq158) && hydrophobic(E7)	
small(HlaPreSeq158) && hydrophobic(E7)	
large(HlaPreSeq161) && hydrophobic(E7)	-0.0115559
medium(HlaPreSeq163) && hydrophobic(E7)	0.0137188
polar(HlaPreSeq163) && hydrophobic(E7)	0.00996216
large(HlaPreSeq166) && hydrophobic(E7)	
cyclic(HlaPreSeq167) && hydrophobic(E7)	
aromatic(HlaPreSeq167) && hydrophobic(E7)	
buried(HlaPreSeq167) && hydrophobic(E7)	
hydrophobic(HlaPreSeq167) && hydrophobic(E7)	
large(HlaPreSeq167) && hydrophobic(E7)	
hydrophobic(HlaPreSeq171) && hydrophobic(E7)	
negative(HlaPreSeq173) && hydrophobic(E7)	
large(E7)	
aliphatic(HlaPreSeq1) && large(E7)	
hydrophobic(HlaPreSeq1) && large(E7)	
small(HlaPreSeq1) && large(E7)	
small(HlaPreSeq9) && large(E7)	
polar(HlaPreSeq9) && large(E7)	
polar(HlaPreSeq11) && large(E7)	
aliphatic(HlaPreSeq12) && large(E7)	
medium(HlaPreSeq12) && large(E7)	
cyclic(HlaPreSeq14) && large(E7)	
aromatic(HlaPreSeq14) && large(E7)	
buried(HlaPreSeq14) && large(E7)	
hydrophobic(HlaPreSeq14) && large(E7)	

aliphatic(HlaPreSeq16) && large(E7)	
hydrophobic(HlaPreSeq16) && large(E7)	
large(HlaPreSeq17) && large(E7)	
positive(HlaPreSeq17) && large(E7)	
charged(HlaPreSeq17) && large(E7)	
aliphatic(HlaPreSeq24) && large(E7)	
buried(HlaPreSeq24) && large(E7)	
hydrophobic(HlaPreSeq24) && large(E7)	
small(HlaPreSeq24) && large(E7)	
medium(HlaPreSeq30) && large(E7)	
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charged(HlaPreSeq30) && large(E7)	
polar(HlaPreSeq30) && large(E7)	
polar(HlaPreSeq32) && large(E7)	
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charged(HlaPreSeq35) && large(E7)	
aliphatic(HlaPreSeq41) && large(E7)	
buried(HlaPreSeq41) && large(E7)	
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small(HlaPreSeq41) && large(E7)	
cyclic(HlaPreSeq43) && large(E7)	
hydrophobic(HlaPreSeq43) && large(E7)	
medium(HlaPreSeq43) && large(E7)	
aliphatic(HlaPreSeq45) && large(E7)	
hydrophobic(HlaPreSeq45) && large(E7)	
small(HlaPreSeq45) && large(E7)	
large(HlaPreSeq46) && large(E7)	
negative(HlaPreSeq46) && large(E7)	
charged(HlaPreSeq46) && large(E7)	
polar(HlaPreSeq46) && large(E7)	
large(HlaPreSeq49) && large(E7)	
negative(HlaPreSeq49) && large(E7)	
charged(HlaPreSeq49) && large(E7)	
polar(HlaPreSeq49) && large(E7)	
medium(HlaPreSeq52) && large(E7)	
aliphatic(HlaPreSeq56) && large(E7)	
hydrophobic(HlaPreSeq56) && large(E7)	
small(HlaPreSeq56) && large(E7)	
large(HlaPreSeq62) && large(E7)	
positive(HlaPreSeq62) && large(E7)	
charged(HlaPreSeq62) && large(E7)	
polar(HlaPreSeq62) && large(E7)	
large(HlaPreSeq63) && large(E7)	-0.00253719
negative(HlaPreSeq63) && large(E7)	
charged(HlaPreSeq63) && large(E7)	
large(HlaPreSeq65) && large(E7)	
polar(HlaPreSeq65) && large(E7)	

large(HIaPreSeq66) && large(E7)	
positive(HIaPreSeq66) && large(E7)	
charged(HIaPreSeq66) && large(E7)	
polar(HIaPreSeq66) && large(E7)	
cyclic(HIaPreSeq67) && large(E7)	-0.0269984
aromatic(HIaPreSeq67) && large(E7)	-0.0272262
hydrophobic(HIaPreSeq67) && large(E7)	-0.00553132
large(HIaPreSeq67) && large(E7)	-0.0219124
large(HIaPreSeq69) && large(E7)	
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charged(HIaPreSeq69) && large(E7)	
polar(HIaPreSeq69) && large(E7)	
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aliphatic(HIaPreSeq71) && large(E7)	-0.0195915
buried(HIaPreSeq71) && large(E7)	-0.0197534
hydrophobic(HIaPreSeq71) && large(E7)	-0.0199004
small(HIaPreSeq71) && large(E7)	
aliphatic(HIaPreSeq73) && large(E7)	
buried(HIaPreSeq73) && large(E7)	
hydrophobic(HIaPreSeq73) && large(E7)	
small(HIaPreSeq73) && large(E7)	
medium(HIaPreSeq74) && large(E7)	
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charged(HIaPreSeq74) && large(E7)	
polar(HIaPreSeq74) && large(E7)	
aliphatic(HIaPreSeq76) && large(E7)	
buried(HIaPreSeq76) && large(E7)	
hydrophobic(HIaPreSeq76) && large(E7)	
medium(HIaPreSeq76) && large(E7)	
medium(HIaPreSeq77) && large(E7)	
large(HIaPreSeq79) && large(E7)	
positive(HIaPreSeq79) && large(E7)	
charged(HIaPreSeq79) && large(E7)	
polar(HIaPreSeq79) && large(E7)	
large(HIaPreSeq80) && large(E7)	
positive(HIaPreSeq80) && large(E7)	
charged(HIaPreSeq80) && large(E7)	
polar(HIaPreSeq80) && large(E7)	
large(HIaPreSeq81) && large(E7)	
positive(HIaPreSeq82) && large(E7)	
charged(HIaPreSeq82) && large(E7)	
polar(HIaPreSeq82) && large(E7)	
aliphatic(HIaPreSeq83) && large(E7)	
hydrophobic(HIaPreSeq83) && large(E7)	
small(HIaPreSeq83) && large(E7)	
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charged(HIaPreSeq90) && large(E7)	
polar(HIaPreSeq90) && large(E7)	
aliphatic(HIaPreSeq91) && large(E7)	
hydrophobic(HIaPreSeq91) && large(E7)	
small(HIaPreSeq91) && large(E7)	
medium(HIaPreSeq94) && large(E7)	0.0298653
polar(HIaPreSeq94) && large(E7)	0.0274344
aliphatic(HIaPreSeq95) && large(E7)	
large(HIaPreSeq95) && large(E7)	
large(HIaPreSeq97) && large(E7)	
positive(HIaPreSeq97) && large(E7)	
charged(HIaPreSeq97) && large(E7)	
polar(HIaPreSeq97) && large(E7)	
cyclic(HIaPreSeq99) && large(E7)	
aromatic(HIaPreSeq99) && large(E7)	
buried(HIaPreSeq99) && large(E7)	
hydrophobic(HIaPreSeq99) && large(E7)	
large(HIaPreSeq99) && large(E7)	
large(HIaPreSeq103) && large(E7)	
cyclic(HIaPreSeq105) && large(E7)	
hydrophobic(HIaPreSeq105) && large(E7)	
medium(HIaPreSeq105) && large(E7)	
aliphatic(HIaPreSeq107) && large(E7)	
small(HIaPreSeq107) && large(E7)	
aliphatic(HIaPreSeq109) && large(E7)	
hydrophobic(HIaPreSeq113) && large(E7)	
medium(HIaPreSeq114) && large(E7)	
cyclic(HIaPreSeq116) && large(E7)	
aromatic(HIaPreSeq116) && large(E7)	
buried(HIaPreSeq116) && large(E7)	
hydrophobic(HIaPreSeq116) && large(E7)	
large(HIaPreSeq116) && large(E7)	
medium(HIaPreSeq127) && large(E7)	
large(HIaPreSeq131) && large(E7)	-0.0074392
positive(HIaPreSeq131) && large(E7)	
charged(HIaPreSeq131) && large(E7)	
medium(HIaPreSeq138) && large(E7)	
polar(HIaPreSeq138) && large(E7)	
aliphatic(HIaPreSeq142) && large(E7)	
buried(HIaPreSeq142) && large(E7)	
hydrophobic(HIaPreSeq142) && large(E7)	
large(HIaPreSeq142) && large(E7)	
medium(HIaPreSeq143) && large(E7)	0.0147209
positive(HIaPreSeq145) && large(E7)	
charged(HIaPreSeq145) && large(E7)	
polar(HIaPreSeq145) && large(E7)	
cyclic(HIaPreSeq147) && large(E7)	

aromatic(HIaPreSeq147) && large(E7)	
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buried(HIaPreSeq149) && large(E7)	
hydrophobic(HIaPreSeq149) && large(E7)	
small(HIaPreSeq149) && large(E7)	
small(HIaPreSeq150) && large(E7)	
large(HIaPreSeq152) && large(E7)	0.0112583
negative(HIaPreSeq152) && large(E7)	0.0109073
charged(HIaPreSeq152) && large(E7)	0.0107499
polar(HIaPreSeq152) && large(E7)	0.0102086
large(HIaPreSeq156) && large(E7)	
positive(HIaPreSeq156) && large(E7)	
charged(HIaPreSeq156) && large(E7)	
polar(HIaPreSeq156) && large(E7)	
aliphatic(HIaPreSeq158) && large(E7)	
buried(HIaPreSeq158) && large(E7)	
hydrophobic(HIaPreSeq158) && large(E7)	
small(HIaPreSeq158) && large(E7)	
large(HIaPreSeq161) && large(E7)	
medium(HIaPreSeq163) && large(E7)	
polar(HIaPreSeq163) && large(E7)	
large(HIaPreSeq166) && large(E7)	
cyclic(HIaPreSeq167) && large(E7)	
aromatic(HIaPreSeq167) && large(E7)	
buried(HIaPreSeq167) && large(E7)	
hydrophobic(HIaPreSeq167) && large(E7)	0.0181071
large(HIaPreSeq167) && large(E7)	
hydrophobic(HIaPreSeq171) && large(E7)	-0.00786796
negative(HIaPreSeq173) && large(E7)	
E8=Gly	
HIaPreSeq1=Gly && E8=Gly	
HIaPreSeq6=Arg && E8=Gly	
HIaPreSeq9=Ser && E8=Gly	
HIaPreSeq11=Ser && E8=Gly	
HIaPreSeq12=Val && E8=Gly	0.0223066
HIaPreSeq14=Trp && E8=Gly	
HIaPreSeq16=Gly && E8=Gly	
HIaPreSeq17=Arg && E8=Gly	
HIaPreSeq21=Arg && E8=Gly	
HIaPreSeq24=Ala && E8=Gly	
HIaPreSeq30=Asp && E8=Gly	
HIaPreSeq32=Gln && E8=Gly	
HIaPreSeq35=Arg && E8=Gly	
HIaPreSeq41=Ala && E8=Gly	
HIaPreSeq43=Pro && E8=Gly	
HIaPreSeq44=Arg && E8=Gly	
HIaPreSeq45=Gly && E8=Gly	

HlaPreSeq46=Glu && E8=Gly	
HlaPreSeq49=Glu && E8=Gly	
HlaPreSeq52=Val && E8=Gly	
HlaPreSeq56=Gly && E8=Gly	
HlaPreSeq62=Arg && E8=Gly	
HlaPreSeq63=Glu && E8=Gly	
HlaPreSeq65=Gln && E8=Gly	
HlaPreSeq66=Lys && E8=Gly	
HlaPreSeq67=Tyr && E8=Gly	
HlaPreSeq69=Arg && E8=Gly	
HlaPreSeq70=Gln && E8=Gly	
HlaPreSeq71=Ala && E8=Gly	
HlaPreSeq73=Ala && E8=Gly	
HlaPreSeq74=Asp && E8=Gly	
HlaPreSeq76=Val && E8=Gly	
HlaPreSeq77=Asn && E8=Gly	
HlaPreSeq79=Arg && E8=Gly	
HlaPreSeq80=Lys && E8=Gly	
HlaPreSeq81=Leu && E8=Gly	
HlaPreSeq82=Arg && E8=Gly	
HlaPreSeq83=Gly && E8=Gly	
HlaPreSeq90=Asp && E8=Gly	
HlaPreSeq91=Gly && E8=Gly	
HlaPreSeq94=Thr && E8=Gly	
HlaPreSeq95=Leu && E8=Gly	-0.0113569
HlaPreSeq97=Arg && E8=Gly	
HlaPreSeq99=Phe && E8=Gly	
HlaPreSeq103=Leu && E8=Gly	
HlaPreSeq105=Pro && E8=Gly	
HlaPreSeq107=Gly && E8=Gly	
HlaPreSeq109=Leu && E8=Gly	
HlaPreSeq113=Tyr && E8=Gly	
HlaPreSeq114=Asn && E8=Gly	
HlaPreSeq116=Phe && E8=Gly	
HlaPreSeq127=Asn && E8=Gly	
HlaPreSeq131=Arg && E8=Gly	
HlaPreSeq138=Thr && E8=Gly	
HlaPreSeq142=Ile && E8=Gly	
HlaPreSeq143=Thr && E8=Gly	
HlaPreSeq144=Gln && E8=Gly	
HlaPreSeq145=Arg && E8=Gly	
HlaPreSeq147=Trp && E8=Gly	
HlaPreSeq149=Ala && E8=Gly	
HlaPreSeq150=Ala && E8=Gly	
HlaPreSeq151=Arg && E8=Gly	
HlaPreSeq152=Glu && E8=Gly	
HlaPreSeq156=Arg && E8=Gly	

HlaPreSeq158=Ala && E8=Gly	
HlaPreSeq161=Glu && E8=Gly	
HlaPreSeq163=Thr && E8=Gly	
HlaPreSeq166=Glu && E8=Gly	
HlaPreSeq167=Trp && E8=Gly	
HlaPreSeq171=Tyr && E8=Gly	
HlaPreSeq173=Glu && E8=Gly	
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aliphatic(HlaPreSeq1) && aliphatic(E8)	
hydrophobic(HlaPreSeq1) && aliphatic(E8)	
small(HlaPreSeq1) && aliphatic(E8)	
small(HlaPreSeq9) && aliphatic(E8)	
polar(HlaPreSeq9) && aliphatic(E8)	
polar(HlaPreSeq11) && aliphatic(E8)	
aliphatic(HlaPreSeq12) && aliphatic(E8)	
medium(HlaPreSeq12) && aliphatic(E8)	
cyclic(HlaPreSeq14) && aliphatic(E8)	
aromatic(HlaPreSeq14) && aliphatic(E8)	
buried(HlaPreSeq14) && aliphatic(E8)	
hydrophobic(HlaPreSeq14) && aliphatic(E8)	
aliphatic(HlaPreSeq16) && aliphatic(E8)	
hydrophobic(HlaPreSeq16) && aliphatic(E8)	
large(HlaPreSeq17) && aliphatic(E8)	
positive(HlaPreSeq17) && aliphatic(E8)	
charged(HlaPreSeq17) && aliphatic(E8)	
aliphatic(HlaPreSeq24) && aliphatic(E8)	
buried(HlaPreSeq24) && aliphatic(E8)	
hydrophobic(HlaPreSeq24) && aliphatic(E8)	
small(HlaPreSeq24) && aliphatic(E8)	
medium(HlaPreSeq30) && aliphatic(E8)	
negative(HlaPreSeq30) && aliphatic(E8)	
charged(HlaPreSeq30) && aliphatic(E8)	
polar(HlaPreSeq30) && aliphatic(E8)	
polar(HlaPreSeq32) && aliphatic(E8)	
positive(HlaPreSeq35) && aliphatic(E8)	
charged(HlaPreSeq35) && aliphatic(E8)	
aliphatic(HlaPreSeq41) && aliphatic(E8)	
buried(HlaPreSeq41) && aliphatic(E8)	
hydrophobic(HlaPreSeq41) && aliphatic(E8)	
small(HlaPreSeq41) && aliphatic(E8)	
cyclic(HlaPreSeq43) && aliphatic(E8)	
hydrophobic(HlaPreSeq43) && aliphatic(E8)	
medium(HlaPreSeq43) && aliphatic(E8)	
aliphatic(HlaPreSeq45) && aliphatic(E8)	
hydrophobic(HlaPreSeq45) && aliphatic(E8)	-0.00982984
small(HlaPreSeq45) && aliphatic(E8)	
large(HlaPreSeq46) && aliphatic(E8)	

negative(HlaPreSeq46) && aliphatic(E8)	
charged(HlaPreSeq46) && aliphatic(E8)	
polar(HlaPreSeq46) && aliphatic(E8)	
large(HlaPreSeq49) && aliphatic(E8)	
negative(HlaPreSeq49) && aliphatic(E8)	
charged(HlaPreSeq49) && aliphatic(E8)	
polar(HlaPreSeq49) && aliphatic(E8)	
medium(HlaPreSeq52) && aliphatic(E8)	
aliphatic(HlaPreSeq56) && aliphatic(E8)	
hydrophobic(HlaPreSeq56) && aliphatic(E8)	
small(HlaPreSeq56) && aliphatic(E8)	
large(HlaPreSeq62) && aliphatic(E8)	
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charged(HlaPreSeq62) && aliphatic(E8)	
polar(HlaPreSeq62) && aliphatic(E8)	
large(HlaPreSeq63) && aliphatic(E8)	
negative(HlaPreSeq63) && aliphatic(E8)	-0.010688
charged(HlaPreSeq63) && aliphatic(E8)	-0.00983119
large(HlaPreSeq65) && aliphatic(E8)	
polar(HlaPreSeq65) && aliphatic(E8)	
large(HlaPreSeq66) && aliphatic(E8)	
positive(HlaPreSeq66) && aliphatic(E8)	
charged(HlaPreSeq66) && aliphatic(E8)	
polar(HlaPreSeq66) && aliphatic(E8)	
cyclic(HlaPreSeq67) && aliphatic(E8)	
aromatic(HlaPreSeq67) && aliphatic(E8)	
hydrophobic(HlaPreSeq67) && aliphatic(E8)	
large(HlaPreSeq67) && aliphatic(E8)	
large(HlaPreSeq69) && aliphatic(E8)	
positive(HlaPreSeq69) && aliphatic(E8)	
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polar(HlaPreSeq69) && aliphatic(E8)	
large(HlaPreSeq70) && aliphatic(E8)	
aliphatic(HlaPreSeq71) && aliphatic(E8)	
buried(HlaPreSeq71) && aliphatic(E8)	
hydrophobic(HlaPreSeq71) && aliphatic(E8)	
small(HlaPreSeq71) && aliphatic(E8)	
aliphatic(HlaPreSeq73) && aliphatic(E8)	
buried(HlaPreSeq73) && aliphatic(E8)	
hydrophobic(HlaPreSeq73) && aliphatic(E8)	
small(HlaPreSeq73) && aliphatic(E8)	
medium(HlaPreSeq74) && aliphatic(E8)	
negative(HlaPreSeq74) && aliphatic(E8)	
charged(HlaPreSeq74) && aliphatic(E8)	
polar(HlaPreSeq74) && aliphatic(E8)	
aliphatic(HlaPreSeq76) && aliphatic(E8)	
buried(HlaPreSeq76) && aliphatic(E8)	

hydrophobic(HlaPreSeq76) && aliphatic(E8)	
medium(HlaPreSeq76) && aliphatic(E8)	
medium(HlaPreSeq77) && aliphatic(E8)	-0.0185987
large(HlaPreSeq79) && aliphatic(E8)	
positive(HlaPreSeq79) && aliphatic(E8)	
charged(HlaPreSeq79) && aliphatic(E8)	
polar(HlaPreSeq79) && aliphatic(E8)	
large(HlaPreSeq80) && aliphatic(E8)	
positive(HlaPreSeq80) && aliphatic(E8)	
charged(HlaPreSeq80) && aliphatic(E8)	
polar(HlaPreSeq80) && aliphatic(E8)	
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positive(HlaPreSeq82) && aliphatic(E8)	
charged(HlaPreSeq82) && aliphatic(E8)	
polar(HlaPreSeq82) && aliphatic(E8)	
aliphatic(HlaPreSeq83) && aliphatic(E8)	
hydrophobic(HlaPreSeq83) && aliphatic(E8)	
small(HlaPreSeq83) && aliphatic(E8)	
medium(HlaPreSeq90) && aliphatic(E8)	
negative(HlaPreSeq90) && aliphatic(E8)	
charged(HlaPreSeq90) && aliphatic(E8)	
polar(HlaPreSeq90) && aliphatic(E8)	
aliphatic(HlaPreSeq91) && aliphatic(E8)	
hydrophobic(HlaPreSeq91) && aliphatic(E8)	
small(HlaPreSeq91) && aliphatic(E8)	
medium(HlaPreSeq94) && aliphatic(E8)	
polar(HlaPreSeq94) && aliphatic(E8)	
aliphatic(HlaPreSeq95) && aliphatic(E8)	
large(HlaPreSeq95) && aliphatic(E8)	
large(HlaPreSeq97) && aliphatic(E8)	-0.0104746
positive(HlaPreSeq97) && aliphatic(E8)	
charged(HlaPreSeq97) && aliphatic(E8)	
polar(HlaPreSeq97) && aliphatic(E8)	0.0205504
cyclic(HlaPreSeq99) && aliphatic(E8)	
aromatic(HlaPreSeq99) && aliphatic(E8)	
buried(HlaPreSeq99) && aliphatic(E8)	
hydrophobic(HlaPreSeq99) && aliphatic(E8)	
large(HlaPreSeq99) && aliphatic(E8)	
large(HlaPreSeq103) && aliphatic(E8)	
cyclic(HlaPreSeq105) && aliphatic(E8)	0.0216718
hydrophobic(HlaPreSeq105) && aliphatic(E8)	0.021046
medium(HlaPreSeq105) && aliphatic(E8)	0.0204071
aliphatic(HlaPreSeq107) && aliphatic(E8)	
small(HlaPreSeq107) && aliphatic(E8)	
aliphatic(HlaPreSeq109) && aliphatic(E8)	
hydrophobic(HlaPreSeq113) && aliphatic(E8)	
medium(HlaPreSeq114) && aliphatic(E8)	

cyclic(HlaPreSeq116) && aliphatic(E8)	0.0233476
aromatic(HlaPreSeq116) && aliphatic(E8)	0.0232152
buried(HlaPreSeq116) && aliphatic(E8)	
hydrophobic(HlaPreSeq116) && aliphatic(E8)	0.0166649
large(HlaPreSeq116) && aliphatic(E8)	
medium(HlaPreSeq127) && aliphatic(E8)	
large(HlaPreSeq131) && aliphatic(E8)	
positive(HlaPreSeq131) && aliphatic(E8)	
charged(HlaPreSeq131) && aliphatic(E8)	
medium(HlaPreSeq138) && aliphatic(E8)	
polar(HlaPreSeq138) && aliphatic(E8)	
aliphatic(HlaPreSeq142) && aliphatic(E8)	
buried(HlaPreSeq142) && aliphatic(E8)	
hydrophobic(HlaPreSeq142) && aliphatic(E8)	
large(HlaPreSeq142) && aliphatic(E8)	
medium(HlaPreSeq143) && aliphatic(E8)	
positive(HlaPreSeq145) && aliphatic(E8)	
charged(HlaPreSeq145) && aliphatic(E8)	
polar(HlaPreSeq145) && aliphatic(E8)	
cyclic(HlaPreSeq147) && aliphatic(E8)	
aromatic(HlaPreSeq147) && aliphatic(E8)	
aliphatic(HlaPreSeq149) && aliphatic(E8)	
buried(HlaPreSeq149) && aliphatic(E8)	
hydrophobic(HlaPreSeq149) && aliphatic(E8)	
small(HlaPreSeq149) && aliphatic(E8)	
small(HlaPreSeq150) && aliphatic(E8)	
large(HlaPreSeq152) && aliphatic(E8)	
negative(HlaPreSeq152) && aliphatic(E8)	
charged(HlaPreSeq152) && aliphatic(E8)	
polar(HlaPreSeq152) && aliphatic(E8)	
large(HlaPreSeq156) && aliphatic(E8)	
positive(HlaPreSeq156) && aliphatic(E8)	
charged(HlaPreSeq156) && aliphatic(E8)	
polar(HlaPreSeq156) && aliphatic(E8)	0.0177481
aliphatic(HlaPreSeq158) && aliphatic(E8)	
buried(HlaPreSeq158) && aliphatic(E8)	
hydrophobic(HlaPreSeq158) && aliphatic(E8)	
small(HlaPreSeq158) && aliphatic(E8)	
large(HlaPreSeq161) && aliphatic(E8)	
medium(HlaPreSeq163) && aliphatic(E8)	
polar(HlaPreSeq163) && aliphatic(E8)	
large(HlaPreSeq166) && aliphatic(E8)	
cyclic(HlaPreSeq167) && aliphatic(E8)	
aromatic(HlaPreSeq167) && aliphatic(E8)	
buried(HlaPreSeq167) && aliphatic(E8)	
hydrophobic(HlaPreSeq167) && aliphatic(E8)	
large(HlaPreSeq167) && aliphatic(E8)	

hydrophobic(HIaPreSeq171) && aliphatic(E8)	-0.00323775
negative(HIaPreSeq173) && aliphatic(E8)	
hydrophobic(E8)	-0.00264582
aliphatic(HIaPreSeq1) && hydrophobic(E8)	0.00230916
hydrophobic(HIaPreSeq1) && hydrophobic(E8)	
small(HIaPreSeq1) && hydrophobic(E8)	
small(HIaPreSeq9) && hydrophobic(E8)	
polar(HIaPreSeq9) && hydrophobic(E8)	
polar(HIaPreSeq11) && hydrophobic(E8)	
aliphatic(HIaPreSeq12) && hydrophobic(E8)	
medium(HIaPreSeq12) && hydrophobic(E8)	
cyclic(HIaPreSeq14) && hydrophobic(E8)	
aromatic(HIaPreSeq14) && hydrophobic(E8)	
buried(HIaPreSeq14) && hydrophobic(E8)	
hydrophobic(HIaPreSeq14) && hydrophobic(E8)	
aliphatic(HIaPreSeq16) && hydrophobic(E8)	
hydrophobic(HIaPreSeq16) && hydrophobic(E8)	
large(HIaPreSeq17) && hydrophobic(E8)	
positive(HIaPreSeq17) && hydrophobic(E8)	
charged(HIaPreSeq17) && hydrophobic(E8)	
aliphatic(HIaPreSeq24) && hydrophobic(E8)	
buried(HIaPreSeq24) && hydrophobic(E8)	
hydrophobic(HIaPreSeq24) && hydrophobic(E8)	
small(HIaPreSeq24) && hydrophobic(E8)	
medium(HIaPreSeq30) && hydrophobic(E8)	
negative(HIaPreSeq30) && hydrophobic(E8)	
charged(HIaPreSeq30) && hydrophobic(E8)	
polar(HIaPreSeq30) && hydrophobic(E8)	
polar(HIaPreSeq32) && hydrophobic(E8)	
positive(HIaPreSeq35) && hydrophobic(E8)	
charged(HIaPreSeq35) && hydrophobic(E8)	
aliphatic(HIaPreSeq41) && hydrophobic(E8)	
buried(HIaPreSeq41) && hydrophobic(E8)	
hydrophobic(HIaPreSeq41) && hydrophobic(E8)	
small(HIaPreSeq41) && hydrophobic(E8)	
cyclic(HIaPreSeq43) && hydrophobic(E8)	
hydrophobic(HIaPreSeq43) && hydrophobic(E8)	
medium(HIaPreSeq43) && hydrophobic(E8)	
aliphatic(HIaPreSeq45) && hydrophobic(E8)	
hydrophobic(HIaPreSeq45) && hydrophobic(E8)	
small(HIaPreSeq45) && hydrophobic(E8)	
large(HIaPreSeq46) && hydrophobic(E8)	
negative(HIaPreSeq46) && hydrophobic(E8)	
charged(HIaPreSeq46) && hydrophobic(E8)	
polar(HIaPreSeq46) && hydrophobic(E8)	
large(HIaPreSeq49) && hydrophobic(E8)	
negative(HIaPreSeq49) && hydrophobic(E8)	

charged(HIaPreSeq49) && hydrophobic(E8)	
polar(HIaPreSeq49) && hydrophobic(E8)	
medium(HIaPreSeq52) && hydrophobic(E8)	
aliphatic(HIaPreSeq56) && hydrophobic(E8)	
hydrophobic(HIaPreSeq56) && hydrophobic(E8)	
small(HIaPreSeq56) && hydrophobic(E8)	
large(HIaPreSeq62) && hydrophobic(E8)	
positive(HIaPreSeq62) && hydrophobic(E8)	-0.0165778
charged(HIaPreSeq62) && hydrophobic(E8)	-0.0264447
polar(HIaPreSeq62) && hydrophobic(E8)	
large(HIaPreSeq63) && hydrophobic(E8)	0.00833136
negative(HIaPreSeq63) && hydrophobic(E8)	0.0045916
charged(HIaPreSeq63) && hydrophobic(E8)	0.00346457
large(HIaPreSeq65) && hydrophobic(E8)	
polar(HIaPreSeq65) && hydrophobic(E8)	
large(HIaPreSeq66) && hydrophobic(E8)	
positive(HIaPreSeq66) && hydrophobic(E8)	
charged(HIaPreSeq66) && hydrophobic(E8)	
polar(HIaPreSeq66) && hydrophobic(E8)	
cyclic(HIaPreSeq67) && hydrophobic(E8)	-0.0122083
aromatic(HIaPreSeq67) && hydrophobic(E8)	-0.0119803
hydrophobic(HIaPreSeq67) && hydrophobic(E8)	
large(HIaPreSeq67) && hydrophobic(E8)	
large(HIaPreSeq69) && hydrophobic(E8)	
positive(HIaPreSeq69) && hydrophobic(E8)	
charged(HIaPreSeq69) && hydrophobic(E8)	
polar(HIaPreSeq69) && hydrophobic(E8)	
large(HIaPreSeq70) && hydrophobic(E8)	
aliphatic(HIaPreSeq71) && hydrophobic(E8)	
buried(HIaPreSeq71) && hydrophobic(E8)	
hydrophobic(HIaPreSeq71) && hydrophobic(E8)	
small(HIaPreSeq71) && hydrophobic(E8)	
aliphatic(HIaPreSeq73) && hydrophobic(E8)	
buried(HIaPreSeq73) && hydrophobic(E8)	
hydrophobic(HIaPreSeq73) && hydrophobic(E8)	
small(HIaPreSeq73) && hydrophobic(E8)	
medium(HIaPreSeq74) && hydrophobic(E8)	
negative(HIaPreSeq74) && hydrophobic(E8)	
charged(HIaPreSeq74) && hydrophobic(E8)	
polar(HIaPreSeq74) && hydrophobic(E8)	
aliphatic(HIaPreSeq76) && hydrophobic(E8)	
buried(HIaPreSeq76) && hydrophobic(E8)	
hydrophobic(HIaPreSeq76) && hydrophobic(E8)	
medium(HIaPreSeq76) && hydrophobic(E8)	
medium(HIaPreSeq77) && hydrophobic(E8)	
large(HIaPreSeq79) && hydrophobic(E8)	
positive(HIaPreSeq79) && hydrophobic(E8)	

charged(HIaPreSeq79) && hydrophobic(E8)	
polar(HIaPreSeq79) && hydrophobic(E8)	
large(HIaPreSeq80) && hydrophobic(E8)	
positive(HIaPreSeq80) && hydrophobic(E8)	
charged(HIaPreSeq80) && hydrophobic(E8)	
polar(HIaPreSeq80) && hydrophobic(E8)	
large(HIaPreSeq81) && hydrophobic(E8)	
positive(HIaPreSeq82) && hydrophobic(E8)	
charged(HIaPreSeq82) && hydrophobic(E8)	
polar(HIaPreSeq82) && hydrophobic(E8)	
aliphatic(HIaPreSeq83) && hydrophobic(E8)	
hydrophobic(HIaPreSeq83) && hydrophobic(E8)	
small(HIaPreSeq83) && hydrophobic(E8)	
medium(HIaPreSeq90) && hydrophobic(E8)	
negative(HIaPreSeq90) && hydrophobic(E8)	
charged(HIaPreSeq90) && hydrophobic(E8)	
polar(HIaPreSeq90) && hydrophobic(E8)	
aliphatic(HIaPreSeq91) && hydrophobic(E8)	
hydrophobic(HIaPreSeq91) && hydrophobic(E8)	
small(HIaPreSeq91) && hydrophobic(E8)	
medium(HIaPreSeq94) && hydrophobic(E8)	
polar(HIaPreSeq94) && hydrophobic(E8)	
aliphatic(HIaPreSeq95) && hydrophobic(E8)	
large(HIaPreSeq95) && hydrophobic(E8)	
large(HIaPreSeq97) && hydrophobic(E8)	
positive(HIaPreSeq97) && hydrophobic(E8)	
charged(HIaPreSeq97) && hydrophobic(E8)	
polar(HIaPreSeq97) && hydrophobic(E8)	
cyclic(HIaPreSeq99) && hydrophobic(E8)	
aromatic(HIaPreSeq99) && hydrophobic(E8)	
buried(HIaPreSeq99) && hydrophobic(E8)	
hydrophobic(HIaPreSeq99) && hydrophobic(E8)	
large(HIaPreSeq99) && hydrophobic(E8)	
large(HIaPreSeq103) && hydrophobic(E8)	
cyclic(HIaPreSeq105) && hydrophobic(E8)	
hydrophobic(HIaPreSeq105) && hydrophobic(E8)	
medium(HIaPreSeq105) && hydrophobic(E8)	
aliphatic(HIaPreSeq107) && hydrophobic(E8)	
small(HIaPreSeq107) && hydrophobic(E8)	
aliphatic(HIaPreSeq109) && hydrophobic(E8)	
hydrophobic(HIaPreSeq113) && hydrophobic(E8)	
medium(HIaPreSeq114) && hydrophobic(E8)	
cyclic(HIaPreSeq116) && hydrophobic(E8)	0.0118312
aromatic(HIaPreSeq116) && hydrophobic(E8)	
buried(HIaPreSeq116) && hydrophobic(E8)	
hydrophobic(HIaPreSeq116) && hydrophobic(E8)	
large(HIaPreSeq116) && hydrophobic(E8)	

medium(HlaPreSeq127) && hydrophobic(E8)	
large(HlaPreSeq131) && hydrophobic(E8)	
positive(HlaPreSeq131) && hydrophobic(E8)	
charged(HlaPreSeq131) && hydrophobic(E8)	
medium(HlaPreSeq138) && hydrophobic(E8)	
polar(HlaPreSeq138) && hydrophobic(E8)	
aliphatic(HlaPreSeq142) && hydrophobic(E8)	
buried(HlaPreSeq142) && hydrophobic(E8)	
hydrophobic(HlaPreSeq142) && hydrophobic(E8)	
large(HlaPreSeq142) && hydrophobic(E8)	
medium(HlaPreSeq143) && hydrophobic(E8)	
positive(HlaPreSeq145) && hydrophobic(E8)	
charged(HlaPreSeq145) && hydrophobic(E8)	
polar(HlaPreSeq145) && hydrophobic(E8)	
cyclic(HlaPreSeq147) && hydrophobic(E8)	
aromatic(HlaPreSeq147) && hydrophobic(E8)	
aliphatic(HlaPreSeq149) && hydrophobic(E8)	
buried(HlaPreSeq149) && hydrophobic(E8)	
hydrophobic(HlaPreSeq149) && hydrophobic(E8)	
small(HlaPreSeq149) && hydrophobic(E8)	
small(HlaPreSeq150) && hydrophobic(E8)	
large(HlaPreSeq152) && hydrophobic(E8)	
negative(HlaPreSeq152) && hydrophobic(E8)	
charged(HlaPreSeq152) && hydrophobic(E8)	
polar(HlaPreSeq152) && hydrophobic(E8)	
large(HlaPreSeq156) && hydrophobic(E8)	
positive(HlaPreSeq156) && hydrophobic(E8)	
charged(HlaPreSeq156) && hydrophobic(E8)	
polar(HlaPreSeq156) && hydrophobic(E8)	0.0221434
aliphatic(HlaPreSeq158) && hydrophobic(E8)	
buried(HlaPreSeq158) && hydrophobic(E8)	
hydrophobic(HlaPreSeq158) && hydrophobic(E8)	
small(HlaPreSeq158) && hydrophobic(E8)	
large(HlaPreSeq161) && hydrophobic(E8)	
medium(HlaPreSeq163) && hydrophobic(E8)	
polar(HlaPreSeq163) && hydrophobic(E8)	
large(HlaPreSeq166) && hydrophobic(E8)	
cyclic(HlaPreSeq167) && hydrophobic(E8)	
aromatic(HlaPreSeq167) && hydrophobic(E8)	
buried(HlaPreSeq167) && hydrophobic(E8)	
hydrophobic(HlaPreSeq167) && hydrophobic(E8)	
large(HlaPreSeq167) && hydrophobic(E8)	
hydrophobic(HlaPreSeq171) && hydrophobic(E8)	0.00680253
negative(HlaPreSeq173) && hydrophobic(E8)	
small(E8)	-0.00749216
aliphatic(HlaPreSeq1) && small(E8)	-0.0145219
hydrophobic(HlaPreSeq1) && small(E8)	-0.0151154

small(HlaPreSeq1) && small(E8)	-0.0155221
small(HlaPreSeq9) && small(E8)	
polar(HlaPreSeq9) && small(E8)	
polar(HlaPreSeq11) && small(E8)	-0.0165762
aliphatic(HlaPreSeq12) && small(E8)	
medium(HlaPreSeq12) && small(E8)	
cyclic(HlaPreSeq14) && small(E8)	
aromatic(HlaPreSeq14) && small(E8)	
buried(HlaPreSeq14) && small(E8)	
hydrophobic(HlaPreSeq14) && small(E8)	
aliphatic(HlaPreSeq16) && small(E8)	
hydrophobic(HlaPreSeq16) && small(E8)	
large(HlaPreSeq17) && small(E8)	-0.0131807
positive(HlaPreSeq17) && small(E8)	
charged(HlaPreSeq17) && small(E8)	
aliphatic(HlaPreSeq24) && small(E8)	-0.0162724
buried(HlaPreSeq24) && small(E8)	-0.0166877
hydrophobic(HlaPreSeq24) && small(E8)	-0.0169604
small(HlaPreSeq24) && small(E8)	
medium(HlaPreSeq30) && small(E8)	
negative(HlaPreSeq30) && small(E8)	
charged(HlaPreSeq30) && small(E8)	
polar(HlaPreSeq30) && small(E8)	
polar(HlaPreSeq32) && small(E8)	
positive(HlaPreSeq35) && small(E8)	
charged(HlaPreSeq35) && small(E8)	
aliphatic(HlaPreSeq41) && small(E8)	
buried(HlaPreSeq41) && small(E8)	
hydrophobic(HlaPreSeq41) && small(E8)	
small(HlaPreSeq41) && small(E8)	
cyclic(HlaPreSeq43) && small(E8)	
hydrophobic(HlaPreSeq43) && small(E8)	
medium(HlaPreSeq43) && small(E8)	
aliphatic(HlaPreSeq45) && small(E8)	
hydrophobic(HlaPreSeq45) && small(E8)	
small(HlaPreSeq45) && small(E8)	
large(HlaPreSeq46) && small(E8)	
negative(HlaPreSeq46) && small(E8)	
charged(HlaPreSeq46) && small(E8)	
polar(HlaPreSeq46) && small(E8)	
large(HlaPreSeq49) && small(E8)	
negative(HlaPreSeq49) && small(E8)	
charged(HlaPreSeq49) && small(E8)	
polar(HlaPreSeq49) && small(E8)	
medium(HlaPreSeq52) && small(E8)	
aliphatic(HlaPreSeq56) && small(E8)	
hydrophobic(HlaPreSeq56) && small(E8)	

small(HlaPreSeq56) && small(E8)	
large(HlaPreSeq62) && small(E8)	
positive(HlaPreSeq62) && small(E8)	
charged(HlaPreSeq62) && small(E8)	
polar(HlaPreSeq62) && small(E8)	
large(HlaPreSeq63) && small(E8)	
negative(HlaPreSeq63) && small(E8)	
charged(HlaPreSeq63) && small(E8)	
large(HlaPreSeq65) && small(E8)	
polar(HlaPreSeq65) && small(E8)	
large(HlaPreSeq66) && small(E8)	
positive(HlaPreSeq66) && small(E8)	
charged(HlaPreSeq66) && small(E8)	
polar(HlaPreSeq66) && small(E8)	
cyclic(HlaPreSeq67) && small(E8)	
aromatic(HlaPreSeq67) && small(E8)	
hydrophobic(HlaPreSeq67) && small(E8)	
large(HlaPreSeq67) && small(E8)	
large(HlaPreSeq69) && small(E8)	
positive(HlaPreSeq69) && small(E8)	
charged(HlaPreSeq69) && small(E8)	
polar(HlaPreSeq69) && small(E8)	
large(HlaPreSeq70) && small(E8)	
aliphatic(HlaPreSeq71) && small(E8)	
buried(HlaPreSeq71) && small(E8)	
hydrophobic(HlaPreSeq71) && small(E8)	
small(HlaPreSeq71) && small(E8)	
aliphatic(HlaPreSeq73) && small(E8)	
buried(HlaPreSeq73) && small(E8)	
hydrophobic(HlaPreSeq73) && small(E8)	
small(HlaPreSeq73) && small(E8)	
medium(HlaPreSeq74) && small(E8)	
negative(HlaPreSeq74) && small(E8)	
charged(HlaPreSeq74) && small(E8)	
polar(HlaPreSeq74) && small(E8)	
aliphatic(HlaPreSeq76) && small(E8)	
buried(HlaPreSeq76) && small(E8)	
hydrophobic(HlaPreSeq76) && small(E8)	
medium(HlaPreSeq76) && small(E8)	0.00639947
medium(HlaPreSeq77) && small(E8)	
large(HlaPreSeq79) && small(E8)	
positive(HlaPreSeq79) && small(E8)	
charged(HlaPreSeq79) && small(E8)	
polar(HlaPreSeq79) && small(E8)	
large(HlaPreSeq80) && small(E8)	
positive(HlaPreSeq80) && small(E8)	
charged(HlaPreSeq80) && small(E8)	

polar(HlaPreSeq80) && small(E8)	
large(HlaPreSeq81) && small(E8)	
positive(HlaPreSeq82) && small(E8)	
charged(HlaPreSeq82) && small(E8)	
polar(HlaPreSeq82) && small(E8)	
aliphatic(HlaPreSeq83) && small(E8)	
hydrophobic(HlaPreSeq83) && small(E8)	
small(HlaPreSeq83) && small(E8)	
medium(HlaPreSeq90) && small(E8)	
negative(HlaPreSeq90) && small(E8)	
charged(HlaPreSeq90) && small(E8)	
polar(HlaPreSeq90) && small(E8)	
aliphatic(HlaPreSeq91) && small(E8)	
hydrophobic(HlaPreSeq91) && small(E8)	
small(HlaPreSeq91) && small(E8)	
medium(HlaPreSeq94) && small(E8)	
polar(HlaPreSeq94) && small(E8)	
aliphatic(HlaPreSeq95) && small(E8)	
large(HlaPreSeq95) && small(E8)	-0.0250886
large(HlaPreSeq97) && small(E8)	
positive(HlaPreSeq97) && small(E8)	
charged(HlaPreSeq97) && small(E8)	
polar(HlaPreSeq97) && small(E8)	0.0138521
cyclic(HlaPreSeq99) && small(E8)	
aromatic(HlaPreSeq99) && small(E8)	
buried(HlaPreSeq99) && small(E8)	
hydrophobic(HlaPreSeq99) && small(E8)	
large(HlaPreSeq99) && small(E8)	
large(HlaPreSeq103) && small(E8)	
cyclic(HlaPreSeq105) && small(E8)	
hydrophobic(HlaPreSeq105) && small(E8)	
medium(HlaPreSeq105) && small(E8)	
aliphatic(HlaPreSeq107) && small(E8)	-0.0212236
small(HlaPreSeq107) && small(E8)	-0.0207456
aliphatic(HlaPreSeq109) && small(E8)	
hydrophobic(HlaPreSeq113) && small(E8)	
medium(HlaPreSeq114) && small(E8)	
cyclic(HlaPreSeq116) && small(E8)	0.00892098
aromatic(HlaPreSeq116) && small(E8)	0.00897685
buried(HlaPreSeq116) && small(E8)	
hydrophobic(HlaPreSeq116) && small(E8)	
large(HlaPreSeq116) && small(E8)	
medium(HlaPreSeq127) && small(E8)	
large(HlaPreSeq131) && small(E8)	
positive(HlaPreSeq131) && small(E8)	
charged(HlaPreSeq131) && small(E8)	
medium(HlaPreSeq138) && small(E8)	

polar(HlaPreSeq138) && small(E8)	
aliphatic(HlaPreSeq142) && small(E8)	
buried(HlaPreSeq142) && small(E8)	
hydrophobic(HlaPreSeq142) && small(E8)	
large(HlaPreSeq142) && small(E8)	
medium(HlaPreSeq143) && small(E8)	
positive(HlaPreSeq145) && small(E8)	
charged(HlaPreSeq145) && small(E8)	
polar(HlaPreSeq145) && small(E8)	
cyclic(HlaPreSeq147) && small(E8)	
aromatic(HlaPreSeq147) && small(E8)	
aliphatic(HlaPreSeq149) && small(E8)	
buried(HlaPreSeq149) && small(E8)	
hydrophobic(HlaPreSeq149) && small(E8)	
small(HlaPreSeq149) && small(E8)	
small(HlaPreSeq150) && small(E8)	
large(HlaPreSeq152) && small(E8)	
negative(HlaPreSeq152) && small(E8)	
charged(HlaPreSeq152) && small(E8)	
polar(HlaPreSeq152) && small(E8)	
large(HlaPreSeq156) && small(E8)	
positive(HlaPreSeq156) && small(E8)	
charged(HlaPreSeq156) && small(E8)	0.0116571
polar(HlaPreSeq156) && small(E8)	
aliphatic(HlaPreSeq158) && small(E8)	
buried(HlaPreSeq158) && small(E8)	
hydrophobic(HlaPreSeq158) && small(E8)	
small(HlaPreSeq158) && small(E8)	
large(HlaPreSeq161) && small(E8)	
medium(HlaPreSeq163) && small(E8)	
polar(HlaPreSeq163) && small(E8)	
large(HlaPreSeq166) && small(E8)	
cyclic(HlaPreSeq167) && small(E8)	
aromatic(HlaPreSeq167) && small(E8)	
buried(HlaPreSeq167) && small(E8)	
hydrophobic(HlaPreSeq167) && small(E8)	
large(HlaPreSeq167) && small(E8)	
hydrophobic(HlaPreSeq171) && small(E8)	
negative(HlaPreSeq173) && small(E8)	
E9=Trp	
HlaPreSeq1=Gly && E9=Trp	
HlaPreSeq6=Arg && E9=Trp	
HlaPreSeq9=Ser && E9=Trp	
HlaPreSeq11=Ser && E9=Trp	
HlaPreSeq12=Val && E9=Trp	
HlaPreSeq14=Trp && E9=Trp	
HlaPreSeq16=Gly && E9=Trp	

HlaPreSeq17=Arg && E9=Trp	
HlaPreSeq21=Arg && E9=Trp	
HlaPreSeq24=Ala && E9=Trp	
HlaPreSeq30=Asp && E9=Trp	
HlaPreSeq32=Gln && E9=Trp	
HlaPreSeq35=Arg && E9=Trp	
HlaPreSeq41=Ala && E9=Trp	
HlaPreSeq43=Pro && E9=Trp	
HlaPreSeq44=Arg && E9=Trp	
HlaPreSeq45=Gly && E9=Trp	
HlaPreSeq46=Glu && E9=Trp	
HlaPreSeq49=Glu && E9=Trp	
HlaPreSeq52=Val && E9=Trp	
HlaPreSeq56=Gly && E9=Trp	
HlaPreSeq62=Arg && E9=Trp	
HlaPreSeq63=Glu && E9=Trp	0.0245863
HlaPreSeq65=Gln && E9=Trp	-0.00638004
HlaPreSeq66=Lys && E9=Trp	
HlaPreSeq67=Tyr && E9=Trp	
HlaPreSeq69=Arg && E9=Trp	
HlaPreSeq70=Gln && E9=Trp	
HlaPreSeq71=Ala && E9=Trp	0.0265086
HlaPreSeq73=Ala && E9=Trp	
HlaPreSeq74=Asp && E9=Trp	
HlaPreSeq76=Val && E9=Trp	
HlaPreSeq77=Asn && E9=Trp	0.0331738
HlaPreSeq79=Arg && E9=Trp	0.0212841
HlaPreSeq80=Lys && E9=Trp	
HlaPreSeq81=Leu && E9=Trp	-0.021657
HlaPreSeq82=Arg && E9=Trp	-0.0219178
HlaPreSeq83=Gly && E9=Trp	-0.0219096
HlaPreSeq90=Asp && E9=Trp	
HlaPreSeq91=Gly && E9=Trp	
HlaPreSeq94=Thr && E9=Trp	
HlaPreSeq95=Leu && E9=Trp	
HlaPreSeq97=Arg && E9=Trp	
HlaPreSeq99=Phe && E9=Trp	
HlaPreSeq103=Leu && E9=Trp	
HlaPreSeq105=Pro && E9=Trp	
HlaPreSeq107=Gly && E9=Trp	
HlaPreSeq109=Leu && E9=Trp	
HlaPreSeq113=Tyr && E9=Trp	
HlaPreSeq114=Asn && E9=Trp	
HlaPreSeq116=Phe && E9=Trp	
HlaPreSeq127=Asn && E9=Trp	
HlaPreSeq131=Arg && E9=Trp	
HlaPreSeq138=Thr && E9=Trp	

HlaPreSeq142=Ile && E9=Trp	
HlaPreSeq143=Thr && E9=Trp	
HlaPreSeq144=Gln && E9=Trp	0.0188781
HlaPreSeq145=Arg && E9=Trp	
HlaPreSeq147=Trp && E9=Trp	
HlaPreSeq149=Ala && E9=Trp	
HlaPreSeq150=Ala && E9=Trp	
HlaPreSeq151=Arg && E9=Trp	0.0155742
HlaPreSeq152=Glu && E9=Trp	
HlaPreSeq156=Arg && E9=Trp	
HlaPreSeq158=Ala && E9=Trp	
HlaPreSeq161=Glu && E9=Trp	0.0189688
HlaPreSeq163=Thr && E9=Trp	
HlaPreSeq166=Glu && E9=Trp	
HlaPreSeq167=Trp && E9=Trp	
HlaPreSeq171=Tyr && E9=Trp	
HlaPreSeq173=Glu && E9=Trp	
cyclic(E9)	0.00356521
aliphatic(HlaPreSeq1) && cyclic(E9)	0.00606822
hydrophobic(HlaPreSeq1) && cyclic(E9)	0.0110957
small(HlaPreSeq1) && cyclic(E9)	0.0155014
small(HlaPreSeq9) && cyclic(E9)	0.0194398
polar(HlaPreSeq9) && cyclic(E9)	0.0246962
polar(HlaPreSeq11) && cyclic(E9)	0.0247412
aliphatic(HlaPreSeq12) && cyclic(E9)	0.0163614
medium(HlaPreSeq12) && cyclic(E9)	0.017788
cyclic(HlaPreSeq14) && cyclic(E9)	
aromatic(HlaPreSeq14) && cyclic(E9)	
buried(HlaPreSeq14) && cyclic(E9)	
hydrophobic(HlaPreSeq14) && cyclic(E9)	
aliphatic(HlaPreSeq16) && cyclic(E9)	0.0294382
hydrophobic(HlaPreSeq16) && cyclic(E9)	0.0297987
large(HlaPreSeq17) && cyclic(E9)	0.0165205
positive(HlaPreSeq17) && cyclic(E9)	0.0161017
charged(HlaPreSeq17) && cyclic(E9)	0.0154783
aliphatic(HlaPreSeq24) && cyclic(E9)	0.0272396
buried(HlaPreSeq24) && cyclic(E9)	0.0270542
hydrophobic(HlaPreSeq24) && cyclic(E9)	0.0267127
small(HlaPreSeq24) && cyclic(E9)	0.0391916
medium(HlaPreSeq30) && cyclic(E9)	
negative(HlaPreSeq30) && cyclic(E9)	
charged(HlaPreSeq30) && cyclic(E9)	
polar(HlaPreSeq30) && cyclic(E9)	
polar(HlaPreSeq32) && cyclic(E9)	0.036502
positive(HlaPreSeq35) && cyclic(E9)	0.0304126
charged(HlaPreSeq35) && cyclic(E9)	0.0286032
aliphatic(HlaPreSeq41) && cyclic(E9)	0.0249613

buried(HIaPreSeq41) && cyclic(E9)	0.023106
hydrophobic(HIaPreSeq41) && cyclic(E9)	0.0212458
small(HIaPreSeq41) && cyclic(E9)	0.0194153
cyclic(HIaPreSeq43) && cyclic(E9)	
hydrophobic(HIaPreSeq43) && cyclic(E9)	
medium(HIaPreSeq43) && cyclic(E9)	
aliphatic(HIaPreSeq45) && cyclic(E9)	
hydrophobic(HIaPreSeq45) && cyclic(E9)	0.0207035
small(HIaPreSeq45) && cyclic(E9)	
large(HIaPreSeq46) && cyclic(E9)	
negative(HIaPreSeq46) && cyclic(E9)	
charged(HIaPreSeq46) && cyclic(E9)	
polar(HIaPreSeq46) && cyclic(E9)	
large(HIaPreSeq49) && cyclic(E9)	
negative(HIaPreSeq49) && cyclic(E9)	
charged(HIaPreSeq49) && cyclic(E9)	
polar(HIaPreSeq49) && cyclic(E9)	
medium(HIaPreSeq52) && cyclic(E9)	
aliphatic(HIaPreSeq56) && cyclic(E9)	
hydrophobic(HIaPreSeq56) && cyclic(E9)	
small(HIaPreSeq56) && cyclic(E9)	
large(HIaPreSeq62) && cyclic(E9)	0.0144551
positive(HIaPreSeq62) && cyclic(E9)	-0.0202755
charged(HIaPreSeq62) && cyclic(E9)	-0.025664
polar(HIaPreSeq62) && cyclic(E9)	
large(HIaPreSeq63) && cyclic(E9)	0.0278738
negative(HIaPreSeq63) && cyclic(E9)	0.0198081
charged(HIaPreSeq63) && cyclic(E9)	0.0188397
large(HIaPreSeq65) && cyclic(E9)	
polar(HIaPreSeq65) && cyclic(E9)	
large(HIaPreSeq66) && cyclic(E9)	-0.0493176
positive(HIaPreSeq66) && cyclic(E9)	-0.0243524
charged(HIaPreSeq66) && cyclic(E9)	-0.0243149
polar(HIaPreSeq66) && cyclic(E9)	0.024153
cyclic(HIaPreSeq67) && cyclic(E9)	-0.0327109
aromatic(HIaPreSeq67) && cyclic(E9)	-0.0326994
hydrophobic(HIaPreSeq67) && cyclic(E9)	-0.00657474
large(HIaPreSeq67) && cyclic(E9)	
large(HIaPreSeq69) && cyclic(E9)	
positive(HIaPreSeq69) && cyclic(E9)	
charged(HIaPreSeq69) && cyclic(E9)	
polar(HIaPreSeq69) && cyclic(E9)	
large(HIaPreSeq70) && cyclic(E9)	-0.012669
aliphatic(HIaPreSeq71) && cyclic(E9)	
buried(HIaPreSeq71) && cyclic(E9)	
hydrophobic(HIaPreSeq71) && cyclic(E9)	
small(HIaPreSeq71) && cyclic(E9)	

aliphatic(HIaPreSeq73) && cyclic(E9)	
buried(HIaPreSeq73) && cyclic(E9)	
hydrophobic(HIaPreSeq73) && cyclic(E9)	
small(HIaPreSeq73) && cyclic(E9)	
medium(HIaPreSeq74) && cyclic(E9)	
negative(HIaPreSeq74) && cyclic(E9)	
charged(HIaPreSeq74) && cyclic(E9)	-0.0227344
polar(HIaPreSeq74) && cyclic(E9)	-0.023449
aliphatic(HIaPreSeq76) && cyclic(E9)	-0.0190307
buried(HIaPreSeq76) && cyclic(E9)	-0.0194313
hydrophobic(HIaPreSeq76) && cyclic(E9)	-0.0198363
medium(HIaPreSeq76) && cyclic(E9)	-0.0479762
medium(HIaPreSeq77) && cyclic(E9)	
large(HIaPreSeq79) && cyclic(E9)	
positive(HIaPreSeq79) && cyclic(E9)	
charged(HIaPreSeq79) && cyclic(E9)	
polar(HIaPreSeq79) && cyclic(E9)	
large(HIaPreSeq80) && cyclic(E9)	
positive(HIaPreSeq80) && cyclic(E9)	
charged(HIaPreSeq80) && cyclic(E9)	
polar(HIaPreSeq80) && cyclic(E9)	
large(HIaPreSeq81) && cyclic(E9)	
positive(HIaPreSeq82) && cyclic(E9)	
charged(HIaPreSeq82) && cyclic(E9)	
polar(HIaPreSeq82) && cyclic(E9)	
aliphatic(HIaPreSeq83) && cyclic(E9)	
hydrophobic(HIaPreSeq83) && cyclic(E9)	
small(HIaPreSeq83) && cyclic(E9)	
medium(HIaPreSeq90) && cyclic(E9)	
negative(HIaPreSeq90) && cyclic(E9)	
charged(HIaPreSeq90) && cyclic(E9)	
polar(HIaPreSeq90) && cyclic(E9)	
aliphatic(HIaPreSeq91) && cyclic(E9)	
hydrophobic(HIaPreSeq91) && cyclic(E9)	
small(HIaPreSeq91) && cyclic(E9)	
medium(HIaPreSeq94) && cyclic(E9)	-0.0177174
polar(HIaPreSeq94) && cyclic(E9)	-0.0184898
aliphatic(HIaPreSeq95) && cyclic(E9)	0.0145699
large(HIaPreSeq95) && cyclic(E9)	0.0239049
large(HIaPreSeq97) && cyclic(E9)	0.0240083
positive(HIaPreSeq97) && cyclic(E9)	
charged(HIaPreSeq97) && cyclic(E9)	
polar(HIaPreSeq97) && cyclic(E9)	-0.0255951
cyclic(HIaPreSeq99) && cyclic(E9)	
aromatic(HIaPreSeq99) && cyclic(E9)	
buried(HIaPreSeq99) && cyclic(E9)	
hydrophobic(HIaPreSeq99) && cyclic(E9)	

large(HIaPreSeq99) && cyclic(E9)	
large(HIaPreSeq103) && cyclic(E9)	
cyclic(HIaPreSeq105) && cyclic(E9)	
hydrophobic(HIaPreSeq105) && cyclic(E9)	0.00490442
medium(HIaPreSeq105) && cyclic(E9)	0.00564499
aliphatic(HIaPreSeq107) && cyclic(E9)	0.0300255
small(HIaPreSeq107) && cyclic(E9)	0.0313288
aliphatic(HIaPreSeq109) && cyclic(E9)	
hydrophobic(HIaPreSeq113) && cyclic(E9)	
medium(HIaPreSeq114) && cyclic(E9)	
cyclic(HIaPreSeq116) && cyclic(E9)	-0.0396412
aromatic(HIaPreSeq116) && cyclic(E9)	-0.0396089
buried(HIaPreSeq116) && cyclic(E9)	
hydrophobic(HIaPreSeq116) && cyclic(E9)	-0.0531188
large(HIaPreSeq116) && cyclic(E9)	-0.0405429
medium(HIaPreSeq127) && cyclic(E9)	0.0361671
large(HIaPreSeq131) && cyclic(E9)	-0.0147645
positive(HIaPreSeq131) && cyclic(E9)	-0.0148447
charged(HIaPreSeq131) && cyclic(E9)	-0.0150469
medium(HIaPreSeq138) && cyclic(E9)	
polar(HIaPreSeq138) && cyclic(E9)	
aliphatic(HIaPreSeq142) && cyclic(E9)	0.0374246
buried(HIaPreSeq142) && cyclic(E9)	0.037017
hydrophobic(HIaPreSeq142) && cyclic(E9)	0.0363164
large(HIaPreSeq142) && cyclic(E9)	0.0353473
medium(HIaPreSeq143) && cyclic(E9)	
positive(HIaPreSeq145) && cyclic(E9)	
charged(HIaPreSeq145) && cyclic(E9)	
polar(HIaPreSeq145) && cyclic(E9)	
cyclic(HIaPreSeq147) && cyclic(E9)	
aromatic(HIaPreSeq147) && cyclic(E9)	
aliphatic(HIaPreSeq149) && cyclic(E9)	
buried(HIaPreSeq149) && cyclic(E9)	
hydrophobic(HIaPreSeq149) && cyclic(E9)	
small(HIaPreSeq149) && cyclic(E9)	
small(HIaPreSeq150) && cyclic(E9)	-0.0375115
large(HIaPreSeq152) && cyclic(E9)	
negative(HIaPreSeq152) && cyclic(E9)	-0.0104891
charged(HIaPreSeq152) && cyclic(E9)	
polar(HIaPreSeq152) && cyclic(E9)	
large(HIaPreSeq156) && cyclic(E9)	
positive(HIaPreSeq156) && cyclic(E9)	0.018834
charged(HIaPreSeq156) && cyclic(E9)	
polar(HIaPreSeq156) && cyclic(E9)	
aliphatic(HIaPreSeq158) && cyclic(E9)	
buried(HIaPreSeq158) && cyclic(E9)	
hydrophobic(HIaPreSeq158) && cyclic(E9)	

small(HIaPreSeq158) && cyclic(E9)	-0.0326017
large(HIaPreSeq161) && cyclic(E9)	
medium(HIaPreSeq163) && cyclic(E9)	
polar(HIaPreSeq163) && cyclic(E9)	-0.00852136
large(HIaPreSeq166) && cyclic(E9)	-0.0305129
cyclic(HIaPreSeq167) && cyclic(E9)	-0.0340027
aromatic(HIaPreSeq167) && cyclic(E9)	-0.0325298
buried(HIaPreSeq167) && cyclic(E9)	-0.0309545
hydrophobic(HIaPreSeq167) && cyclic(E9)	
large(HIaPreSeq167) && cyclic(E9)	-0.0293064
hydrophobic(HIaPreSeq171) && cyclic(E9)	
negative(HIaPreSeq173) && cyclic(E9)	
aromatic(E9)	0.0226223
aliphatic(HIaPreSeq1) && aromatic(E9)	0.0184827
hydrophobic(HIaPreSeq1) && aromatic(E9)	0.0187286
small(HIaPreSeq1) && aromatic(E9)	0.018952
small(HIaPreSeq9) && aromatic(E9)	0.0213224
polar(HIaPreSeq9) && aromatic(E9)	0.0304297
polar(HIaPreSeq11) && aromatic(E9)	0.0186044
aliphatic(HIaPreSeq12) && aromatic(E9)	0.0129665
medium(HIaPreSeq12) && aromatic(E9)	0.0129303
cyclic(HIaPreSeq14) && aromatic(E9)	
aromatic(HIaPreSeq14) && aromatic(E9)	
buried(HIaPreSeq14) && aromatic(E9)	
hydrophobic(HIaPreSeq14) && aromatic(E9)	
aliphatic(HIaPreSeq16) && aromatic(E9)	0.0209132
hydrophobic(HIaPreSeq16) && aromatic(E9)	0.0204999
large(HIaPreSeq17) && aromatic(E9)	0.007637
positive(HIaPreSeq17) && aromatic(E9)	0.00700134
charged(HIaPreSeq17) && aromatic(E9)	0.00634087
aliphatic(HIaPreSeq24) && aromatic(E9)	0.0196858
buried(HIaPreSeq24) && aromatic(E9)	0.0194459
hydrophobic(HIaPreSeq24) && aromatic(E9)	0.0192287
small(HIaPreSeq24) && aromatic(E9)	0.0281747
medium(HIaPreSeq30) && aromatic(E9)	
negative(HIaPreSeq30) && aromatic(E9)	
charged(HIaPreSeq30) && aromatic(E9)	
polar(HIaPreSeq30) && aromatic(E9)	
polar(HIaPreSeq32) && aromatic(E9)	0.0263331
positive(HIaPreSeq35) && aromatic(E9)	0.0213341
charged(HIaPreSeq35) && aromatic(E9)	0.0202587
aliphatic(HIaPreSeq41) && aromatic(E9)	0.0172636
buried(HIaPreSeq41) && aromatic(E9)	0.0161431
hydrophobic(HIaPreSeq41) && aromatic(E9)	0.0149872
small(HIaPreSeq41) && aromatic(E9)	0.0138198
cyclic(HIaPreSeq43) && aromatic(E9)	
hydrophobic(HIaPreSeq43) && aromatic(E9)	

medium(HlaPreSeq43) && aromatic(E9)	
aliphatic(HlaPreSeq45) && aromatic(E9)	
hydrophobic(HlaPreSeq45) && aromatic(E9)	0.0190751
small(HlaPreSeq45) && aromatic(E9)	
large(HlaPreSeq46) && aromatic(E9)	
negative(HlaPreSeq46) && aromatic(E9)	
charged(HlaPreSeq46) && aromatic(E9)	
polar(HlaPreSeq46) && aromatic(E9)	
large(HlaPreSeq49) && aromatic(E9)	
negative(HlaPreSeq49) && aromatic(E9)	
charged(HlaPreSeq49) && aromatic(E9)	
polar(HlaPreSeq49) && aromatic(E9)	
medium(HlaPreSeq52) && aromatic(E9)	
aliphatic(HlaPreSeq56) && aromatic(E9)	
hydrophobic(HlaPreSeq56) && aromatic(E9)	
small(HlaPreSeq56) && aromatic(E9)	
large(HlaPreSeq62) && aromatic(E9)	0.00962029
positive(HlaPreSeq62) && aromatic(E9)	-0.0116853
charged(HlaPreSeq62) && aromatic(E9)	
polar(HlaPreSeq62) && aromatic(E9)	
large(HlaPreSeq63) && aromatic(E9)	0.0277929
negative(HlaPreSeq63) && aromatic(E9)	0.0199461
charged(HlaPreSeq63) && aromatic(E9)	0.0193444
large(HlaPreSeq65) && aromatic(E9)	
polar(HlaPreSeq65) && aromatic(E9)	
large(HlaPreSeq66) && aromatic(E9)	-0.0279757
positive(HlaPreSeq66) && aromatic(E9)	-0.0134578
charged(HlaPreSeq66) && aromatic(E9)	-0.0132812
polar(HlaPreSeq66) && aromatic(E9)	0.0236685
cyclic(HlaPreSeq67) && aromatic(E9)	-0.0275849
aromatic(HlaPreSeq67) && aromatic(E9)	-0.0275249
hydrophobic(HlaPreSeq67) && aromatic(E9)	-0.00704129
large(HlaPreSeq67) && aromatic(E9)	
large(HlaPreSeq69) && aromatic(E9)	
positive(HlaPreSeq69) && aromatic(E9)	
charged(HlaPreSeq69) && aromatic(E9)	
polar(HlaPreSeq69) && aromatic(E9)	
large(HlaPreSeq70) && aromatic(E9)	-0.0144563
aliphatic(HlaPreSeq71) && aromatic(E9)	
buried(HlaPreSeq71) && aromatic(E9)	
hydrophobic(HlaPreSeq71) && aromatic(E9)	
small(HlaPreSeq71) && aromatic(E9)	
aliphatic(HlaPreSeq73) && aromatic(E9)	
buried(HlaPreSeq73) && aromatic(E9)	
hydrophobic(HlaPreSeq73) && aromatic(E9)	
small(HlaPreSeq73) && aromatic(E9)	
medium(HlaPreSeq74) && aromatic(E9)	

negative(HlaPreSeq74) && aromatic(E9)	
charged(HlaPreSeq74) && aromatic(E9)	-0.0229188
polar(HlaPreSeq74) && aromatic(E9)	-0.023344
aliphatic(HlaPreSeq76) && aromatic(E9)	-0.0175099
buried(HlaPreSeq76) && aromatic(E9)	-0.0177656
hydrophobic(HlaPreSeq76) && aromatic(E9)	-0.0180118
medium(HlaPreSeq76) && aromatic(E9)	-0.0373268
medium(HlaPreSeq77) && aromatic(E9)	
large(HlaPreSeq79) && aromatic(E9)	0.00884829
positive(HlaPreSeq79) && aromatic(E9)	
charged(HlaPreSeq79) && aromatic(E9)	
polar(HlaPreSeq79) && aromatic(E9)	
large(HlaPreSeq80) && aromatic(E9)	0.016036
positive(HlaPreSeq80) && aromatic(E9)	
charged(HlaPreSeq80) && aromatic(E9)	
polar(HlaPreSeq80) && aromatic(E9)	
large(HlaPreSeq81) && aromatic(E9)	
positive(HlaPreSeq82) && aromatic(E9)	
charged(HlaPreSeq82) && aromatic(E9)	
polar(HlaPreSeq82) && aromatic(E9)	
aliphatic(HlaPreSeq83) && aromatic(E9)	
hydrophobic(HlaPreSeq83) && aromatic(E9)	
small(HlaPreSeq83) && aromatic(E9)	
medium(HlaPreSeq90) && aromatic(E9)	
negative(HlaPreSeq90) && aromatic(E9)	
charged(HlaPreSeq90) && aromatic(E9)	
polar(HlaPreSeq90) && aromatic(E9)	
aliphatic(HlaPreSeq91) && aromatic(E9)	
hydrophobic(HlaPreSeq91) && aromatic(E9)	
small(HlaPreSeq91) && aromatic(E9)	
medium(HlaPreSeq94) && aromatic(E9)	-0.0197193
polar(HlaPreSeq94) && aromatic(E9)	-0.0201538
aliphatic(HlaPreSeq95) && aromatic(E9)	0.0148381
large(HlaPreSeq95) && aromatic(E9)	0.0222991
large(HlaPreSeq97) && aromatic(E9)	0.0231477
positive(HlaPreSeq97) && aromatic(E9)	0.026266
charged(HlaPreSeq97) && aromatic(E9)	0.0259571
polar(HlaPreSeq97) && aromatic(E9)	-0.00623987
cyclic(HlaPreSeq99) && aromatic(E9)	
aromatic(HlaPreSeq99) && aromatic(E9)	
buried(HlaPreSeq99) && aromatic(E9)	
hydrophobic(HlaPreSeq99) && aromatic(E9)	
large(HlaPreSeq99) && aromatic(E9)	
large(HlaPreSeq103) && aromatic(E9)	
cyclic(HlaPreSeq105) && aromatic(E9)	0.00624747
hydrophobic(HlaPreSeq105) && aromatic(E9)	0.00642569
medium(HlaPreSeq105) && aromatic(E9)	

aliphatic(HlaPreSeq107) && aromatic(E9)	0.0254349
small(HlaPreSeq107) && aromatic(E9)	0.0257185
aliphatic(HlaPreSeq109) && aromatic(E9)	
hydrophobic(HlaPreSeq113) && aromatic(E9)	
medium(HlaPreSeq114) && aromatic(E9)	0.0111076
cyclic(HlaPreSeq116) && aromatic(E9)	-0.0224409
aromatic(HlaPreSeq116) && aromatic(E9)	-0.022195
buried(HlaPreSeq116) && aromatic(E9)	
hydrophobic(HlaPreSeq116) && aromatic(E9)	-0.0364607
large(HlaPreSeq116) && aromatic(E9)	-0.0225124
medium(HlaPreSeq127) && aromatic(E9)	0.029948
large(HlaPreSeq131) && aromatic(E9)	-0.0184129
positive(HlaPreSeq131) && aromatic(E9)	-0.0185624
charged(HlaPreSeq131) && aromatic(E9)	-0.0187282
medium(HlaPreSeq138) && aromatic(E9)	0.0098412
polar(HlaPreSeq138) && aromatic(E9)	
aliphatic(HlaPreSeq142) && aromatic(E9)	0.0294876
buried(HlaPreSeq142) && aromatic(E9)	0.0290418
hydrophobic(HlaPreSeq142) && aromatic(E9)	0.0283841
large(HlaPreSeq142) && aromatic(E9)	0.0275293
medium(HlaPreSeq143) && aromatic(E9)	
positive(HlaPreSeq145) && aromatic(E9)	
charged(HlaPreSeq145) && aromatic(E9)	
polar(HlaPreSeq145) && aromatic(E9)	
cyclic(HlaPreSeq147) && aromatic(E9)	
aromatic(HlaPreSeq147) && aromatic(E9)	
aliphatic(HlaPreSeq149) && aromatic(E9)	
buried(HlaPreSeq149) && aromatic(E9)	
hydrophobic(HlaPreSeq149) && aromatic(E9)	-0.00396342
small(HlaPreSeq149) && aromatic(E9)	-0.00537424
small(HlaPreSeq150) && aromatic(E9)	
large(HlaPreSeq152) && aromatic(E9)	
negative(HlaPreSeq152) && aromatic(E9)	
charged(HlaPreSeq152) && aromatic(E9)	
polar(HlaPreSeq152) && aromatic(E9)	
large(HlaPreSeq156) && aromatic(E9)	
positive(HlaPreSeq156) && aromatic(E9)	0.0154314
charged(HlaPreSeq156) && aromatic(E9)	
polar(HlaPreSeq156) && aromatic(E9)	
aliphatic(HlaPreSeq158) && aromatic(E9)	
buried(HlaPreSeq158) && aromatic(E9)	
hydrophobic(HlaPreSeq158) && aromatic(E9)	
small(HlaPreSeq158) && aromatic(E9)	
large(HlaPreSeq161) && aromatic(E9)	
medium(HlaPreSeq163) && aromatic(E9)	0.0153766
polar(HlaPreSeq163) && aromatic(E9)	-0.0169262
large(HlaPreSeq166) && aromatic(E9)	

cyclic(HlaPreSeq167) && aromatic(E9)	
aromatic(HlaPreSeq167) && aromatic(E9)	
buried(HlaPreSeq167) && aromatic(E9)	
hydrophobic(HlaPreSeq167) && aromatic(E9)	
large(HlaPreSeq167) && aromatic(E9)	
hydrophobic(HlaPreSeq171) && aromatic(E9)	
negative(HlaPreSeq173) && aromatic(E9)	
buried(E9)	0.0708863
aliphatic(HlaPreSeq1) && buried(E9)	0.0639445
hydrophobic(HlaPreSeq1) && buried(E9)	0.0593615
small(HlaPreSeq1) && buried(E9)	0.0532789
small(HlaPreSeq9) && buried(E9)	
polar(HlaPreSeq9) && buried(E9)	
polar(HlaPreSeq11) && buried(E9)	
aliphatic(HlaPreSeq12) && buried(E9)	0.0146844
medium(HlaPreSeq12) && buried(E9)	0.0112976
cyclic(HlaPreSeq14) && buried(E9)	
aromatic(HlaPreSeq14) && buried(E9)	
buried(HlaPreSeq14) && buried(E9)	
hydrophobic(HlaPreSeq14) && buried(E9)	
aliphatic(HlaPreSeq16) && buried(E9)	0.0145805
hydrophobic(HlaPreSeq16) && buried(E9)	0.0112657
large(HlaPreSeq17) && buried(E9)	0.0169576
positive(HlaPreSeq17) && buried(E9)	0.0137468
charged(HlaPreSeq17) && buried(E9)	0.0110449
aliphatic(HlaPreSeq24) && buried(E9)	
buried(HlaPreSeq24) && buried(E9)	
hydrophobic(HlaPreSeq24) && buried(E9)	
small(HlaPreSeq24) && buried(E9)	
medium(HlaPreSeq30) && buried(E9)	0.0120967
negative(HlaPreSeq30) && buried(E9)	0.00959239
charged(HlaPreSeq30) && buried(E9)	0.00753744
polar(HlaPreSeq30) && buried(E9)	
polar(HlaPreSeq32) && buried(E9)	
positive(HlaPreSeq35) && buried(E9)	
charged(HlaPreSeq35) && buried(E9)	
aliphatic(HlaPreSeq41) && buried(E9)	
buried(HlaPreSeq41) && buried(E9)	
hydrophobic(HlaPreSeq41) && buried(E9)	
small(HlaPreSeq41) && buried(E9)	
cyclic(HlaPreSeq43) && buried(E9)	0.0260975
hydrophobic(HlaPreSeq43) && buried(E9)	0.0262396
medium(HlaPreSeq43) && buried(E9)	0.0257119
aliphatic(HlaPreSeq45) && buried(E9)	0.0223949
hydrophobic(HlaPreSeq45) && buried(E9)	
small(HlaPreSeq45) && buried(E9)	0.0223754
large(HlaPreSeq46) && buried(E9)	

negative(HIaPreSeq46) && buried(E9)	
charged(HIaPreSeq46) && buried(E9)	
polar(HIaPreSeq46) && buried(E9)	
large(HIaPreSeq49) && buried(E9)	
negative(HIaPreSeq49) && buried(E9)	
charged(HIaPreSeq49) && buried(E9)	
polar(HIaPreSeq49) && buried(E9)	
medium(HIaPreSeq52) && buried(E9)	0.0223537
aliphatic(HIaPreSeq56) && buried(E9)	0.0147197
hydrophobic(HIaPreSeq56) && buried(E9)	0.0123316
small(HIaPreSeq56) && buried(E9)	0.0102298
large(HIaPreSeq62) && buried(E9)	-0.0219433
positive(HIaPreSeq62) && buried(E9)	0.0180557
charged(HIaPreSeq62) && buried(E9)	0.0179363
polar(HIaPreSeq62) && buried(E9)	-0.0259889
large(HIaPreSeq63) && buried(E9)	
negative(HIaPreSeq63) && buried(E9)	
charged(HIaPreSeq63) && buried(E9)	
large(HIaPreSeq65) && buried(E9)	
polar(HIaPreSeq65) && buried(E9)	
large(HIaPreSeq66) && buried(E9)	0.0296457
positive(HIaPreSeq66) && buried(E9)	0.0237583
charged(HIaPreSeq66) && buried(E9)	0.020864
polar(HIaPreSeq66) && buried(E9)	0.00986648
cyclic(HIaPreSeq67) && buried(E9)	0.0181415
aromatic(HIaPreSeq67) && buried(E9)	0.0179936
hydrophobic(HIaPreSeq67) && buried(E9)	0.015222
large(HIaPreSeq67) && buried(E9)	0.025003
large(HIaPreSeq69) && buried(E9)	0.0204914
positive(HIaPreSeq69) && buried(E9)	0.020456
charged(HIaPreSeq69) && buried(E9)	0.020418
polar(HIaPreSeq69) && buried(E9)	
large(HIaPreSeq70) && buried(E9)	
aliphatic(HIaPreSeq71) && buried(E9)	0.0309139
buried(HIaPreSeq71) && buried(E9)	0.0307527
hydrophobic(HIaPreSeq71) && buried(E9)	0.0304943
small(HIaPreSeq71) && buried(E9)	0.0126929
aliphatic(HIaPreSeq73) && buried(E9)	0.0105901
buried(HIaPreSeq73) && buried(E9)	0.0106182
hydrophobic(HIaPreSeq73) && buried(E9)	0.010643
small(HIaPreSeq73) && buried(E9)	0.0157206
medium(HIaPreSeq74) && buried(E9)	-0.00604387
negative(HIaPreSeq74) && buried(E9)	-0.00869475
charged(HIaPreSeq74) && buried(E9)	0.0132392
polar(HIaPreSeq74) && buried(E9)	0.0123046
aliphatic(HIaPreSeq76) && buried(E9)	
buried(HIaPreSeq76) && buried(E9)	

hydrophobic(HlaPreSeq76) && buried(E9)	
medium(HlaPreSeq76) && buried(E9)	-0.0121747
medium(HlaPreSeq77) && buried(E9)	
large(HlaPreSeq79) && buried(E9)	0.0348387
positive(HlaPreSeq79) && buried(E9)	0.0340953
charged(HlaPreSeq79) && buried(E9)	0.0323774
polar(HlaPreSeq79) && buried(E9)	0.0300079
large(HlaPreSeq80) && buried(E9)	0.0286611
positive(HlaPreSeq80) && buried(E9)	0.0145627
charged(HlaPreSeq80) && buried(E9)	0.014585
polar(HlaPreSeq80) && buried(E9)	
large(HlaPreSeq81) && buried(E9)	-0.0116443
positive(HlaPreSeq82) && buried(E9)	
charged(HlaPreSeq82) && buried(E9)	
polar(HlaPreSeq82) && buried(E9)	
aliphatic(HlaPreSeq83) && buried(E9)	
hydrophobic(HlaPreSeq83) && buried(E9)	
small(HlaPreSeq83) && buried(E9)	
medium(HlaPreSeq90) && buried(E9)	-0.0105697
negative(HlaPreSeq90) && buried(E9)	-0.0107519
charged(HlaPreSeq90) && buried(E9)	-0.0109534
polar(HlaPreSeq90) && buried(E9)	-0.0111735
aliphatic(HlaPreSeq91) && buried(E9)	0.0151544
hydrophobic(HlaPreSeq91) && buried(E9)	0.0128729
small(HlaPreSeq91) && buried(E9)	0.0107495
medium(HlaPreSeq94) && buried(E9)	
polar(HlaPreSeq94) && buried(E9)	
aliphatic(HlaPreSeq95) && buried(E9)	
large(HlaPreSeq95) && buried(E9)	-0.0239951
large(HlaPreSeq97) && buried(E9)	
positive(HlaPreSeq97) && buried(E9)	
charged(HlaPreSeq97) && buried(E9)	
polar(HlaPreSeq97) && buried(E9)	
cyclic(HlaPreSeq99) && buried(E9)	0.00825528
aromatic(HlaPreSeq99) && buried(E9)	
buried(HlaPreSeq99) && buried(E9)	0.0132409
hydrophobic(HlaPreSeq99) && buried(E9)	
large(HlaPreSeq99) && buried(E9)	
large(HlaPreSeq103) && buried(E9)	0.0260097
cyclic(HlaPreSeq105) && buried(E9)	
hydrophobic(HlaPreSeq105) && buried(E9)	
medium(HlaPreSeq105) && buried(E9)	
aliphatic(HlaPreSeq107) && buried(E9)	-0.0266317
small(HlaPreSeq107) && buried(E9)	-0.0263605
aliphatic(HlaPreSeq109) && buried(E9)	0.0308182
hydrophobic(HlaPreSeq113) && buried(E9)	0.0132627
medium(HlaPreSeq114) && buried(E9)	0.0214088

cyclic(HIaPreSeq116) && buried(E9)	0.0364381
aromatic(HIaPreSeq116) && buried(E9)	0.0342796
buried(HIaPreSeq116) && buried(E9)	0.0197263
hydrophobic(HIaPreSeq116) && buried(E9)	0.042699
large(HIaPreSeq116) && buried(E9)	0.0290849
medium(HIaPreSeq127) && buried(E9)	-0.0399404
large(HIaPreSeq131) && buried(E9)	0.0167651
positive(HIaPreSeq131) && buried(E9)	0.0172477
charged(HIaPreSeq131) && buried(E9)	0.0168672
medium(HIaPreSeq138) && buried(E9)	
polar(HIaPreSeq138) && buried(E9)	0.0204036
aliphatic(HIaPreSeq142) && buried(E9)	-0.0268696
buried(HIaPreSeq142) && buried(E9)	-0.0243333
hydrophobic(HIaPreSeq142) && buried(E9)	-0.0216097
large(HIaPreSeq142) && buried(E9)	-0.01888
medium(HIaPreSeq143) && buried(E9)	0.0277463
positive(HIaPreSeq145) && buried(E9)	0.0142938
charged(HIaPreSeq145) && buried(E9)	0.0120174
polar(HIaPreSeq145) && buried(E9)	0.00995381
cyclic(HIaPreSeq147) && buried(E9)	0.0136875
aromatic(HIaPreSeq147) && buried(E9)	0.0112092
aliphatic(HIaPreSeq149) && buried(E9)	0.0144052
buried(HIaPreSeq149) && buried(E9)	0.0119507
hydrophobic(HIaPreSeq149) && buried(E9)	0.00974078
small(HIaPreSeq149) && buried(E9)	
small(HIaPreSeq150) && buried(E9)	-0.00293756
large(HIaPreSeq152) && buried(E9)	
negative(HIaPreSeq152) && buried(E9)	
charged(HIaPreSeq152) && buried(E9)	
polar(HIaPreSeq152) && buried(E9)	
large(HIaPreSeq156) && buried(E9)	
positive(HIaPreSeq156) && buried(E9)	
charged(HIaPreSeq156) && buried(E9)	
polar(HIaPreSeq156) && buried(E9)	
aliphatic(HIaPreSeq158) && buried(E9)	
buried(HIaPreSeq158) && buried(E9)	
hydrophobic(HIaPreSeq158) && buried(E9)	
small(HIaPreSeq158) && buried(E9)	
large(HIaPreSeq161) && buried(E9)	0.0125893
medium(HIaPreSeq163) && buried(E9)	
polar(HIaPreSeq163) && buried(E9)	
large(HIaPreSeq166) && buried(E9)	-0.0027524
cyclic(HIaPreSeq167) && buried(E9)	-0.00561807
aromatic(HIaPreSeq167) && buried(E9)	-0.00532963
buried(HIaPreSeq167) && buried(E9)	
hydrophobic(HIaPreSeq167) && buried(E9)	
large(HIaPreSeq167) && buried(E9)	

hydrophobic(HIaPreSeq171) && buried(E9)	
negative(HIaPreSeq173) && buried(E9)	
hydrophobic(E9)	-0.0408284
aliphatic(HIaPreSeq1) && hydrophobic(E9)	-0.0234192
hydrophobic(HIaPreSeq1) && hydrophobic(E9)	-0.0186944
small(HIaPreSeq1) && hydrophobic(E9)	-0.0148111
small(HIaPreSeq9) && hydrophobic(E9)	
polar(HIaPreSeq9) && hydrophobic(E9)	
polar(HIaPreSeq11) && hydrophobic(E9)	
aliphatic(HIaPreSeq12) && hydrophobic(E9)	
medium(HIaPreSeq12) && hydrophobic(E9)	
cyclic(HIaPreSeq14) && hydrophobic(E9)	
aromatic(HIaPreSeq14) && hydrophobic(E9)	
buried(HIaPreSeq14) && hydrophobic(E9)	
hydrophobic(HIaPreSeq14) && hydrophobic(E9)	
aliphatic(HIaPreSeq16) && hydrophobic(E9)	
hydrophobic(HIaPreSeq16) && hydrophobic(E9)	
large(HIaPreSeq17) && hydrophobic(E9)	
positive(HIaPreSeq17) && hydrophobic(E9)	
charged(HIaPreSeq17) && hydrophobic(E9)	
aliphatic(HIaPreSeq24) && hydrophobic(E9)	-0.014225
buried(HIaPreSeq24) && hydrophobic(E9)	-0.0129148
hydrophobic(HIaPreSeq24) && hydrophobic(E9)	
small(HIaPreSeq24) && hydrophobic(E9)	
medium(HIaPreSeq30) && hydrophobic(E9)	
negative(HIaPreSeq30) && hydrophobic(E9)	
charged(HIaPreSeq30) && hydrophobic(E9)	
polar(HIaPreSeq30) && hydrophobic(E9)	
polar(HIaPreSeq32) && hydrophobic(E9)	0.0108239
positive(HIaPreSeq35) && hydrophobic(E9)	
charged(HIaPreSeq35) && hydrophobic(E9)	
aliphatic(HIaPreSeq41) && hydrophobic(E9)	
buried(HIaPreSeq41) && hydrophobic(E9)	
hydrophobic(HIaPreSeq41) && hydrophobic(E9)	
small(HIaPreSeq41) && hydrophobic(E9)	
cyclic(HIaPreSeq43) && hydrophobic(E9)	-0.00963466
hydrophobic(HIaPreSeq43) && hydrophobic(E9)	-0.0108341
medium(HIaPreSeq43) && hydrophobic(E9)	-0.011346
aliphatic(HIaPreSeq45) && hydrophobic(E9)	
hydrophobic(HIaPreSeq45) && hydrophobic(E9)	
small(HIaPreSeq45) && hydrophobic(E9)	
large(HIaPreSeq46) && hydrophobic(E9)	
negative(HIaPreSeq46) && hydrophobic(E9)	
charged(HIaPreSeq46) && hydrophobic(E9)	
polar(HIaPreSeq46) && hydrophobic(E9)	
large(HIaPreSeq49) && hydrophobic(E9)	
negative(HIaPreSeq49) && hydrophobic(E9)	

charged(HIaPreSeq49) && hydrophobic(E9)	
polar(HIaPreSeq49) && hydrophobic(E9)	
medium(HIaPreSeq52) && hydrophobic(E9)	
aliphatic(HIaPreSeq56) && hydrophobic(E9)	
hydrophobic(HIaPreSeq56) && hydrophobic(E9)	
small(HIaPreSeq56) && hydrophobic(E9)	
large(HIaPreSeq62) && hydrophobic(E9)	
positive(HIaPreSeq62) && hydrophobic(E9)	
charged(HIaPreSeq62) && hydrophobic(E9)	-0.0161114
polar(HIaPreSeq62) && hydrophobic(E9)	
large(HIaPreSeq63) && hydrophobic(E9)	-0.0181701
negative(HIaPreSeq63) && hydrophobic(E9)	-0.0236007
charged(HIaPreSeq63) && hydrophobic(E9)	-0.0207564
large(HIaPreSeq65) && hydrophobic(E9)	
polar(HIaPreSeq65) && hydrophobic(E9)	
large(HIaPreSeq66) && hydrophobic(E9)	-0.0152018
positive(HIaPreSeq66) && hydrophobic(E9)	-0.0196683
charged(HIaPreSeq66) && hydrophobic(E9)	-0.0166729
polar(HIaPreSeq66) && hydrophobic(E9)	
cyclic(HIaPreSeq67) && hydrophobic(E9)	-0.0171488
aromatic(HIaPreSeq67) && hydrophobic(E9)	-0.0167264
hydrophobic(HIaPreSeq67) && hydrophobic(E9)	
large(HIaPreSeq67) && hydrophobic(E9)	
large(HIaPreSeq69) && hydrophobic(E9)	
positive(HIaPreSeq69) && hydrophobic(E9)	
charged(HIaPreSeq69) && hydrophobic(E9)	
polar(HIaPreSeq69) && hydrophobic(E9)	
large(HIaPreSeq70) && hydrophobic(E9)	
aliphatic(HIaPreSeq71) && hydrophobic(E9)	-0.0103339
buried(HIaPreSeq71) && hydrophobic(E9)	-0.0102807
hydrophobic(HIaPreSeq71) && hydrophobic(E9)	-0.0101864
small(HIaPreSeq71) && hydrophobic(E9)	
aliphatic(HIaPreSeq73) && hydrophobic(E9)	
buried(HIaPreSeq73) && hydrophobic(E9)	
hydrophobic(HIaPreSeq73) && hydrophobic(E9)	
small(HIaPreSeq73) && hydrophobic(E9)	
medium(HIaPreSeq74) && hydrophobic(E9)	-0.0196685
negative(HIaPreSeq74) && hydrophobic(E9)	-0.0186344
charged(HIaPreSeq74) && hydrophobic(E9)	
polar(HIaPreSeq74) && hydrophobic(E9)	
aliphatic(HIaPreSeq76) && hydrophobic(E9)	-0.0182726
buried(HIaPreSeq76) && hydrophobic(E9)	-0.0170081
hydrophobic(HIaPreSeq76) && hydrophobic(E9)	-0.0154571
medium(HIaPreSeq76) && hydrophobic(E9)	-0.0426415
medium(HIaPreSeq77) && hydrophobic(E9)	
large(HIaPreSeq79) && hydrophobic(E9)	-0.0185461
positive(HIaPreSeq79) && hydrophobic(E9)	-0.0173125

charged(HIaPreSeq79) && hydrophobic(E9)	-0.0157913
polar(HIaPreSeq79) && hydrophobic(E9)	-0.0141331
large(HIaPreSeq80) && hydrophobic(E9)	
positive(HIaPreSeq80) && hydrophobic(E9)	
charged(HIaPreSeq80) && hydrophobic(E9)	
polar(HIaPreSeq80) && hydrophobic(E9)	0.0100335
large(HIaPreSeq81) && hydrophobic(E9)	
positive(HIaPreSeq82) && hydrophobic(E9)	
charged(HIaPreSeq82) && hydrophobic(E9)	
polar(HIaPreSeq82) && hydrophobic(E9)	
aliphatic(HIaPreSeq83) && hydrophobic(E9)	
hydrophobic(HIaPreSeq83) && hydrophobic(E9)	
small(HIaPreSeq83) && hydrophobic(E9)	
medium(HIaPreSeq90) && hydrophobic(E9)	-0.0129249
negative(HIaPreSeq90) && hydrophobic(E9)	-0.0132372
charged(HIaPreSeq90) && hydrophobic(E9)	-0.0135063
polar(HIaPreSeq90) && hydrophobic(E9)	-0.0137237
aliphatic(HIaPreSeq91) && hydrophobic(E9)	
hydrophobic(HIaPreSeq91) && hydrophobic(E9)	
small(HIaPreSeq91) && hydrophobic(E9)	
medium(HIaPreSeq94) && hydrophobic(E9)	
polar(HIaPreSeq94) && hydrophobic(E9)	
aliphatic(HIaPreSeq95) && hydrophobic(E9)	
large(HIaPreSeq95) && hydrophobic(E9)	
large(HIaPreSeq97) && hydrophobic(E9)	0.0186319
positive(HIaPreSeq97) && hydrophobic(E9)	0.027404
charged(HIaPreSeq97) && hydrophobic(E9)	0.0264874
polar(HIaPreSeq97) && hydrophobic(E9)	
cyclic(HIaPreSeq99) && hydrophobic(E9)	
aromatic(HIaPreSeq99) && hydrophobic(E9)	
buried(HIaPreSeq99) && hydrophobic(E9)	
hydrophobic(HIaPreSeq99) && hydrophobic(E9)	
large(HIaPreSeq99) && hydrophobic(E9)	
large(HIaPreSeq103) && hydrophobic(E9)	
cyclic(HIaPreSeq105) && hydrophobic(E9)	
hydrophobic(HIaPreSeq105) && hydrophobic(E9)	
medium(HIaPreSeq105) && hydrophobic(E9)	
aliphatic(HIaPreSeq107) && hydrophobic(E9)	
small(HIaPreSeq107) && hydrophobic(E9)	
aliphatic(HIaPreSeq109) && hydrophobic(E9)	
hydrophobic(HIaPreSeq113) && hydrophobic(E9)	
medium(HIaPreSeq114) && hydrophobic(E9)	
cyclic(HIaPreSeq116) && hydrophobic(E9)	
aromatic(HIaPreSeq116) && hydrophobic(E9)	
buried(HIaPreSeq116) && hydrophobic(E9)	
hydrophobic(HIaPreSeq116) && hydrophobic(E9)	
large(HIaPreSeq116) && hydrophobic(E9)	

medium(HlaPreSeq127) && hydrophobic(E9)	-0.0170893
large(HlaPreSeq131) && hydrophobic(E9)	
positive(HlaPreSeq131) && hydrophobic(E9)	
charged(HlaPreSeq131) && hydrophobic(E9)	
medium(HlaPreSeq138) && hydrophobic(E9)	
polar(HlaPreSeq138) && hydrophobic(E9)	
aliphatic(HlaPreSeq142) && hydrophobic(E9)	
buried(HlaPreSeq142) && hydrophobic(E9)	
hydrophobic(HlaPreSeq142) && hydrophobic(E9)	
large(HlaPreSeq142) && hydrophobic(E9)	
medium(HlaPreSeq143) && hydrophobic(E9)	0.0118914
positive(HlaPreSeq145) && hydrophobic(E9)	
charged(HlaPreSeq145) && hydrophobic(E9)	
polar(HlaPreSeq145) && hydrophobic(E9)	
cyclic(HlaPreSeq147) && hydrophobic(E9)	
aromatic(HlaPreSeq147) && hydrophobic(E9)	
aliphatic(HlaPreSeq149) && hydrophobic(E9)	
buried(HlaPreSeq149) && hydrophobic(E9)	
hydrophobic(HlaPreSeq149) && hydrophobic(E9)	
small(HlaPreSeq149) && hydrophobic(E9)	
small(HlaPreSeq150) && hydrophobic(E9)	-0.00661496
large(HlaPreSeq152) && hydrophobic(E9)	
negative(HlaPreSeq152) && hydrophobic(E9)	-0.0110711
charged(HlaPreSeq152) && hydrophobic(E9)	
polar(HlaPreSeq152) && hydrophobic(E9)	-0.0141037
large(HlaPreSeq156) && hydrophobic(E9)	
positive(HlaPreSeq156) && hydrophobic(E9)	0.0168247
charged(HlaPreSeq156) && hydrophobic(E9)	
polar(HlaPreSeq156) && hydrophobic(E9)	
aliphatic(HlaPreSeq158) && hydrophobic(E9)	
buried(HlaPreSeq158) && hydrophobic(E9)	
hydrophobic(HlaPreSeq158) && hydrophobic(E9)	
small(HlaPreSeq158) && hydrophobic(E9)	-0.00961285
large(HlaPreSeq161) && hydrophobic(E9)	
medium(HlaPreSeq163) && hydrophobic(E9)	
polar(HlaPreSeq163) && hydrophobic(E9)	
large(HlaPreSeq166) && hydrophobic(E9)	-0.0105249
cyclic(HlaPreSeq167) && hydrophobic(E9)	-0.0103689
aromatic(HlaPreSeq167) && hydrophobic(E9)	-0.00893863
buried(HlaPreSeq167) && hydrophobic(E9)	-0.00747714
hydrophobic(HlaPreSeq167) && hydrophobic(E9)	
large(HlaPreSeq167) && hydrophobic(E9)	
hydrophobic(HlaPreSeq171) && hydrophobic(E9)	
negative(HlaPreSeq173) && hydrophobic(E9)	
large(E9)	0.0176514
aliphatic(HlaPreSeq1) && large(E9)	0.0299081
hydrophobic(HlaPreSeq1) && large(E9)	0.0262116

small(HlaPreSeq1) && large(E9)	0.0224328
small(HlaPreSeq9) && large(E9)	
polar(HlaPreSeq9) && large(E9)	
polar(HlaPreSeq11) && large(E9)	0.0177784
aliphatic(HlaPreSeq12) && large(E9)	
medium(HlaPreSeq12) && large(E9)	
cyclic(HlaPreSeq14) && large(E9)	
aromatic(HlaPreSeq14) && large(E9)	
buried(HlaPreSeq14) && large(E9)	
hydrophobic(HlaPreSeq14) && large(E9)	
aliphatic(HlaPreSeq16) && large(E9)	
hydrophobic(HlaPreSeq16) && large(E9)	
large(HlaPreSeq17) && large(E9)	
positive(HlaPreSeq17) && large(E9)	
charged(HlaPreSeq17) && large(E9)	
aliphatic(HlaPreSeq24) && large(E9)	0.0179357
buried(HlaPreSeq24) && large(E9)	0.0151103
hydrophobic(HlaPreSeq24) && large(E9)	
small(HlaPreSeq24) && large(E9)	
medium(HlaPreSeq30) && large(E9)	
negative(HlaPreSeq30) && large(E9)	
charged(HlaPreSeq30) && large(E9)	
polar(HlaPreSeq30) && large(E9)	
polar(HlaPreSeq32) && large(E9)	
positive(HlaPreSeq35) && large(E9)	
charged(HlaPreSeq35) && large(E9)	
aliphatic(HlaPreSeq41) && large(E9)	
buried(HlaPreSeq41) && large(E9)	
hydrophobic(HlaPreSeq41) && large(E9)	
small(HlaPreSeq41) && large(E9)	
cyclic(HlaPreSeq43) && large(E9)	
hydrophobic(HlaPreSeq43) && large(E9)	
medium(HlaPreSeq43) && large(E9)	
aliphatic(HlaPreSeq45) && large(E9)	
hydrophobic(HlaPreSeq45) && large(E9)	
small(HlaPreSeq45) && large(E9)	
large(HlaPreSeq46) && large(E9)	
negative(HlaPreSeq46) && large(E9)	
charged(HlaPreSeq46) && large(E9)	
polar(HlaPreSeq46) && large(E9)	
large(HlaPreSeq49) && large(E9)	
negative(HlaPreSeq49) && large(E9)	
charged(HlaPreSeq49) && large(E9)	
polar(HlaPreSeq49) && large(E9)	
medium(HlaPreSeq52) && large(E9)	
aliphatic(HlaPreSeq56) && large(E9)	
hydrophobic(HlaPreSeq56) && large(E9)	

small(HlaPreSeq56) && large(E9)	
large(HlaPreSeq62) && large(E9)	0.0313205
positive(HlaPreSeq62) && large(E9)	
charged(HlaPreSeq62) && large(E9)	
polar(HlaPreSeq62) && large(E9)	0.0306809
large(HlaPreSeq63) && large(E9)	-0.0119497
negative(HlaPreSeq63) && large(E9)	-0.0126126
charged(HlaPreSeq63) && large(E9)	
large(HlaPreSeq65) && large(E9)	
polar(HlaPreSeq65) && large(E9)	
large(HlaPreSeq66) && large(E9)	
positive(HlaPreSeq66) && large(E9)	
charged(HlaPreSeq66) && large(E9)	
polar(HlaPreSeq66) && large(E9)	
cyclic(HlaPreSeq67) && large(E9)	
aromatic(HlaPreSeq67) && large(E9)	
hydrophobic(HlaPreSeq67) && large(E9)	0.010271
large(HlaPreSeq67) && large(E9)	
large(HlaPreSeq69) && large(E9)	
positive(HlaPreSeq69) && large(E9)	
charged(HlaPreSeq69) && large(E9)	
polar(HlaPreSeq69) && large(E9)	
large(HlaPreSeq70) && large(E9)	
aliphatic(HlaPreSeq71) && large(E9)	
buried(HlaPreSeq71) && large(E9)	
hydrophobic(HlaPreSeq71) && large(E9)	
small(HlaPreSeq71) && large(E9)	
aliphatic(HlaPreSeq73) && large(E9)	
buried(HlaPreSeq73) && large(E9)	
hydrophobic(HlaPreSeq73) && large(E9)	
small(HlaPreSeq73) && large(E9)	
medium(HlaPreSeq74) && large(E9)	0.0119006
negative(HlaPreSeq74) && large(E9)	0.0140743
charged(HlaPreSeq74) && large(E9)	
polar(HlaPreSeq74) && large(E9)	
aliphatic(HlaPreSeq76) && large(E9)	-0.0168055
buried(HlaPreSeq76) && large(E9)	
hydrophobic(HlaPreSeq76) && large(E9)	
medium(HlaPreSeq76) && large(E9)	
medium(HlaPreSeq77) && large(E9)	
large(HlaPreSeq79) && large(E9)	
positive(HlaPreSeq79) && large(E9)	
charged(HlaPreSeq79) && large(E9)	
polar(HlaPreSeq79) && large(E9)	
large(HlaPreSeq80) && large(E9)	0.0116529
positive(HlaPreSeq80) && large(E9)	
charged(HlaPreSeq80) && large(E9)	

polar(HlaPreSeq80) && large(E9)	
large(HlaPreSeq81) && large(E9)	
positive(HlaPreSeq82) && large(E9)	
charged(HlaPreSeq82) && large(E9)	
polar(HlaPreSeq82) && large(E9)	
aliphatic(HlaPreSeq83) && large(E9)	
hydrophobic(HlaPreSeq83) && large(E9)	
small(HlaPreSeq83) && large(E9)	
medium(HlaPreSeq90) && large(E9)	0.00886339
negative(HlaPreSeq90) && large(E9)	0.00891044
charged(HlaPreSeq90) && large(E9)	0.00913077
polar(HlaPreSeq90) && large(E9)	0.009524
aliphatic(HlaPreSeq91) && large(E9)	
hydrophobic(HlaPreSeq91) && large(E9)	
small(HlaPreSeq91) && large(E9)	
medium(HlaPreSeq94) && large(E9)	
polar(HlaPreSeq94) && large(E9)	
aliphatic(HlaPreSeq95) && large(E9)	0.0113046
large(HlaPreSeq95) && large(E9)	0.0239976
large(HlaPreSeq97) && large(E9)	
positive(HlaPreSeq97) && large(E9)	
charged(HlaPreSeq97) && large(E9)	
polar(HlaPreSeq97) && large(E9)	
cyclic(HlaPreSeq99) && large(E9)	
aromatic(HlaPreSeq99) && large(E9)	
buried(HlaPreSeq99) && large(E9)	0.016215
hydrophobic(HlaPreSeq99) && large(E9)	
large(HlaPreSeq99) && large(E9)	
large(HlaPreSeq103) && large(E9)	
cyclic(HlaPreSeq105) && large(E9)	
hydrophobic(HlaPreSeq105) && large(E9)	
medium(HlaPreSeq105) && large(E9)	
aliphatic(HlaPreSeq107) && large(E9)	0.026418
small(HlaPreSeq107) && large(E9)	0.0232943
aliphatic(HlaPreSeq109) && large(E9)	
hydrophobic(HlaPreSeq113) && large(E9)	-0.0223362
medium(HlaPreSeq114) && large(E9)	
cyclic(HlaPreSeq116) && large(E9)	-0.0136222
aromatic(HlaPreSeq116) && large(E9)	-0.0133773
buried(HlaPreSeq116) && large(E9)	-0.0198997
hydrophobic(HlaPreSeq116) && large(E9)	-0.0216209
large(HlaPreSeq116) && large(E9)	-0.0175022
medium(HlaPreSeq127) && large(E9)	
large(HlaPreSeq131) && large(E9)	
positive(HlaPreSeq131) && large(E9)	
charged(HlaPreSeq131) && large(E9)	
medium(HlaPreSeq138) && large(E9)	

polar(HIaPreSeq138) && large(E9)	
aliphatic(HIaPreSeq142) && large(E9)	0.0194681
buried(HIaPreSeq142) && large(E9)	0.0157143
hydrophobic(HIaPreSeq142) && large(E9)	
large(HIaPreSeq142) && large(E9)	
medium(HIaPreSeq143) && large(E9)	-0.00529073
positive(HIaPreSeq145) && large(E9)	-0.0174754
charged(HIaPreSeq145) && large(E9)	-0.0157857
polar(HIaPreSeq145) && large(E9)	-0.0137782
cyclic(HIaPreSeq147) && large(E9)	
aromatic(HIaPreSeq147) && large(E9)	
aliphatic(HIaPreSeq149) && large(E9)	-0.0190136
buried(HIaPreSeq149) && large(E9)	-0.0156023
hydrophobic(HIaPreSeq149) && large(E9)	-0.0125941
small(HIaPreSeq149) && large(E9)	
small(HIaPreSeq150) && large(E9)	0.0355911
large(HIaPreSeq152) && large(E9)	
negative(HIaPreSeq152) && large(E9)	
charged(HIaPreSeq152) && large(E9)	
polar(HIaPreSeq152) && large(E9)	
large(HIaPreSeq156) && large(E9)	
positive(HIaPreSeq156) && large(E9)	
charged(HIaPreSeq156) && large(E9)	
polar(HIaPreSeq156) && large(E9)	0.022267
aliphatic(HIaPreSeq158) && large(E9)	
buried(HIaPreSeq158) && large(E9)	
hydrophobic(HIaPreSeq158) && large(E9)	
small(HIaPreSeq158) && large(E9)	0.0294171
large(HIaPreSeq161) && large(E9)	
medium(HIaPreSeq163) && large(E9)	
polar(HIaPreSeq163) && large(E9)	-0.0159075
large(HIaPreSeq166) && large(E9)	0.0157872
cyclic(HIaPreSeq167) && large(E9)	0.0177818
aromatic(HIaPreSeq167) && large(E9)	0.014486
buried(HIaPreSeq167) && large(E9)	
hydrophobic(HIaPreSeq167) && large(E9)	
large(HIaPreSeq167) && large(E9)	
hydrophobic(HIaPreSeq171) && large(E9)	0.0109232
negative(HIaPreSeq173) && large(E9)	
G in NFlank	0.0386254
G in NFlank[1@]	0.0386342
C in CFlank	0.044201
C in CFlank[@1]	0.0441813
aliphatic in NFlank	-0.00372952
hydrophobic in NFlank	-0.0238279
small in NFlank	-0.014629
aliphatic in NFlank[1@]	-0.0120808

hydrophobic in NFlank[1@]	-0.0219244
small in NFlank[1@]	-0.0152875
buried in CFlank	-0.0194939
medium in CFlank	0.00947072
polar in CFlank	0.0280823
buried in CFlank[@1]	-0.016163
medium in CFlank[@1]	0.00793558
polar in CFlank[@1]	0.028862
TR in Epitope	0.0089893
RY in Epitope	0.00585569
YP in Epitope	
PL in Epitope	
LT in Epitope	0.0170747
TF in Epitope	0.0174055
FG in Epitope	
GW in Epitope	0.0348866
TR in Epitope[@1-2]	
RY in Epitope[@2-3]	0.0159158
YP in Epitope[@3-4]	
PL in Epitope[@4-5]	
LT in Epitope[@5-6]	0.00854704
TF in Epitope[@6-7]	
FG in Epitope[@7-8]	
GW in Epitope[@8-9]	
medium,large in Epitope	-0.0848194
medium,positive in Epitope	-0.014277
medium,charged in Epitope	-0.0239569
medium,polar in Epitope	-0.0145959
polar,large in Epitope	-0.024792
polar,positive in Epitope	
polar,charged in Epitope	0.0496893
polar,polar in Epitope	0.0320605
large,cyclic in Epitope	-0.0203396
large,aromatic in Epitope	
large,hydrophobic in Epitope	-0.0301016
large,large in Epitope	-0.0326539
positive,cyclic in Epitope	
positive,aromatic in Epitope	0.0113657
positive,hydrophobic in Epitope	-0.0154319
positive,large in Epitope	-0.0232853
charged,cyclic in Epitope	-0.0114338
charged,aromatic in Epitope	
charged,hydrophobic in Epitope	
charged,large in Epitope	-0.0134729
polar,cyclic in Epitope	0.0152506
polar,aromatic in Epitope	-0.0219576
polar,hydrophobic in Epitope	

cyclic,cyclic in Epitope	
cyclic,hydrophobic in Epitope	-0.0362955
cyclic,medium in Epitope	-0.00851756
aromatic,cyclic in Epitope	0.0235147
aromatic,hydrophobic in Epitope	
aromatic,medium in Epitope	0.0280411
hydrophobic,cyclic in Epitope	
hydrophobic,hydrophobic in Epitope	-0.0240898
hydrophobic,medium in Epitope	
large,medium in Epitope	-0.0168111
cyclic,aliphatic in Epitope	
cyclic,buried in Epitope	0.0222236
cyclic,large in Epitope	0.0294087
hydrophobic,aliphatic in Epitope	
hydrophobic,buried in Epitope	
hydrophobic,large in Epitope	
medium,aliphatic in Epitope	0.00895023
medium,buried in Epitope	-0.0114205
medium,hydrophobic in Epitope	
aliphatic,medium in Epitope	
aliphatic,polar in Epitope	
buried,medium in Epitope	0.0646071
buried,polar in Epitope	0.0652927
hydrophobic,polar in Epitope	-0.0256126
large,polar in Epitope	0.00887288
medium,cyclic in Epitope	-0.0470856
medium,aromatic in Epitope	-0.0431019
polar,buried in Epitope	
cyclic,small in Epitope	
aromatic,aliphatic in Epitope	
aromatic,small in Epitope	-0.00618045
buried,aliphatic in Epitope	-0.0613077
buried,hydrophobic in Epitope	0.008203
buried,small in Epitope	-0.0441254
hydrophobic,small in Epitope	0.0109279
large,aliphatic in Epitope	-0.050252
large,small in Epitope	-0.00605783
aliphatic,cyclic in Epitope	-0.0172853
aliphatic,aromatic in Epitope	-0.0209337
aliphatic,buried in Epitope	0.0151195
aliphatic,hydrophobic in Epitope	0.020276
aliphatic,large in Epitope	
hydrophobic,aromatic in Epitope	0.0193812
small,cyclic in Epitope	-0.00739826
small,aromatic in Epitope	
small,buried in Epitope	
small,hydrophobic in Epitope	-0.0176585

small,large in Epitope	
medium,large in Epitope[@1-2]	0.0286192
medium,positive in Epitope[@1-2]	
medium,charged in Epitope[@1-2]	0.0103506
medium,polar in Epitope[@1-2]	0.0115651
polar,large in Epitope[@1-2]	
polar,positive in Epitope[@1-2]	
polar,charged in Epitope[@1-2]	
polar,polar in Epitope[@1-2]	
large,cyclic in Epitope[@2-3]	0.0362909
large,aromatic in Epitope[@2-3]	0.043682
large,hydrophobic in Epitope[@2-3]	0.041059
large,large in Epitope[@2-3]	0.0258346
positive,cyclic in Epitope[@2-3]	0.0112082
positive,aromatic in Epitope[@2-3]	0.0141009
positive,hydrophobic in Epitope[@2-3]	0.00999934
positive,large in Epitope[@2-3]	0.0111622
charged,cyclic in Epitope[@2-3]	0.0173689
charged,aromatic in Epitope[@2-3]	0.0230783
charged,hydrophobic in Epitope[@2-3]	0.0202865
charged,large in Epitope[@2-3]	0.0243799
polar,cyclic in Epitope[@2-3]	0.0169335
polar,aromatic in Epitope[@2-3]	0.0148918
polar,hydrophobic in Epitope[@2-3]	
polar,large in Epitope[@2-3]	
cyclic,cyclic in Epitope[@3-4]	0.0132162
cyclic,hydrophobic in Epitope[@3-4]	-0.0382002
cyclic,medium in Epitope[@3-4]	
aromatic,cyclic in Epitope[@3-4]	0.0167365
aromatic,hydrophobic in Epitope[@3-4]	-0.0227962
aromatic,medium in Epitope[@3-4]	
hydrophobic,cyclic in Epitope[@3-4]	0.0363813
hydrophobic,hydrophobic in Epitope[@3-4]	
hydrophobic,medium in Epitope[@3-4]	
large,cyclic in Epitope[@3-4]	
large,hydrophobic in Epitope[@3-4]	-0.0140381
large,medium in Epitope[@3-4]	
cyclic,aliphatic in Epitope[@4-5]	0.0215246
cyclic,buried in Epitope[@4-5]	0.0173051
cyclic,hydrophobic in Epitope[@4-5]	0.031043
cyclic,large in Epitope[@4-5]	-0.0136701
hydrophobic,aliphatic in Epitope[@4-5]	
hydrophobic,buried in Epitope[@4-5]	-0.0236216
hydrophobic,hydrophobic in Epitope[@4-5]	
hydrophobic,large in Epitope[@4-5]	0.0254595
medium,aliphatic in Epitope[@4-5]	
medium,buried in Epitope[@4-5]	0.0175319

medium,hydrophobic in Epitope[@4-5]	
medium,large in Epitope[@4-5]	-0.0130962
aliphatic,medium in Epitope[@5-6]	-0.031247
aliphatic,polar in Epitope[@5-6]	
buried,medium in Epitope[@5-6]	
buried,polar in Epitope[@5-6]	0.0301477
hydrophobic,medium in Epitope[@5-6]	-0.0211312
hydrophobic,polar in Epitope[@5-6]	-0.0271899
large,medium in Epitope[@5-6]	-0.00525845
large,polar in Epitope[@5-6]	0.0451311
medium,cyclic in Epitope[@6-7]	-0.0117366
medium,aromatic in Epitope[@6-7]	0.0174902
medium,buried in Epitope[@6-7]	0.031084
medium,hydrophobic in Epitope[@6-7]	-0.0130571
medium,large in Epitope[@6-7]	
polar,cyclic in Epitope[@6-7]	-0.00362787
polar,aromatic in Epitope[@6-7]	
polar,buried in Epitope[@6-7]	0.0123962
polar,hydrophobic in Epitope[@6-7]	
polar,large in Epitope[@6-7]	0.0101649
cyclic,aliphatic in Epitope[@7-8]	0.0252504
cyclic,hydrophobic in Epitope[@7-8]	0.0208655
cyclic,small in Epitope[@7-8]	
aromatic,aliphatic in Epitope[@7-8]	0.0191819
aromatic,hydrophobic in Epitope[@7-8]	0.0179981
aromatic,small in Epitope[@7-8]	
buried,aliphatic in Epitope[@7-8]	0.0253477
buried,hydrophobic in Epitope[@7-8]	
buried,small in Epitope[@7-8]	-0.0215343
hydrophobic,aliphatic in Epitope[@7-8]	0.049027
hydrophobic,hydrophobic in Epitope[@7-8]	0.014188
hydrophobic,small in Epitope[@7-8]	
large,aliphatic in Epitope[@7-8]	
large,hydrophobic in Epitope[@7-8]	-0.0426337
large,small in Epitope[@7-8]	-0.0188227
aliphatic,cyclic in Epitope[@8-9]	-0.00715346
aliphatic,aromatic in Epitope[@8-9]	
aliphatic,buried in Epitope[@8-9]	
aliphatic,hydrophobic in Epitope[@8-9]	-0.00985991
aliphatic,large in Epitope[@8-9]	-0.0106969
hydrophobic,cyclic in Epitope[@8-9]	-0.010131
hydrophobic,aromatic in Epitope[@8-9]	
hydrophobic,buried in Epitope[@8-9]	-0.00821249
hydrophobic,hydrophobic in Epitope[@8-9]	-0.0134519
hydrophobic,large in Epitope[@8-9]	-0.0283376
small,cyclic in Epitope[@8-9]	-0.0127301
small,aromatic in Epitope[@8-9]	

small,buried in Epitope[@8-9]	0.0288942
small,hydrophobic in Epitope[@8-9]	0.00796399
small,large in Epitope[@8-9]	-0.0172771
G in NFlank[1@] && T in Epitope[@1]	
W in Epitope[@9] && C in CFlank[@1]	
aliphatic in NFlank[1@] && medium in Epitope[@1]	0.00668063
aliphatic in NFlank[1@] && polar in Epitope[@1]	-0.0157383
hydrophobic in NFlank[1@] && medium in Epitope[@1]	0.00777237
hydrophobic in NFlank[1@] && polar in Epitope[@1]	
small in NFlank[1@] && medium in Epitope[@1]	
small in NFlank[1@] && polar in Epitope[@1]	-0.0182482
cyclic in Epitope[@9] && buried in CFlank[@1]	
cyclic in Epitope[@9] && medium in CFlank[@1]	0.021629
cyclic in Epitope[@9] && polar in CFlank[@1]	
aromatic in Epitope[@9] && buried in CFlank[@1]	
aromatic in Epitope[@9] && medium in CFlank[@1]	0.0173904
aromatic in Epitope[@9] && polar in CFlank[@1]	
buried in Epitope[@9] && buried in CFlank[@1]	
buried in Epitope[@9] && medium in CFlank[@1]	-0.00839528
buried in Epitope[@9] && polar in CFlank[@1]	
hydrophobic in Epitope[@9] && buried in CFlank[@1]	
hydrophobic in Epitope[@9] && medium in CFlank[@1]	0.0221422
hydrophobic in Epitope[@9] && polar in CFlank[@1]	0.025005
large in Epitope[@9] && buried in CFlank[@1]	0.0223039
large in Epitope[@9] && medium in CFlank[@1]	0.0181447
large in Epitope[@9] && polar in CFlank[@1]	
AlwaysTrue	-0.0331736

Feature	Weight
HlaPreSeq1=Gly	-0.682168
HlaPreSeq6=Arg	-0.400078
HlaPreSeq9=Phe	-0.151059
HlaPreSeq11=Ser	-0.225585
HlaPreSeq12=Val	-0.218504
HlaPreSeq14=Arg	-0.214254
HlaPreSeq16=Gly	-0.162048
HlaPreSeq17=Arg	-0.124782
HlaPreSeq21=Arg	-0.0902305
HlaPreSeq24=Ala	-0.0430415
HlaPreSeq30=Asp	-0.0583658
HlaPreSeq32=Gln	-0.0364025
HlaPreSeq35=Arg	-0.0362292
HlaPreSeq41=Ala	-0.0230398
HlaPreSeq46=Glu	-0.0280059
HlaPreSeq49=Ala	-0.018213
HlaPreSeq56=Gly	-0.0133377
HlaPreSeq65=Arg	0.0274833
HlaPreSeq69=Ala	0.0189308
HlaPreSeq70=His	0.0285563
HlaPreSeq71=Ser	0.0177947
HlaPreSeq74=Asp	-0.0163807
HlaPreSeq77=Asn	-0.0202427
HlaPreSeq79=Gly	0.014383
HlaPreSeq80=Thr	0.00827761
HlaPreSeq90=Asp	0.00157819
HlaPreSeq95=Ile	-0.010094
HlaPreSeq97=Ile	-0.0129994
HlaPreSeq103=Val	0.00010244
HlaPreSeq105=Pro	-0.0325057
HlaPreSeq107=Gly	-0.0313098
HlaPreSeq109=Phe	0.0148325
HlaPreSeq127=Asn	-0.0293463
HlaPreSeq138=Met	0.0168143
HlaPreSeq142=Ile	-0.0265345
HlaPreSeq144=Lys	0.0145433
HlaPreSeq145=Arg	-0.0239823
HlaPreSeq151=His	0.0133291
aliphatic(HlaPreSeq1)	0.0200438
hydrophobic(HlaPreSeq1)	0.0147337
large(HlaPreSeq43)	0.0108906
large(HlaPreSeq67)	-0.0040914
cyclic(HlaPreSeq70)	0.0179344
medium(HlaPreSeq90)	0.00050163
negative(HlaPreSeq90)	-0.0006629
charged(HlaPreSeq90)	-0.0019062

polar(HlaPreSeq90)	-0.0031899
large(HlaPreSeq95)	-0.0259184
aliphatic(HlaPreSeq97)	-0.0114227
cyclic(HlaPreSeq105)	-0.0178925
charged(HlaPreSeq163)	-0.0163878
HlaPreSeq69=Ala && E1=Trp	-0.0181062
aliphatic(HlaPreSeq24) && cyclic(E	0.0073986
buried(HlaPreSeq24) && cyclic(E1)	0.00771825
hydrophobic(HlaPreSeq24) && cyc	0.00806613
small(HlaPreSeq24) && cyclic(E1)	0.0133146
large(HlaPreSeq45) && cyclic(E1)	-0.0170675
negative(HlaPreSeq63) && cyclic(E	-0.0100484
charged(HlaPreSeq63) && cyclic(E	-0.0097797
aliphatic(HlaPreSeq69) && cyclic(E	-0.0133077
buried(HlaPreSeq69) && cyclic(E1)	-0.0130516
small(HlaPreSeq76) && cyclic(E1)	0.0120361
positive(HlaPreSeq144) && cyclic(I	-0.0133333
charged(HlaPreSeq144) && cyclic(	-0.0131776
cyclic(HlaPreSeq151) && cyclic(E1)	-0.0148525
aromatic(HlaPreSeq151) && cyclic	-0.0146817
charged(HlaPreSeq163) && cyclic(	-0.0191269
aromatic(E1)	0.017675
aliphatic(HlaPreSeq1) && aromatic	0.0159907
hydrophobic(HlaPreSeq1) && aron	0.0177963
small(HlaPreSeq1) && aromatic(E1	0.0195729
buried(HlaPreSeq9) && aromatic(E	0.0213561
polar(HlaPreSeq11) && aromatic(E	0.0116541
aliphatic(HlaPreSeq12) && aromat	0.0155424
medium(HlaPreSeq12) && aromat	0.0164034
positive(HlaPreSeq14) && aromati	0.0272062
charged(HlaPreSeq14) && aromati	0.0281484
polar(HlaPreSeq14) && aromatic(E	0.0288515
aliphatic(HlaPreSeq16) && aromat	0.0303589
hydrophobic(HlaPreSeq16) && arc	0.0306009
large(HlaPreSeq17) && aromatic(E	0.0325321
positive(HlaPreSeq17) && aromati	0.0323072
charged(HlaPreSeq17) && aromati	0.031871
aliphatic(HlaPreSeq24) && aromat	0.0234653
buried(HlaPreSeq24) && aromatic	0.0231224
hydrophobic(HlaPreSeq24) && arc	0.0226899
small(HlaPreSeq24) && aromatic(E	0.0371215
medium(HlaPreSeq30) && aromat	0.0307826
negative(HlaPreSeq30) && aromat	0.0297013
charged(HlaPreSeq30) && aromati	0.0285256
polar(HlaPreSeq30) && aromatic(E	0.0272752
polar(HlaPreSeq32) && aromatic(E	0.0288878
positive(HlaPreSeq35) && aromati	0.0203238

charged(HlaPreSeq35) && aromati	0.0188773
aliphatic(HlaPreSeq41) && aromati	0.0259523
buried(HlaPreSeq41) && aromatic	0.0245842
hydrophobic(HlaPreSeq41) && arc	0.0232221
small(HlaPreSeq41) && aromatic(E	0.0218754
polar(HlaPreSeq62) && aromatic(E	-0.0107971
medium(HlaPreSeq74) && aromati	-0.0101456
negative(HlaPreSeq74) && aromati	-0.0102621
small(HlaPreSeq76) && aromatic(E	0.0134073
aliphatic(HlaPreSeq97) && aromati	-0.0122057
positive(HlaPreSeq144) && aroma	-0.0079433
charged(HlaPreSeq144) && aroma	-0.0084072
cyclic(HlaPreSeq151) && aromatic	-0.0104909
aromatic(HlaPreSeq151) && arom	-0.0109725
positive(HlaPreSeq156) && aroma	0.0162756
charged(HlaPreSeq156) && aroma	0.0166286
charged(HlaPreSeq163) && aroma	-0.0170749
polar(HlaPreSeq43) && buried(E1)	0.0120996
aliphatic(HlaPreSeq56) && buried(	-0.0121011
hydrophobic(HlaPreSeq56) && bui	-0.0127755
small(HlaPreSeq56) && buried(E1)	-0.0131258
large(HlaPreSeq62) && buried(E1)	-0.0136072
polar(HlaPreSeq62) && buried(E1)	-0.0176013
large(HlaPreSeq63) && buried(E1)	0.0205267
negative(HlaPreSeq63) && buried(	0.0166386
charged(HlaPreSeq63) && buried(l	0.0163528
positive(HlaPreSeq65) && buried(f	0.0184411
charged(HlaPreSeq65) && buried(l	0.0183119
polar(HlaPreSeq66) && buried(E1)	0.0160386
large(HlaPreSeq67) && buried(E1)	0.00095328
aliphatic(HlaPreSeq69) && buried(	0.0154742
buried(HlaPreSeq69) && buried(E1	0.0147727
hydrophobic(HlaPreSeq69) && bui	0.0139474
small(HlaPreSeq69) && buried(E1)	0.0130282
cyclic(HlaPreSeq70) && buried(E1)	0.00798371
aromatic(HlaPreSeq70) && buried	0.00757457
positive(HlaPreSeq70) && buried(f	0.0059089
charged(HlaPreSeq70) && buried(l	0.00556604
medium(HlaPreSeq74) && buried(	-0.0033771
negative(HlaPreSeq74) && buried(	-0.0036096
aliphatic(HlaPreSeq79) && buried(	0.0112164
hydrophobic(HlaPreSeq79) && bui	0.0108775
small(HlaPreSeq79) && buried(E1)	0.0104928
large(HlaPreSeq95) && buried(E1)	-0.0104507
cyclic(HlaPreSeq105) && buried(E:	-0.0181784
hydrophobic(HlaPreSeq105) && bi	-0.0190347
medium(HlaPreSeq105) && buriec	-0.0197345

aliphatic(HlaPreSeq107) && buried	-0.0124518
small(HlaPreSeq107) && buried(E1	-0.0126113
large(HlaPreSeq138) && buried(E1	0.00690675
polar(HlaPreSeq163) && buried(E1	-0.0175787
hydrophobic(E1)	-0.0209594
aliphatic(HlaPreSeq1) && hydroph	-0.0118246
hydrophobic(HlaPreSeq1) && hydr	-0.0104056
large(HlaPreSeq45) && hydrophok	0.00895117
large(HlaPreSeq62) && hydrophok	-0.0345422
polar(HlaPreSeq62) && hydrophok	-0.0361425
large(HlaPreSeq63) && hydrophok	0.0143475
negative(HlaPreSeq63) && hydroph	0.0113129
charged(HlaPreSeq63) && hydropl	0.0104351
positive(HlaPreSeq65) && hydropl	0.0149451
charged(HlaPreSeq65) && hydropl	0.0142296
hydrophobic(HlaPreSeq67) && hyc	-0.0183752
large(HlaPreSeq67) && hydrophok	-0.0059084
medium(HlaPreSeq73) && hydroph	-0.0220074
medium(HlaPreSeq74) && hydroph	-0.0228176
negative(HlaPreSeq74) && hydroph	-0.0222927
aliphatic(HlaPreSeq79) && hydroph	0.0154985
hydrophobic(HlaPreSeq79) && hyc	0.0159283
small(HlaPreSeq79) && hydrophok	0.0159805
medium(HlaPreSeq80) && hydroph	0.0155698
aliphatic(HlaPreSeq91) && hydroph	-0.016384
hydrophobic(HlaPreSeq91) && hyc	-0.0154225
small(HlaPreSeq91) && hydrophok	-0.0141478
large(HlaPreSeq95) && hydrophok	-0.0308771
cyclic(HlaPreSeq105) && hydrophc	-0.0147056
aliphatic(HlaPreSeq107) && hydro	-0.0239016
large(HlaPreSeq163) && hydrophc	0.0133129
polar(HlaPreSeq163) && hydrophc	-0.0189081
buried(HlaPreSeq9) && large(E1)	0.018993
aliphatic(HlaPreSeq12) && large(E	-0.0179854
medium(HlaPreSeq12) && large(E:	-0.0176583
hydrophobic(HlaPreSeq45) && lar	0.00183249
medium(HlaPreSeq66) && large(E:	0.0138651
large(HlaPreSeq67) && large(E1)	0.0161214
aliphatic(HlaPreSeq76) && large(E	-0.0085008
buried(HlaPreSeq76) && large(E1)	-0.0098938
hydrophobic(HlaPreSeq76) && lar	-0.0107517
aliphatic(HlaPreSeq91) && large(E	-0.0026529
large(HlaPreSeq97) && large(E1)	-0.0199036
aliphatic(HlaPreSeq107) && large(	-0.0056685
small(HlaPreSeq107) && large(E1)	-0.0020679
positive(HlaPreSeq114) && large(E	-0.0105619
charged(HlaPreSeq116) && large(f	0.00197288

positive(HlaPreSeq144) && large(E	-0.0132304
charged(HlaPreSeq144) && large(E	-0.0133445
small(HlaPreSeq152) && large(E1)	-0.0165612
polar(HlaPreSeq156) && large(E1)	-0.0221309
positive(HlaPreSeq163) && large(E	-0.0080607
charged(HlaPreSeq163) && large(E	-0.0131736
hydrophobic(HlaPreSeq171) && la	0.0198435
HlaPreSeq9=Phe && E2=Ile	-0.0194519
HlaPreSeq32=Gln && E2=Ile	-0.0089926
HlaPreSeq43=Gln && E2=Ile	-0.0139997
HlaPreSeq45=Met && E2=Ile	-0.0129683
HlaPreSeq56=Gly && E2=Ile	-0.0070419
HlaPreSeq63=Glu && E2=Ile	-0.0183531
HlaPreSeq65=Arg && E2=Ile	-0.0169969
HlaPreSeq70=His && E2=Ile	-0.0154684
HlaPreSeq71=Ser && E2=Ile	-0.01029
HlaPreSeq73=Thr && E2=Ile	-0.0129502
HlaPreSeq74=Asp && E2=Ile	0.0100451
HlaPreSeq79=Gly && E2=Ile	-0.0167195
HlaPreSeq80=Thr && E2=Ile	-0.0145557
HlaPreSeq94=Thr && E2=Ile	-0.0104563
HlaPreSeq95=Ile && E2=Ile	0.00935081
HlaPreSeq103=Val && E2=Ile	-0.0161357
HlaPreSeq107=Gly && E2=Ile	0.0129982
HlaPreSeq109=Phe && E2=Ile	-0.0140639
HlaPreSeq113=Tyr && E2=Ile	-0.0115563
HlaPreSeq116=Asp && E2=Ile	0.00878542
HlaPreSeq127=Asn && E2=Ile	0.00802033
HlaPreSeq131=Arg && E2=Ile	-0.0137008
HlaPreSeq142=Ile && E2=Ile	0.0111761
HlaPreSeq144=Lys && E2=Ile	-0.017955
HlaPreSeq145=Arg && E2=Ile	0.0112395
HlaPreSeq151=His && E2=Ile	-0.020312
aliphatic(HlaPreSeq1) && aliphatic	0.0116311
hydrophobic(HlaPreSeq1) && alipt	0.0164479
small(HlaPreSeq1) && aliphatic(E2	0.019524
cyclic(HlaPreSeq9) && aliphatic(E2	0.0174386
aromatic(HlaPreSeq9) && aliphatic	0.0184909
hydrophobic(HlaPreSeq9) && alipt	0.0257263
large(HlaPreSeq9) && aliphatic(E2	0.0188728
aliphatic(HlaPreSeq12) && aliphati	0.0120119
medium(HlaPreSeq12) && aliphati	0.012358
positive(HlaPreSeq14) && aliphatic	0.0115585
aliphatic(HlaPreSeq24) && aliphati	0.0215821
buried(HlaPreSeq24) && aliphatic(	0.0209015
hydrophobic(HlaPreSeq24) && aliq	0.0198802
small(HlaPreSeq24) && aliphatic(E	0.0172551

hydrophobic(HlaPreSeq45) && aliq	0.0095251
aliphatic(HlaPreSeq56) && aliphatic	-0.0063065
hydrophobic(HlaPreSeq56) && aliq	-0.0081737
large(HlaPreSeq63) && aliphatic(E	-0.0197342
large(HlaPreSeq65) && aliphatic(E	0.0142955
positive(HlaPreSeq65) && aliphatic	0.0145151
charged(HlaPreSeq65) && aliphatic	0.0177508
polar(HlaPreSeq65) && aliphatic(E	0.0158718
polar(HlaPreSeq66) && aliphatic(E	0.0102552
buried(HlaPreSeq67) && aliphatic(	0.0116487
hydrophobic(HlaPreSeq67) && aliq	0.0104972
large(HlaPreSeq67) && aliphatic(E	-0.0032933
polar(HlaPreSeq71) && aliphatic(E	0.00793445
charged(HlaPreSeq74) && aliphatic	0.0130159
polar(HlaPreSeq74) && aliphatic(E	0.0126193
aliphatic(HlaPreSeq76) && aliphatic	0.0157989
buried(HlaPreSeq76) && aliphatic(	0.0172039
hydrophobic(HlaPreSeq76) && aliq	0.0179043
small(HlaPreSeq76) && aliphatic(E	-0.0251863
aliphatic(HlaPreSeq79) && aliphatic	0.0140021
hydrophobic(HlaPreSeq79) && aliq	0.0147201
small(HlaPreSeq79) && aliphatic(E	0.0148477
medium(HlaPreSeq80) && aliphatic	0.0149045
aliphatic(HlaPreSeq91) && aliphatic	-0.0100124
hydrophobic(HlaPreSeq91) && aliq	-0.014185
small(HlaPreSeq91) && aliphatic(E	-0.0166363
aliphatic(HlaPreSeq95) && aliphatic	-0.0215882
large(HlaPreSeq95) && aliphatic(E	-0.0255722
buried(HlaPreSeq97) && aliphatic(	-0.0225095
hydrophobic(HlaPreSeq97) && aliq	-0.0226665
large(HlaPreSeq97) && aliphatic(E	-0.0228711
cyclic(HlaPreSeq105) && aliphatic(	-0.0095037
hydrophobic(HlaPreSeq105) && al	-0.0115658
medium(HlaPreSeq105) && aliphatic	-0.013561
aliphatic(HlaPreSeq107) && aliphatic	-0.0289825
small(HlaPreSeq107) && aliphatic(	-0.0302535
aromatic(HlaPreSeq109) && aliphatic	-0.0038674
medium(HlaPreSeq127) && aliphatic	-0.0165981
large(HlaPreSeq131) && aliphatic(	0.00433318
positive(HlaPreSeq131) && aliphatic	0.00762662
charged(HlaPreSeq131) && aliphatic	0.00985498
buried(HlaPreSeq138) && aliphatic(	0.00553977
hydrophobic(HlaPreSeq138) && al	0.00723737
large(HlaPreSeq138) && aliphatic(	0.0107869
aliphatic(HlaPreSeq142) && aliphatic	-0.0235299
buried(HlaPreSeq142) && aliphatic(	-0.0249226
hydrophobic(HlaPreSeq142) && al	-0.0259604

large(HlaPreSeq142) && aliphatic(	-0.0266107
aliphatic(HlaPreSeq149) && aliphatic(	-0.0156726
buried(HlaPreSeq149) && aliphatic(	-0.013952
hydrophobic(HlaPreSeq149) && aliphatic(	-0.0121949
small(HlaPreSeq149) && aliphatic(	-0.0104988
medium(HlaPreSeq150) && aliphatic(	-0.0166849
cyclic(HlaPreSeq151) && aliphatic(	0.0131657
aromatic(HlaPreSeq151) && aliphatic(	0.0141381
aliphatic(HlaPreSeq152) && aliphatic(	-0.0176688
buried(HlaPreSeq152) && aliphatic(	-0.0178151
hydrophobic(HlaPreSeq152) && aliphatic(	-0.0175171
positive(HlaPreSeq156) && aliphatic(	-0.0267154
charged(HlaPreSeq156) && aliphatic(	-0.0216186
polar(HlaPreSeq156) && aliphatic(	-0.0249092
medium(HlaPreSeq158) && aliphatic(	-0.0210494
large(HlaPreSeq163) && aliphatic(	-0.020074
polar(HlaPreSeq163) && aliphatic(	0.0135083
medium(HlaPreSeq166) && aliphatic(	-0.0275029
aliphatic(HlaPreSeq167) && aliphatic(	-0.0275092
small(HlaPreSeq167) && aliphatic(	-0.0312355
buried(E2)	0.0457686
aliphatic(HlaPreSeq1) && buried(E2)	0.0548049
hydrophobic(HlaPreSeq1) && buried(E2)	0.0510183
small(HlaPreSeq1) && buried(E2)	0.046068
cyclic(HlaPreSeq9) && buried(E2)	0.0310389
aromatic(HlaPreSeq9) && buried(E2)	0.027006
buried(HlaPreSeq9) && buried(E2)	0.0373012
hydrophobic(HlaPreSeq9) && buried(E2)	0.0258801
large(HlaPreSeq9) && buried(E2)	0.0171689
polar(HlaPreSeq11) && buried(E2)	0.0145709
aliphatic(HlaPreSeq12) && buried(E2)	0.0136545
medium(HlaPreSeq12) && buried(E2)	0.0111676
aliphatic(HlaPreSeq24) && buried(E2)	0.0320829
buried(HlaPreSeq24) && buried(E2)	0.028037
hydrophobic(HlaPreSeq24) && buried(E2)	0.0242212
medium(HlaPreSeq30) && buried(E2)	-0.0090572
negative(HlaPreSeq30) && buried(E2)	-0.0099698
charged(HlaPreSeq30) && buried(E2)	-0.0100663
aliphatic(HlaPreSeq41) && buried(E2)	0.0104702
large(HlaPreSeq43) && buried(E2)	0.0105118
polar(HlaPreSeq43) && buried(E2)	0.01099
buried(HlaPreSeq45) && buried(E2)	0.0148433
large(HlaPreSeq45) && buried(E2)	-0.011602
large(HlaPreSeq46) && buried(E2)	-0.0118715
negative(HlaPreSeq46) && buried(E2)	-0.0116282
charged(HlaPreSeq46) && buried(E2)	-0.0108888
large(HlaPreSeq62) && buried(E2)	-0.0349286

polar(HlaPreSeq62) && buried(E2)	-0.0286371
negative(HlaPreSeq63) && buried(E2)	0.00804001
charged(HlaPreSeq63) && buried(E2)	0.00829722
positive(HlaPreSeq65) && buried(E2)	0.0257114
charged(HlaPreSeq65) && buried(E2)	0.0250181
polar(HlaPreSeq66) && buried(E2)	0.0144053
large(HlaPreSeq67) && buried(E2)	-0.0093691
medium(HlaPreSeq74) && buried(E2)	-0.0201765
negative(HlaPreSeq74) && buried(E2)	-0.0188737
charged(HlaPreSeq74) && buried(E2)	0.0116419
polar(HlaPreSeq74) && buried(E2)	0.0106335
aliphatic(HlaPreSeq76) && buried(E2)	0.0200124
buried(HlaPreSeq76) && buried(E2)	0.0187775
hydrophobic(HlaPreSeq76) && buried(E2)	0.0172666
small(HlaPreSeq76) && buried(E2)	-0.0202323
aliphatic(HlaPreSeq79) && buried(E2)	0.0145472
hydrophobic(HlaPreSeq79) && buried(E2)	0.0128885
small(HlaPreSeq79) && buried(E2)	0.011209
aliphatic(HlaPreSeq91) && buried(E2)	-0.0170918
hydrophobic(HlaPreSeq91) && buried(E2)	-0.0170326
small(HlaPreSeq91) && buried(E2)	-0.0161604
aliphatic(HlaPreSeq95) && buried(E2)	-0.0166543
large(HlaPreSeq95) && buried(E2)	-0.039524
buried(HlaPreSeq97) && buried(E2)	-0.0192319
hydrophobic(HlaPreSeq97) && buried(E2)	-0.0180669
cyclic(HlaPreSeq105) && buried(E2)	-0.0292812
hydrophobic(HlaPreSeq105) && buried(E2)	-0.0286905
medium(HlaPreSeq105) && buried(E2)	-0.0279074
aliphatic(HlaPreSeq107) && buried(E2)	-0.0328121
small(HlaPreSeq107) && buried(E2)	-0.0300245
cyclic(HlaPreSeq109) && buried(E2)	0.0116945
aromatic(HlaPreSeq109) && buried(E2)	0.011997
positive(HlaPreSeq114) && buried(E2)	0.00816817
medium(HlaPreSeq127) && buried(E2)	-0.0153141
aliphatic(HlaPreSeq142) && buried(E2)	-0.0232494
buried(HlaPreSeq142) && buried(E2)	-0.0212879
hydrophobic(HlaPreSeq142) && buried(E2)	-0.0193953
large(HlaPreSeq142) && buried(E2)	-0.0175804
positive(HlaPreSeq144) && buried(E2)	0.0182266
charged(HlaPreSeq144) && buried(E2)	0.0171464
cyclic(HlaPreSeq151) && buried(E2)	0.0129548
aromatic(HlaPreSeq151) && buried(E2)	0.011547
positive(HlaPreSeq156) && buried(E2)	-0.0236635
charged(HlaPreSeq156) && buried(E2)	-0.0151645
polar(HlaPreSeq156) && buried(E2)	-0.0159141
medium(HlaPreSeq158) && buried(E2)	-0.0157633
large(HlaPreSeq163) && buried(E2)	-0.0215437

charged(HlaPreSeq163) && buried	-0.0198352
medium(HlaPreSeq166) && buriec	-0.0181589
aliphatic(HlaPreSeq167) && buriec	-0.0181407
small(HlaPreSeq167) && buried(E ₂)	-0.0271469
aliphatic(HlaPreSeq1) && hydroph	0.0183954
cyclic(HlaPreSeq9) && hydrophobi	-0.0162971
aromatic(HlaPreSeq9) && hydroph	-0.0142941
buried(HlaPreSeq9) && hydrophok	-0.0186658
large(HlaPreSeq9) && hydrophobic	-0.0100822
aliphatic(HlaPreSeq24) && hydroph	0.0297977
buried(HlaPreSeq24) && hydrophc	0.0253564
hydrophobic(HlaPreSeq24) && hyc	0.0216461
large(HlaPreSeq43) && hydrophok	-0.0100924
polar(HlaPreSeq43) && hydrophok	-0.0116424
buried(HlaPreSeq45) && hydrophc	-0.0142762
hydrophobic(HlaPreSeq45) && hyc	-0.0208
large(HlaPreSeq45) && hydrophok	-0.0213606
large(HlaPreSeq62) && hydrophok	0.00645691
polar(HlaPreSeq62) && hydrophok	0.0146937
large(HlaPreSeq63) && hydrophok	-0.0367221
negative(HlaPreSeq63) && hydroph	-0.0316296
charged(HlaPreSeq63) && hydropl	-0.0287758
positive(HlaPreSeq65) && hydropl	-0.0191508
charged(HlaPreSeq65) && hydropl	-0.0181384
medium(HlaPreSeq66) && hydroph	-0.0221926
hydrophobic(HlaPreSeq67) && hyc	0.0589414
large(HlaPreSeq67) && hydrophok	0.0285809
aliphatic(HlaPreSeq69) && hydroph	0.0210781
buried(HlaPreSeq69) && hydrophc	0.0190664
hydrophobic(HlaPreSeq69) && hyc	0.0166874
small(HlaPreSeq69) && hydrophok	0.01431
large(HlaPreSeq70) && hydrophok	0.0159271
positive(HlaPreSeq70) && hydropl	-0.0037717
charged(HlaPreSeq70) && hydropl	-0.0058306
aliphatic(HlaPreSeq76) && hydroph	-0.0233547
buried(HlaPreSeq76) && hydrophc	-0.0223267
hydrophobic(HlaPreSeq76) && hyc	-0.0208057
small(HlaPreSeq76) && hydrophok	-0.0182572
aliphatic(HlaPreSeq79) && hydroph	-0.0197501
hydrophobic(HlaPreSeq79) && hyc	-0.0179483
small(HlaPreSeq79) && hydrophok	-0.016018
aliphatic(HlaPreSeq91) && hydroph	0.018747
hydrophobic(HlaPreSeq91) && hyc	0.0176702
small(HlaPreSeq91) && hydrophok	0.0162587
aliphatic(HlaPreSeq97) && hydroph	-0.0286424
buried(HlaPreSeq97) && hydrophc	-0.0138698
hydrophobic(HlaPreSeq97) && hyc	-0.0124787

cyclic(HlaPreSeq99) && hydrophob	0.0138356
medium(HlaPreSeq103) && hydro	-0.0055401
aliphatic(HlaPreSeq107) && hydro	0.0107248
small(HlaPreSeq107) && hydrophc	0.0120211
hydrophobic(HlaPreSeq113) && h	-0.0119769
charged(HlaPreSeq114) && hydro	0.0142928
medium(HlaPreSeq116) && hydro	-0.0165036
negative(HlaPreSeq116) && hydro	-0.0156217
charged(HlaPreSeq116) && hydro	-0.0172241
large(HlaPreSeq131) && hydrophc	0.0163707
aliphatic(HlaPreSeq142) && hydro	0.0160422
buried(HlaPreSeq142) && hydropt	0.0159461
hydrophobic(HlaPreSeq142) && h	0.015384
large(HlaPreSeq142) && hydrophc	0.014484
medium(HlaPreSeq150) && hydro	-0.0138216
aliphatic(HlaPreSeq152) && hydro	-0.0144438
small(HlaPreSeq152) && hydrophc	-0.016113
large(HlaPreSeq156) && hydrophc	0.0133498
charged(HlaPreSeq156) && hydro	-0.0050257
medium(HlaPreSeq158) && hydro	-0.0206749
large(HlaPreSeq163) && hydrophc	0.014609
positive(HlaPreSeq163) && hydro	-0.0116406
polar(HlaPreSeq163) && hydrophc	-0.0110819
aliphatic(HlaPreSeq1) && large(E2	0.0153108
hydrophobic(HlaPreSeq1) && larg	0.0146205
small(HlaPreSeq1) && large(E2)	0.0135054
cyclic(HlaPreSeq9) && large(E2)	-0.0320714
aromatic(HlaPreSeq9) && large(E2	-0.0291616
buried(HlaPreSeq9) && large(E2)	0.0247272
hydrophobic(HlaPreSeq9) && larg	-0.045665
large(HlaPreSeq9) && large(E2)	-0.0244349
polar(HlaPreSeq11) && large(E2)	0.0192261
aliphatic(HlaPreSeq12) && large(E	0.0328889
medium(HlaPreSeq12) && large(E	0.0303304
aliphatic(HlaPreSeq24) && large(E	-0.0355836
buried(HlaPreSeq24) && large(E2)	-0.0342505
hydrophobic(HlaPreSeq24) && lar	-0.0324777
small(HlaPreSeq24) && large(E2)	-0.0150813
medium(HlaPreSeq30) && large(E	0.0116141
negative(HlaPreSeq30) && large(E	0.0111399
charged(HlaPreSeq30) && large(E2	0.0105204
polar(HlaPreSeq30) && large(E2)	0.00964781
polar(HlaPreSeq32) && large(E2)	-0.0099532
positive(HlaPreSeq35) && large(E2	0.0119345
charged(HlaPreSeq35) && large(E2	0.0101947
hydrophobic(HlaPreSeq45) && lar	0.014748
large(HlaPreSeq45) && large(E2)	0.0289445

large(HlaPreSeq63) && large(E2)	0.0581336
negative(HlaPreSeq63) && large(E	0.0459179
charged(HlaPreSeq63) && large(E2	0.0413364
large(HlaPreSeq65) && large(E2)	-0.0266178
positive(HlaPreSeq65) && large(E2	-0.0313404
charged(HlaPreSeq65) && large(E2	-0.0318065
polar(HlaPreSeq65) && large(E2)	-0.0223477
medium(HlaPreSeq66) && large(E:	-0.0355476
polar(HlaPreSeq66) && large(E2)	-0.0117188
buried(HlaPreSeq67) && large(E2)	-0.0139914
hydrophobic(HlaPreSeq67) && lar	-0.0567737
large(HlaPreSeq67) && large(E2)	-0.0511517
aliphatic(HlaPreSeq69) && large(E:	-0.0147281
buried(HlaPreSeq69) && large(E2)	-0.0125357
cyclic(HlaPreSeq70) && large(E2)	0.0186856
aromatic(HlaPreSeq70) && large(E	0.0189972
large(HlaPreSeq70) && large(E2)	0.0056757
positive(HlaPreSeq70) && large(E2	0.0307543
charged(HlaPreSeq70) && large(E2	0.029988
polar(HlaPreSeq71) && large(E2)	0.0207036
charged(HlaPreSeq74) && large(E2	0.0104432
polar(HlaPreSeq74) && large(E2)	0.00850053
aliphatic(HlaPreSeq79) && large(E:	-0.0171584
hydrophobic(HlaPreSeq79) && lar	-0.0168967
small(HlaPreSeq79) && large(E2)	-0.0163183
medium(HlaPreSeq80) && large(E:	0.00975984
polar(HlaPreSeq80) && large(E2)	0.00894218
positive(HlaPreSeq82) && large(E2	-0.0164856
charged(HlaPreSeq82) && large(E2	-0.0158735
polar(HlaPreSeq82) && large(E2)	-0.0149731
aliphatic(HlaPreSeq83) && large(E:	-0.0138086
hydrophobic(HlaPreSeq83) && lar	-0.012476
small(HlaPreSeq83) && large(E2)	-0.0110722
medium(HlaPreSeq94) && large(E:	0.0437197
polar(HlaPreSeq94) && large(E2)	0.039298
large(HlaPreSeq95) && large(E2)	-0.0121355
aliphatic(HlaPreSeq97) && large(E:	-0.0179652
large(HlaPreSeq97) && large(E2)	0.0112522
medium(HlaPreSeq103) && large(l	0.0172709
cyclic(HlaPreSeq105) && large(E2)	-0.0237206
hydrophobic(HlaPreSeq105) && la	-0.023124
medium(HlaPreSeq105) && large(l	-0.0224
aliphatic(HlaPreSeq107) && large(	-0.0057604
hydrophobic(HlaPreSeq113) && la	0.0271632
large(HlaPreSeq114) && large(E2)	0.013243
positive(HlaPreSeq114) && large(E	0.0211349
polar(HlaPreSeq116) && large(E2)	-0.0159615

aliphatic(HlaPreSeq149) && large(E	0.00633486
positive(HlaPreSeq156) && large(E	-0.0105119
charged(HlaPreSeq156) && large(E	-0.0109658
large(HlaPreSeq163) && large(E2)	-0.0357785
positive(HlaPreSeq163) && large(E	-0.0152784
polar(HlaPreSeq163) && large(E2)	0.021455
medium(HlaPreSeq166) && large(l	0.0149216
aliphatic(HlaPreSeq167) && large(	0.0147686
small(HlaPreSeq167) && large(E2)	0.0102959
HlaPreSeq17=Arg && E3=Tyr	0.0175506
HlaPreSeq24=Ala && E3=Tyr	0.0238419
HlaPreSeq30=Asp && E3=Tyr	0.0167263
HlaPreSeq32=Gln && E3=Tyr	0.0174428
HlaPreSeq35=Arg && E3=Tyr	0.0154552
HlaPreSeq41=Ala && E3=Tyr	0.0157694
HlaPreSeq43=Gln && E3=Tyr	0.0183471
HlaPreSeq46=Glu && E3=Tyr	0.0188877
HlaPreSeq56=Gly && E3=Tyr	0.0171909
HlaPreSeq65=Arg && E3=Tyr	0.0159584
HlaPreSeq71=Ser && E3=Tyr	0.0182498
HlaPreSeq74=Asp && E3=Tyr	0.0217909
HlaPreSeq79=Gly && E3=Tyr	0.0142325
HlaPreSeq81=Leu && E3=Tyr	0.0125219
HlaPreSeq82=Arg && E3=Tyr	0.0149568
HlaPreSeq83=Gly && E3=Tyr	0.0149504
HlaPreSeq91=Gly && E3=Tyr	0.0145435
HlaPreSeq94=Thr && E3=Tyr	0.0138177
HlaPreSeq95=Ile && E3=Tyr	0.016013
HlaPreSeq99=Tyr && E3=Tyr	0.0125681
HlaPreSeq103=Val && E3=Tyr	0.0103909
HlaPreSeq107=Gly && E3=Tyr	0.0133392
HlaPreSeq109=Phe && E3=Tyr	0.0149715
HlaPreSeq113=Tyr && E3=Tyr	0.0233519
HlaPreSeq114=Arg && E3=Tyr	0.0145524
HlaPreSeq116=Asp && E3=Tyr	0.0186223
HlaPreSeq127=Asn && E3=Tyr	0.0125595
HlaPreSeq131=Arg && E3=Tyr	0.0226965
HlaPreSeq138=Met && E3=Tyr	0.0182445
HlaPreSeq142=Ile && E3=Tyr	0.0134028
HlaPreSeq143=Thr && E3=Tyr	0.0138809
HlaPreSeq144=Lys && E3=Tyr	0.0131638
HlaPreSeq145=Arg && E3=Tyr	0.0134581
HlaPreSeq147=Trp && E3=Tyr	0.0140434
HlaPreSeq149=Ala && E3=Tyr	0.015302
HlaPreSeq161=Glu && E3=Tyr	0.0127775
HlaPreSeq173=Glu && E3=Tyr	0.0132847
cyclic(HlaPreSeq9) && cyclic(E3)	0.014403

aromatic(HlaPreSeq9) && cyclic(E:	0.0146238
buried(HlaPreSeq9) && cyclic(E3)	0.0217899
hydrophobic(HlaPreSeq9) && cycli	0.00706471
large(HlaPreSeq9) && cyclic(E3)	0.0147839
polar(HlaPreSeq11) && cyclic(E3)	0.00375292
aliphatic(HlaPreSeq12) && cyclic(E	0.0110569
medium(HlaPreSeq12) && cyclic(E	0.0112867
large(HlaPreSeq63) && cyclic(E3)	0.0204687
negative(HlaPreSeq63) && cyclic(E	0.0183562
charged(HlaPreSeq63) && cyclic(E:	0.018292
cyclic(HlaPreSeq70) && cyclic(E3)	-0.0143451
aromatic(HlaPreSeq70) && cyclic(f	-0.014378
polar(HlaPreSeq71) && cyclic(E3)	-0.0148533
polar(HlaPreSeq80) && cyclic(E3)	-0.0148072
positive(HlaPreSeq82) && cyclic(E:	-0.0133375
charged(HlaPreSeq82) && cyclic(E:	-0.0133953
polar(HlaPreSeq82) && cyclic(E3)	-0.0134234
aliphatic(HlaPreSeq83) && cyclic(E	-0.0134098
hydrophobic(HlaPreSeq83) && cyc	-0.0133464
small(HlaPreSeq83) && cyclic(E3)	-0.0132285
medium(HlaPreSeq94) && cyclic(E	0.0124356
polar(HlaPreSeq94) && cyclic(E3)	0.0126978
buried(HlaPreSeq97) && cyclic(E3)	0.0207114
hydrophobic(HlaPreSeq97) && cyc	0.0207304
medium(HlaPreSeq103) && cyclic(	0.0155247
medium(HlaPreSeq127) && cyclic(	0.0133999
aliphatic(HlaPreSeq152) && cyclic(	-0.0189258
buried(HlaPreSeq152) && cyclic(E:	-0.0189569
hydrophobic(HlaPreSeq152) && cy	-0.0189278
large(HlaPreSeq161) && cyclic(E3)	-0.0126935
hydrophobic(HlaPreSeq171) && cy	-0.0159759
cyclic(HlaPreSeq9) && aromatic(E:	0.0255023
aromatic(HlaPreSeq9) && aromati	0.0257513
buried(HlaPreSeq9) && aromatic(f	0.0317394
large(HlaPreSeq9) && aromatic(E3	0.0260623
polar(HlaPreSeq11) && aromatic(f	0.0181829
aliphatic(HlaPreSeq12) && aromat	0.021933
medium(HlaPreSeq12) && aromat	0.0221338
aliphatic(HlaPreSeq24) && aromat	0.0220841
buried(HlaPreSeq24) && aromatic	0.0221079
hydrophobic(HlaPreSeq67) && arc	0.00446178
large(HlaPreSeq67) && aromatic(E	-0.0159396
hydrophobic(HlaPreSeq113) && ar	0.0246267
positive(HlaPreSeq114) && aroma	0.0279403
medium(HlaPreSeq116) && aromæ	0.0218113
negative(HlaPreSeq116) && aromæ	0.0218073
charged(HlaPreSeq116) && aroma	0.0208502

polar(HlaPreSeq116) && aromatic	0.0170809
large(HlaPreSeq131) && aromatic	-0.0014071
positive(HlaPreSeq131) && aroma	-0.0016303
charged(HlaPreSeq131) && aroma	-0.0018968
aliphatic(HlaPreSeq152) && arom	-0.0115267
buried(HlaPreSeq152) && aromati	-0.0118335
hydrophobic(HlaPreSeq152) && ar	-0.0121153
charged(HlaPreSeq156) && aroma	-0.0189781
polar(HlaPreSeq156) && aromatic	-0.0196078
large(HlaPreSeq161) && aromatic	-0.0105729
hydrophobic(HlaPreSeq171) && ar	-0.0176088
hydrophobic(E3)	-0.0260472
aliphatic(HlaPreSeq1) && hydroph	-0.0218314
hydrophobic(HlaPreSeq1) && hydr	-0.0202683
small(HlaPreSeq1) && hydrophobi	-0.0184326
cyclic(HlaPreSeq9) && hydrophobi	-0.0115336
aromatic(HlaPreSeq9) && hydroph	-0.0110996
buried(HlaPreSeq9) && hydrophob	-0.0153429
large(HlaPreSeq9) && hydrophobi	-0.009389
polar(HlaPreSeq11) && hydrophob	-0.0222332
aliphatic(HlaPreSeq12) && hydroph	-0.0222837
medium(HlaPreSeq12) && hydroph	-0.0209923
aliphatic(HlaPreSeq24) && hydroph	-0.0209573
buried(HlaPreSeq24) && hydrophob	-0.0195602
hydrophobic(HlaPreSeq24) && hydro	-0.0178512
positive(HlaPreSeq35) && hydrophob	0.00791265
hydrophobic(HlaPreSeq45) && hydro	-0.0114981
positive(HlaPreSeq65) && hydrophob	-0.0079452
charged(HlaPreSeq65) && hydrophob	-0.0078951
buried(HlaPreSeq67) && hydrophob	-0.0225671
cyclic(HlaPreSeq70) && hydrophob	-0.0187592
aromatic(HlaPreSeq70) && hydrophob	-0.0186033
positive(HlaPreSeq70) && hydrophob	-0.0232112
charged(HlaPreSeq70) && hydrophob	-0.0217742
small(HlaPreSeq76) && hydrophob	-0.0122136
medium(HlaPreSeq103) && hydrophob	0.0149435
charged(HlaPreSeq114) && hydrophob	0.0201674
medium(HlaPreSeq116) && hydrophob	0.014138
negative(HlaPreSeq116) && hydrophob	0.0173466
charged(HlaPreSeq116) && hydrophob	0.00613818
polar(HlaPreSeq116) && hydrophob	0.0136785
large(HlaPreSeq138) && hydrophob	-0.0084262
medium(HlaPreSeq158) && hydrophob	-0.0106
large(HlaPreSeq163) && hydrophob	0.0216587
polar(HlaPreSeq163) && hydrophob	-0.0170027
hydrophobic(HlaPreSeq9) && large	-0.0212969
aliphatic(HlaPreSeq24) && large	-0.0072439

buried(HlaPreSeq24) && large(E3)	-0.0083673
hydrophobic(HlaPreSeq24) && lar	-0.0090496
aliphatic(HlaPreSeq41) && large(E	0.014271
buried(HlaPreSeq41) && large(E3)	0.0123219
hydrophobic(HlaPreSeq41) && lar	0.0109346
polar(HlaPreSeq43) && large(E3)	-0.0056309
buried(HlaPreSeq45) && large(E3)	-0.0165231
hydrophobic(HlaPreSeq45) && lar	-0.0222467
large(HlaPreSeq45) && large(E3)	-0.0183937
large(HlaPreSeq62) && large(E3)	0.00934374
polar(HlaPreSeq62) && large(E3)	0.0176252
large(HlaPreSeq63) && large(E3)	-0.0265004
negative(HlaPreSeq63) && large(E	-0.0183063
charged(HlaPreSeq63) && large(E:	-0.0171323
polar(HlaPreSeq66) && large(E3)	-0.0084056
buried(HlaPreSeq67) && large(E3)	0.0176181
positive(HlaPreSeq70) && large(E3	0.0139657
charged(HlaPreSeq70) && large(E:	0.0134825
medium(HlaPreSeq74) && large(E:	0.0115931
negative(HlaPreSeq74) && large(E	0.0113868
small(HlaPreSeq76) && large(E3)	-0.0130666
aliphatic(HlaPreSeq95) && large(E	0.0100912
aliphatic(HlaPreSeq97) && large(E	-0.0155787
cyclic(HlaPreSeq105) && large(E3)	0.0101735
hydrophobic(HlaPreSeq105) && la	0.0112447
medium(HlaPreSeq105) && large(l	0.0119662
cyclic(HlaPreSeq109) && large(E3)	-0.0131773
aromatic(HlaPreSeq109) && large(	-0.0134704
positive(HlaPreSeq114) && large(E	-0.0194626
charged(HlaPreSeq114) && large(f	-0.0170791
medium(HlaPreSeq116) && large(l	0.0134631
negative(HlaPreSeq116) && large(	0.0140046
charged(HlaPreSeq116) && large(f	0.0116559
polar(HlaPreSeq116) && large(E3)	0.0224155
medium(HlaPreSeq127) && large(l	0.0204534
aliphatic(HlaPreSeq142) && large(	0.0152902
buried(HlaPreSeq142) && large(E3	0.0138954
hydrophobic(HlaPreSeq142) && la	0.0124402
positive(HlaPreSeq144) && large(E	-0.0219479
charged(HlaPreSeq144) && large(f	-0.0217049
cyclic(HlaPreSeq151) && large(E3)	-0.0193488
aromatic(HlaPreSeq151) && large(	-0.0187321
aliphatic(HlaPreSeq152) && large(	0.0099309
buried(HlaPreSeq152) && large(E3	0.00999255
hydrophobic(HlaPreSeq152) && la	0.0098415
positive(HlaPreSeq156) && large(E	-0.0133249
small(HlaPreSeq167) && large(E3)	-0.0156912

hydrophobic(HlaPreSeq171) && la	-0.01209
HlaPreSeq105=Pro && E4=His	0.0237837
cyclic(E4)	0.02008
buried(HlaPreSeq9) && cyclic(E4)	-0.0076702
positive(HlaPreSeq14) && cyclic(E4)	0.0198221
charged(HlaPreSeq14) && cyclic(E4)	0.0198993
polar(HlaPreSeq14) && cyclic(E4)	0.0198254
large(HlaPreSeq17) && cyclic(E4)	0.018998
aliphatic(HlaPreSeq24) && cyclic(E4)	0.0232627
buried(HlaPreSeq24) && cyclic(E4)	0.0230718
hydrophobic(HlaPreSeq24) && cyclic(E4)	0.022806
medium(HlaPreSeq74) && cyclic(E4)	0.0363234
negative(HlaPreSeq74) && cyclic(E4)	0.0364032
charged(HlaPreSeq74) && cyclic(E4)	0.034789
polar(HlaPreSeq74) && cyclic(E4)	0.0342372
medium(HlaPreSeq77) && cyclic(E4)	-0.0051344
large(HlaPreSeq95) && cyclic(E4)	0.0269951
large(HlaPreSeq97) && cyclic(E4)	0.00456889
charged(HlaPreSeq114) && cyclic(E4)	-0.009709
polar(HlaPreSeq116) && cyclic(E4)	-0.001738
hydrophobic(HlaPreSeq171) && cyclic(E4)	0.00066693
hydrophobic(HlaPreSeq9) && aromatic(E4)	-0.0161045
aliphatic(HlaPreSeq24) && aromatic(E4)	-0.020183
buried(HlaPreSeq24) && aromatic(E4)	-0.0203008
hydrophobic(HlaPreSeq24) && aromatic(E4)	-0.0204242
small(HlaPreSeq24) && aromatic(E4)	-0.019449
polar(HlaPreSeq32) && aromatic(E4)	-0.0198082
aliphatic(HlaPreSeq41) && aromatic(E4)	-0.0162687
buried(HlaPreSeq41) && aromatic(E4)	-0.0164269
hydrophobic(HlaPreSeq41) && aromatic(E4)	-0.0165533
negative(HlaPreSeq63) && aromatic(E4)	0.00507059
charged(HlaPreSeq63) && aromatic(E4)	0.00503691
medium(HlaPreSeq74) && aromatic(E4)	0.0199181
negative(HlaPreSeq74) && aromatic(E4)	0.0199195
charged(HlaPreSeq74) && aromatic(E4)	0.00462494
polar(HlaPreSeq74) && aromatic(E4)	0.00452059
medium(HlaPreSeq80) && aromatic(E4)	0.00156317
large(HlaPreSeq95) && aromatic(E4)	0.0109518
large(HlaPreSeq97) && aromatic(E4)	-0.0204561
charged(HlaPreSeq114) && aromatic(E4)	-0.0291912
charged(HlaPreSeq116) && aromatic(E4)	0.0119708
cyclic(HlaPreSeq151) && aromatic(E4)	-0.0220922
aromatic(HlaPreSeq151) && aromatic(E4)	-0.0221055
positive(HlaPreSeq156) && aromatic(E4)	0.0173089
charged(HlaPreSeq156) && aromatic(E4)	0.0163816
hydrophobic(HlaPreSeq171) && aromatic(E4)	-0.0190478
aliphatic(HlaPreSeq12) && large(E4)	-0.0049796

medium(HlaPreSeq12) && large(E	-0.0065874
aliphatic(HlaPreSeq24) && large(E	-0.013121
buried(HlaPreSeq24) && large(E4)	-0.0139871
hydrophobic(HlaPreSeq24) && lar	-0.0142569
medium(HlaPreSeq30) && large(E	-0.0193881
negative(HlaPreSeq30) && large(E	-0.0173919
polar(HlaPreSeq32) && large(E4)	0.00997715
polar(HlaPreSeq62) && large(E4)	0.0188525
large(HlaPreSeq63) && large(E4)	-0.0108272
medium(HlaPreSeq66) && large(E	0.0231887
hydrophobic(HlaPreSeq67) && lar	-0.0084477
medium(HlaPreSeq74) && large(E	0.0168477
negative(HlaPreSeq74) && large(E	0.0170143
aliphatic(HlaPreSeq76) && large(E	-0.0200688
buried(HlaPreSeq76) && large(E4)	-0.0205394
hydrophobic(HlaPreSeq76) && lar	-0.0206223
small(HlaPreSeq76) && large(E4)	-0.0097885
aliphatic(HlaPreSeq91) && large(E	0.00110715
medium(HlaPreSeq94) && large(E	0.00806293
polar(HlaPreSeq94) && large(E4)	0.0080018
large(HlaPreSeq95) && large(E4)	0.0258249
aliphatic(HlaPreSeq97) && large(E	0.0180128
buried(HlaPreSeq97) && large(E4)	0.028402
hydrophobic(HlaPreSeq97) && lar	0.0280452
cyclic(HlaPreSeq105) && large(E4)	0.0157106
hydrophobic(HlaPreSeq105) && la	0.0160494
medium(HlaPreSeq105) && large(l	0.0160661
aliphatic(HlaPreSeq107) && large(	0.0166293
small(HlaPreSeq107) && large(E4)	0.0150452
cyclic(HlaPreSeq109) && large(E4)	-0.0153421
aromatic(HlaPreSeq109) && large(	-0.0158575
hydrophobic(HlaPreSeq113) && la	-0.0134974
polar(HlaPreSeq116) && large(E4)	0.00294701
large(HlaPreSeq131) && large(E4)	-0.0210349
positive(HlaPreSeq131) && large(E	-0.0210929
charged(HlaPreSeq131) && large(f	-0.0205259
positive(HlaPreSeq156) && large(E	0.0290548
charged(HlaPreSeq156) && large(f	0.0206459
hydrophobic(HlaPreSeq171) && la	-0.0251909
polar(HlaPreSeq11) && positive(E	-0.022575
aliphatic(HlaPreSeq12) && positiv	-0.0237494
medium(HlaPreSeq12) && positiv	-0.0235717
negative(HlaPreSeq63) && positiv	0.0117183
charged(HlaPreSeq63) && positive	0.0119666
large(HlaPreSeq67) && positive(E4	0.0230397
aliphatic(HlaPreSeq76) && positiv	-0.026598
buried(HlaPreSeq76) && positive(f	-0.0264839

hydrophobic(HIaPreSeq76) && pos	-0.0263496
positive(HIaPreSeq114) && positiv	-0.0284969
large(HIaPreSeq163) && positive(E	0.0263527
polar(HIaPreSeq163) && positive(f	-0.0198859
charged(E4)	0.012477
aliphatic(HIaPreSeq1) && charged(l	0.0179678
hydrophobic(HIaPreSeq1) && char	0.0217587
small(HIaPreSeq1) && charged(E4)	0.0244615
cyclic(HIaPreSeq9) && charged(E4)	0.0100653
aromatic(HIaPreSeq9) && charged	0.0113213
buried(HIaPreSeq9) && charged(E	0.00497663
hydrophobic(HIaPreSeq9) && char	0.0217567
large(HIaPreSeq9) && charged(E4)	0.0124892
positive(HIaPreSeq14) && charged	0.026982
charged(HIaPreSeq14) && chargec	0.0256807
polar(HIaPreSeq14) && charged(E	0.0240494
aliphatic(HIaPreSeq16) && charge	0.0233461
hydrophobic(HIaPreSeq16) && cha	0.0213683
small(HIaPreSeq24) && charged(E	0.0214963
medium(HIaPreSeq30) && charge	0.0241734
negative(HIaPreSeq30) && charge	0.0219848
charged(HIaPreSeq30) && chargec	0.0198164
buried(HIaPreSeq45) && charged(l	-0.0139405
medium(HIaPreSeq66) && charge	-0.0059305
hydrophobic(HIaPreSeq67) && cha	0.018617
large(HIaPreSeq67) && charged(E	0.0355805
cyclic(HIaPreSeq70) && charged(E	0.0105431
aromatic(HIaPreSeq70) && charge	0.0102612
medium(HIaPreSeq74) && charge	-0.008126
negative(HIaPreSeq74) && charge	-0.0084137
positive(HIaPreSeq114) && charge	-0.0249847
charged(HIaPreSeq114) && charge	0.00958582
medium(HIaPreSeq116) && charge	-0.0166783
hydrophobic(HIaPreSeq171) && cl	0.0198221
polar(E4)	-0.0137618
cyclic(HIaPreSeq9) && polar(E4)	-0.0214256
aromatic(HIaPreSeq9) && polar(E4	-0.0206104
buried(HIaPreSeq9) && polar(E4)	-0.0262563
hydrophobic(HIaPreSeq9) && pola	-0.0180062
large(HIaPreSeq9) && polar(E4)	-0.0171088
polar(HIaPreSeq71) && polar(E4)	-0.008832
large(HIaPreSeq97) && polar(E4)	-0.0008959
charged(HIaPreSeq114) && polar(l	-0.0026419
large(HIaPreSeq156) && polar(E4)	0.0031823
HIaPreSeq77=Asn && E5=Thr	0.0113737
HIaPreSeq94=Thr && E5=Thr	-0.0259206
cyclic(HIaPreSeq9) && medium(E5	0.0147485

aromatic(HlaPreSeq9) && medium	0.014114
buried(HlaPreSeq9) && medium(E	-0.0136211
aliphatic(HlaPreSeq12) && mediur	0.0169467
medium(HlaPreSeq12) && mediun	0.0157459
aliphatic(HlaPreSeq24) && mediur	-0.0101877
buried(HlaPreSeq24) && medium(	-0.0103518
large(HlaPreSeq45) && medium(E!	-0.029146
buried(HlaPreSeq67) && medium(	-0.0236077
large(HlaPreSeq70) && medium(E!	0.00802859
polar(HlaPreSeq71) && medium(E	-0.0241666
medium(HlaPreSeq94) && mediun	-0.0175191
polar(HlaPreSeq94) && medium(E	-0.017427
medium(HlaPreSeq103) && mediu	-0.0192702
charged(HlaPreSeq114) && mediu	0.0142188
polar(HlaPreSeq116) && medium(	0.00982468
small(HlaPreSeq152) && medium(	0.019644
positive(HlaPreSeq156) && mediu	0.0207133
polar(HlaPreSeq156) && medium(	0.0182427
large(HlaPreSeq163) && medium(l	0.0147333
charged(HlaPreSeq163) && mediu	0.0217994
hydrophobic(HlaPreSeq171) && m	-0.0073738
polar(E5)	-0.0125367
aliphatic(HlaPreSeq1) && polar(E5	-0.012302
hydrophobic(HlaPreSeq1) && pola	-0.0123839
small(HlaPreSeq1) && polar(E5)	-0.0120507
cyclic(HlaPreSeq9) && polar(E5)	-0.0325206
aromatic(HlaPreSeq9) && polar(E5	-0.031438
large(HlaPreSeq9) && polar(E5)	-0.0298143
polar(HlaPreSeq11) && polar(E5)	-0.0195977
positive(HlaPreSeq14) && polar(E!	-0.012359
buried(HlaPreSeq67) && polar(E5)	0.00496261
aliphatic(HlaPreSeq95) && polar(E	0.00820529
large(HlaPreSeq163) && polar(E5)	-0.0169211
HlaPreSeq74=Asp && E6=Gln	-0.0030918
HlaPreSeq82=Arg && E6=Gln	-0.0055636
HlaPreSeq83=Gly && E6=Gln	-0.0055661
HlaPreSeq94=Thr && E6=Gln	-0.0009998
HlaPreSeq95=Ile && E6=Gln	0.0210227
HlaPreSeq131=Arg && E6=Gln	-0.0072194
large(E6)	0.014884
aliphatic(HlaPreSeq1) && large(E6	0.028969
hydrophobic(HlaPreSeq1) && larg€	0.0280039
small(HlaPreSeq1) && large(E6)	0.0263427
cyclic(HlaPreSeq9) && large(E6)	-0.0186016
aromatic(HlaPreSeq9) && large(E6	-0.0174279
large(HlaPreSeq9) && large(E6)	-0.0161111
positive(HlaPreSeq14) && large(E€	0.0169396

charged(HlaPreSeq14) && large(E6)	0.01476
polar(HlaPreSeq14) && large(E6)	0.0126958
aliphatic(HlaPreSeq16) && large(E6)	0.0103197
aliphatic(HlaPreSeq24) && large(E6)	-0.0104881
buried(HlaPreSeq24) && large(E6)	-0.0099831
medium(HlaPreSeq30) && large(E6)	0.0181987
negative(HlaPreSeq30) && large(E6)	0.0160675
charged(HlaPreSeq30) && large(E6)	0.0139766
medium(HlaPreSeq66) && large(E6)	0.0216103
medium(HlaPreSeq73) && large(E6)	-0.0094984
polar(HlaPreSeq73) && large(E6)	-0.0086562
medium(HlaPreSeq74) && large(E6)	0.0188306
negative(HlaPreSeq74) && large(E6)	0.0186385
large(HlaPreSeq95) && large(E6)	0.0266424
buried(HlaPreSeq97) && large(E6)	0.0158047
hydrophobic(HlaPreSeq97) && large(E6)	0.0154889
large(HlaPreSeq97) && large(E6)	-0.0259782
medium(HlaPreSeq103) && large(E6)	0.011885
aliphatic(HlaPreSeq107) && large(E6)	0.0207989
medium(HlaPreSeq116) && large(E6)	0.0153775
negative(HlaPreSeq116) && large(E6)	0.0167814
charged(HlaPreSeq116) && large(E6)	0.0147064
polar(HlaPreSeq116) && large(E6)	0.0148762
large(HlaPreSeq131) && large(E6)	0.00982017
positive(HlaPreSeq131) && large(E6)	0.00776259
charged(HlaPreSeq131) && large(E6)	0.0060311
medium(HlaPreSeq143) && large(E6)	-0.0068799
positive(HlaPreSeq144) && large(E6)	-0.0214922
charged(HlaPreSeq144) && large(E6)	-0.0206041
cyclic(HlaPreSeq147) && large(E6)	-0.0110155
positive(HlaPreSeq156) && large(E6)	-0.0157742
charged(HlaPreSeq156) && large(E6)	-0.0083247
polar(HlaPreSeq156) && large(E6)	-0.0076077
polar(E6)	-0.0172014
hydrophobic(HlaPreSeq1) && polar(E6)	-0.0075646
small(HlaPreSeq1) && polar(E6)	-0.0078352
cyclic(HlaPreSeq9) && polar(E6)	-0.0128484
aromatic(HlaPreSeq9) && polar(E6)	-0.0130053
large(HlaPreSeq9) && polar(E6)	-0.0128078
polar(HlaPreSeq11) && polar(E6)	-0.0182893
positive(HlaPreSeq14) && polar(E6)	-0.016037
charged(HlaPreSeq14) && polar(E6)	-0.0151927
polar(HlaPreSeq14) && polar(E6)	-0.0140242
aliphatic(HlaPreSeq16) && polar(E6)	-0.0115179
hydrophobic(HlaPreSeq16) && polar(E6)	-0.0100729
positive(HlaPreSeq35) && polar(E6)	-0.0208418
charged(HlaPreSeq35) && polar(E6)	-0.0185329

large(HlaPreSeq45) && polar(E6)	-0.0225847
large(HlaPreSeq95) && polar(E6)	-0.0143295
buried(HlaPreSeq97) && polar(E6)	0.0222995
hydrophobic(HlaPreSeq97) && pol	0.0220363
hydrophobic(HlaPreSeq113) && p	0.009293
positive(HlaPreSeq156) && polar(E	0.0175563
polar(HlaPreSeq156) && polar(E6)	0.015964
HlaPreSeq24=Ala && E7=Gly	-0.0178967
HlaPreSeq30=Asp && E7=Gly	-0.0150954
HlaPreSeq70=His && E7=Gly	-0.0194283
HlaPreSeq97=Ile && E7=Gly	0.00956506
HlaPreSeq114=Arg && E7=Gly	0.0116035
HlaPreSeq116=Asp && E7=Gly	0.0146055
HlaPreSeq161=Glu && E7=Gly	-0.0159381
HlaPreSeq171=Tyr && E7=Gly	-0.0118505
aliphatic(E7)	-0.0108583
aliphatic(HlaPreSeq1) && aliphatic	-0.0062157
hydrophobic(HlaPreSeq1) && ali	-0.0057748
small(HlaPreSeq1) && aliphatic(E7	-0.0053488
buried(HlaPreSeq67) && aliphatic(	-0.0031366
medium(HlaPreSeq73) && aliphatic	0.00151139
medium(HlaPreSeq103) && aliphatic	-0.021559
positive(HlaPreSeq114) && aliphatic	0.00171108
charged(HlaPreSeq114) && aliphatic	0.00060068
medium(HlaPreSeq116) && aliphatic	0.0144693
negative(HlaPreSeq116) && aliphatic	0.0162163
large(HlaPreSeq131) && aliphatic(	-0.0346139
positive(HlaPreSeq131) && aliphatic	-0.0345523
charged(HlaPreSeq131) && aliphatic	-0.033988
cyclic(HlaPreSeq151) && aliphatic(	-0.0070948
aromatic(HlaPreSeq151) && aliphatic	-0.0063101
large(HlaPreSeq156) && aliphatic(	0.010863
positive(HlaPreSeq156) && aliphatic	0.0279072
hydrophobic(E7)	-0.002169
aliphatic(HlaPreSeq1) && hydrophobic	0.00688371
hydrophobic(HlaPreSeq1) && hydrophobic	0.00856492
small(HlaPreSeq1) && hydrophobic	0.00944935
cyclic(HlaPreSeq9) && hydrophobic	0.0120595
aromatic(HlaPreSeq9) && hydrophobic	0.0115524
buried(HlaPreSeq9) && hydrophobic	0.0005773
hydrophobic(HlaPreSeq9) && hydrophobic	0.00914588
large(HlaPreSeq9) && hydrophobic	0.0102925
polar(HlaPreSeq11) && hydrophobic	0.0160918
large(HlaPreSeq67) && hydrophobic	-0.0025612
medium(HlaPreSeq90) && hydrophobic	-0.0215711
negative(HlaPreSeq90) && hydrophobic	-0.0217036
charged(HlaPreSeq90) && hydrophobic	-0.0218419

polar(HlaPreSeq90) && hydrophob	-0.0219843
medium(HlaPreSeq103) && hydro	-0.0095391
cyclic(HlaPreSeq105) && hydrophc	-0.0053343
hydrophobic(HlaPreSeq105) && h	-0.0061766
medium(HlaPreSeq105) && hydro	-0.0068682
positive(HlaPreSeq114) && hydro	0.00640706
charged(HlaPreSeq114) && hydro	0.00420295
positive(HlaPreSeq156) && hydro	0.024608
charged(HlaPreSeq156) && hydro	0.0212761
large(HlaPreSeq161) && hydrophc	-0.0115559
large(HlaPreSeq163) && hydrophc	-0.0179533
positive(HlaPreSeq163) && hydro	-0.0178224
polar(HlaPreSeq163) && hydrophc	0.00996216
buried(HlaPreSeq9) && small(E7)	0.00544491
hydrophobic(HlaPreSeq9) && sma	0.01184
polar(HlaPreSeq14) && small(E7)	-0.0056699
aliphatic(HlaPreSeq16) && small(E	-0.0082493
hydrophobic(HlaPreSeq16) && sm	-0.0091874
large(HlaPreSeq17) && small(E7)	-0.0062768
positive(HlaPreSeq17) && small(E	-0.0070445
aliphatic(HlaPreSeq24) && small(E	-0.020784
buried(HlaPreSeq24) && small(E7)	-0.0211436
hydrophobic(HlaPreSeq24) && sm	-0.0213833
small(HlaPreSeq24) && small(E7)	-0.0118795
medium(HlaPreSeq30) && small(E	-0.0180109
negative(HlaPreSeq30) && small(E	-0.0178345
charged(HlaPreSeq30) && small(E	-0.0175093
polar(HlaPreSeq30) && small(E7)	-0.0170537
large(HlaPreSeq46) && small(E7)	-0.0227401
negative(HlaPreSeq46) && small(E	-0.0221752
charged(HlaPreSeq46) && small(E	-0.0215136
polar(HlaPreSeq46) && small(E7)	-0.0207663
large(HlaPreSeq63) && small(E7)	-0.020382
aliphatic(HlaPreSeq69) && small(E	0.0111872
buried(HlaPreSeq69) && small(E7)	0.0117364
hydrophobic(HlaPreSeq69) && sm	0.0122692
small(HlaPreSeq69) && small(E7)	0.0127652
large(HlaPreSeq70) && small(E7)	0.00690626
small(HlaPreSeq71) && small(E7)	0.00846269
polar(HlaPreSeq71) && small(E7)	-0.0205431
large(HlaPreSeq95) && small(E7)	-0.0119946
large(HlaPreSeq97) && small(E7)	-0.0221373
medium(HlaPreSeq103) && small(	0.0105993
hydrophobic(HlaPreSeq113) && sr	-0.0219224
charged(HlaPreSeq114) && small(l	0.0187039
charged(HlaPreSeq163) && small(l	0.0167778
cyclic(E8)	-0.0040788

aliphatic(HlaPreSeq1) && cyclic(E8	0.00584839
hydrophobic(HlaPreSeq1) && cycli	0.00766442
small(HlaPreSeq1) && cyclic(E8)	0.00935713
buried(HlaPreSeq9) && cyclic(E8)	0.00226481
polar(HlaPreSeq11) && cyclic(E8)	0.00804232
aliphatic(HlaPreSeq12) && cyclic(E	0.00282302
medium(HlaPreSeq12) && cyclic(E	0.0039713
positive(HlaPreSeq14) && cyclic(E	0.00283798
charged(HlaPreSeq14) && cyclic(E	0.00369399
polar(HlaPreSeq14) && cyclic(E8)	0.00433983
aliphatic(HlaPreSeq16) && cyclic(E	0.0087157
hydrophobic(HlaPreSeq16) && cyc	0.00899363
large(HlaPreSeq17) && cyclic(E8)	0.0088142
aliphatic(HlaPreSeq24) && cyclic(E	0.0225929
buried(HlaPreSeq24) && cyclic(E8)	0.0226739
hydrophobic(HlaPreSeq24) && cyc	0.0226663
small(HlaPreSeq24) && cyclic(E8)	0.0111658
medium(HlaPreSeq30) && cyclic(E	0.0124892
negative(HlaPreSeq30) && cyclic(E	0.0119778
charged(HlaPreSeq30) && cyclic(E	0.011391
buried(HlaPreSeq45) && cyclic(E8)	0.0237951
hydrophobic(HlaPreSeq45) && cyc	0.0245132
large(HlaPreSeq63) && cyclic(E8)	0.0314825
negative(HlaPreSeq63) && cyclic(E	0.0309931
charged(HlaPreSeq63) && cyclic(E	0.0306883
medium(HlaPreSeq94) && cyclic(E	-0.0096056
polar(HlaPreSeq94) && cyclic(E8)	-0.0102963
aliphatic(HlaPreSeq97) && cyclic(E	0.0211172
cyclic(HlaPreSeq99) && cyclic(E8)	-0.0054577
aromatic(HlaPreSeq99) && cyclic(E	-0.0064718
hydrophobic(HlaPreSeq99) && cyc	-0.007374
large(HlaPreSeq99) && cyclic(E8)	-0.0081417
cyclic(HlaPreSeq105) && cyclic(E8)	-0.0100331
hydrophobic(HlaPreSeq105) && cy	-0.0103176
medium(HlaPreSeq105) && cyclic(	-0.0105842
charged(HlaPreSeq114) && cyclic(	0.0140817
polar(HlaPreSeq116) && cyclic(E8)	0.0145045
polar(HlaPreSeq163) && cyclic(E8)	-0.011278
hydrophobic(HlaPreSeq171) && cy	0.0176182
aliphatic(HlaPreSeq24) && aromat	0.0138218
buried(HlaPreSeq24) && aromatic	0.0138042
hydrophobic(HlaPreSeq24) && arc	0.0138299
medium(HlaPreSeq30) && aromat	0.0152184
negative(HlaPreSeq30) && aromat	0.0152654
charged(HlaPreSeq30) && aromati	0.0153001
hydrophobic(HlaPreSeq45) && arc	0.0170108
large(HlaPreSeq63) && aromatic(E	0.0275611

negative(HlaPreSeq63) && aromati	0.0244062
charged(HlaPreSeq63) && aromati	0.0245604
large(HlaPreSeq67) && aromatic(E	0.0215614
medium(HlaPreSeq74) && aromati	-0.0079093
negative(HlaPreSeq74) && aromati	-0.0079494
medium(HlaPreSeq77) && aromati	0.0226527
charged(HlaPreSeq156) && aroma	0.017888
hydrophobic(HlaPreSeq171) && ar	0.0237179
hydrophobic(E8)	-0.0026458
aliphatic(HlaPreSeq1) && hydroph	0.00230916
cyclic(HlaPreSeq9) && hydrophobi	-0.0086855
aromatic(HlaPreSeq9) && hydroph	-0.0089928
large(HlaPreSeq9) && hydrophobi	-0.0088886
large(HlaPreSeq63) && hydrophok	0.00833136
negative(HlaPreSeq63) && hydroph	0.0045916
charged(HlaPreSeq63) && hydroph	0.00346457
medium(HlaPreSeq66) && hydroph	0.024997
buried(HlaPreSeq67) && hydrophc	-0.0204868
cyclic(HlaPreSeq70) && hydrophol	-0.0156325
aromatic(HlaPreSeq70) && hydroph	-0.015563
positive(HlaPreSeq70) && hydroph	-0.0247021
charged(HlaPreSeq70) && hydroph	-0.0240862
polar(HlaPreSeq156) && hydrophc	0.0221434
hydrophobic(HlaPreSeq171) && h	0.00680253
aliphatic(HlaPreSeq1) && large(E8	0.016426
hydrophobic(HlaPreSeq1) && large	0.0164309
small(HlaPreSeq1) && large(E8)	0.0159047
aliphatic(HlaPreSeq12) && large(E	0.0126395
medium(HlaPreSeq12) && large(E	0.011133
large(HlaPreSeq46) && large(E8)	-0.0143191
negative(HlaPreSeq46) && large(E	-0.0138621
large(HlaPreSeq63) && large(E8)	0.0231928
hydrophobic(HlaPreSeq67) && lar	-0.0075299
small(HlaPreSeq76) && large(E8)	0.0149936
positive(HlaPreSeq82) && large(E8	-0.0249334
charged(HlaPreSeq82) && large(E8	-0.0230488
polar(HlaPreSeq82) && large(E8)	-0.020928
medium(HlaPreSeq94) && large(E	0.014525
polar(HlaPreSeq94) && large(E8)	0.0140635
large(HlaPreSeq95) && large(E8)	0.023911
buried(HlaPreSeq97) && large(E8)	0.0245092
hydrophobic(HlaPreSeq97) && lar	0.0243163
large(HlaPreSeq97) && large(E8)	0.0157773
large(HlaPreSeq131) && large(E8)	-0.01191
positive(HlaPreSeq131) && large(E	-0.0120721
charged(HlaPreSeq131) && large(E	-0.0118756
medium(HlaPreSeq158) && large(l	0.0174337

large(HlaPreSeq163) && large(E8)	-0.0144419
E9=Phe	-0.0130022
HlaPreSeq1=Gly && E9=Phe	-0.0189539
HlaPreSeq6=Arg && E9=Phe	-0.0129702
HlaPreSeq11=Ser && E9=Phe	-0.0159628
HlaPreSeq14=Arg && E9=Phe	-0.0188219
HlaPreSeq16=Gly && E9=Phe	-0.0147097
HlaPreSeq17=Arg && E9=Phe	-0.0135578
HlaPreSeq21=Arg && E9=Phe	-0.0183499
HlaPreSeq30=Asp && E9=Phe	-0.0148089
HlaPreSeq35=Arg && E9=Phe	-0.0103456
HlaPreSeq43=Gln && E9=Phe	-0.0146485
HlaPreSeq46=Glu && E9=Phe	-0.0230286
HlaPreSeq49=Ala && E9=Phe	-0.0162917
HlaPreSeq52=Ile && E9=Phe	-0.0251101
HlaPreSeq56=Gly && E9=Phe	-0.0129214
HlaPreSeq65=Arg && E9=Phe	-0.0100362
HlaPreSeq69=Ala && E9=Phe	-0.0155771
HlaPreSeq71=Ser && E9=Phe	-0.0148295
HlaPreSeq73=Thr && E9=Phe	-0.0211009
HlaPreSeq79=Gly && E9=Phe	-0.016171
HlaPreSeq80=Thr && E9=Phe	-0.0154133
HlaPreSeq81=Leu && E9=Phe	-0.0160022
HlaPreSeq94=Thr && E9=Phe	-0.0145823
HlaPreSeq99=Tyr && E9=Phe	-0.0244422
HlaPreSeq103=Val && E9=Phe	-0.013979
HlaPreSeq109=Phe && E9=Phe	-0.0127759
HlaPreSeq116=Asp && E9=Phe	-0.0155185
HlaPreSeq138=Met && E9=Phe	-0.0143522
cyclic(E9)	0.00356521
aliphatic(HlaPreSeq1) && cyclic(E9)	0.00606822
hydrophobic(HlaPreSeq1) && cycli	0.0110957
small(HlaPreSeq1) && cyclic(E9)	0.0155014
hydrophobic(HlaPreSeq9) && cycli	-0.0206251
polar(HlaPreSeq11) && cyclic(E9)	0.0247412
aliphatic(HlaPreSeq12) && cyclic(E	0.0163614
medium(HlaPreSeq12) && cyclic(E	0.017788
positive(HlaPreSeq14) && cyclic(E'	0.014588
charged(HlaPreSeq14) && cyclic(E'	0.0164739
polar(HlaPreSeq14) && cyclic(E9)	0.0178256
aliphatic(HlaPreSeq16) && cyclic(E	0.0294382
hydrophobic(HlaPreSeq16) && cyc	0.0297987
large(HlaPreSeq17) && cyclic(E9)	0.0165205
positive(HlaPreSeq17) && cyclic(E'	0.0161017
charged(HlaPreSeq17) && cyclic(E'	0.0154783
aliphatic(HlaPreSeq24) && cyclic(E	0.0272396
buried(HlaPreSeq24) && cyclic(E9)	0.0270542

hydrophobic(HlaPreSeq24) && cyc	0.0267127
small(HlaPreSeq24) && cyclic(E9)	0.0391916
polar(HlaPreSeq32) && cyclic(E9)	0.036502
positive(HlaPreSeq35) && cyclic(E9)	0.0304126
charged(HlaPreSeq35) && cyclic(E9)	0.0286032
aliphatic(HlaPreSeq41) && cyclic(E9)	0.0249613
buried(HlaPreSeq41) && cyclic(E9)	0.023106
hydrophobic(HlaPreSeq41) && cyc	0.0212458
small(HlaPreSeq41) && cyclic(E9)	0.0194153
buried(HlaPreSeq45) && cyclic(E9)	0.0170305
hydrophobic(HlaPreSeq45) && cyc	0.0207035
large(HlaPreSeq62) && cyclic(E9)	0.0144551
large(HlaPreSeq63) && cyclic(E9)	0.0278738
negative(HlaPreSeq63) && cyclic(E9)	0.0198081
charged(HlaPreSeq63) && cyclic(E9)	0.0188397
positive(HlaPreSeq65) && cyclic(E9)	0.0208487
charged(HlaPreSeq65) && cyclic(E9)	0.0202012
medium(HlaPreSeq66) && cyclic(E9)	0.0412605
polar(HlaPreSeq66) && cyclic(E9)	0.024153
buried(HlaPreSeq67) && cyclic(E9)	-0.0218676
hydrophobic(HlaPreSeq67) && cyc	-0.0065747
large(HlaPreSeq70) && cyclic(E9)	-0.012669
charged(HlaPreSeq74) && cyclic(E9)	-0.0227344
polar(HlaPreSeq74) && cyclic(E9)	-0.023449
aliphatic(HlaPreSeq76) && cyclic(E9)	-0.0190307
buried(HlaPreSeq76) && cyclic(E9)	-0.0194313
hydrophobic(HlaPreSeq76) && cyc	-0.0198363
small(HlaPreSeq76) && cyclic(E9)	0.0222866
medium(HlaPreSeq94) && cyclic(E9)	-0.0177174
polar(HlaPreSeq94) && cyclic(E9)	-0.0184898
aliphatic(HlaPreSeq95) && cyclic(E9)	0.0145699
large(HlaPreSeq95) && cyclic(E9)	0.0239049
aliphatic(HlaPreSeq97) && cyclic(E9)	0.0199636
buried(HlaPreSeq97) && cyclic(E9)	0.0136974
hydrophobic(HlaPreSeq97) && cyc	0.0137541
large(HlaPreSeq97) && cyclic(E9)	0.0240083
hydrophobic(HlaPreSeq105) && cy	0.00490442
medium(HlaPreSeq105) && cyclic(E9)	0.00564499
aliphatic(HlaPreSeq107) && cyclic(E9)	0.0300255
small(HlaPreSeq107) && cyclic(E9)	0.0313288
positive(HlaPreSeq114) && cyclic(E9)	-0.0278422
charged(HlaPreSeq114) && cyclic(E9)	0.0178045
medium(HlaPreSeq116) && cyclic(E9)	0.00668262
negative(HlaPreSeq116) && cyclic(E9)	0.00832258
charged(HlaPreSeq116) && cyclic(E9)	0.0222805
polar(HlaPreSeq116) && cyclic(E9)	0.0495016
medium(HlaPreSeq127) && cyclic(E9)	0.0361671

large(HlaPreSeq131) && cyclic(E9)	-0.0147645
positive(HlaPreSeq131) && cyclic(I	-0.0148447
charged(HlaPreSeq131) && cyclic(	-0.0150469
aliphatic(HlaPreSeq142) && cyclic(	0.0374246
buried(HlaPreSeq142) && cyclic(E9	0.037017
hydrophobic(HlaPreSeq142) && cy	0.0363164
large(HlaPreSeq142) && cyclic(E9)	0.0353473
positive(HlaPreSeq144) && cyclic(I	-0.0227803
charged(HlaPreSeq144) && cyclic(	-0.0229766
medium(HlaPreSeq150) && cyclic(	0.0133977
cyclic(HlaPreSeq151) && cyclic(E9)	-0.0189357
aromatic(HlaPreSeq151) && cyclic	-0.019202
positive(HlaPreSeq156) && cyclic(I	0.018834
medium(HlaPreSeq158) && cyclic(	0.0124226
charged(HlaPreSeq163) && cyclic(	-0.0224506
polar(HlaPreSeq163) && cyclic(E9)	-0.0085214
medium(HlaPreSeq166) && cyclic(	0.0143092
aliphatic(HlaPreSeq167) && cyclic(	0.0142797
small(HlaPreSeq167) && cyclic(E9)	0.0190022
aromatic(E9)	0.0226223
aliphatic(HlaPreSeq1) && aromatic	0.0184827
hydrophobic(HlaPreSeq1) && aron	0.0187286
small(HlaPreSeq1) && aromatic(E9	0.018952
hydrophobic(HlaPreSeq9) && aron	-0.0163345
polar(HlaPreSeq11) && aromatic(E	0.0186044
aliphatic(HlaPreSeq12) && aromat	0.0129665
medium(HlaPreSeq12) && aromat	0.0129303
positive(HlaPreSeq14) && aromati	0.0111643
charged(HlaPreSeq14) && aromati	0.0110613
polar(HlaPreSeq14) && aromatic(E	0.0108679
aliphatic(HlaPreSeq16) && aromat	0.0209132
hydrophobic(HlaPreSeq16) && arc	0.0204999
large(HlaPreSeq17) && aromatic(E	0.007637
positive(HlaPreSeq17) && aromati	0.00700134
charged(HlaPreSeq17) && aromati	0.00634087
aliphatic(HlaPreSeq24) && aromat	0.0196858
buried(HlaPreSeq24) && aromatic	0.0194459
hydrophobic(HlaPreSeq24) && arc	0.0192287
small(HlaPreSeq24) && aromatic(E	0.0281747
polar(HlaPreSeq32) && aromatic(E	0.0263331
positive(HlaPreSeq35) && aromati	0.0213341
charged(HlaPreSeq35) && aromati	0.0202587
aliphatic(HlaPreSeq41) && aromat	0.0172636
buried(HlaPreSeq41) && aromatic	0.0161431
hydrophobic(HlaPreSeq41) && arc	0.0149872
small(HlaPreSeq41) && aromatic(E	0.0138198
hydrophobic(HlaPreSeq45) && arc	0.0190751

large(HlaPreSeq62) && aromatic(E	0.00962029
large(HlaPreSeq63) && aromatic(E	0.0277929
negative(HlaPreSeq63) && aromati	0.0199461
charged(HlaPreSeq63) && aromati	0.0193444
positive(HlaPreSeq65) && aromati	0.0178744
charged(HlaPreSeq65) && aromati	0.0174091
medium(HlaPreSeq66) && aromati	0.0374186
polar(HlaPreSeq66) && aromatic(E	0.0236685
buried(HlaPreSeq67) && aromatic	-0.0221181
hydrophobic(HlaPreSeq67) && arc	-0.0070413
large(HlaPreSeq70) && aromatic(E	-0.0144563
charged(HlaPreSeq74) && aromati	-0.0229188
polar(HlaPreSeq74) && aromatic(E	-0.023344
aliphatic(HlaPreSeq76) && aromati	-0.0175099
buried(HlaPreSeq76) && aromatic	-0.0177656
hydrophobic(HlaPreSeq76) && arc	-0.0180118
small(HlaPreSeq76) && aromatic(E	0.0214593
medium(HlaPreSeq94) && aromati	-0.0197193
polar(HlaPreSeq94) && aromatic(E	-0.0201538
aliphatic(HlaPreSeq95) && aromati	0.0148381
large(HlaPreSeq95) && aromatic(E	0.0222991
aliphatic(HlaPreSeq97) && aromati	0.016577
buried(HlaPreSeq97) && aromatic	0.0129842
hydrophobic(HlaPreSeq97) && arc	0.0129296
large(HlaPreSeq97) && aromatic(E	0.0231477
cyclic(HlaPreSeq105) && aromatic	0.00624747
hydrophobic(HlaPreSeq105) && ar	0.00642569
aliphatic(HlaPreSeq107) && aromati	0.0254349
small(HlaPreSeq107) && aromatic	0.0257185
large(HlaPreSeq114) && aromatic(E	-0.0132874
positive(HlaPreSeq114) && aromati	-0.0314768
charged(HlaPreSeq114) && aromati	0.00936157
charged(HlaPreSeq116) && aromati	0.0189032
polar(HlaPreSeq116) && aromatic(E	0.0426771
medium(HlaPreSeq127) && aromati	0.029948
large(HlaPreSeq131) && aromatic(E	-0.0184129
positive(HlaPreSeq131) && aromati	-0.0185624
charged(HlaPreSeq131) && aromati	-0.0187282
large(HlaPreSeq138) && aromatic(E	-0.0122981
aliphatic(HlaPreSeq142) && aromati	0.0294876
buried(HlaPreSeq142) && aromati	0.0290418
hydrophobic(HlaPreSeq142) && ar	0.0283841
large(HlaPreSeq142) && aromatic(E	0.0275293
positive(HlaPreSeq144) && aromati	-0.0279282
charged(HlaPreSeq144) && aromati	-0.0280773
hydrophobic(HlaPreSeq149) && ar	-0.0039634
small(HlaPreSeq149) && aromatic	-0.0053742

cyclic(HlaPreSeq151) && aromatic	-0.0248047
aromatic(HlaPreSeq151) && arom	-0.0249994
positive(HlaPreSeq156) && aroma	0.0154314
charged(HlaPreSeq163) && aroma	-0.0258235
polar(HlaPreSeq163) && aromatic	-0.0169262
small(HlaPreSeq167) && aromatic	0.0160982
buried(E9)	0.0708863
aliphatic(HlaPreSeq1) && buried(E	0.0639445
hydrophobic(HlaPreSeq1) && bur	0.0593615
small(HlaPreSeq1) && buried(E9)	0.0532789
cyclic(HlaPreSeq9) && buried(E9)	0.0324769
aromatic(HlaPreSeq9) && buried(E	0.0286821
buried(HlaPreSeq9) && buried(E9)	0.0038492
hydrophobic(HlaPreSeq9) && bur	0.0417145
large(HlaPreSeq9) && buried(E9)	0.0199932
aliphatic(HlaPreSeq12) && buried(	0.0146844
medium(HlaPreSeq12) && buried(	0.0112976
positive(HlaPreSeq14) && buried(f	0.021808
charged(HlaPreSeq14) && buried(l	0.0168077
polar(HlaPreSeq14) && buried(E9)	0.0126727
aliphatic(HlaPreSeq16) && buried(	0.0145805
hydrophobic(HlaPreSeq16) && bu	0.0112657
large(HlaPreSeq17) && buried(E9)	0.0169576
positive(HlaPreSeq17) && buried(f	0.0137468
charged(HlaPreSeq17) && buried(l	0.0110449
medium(HlaPreSeq30) && buried(	0.0120967
negative(HlaPreSeq30) && buried(	0.00959239
charged(HlaPreSeq30) && buried(l	0.00753744
large(HlaPreSeq43) && buried(E9)	-0.0275949
polar(HlaPreSeq43) && buried(E9)	-0.0249082
buried(HlaPreSeq45) && buried(E9)	-0.0137093
large(HlaPreSeq52) && buried(E9)	-0.0177699
aliphatic(HlaPreSeq56) && buried(	0.0147197
hydrophobic(HlaPreSeq56) && bu	0.0123316
small(HlaPreSeq56) && buried(E9)	0.0102298
large(HlaPreSeq62) && buried(E9)	-0.0219433
polar(HlaPreSeq62) && buried(E9)	-0.0259889
positive(HlaPreSeq65) && buried(f	-0.021901
charged(HlaPreSeq65) && buried(l	-0.019968
medium(HlaPreSeq66) && buried(	-0.0240703
polar(HlaPreSeq66) && buried(E9)	0.00986648
buried(HlaPreSeq67) && buried(E9)	0.00856115
hydrophobic(HlaPreSeq67) && bu	0.015222
large(HlaPreSeq67) && buried(E9)	0.025003
cyclic(HlaPreSeq70) && buried(E9)	0.00609121
aromatic(HlaPreSeq70) && buried	0.00991811
positive(HlaPreSeq70) && buried(f	0.0128586

charged(HlaPreSeq70) && buried(l	0.0142063
small(HlaPreSeq71) && buried(E9)	0.0126929
polar(HlaPreSeq71) && buried(E9)	-0.0190223
medium(HlaPreSeq74) && buried(	-0.0060439
negative(HlaPreSeq74) && buried(	-0.0086948
charged(HlaPreSeq74) && buried(l	0.0132392
polar(HlaPreSeq74) && buried(E9)	0.0123046
small(HlaPreSeq76) && buried(E9)	-0.0129868
aliphatic(HlaPreSeq79) && buried(	-0.0266162
hydrophobic(HlaPreSeq79) && bui	-0.025914
small(HlaPreSeq79) && buried(E9)	-0.0249027
medium(HlaPreSeq80) && buried(	-0.0217748
large(HlaPreSeq81) && buried(E9)	-0.0116443
medium(HlaPreSeq90) && buried(	-0.0105697
negative(HlaPreSeq90) && buried(	-0.0107519
charged(HlaPreSeq90) && buried(l	-0.0109534
polar(HlaPreSeq90) && buried(E9)	-0.0111735
aliphatic(HlaPreSeq91) && buried(	0.0151544
hydrophobic(HlaPreSeq91) && bui	0.0128729
small(HlaPreSeq91) && buried(E9)	0.0107495
large(HlaPreSeq95) && buried(E9)	-0.0239951
aliphatic(HlaPreSeq97) && buried(	-0.0379705
buried(HlaPreSeq97) && buried(E9	-0.0114516
hydrophobic(HlaPreSeq97) && bui	-0.0128636
cyclic(HlaPreSeq99) && buried(E9)	0.00825528
aliphatic(HlaPreSeq107) && buried(	-0.0266317
small(HlaPreSeq107) && buried(E9	-0.0263605
hydrophobic(HlaPreSeq113) && bui	0.0132627
positive(HlaPreSeq114) && buried	0.0103425
medium(HlaPreSeq116) && buried(	-0.0374782
negative(HlaPreSeq116) && buried(	-0.03543
charged(HlaPreSeq116) && buried	-0.0453939
polar(HlaPreSeq116) && buried(E9	-0.0641345
medium(HlaPreSeq127) && buried(	-0.0399404
large(HlaPreSeq131) && buried(E9)	0.0167651
positive(HlaPreSeq131) && buried	0.0172477
charged(HlaPreSeq131) && buried	0.0168672
aliphatic(HlaPreSeq142) && buried(	-0.0268696
buried(HlaPreSeq142) && buried(E	-0.0243333
hydrophobic(HlaPreSeq142) && bui	-0.0216097
large(HlaPreSeq142) && buried(E9)	-0.01888
medium(HlaPreSeq143) && buried(	0.0277463
positive(HlaPreSeq144) && buried	0.0194985
charged(HlaPreSeq144) && buried	0.01743
positive(HlaPreSeq145) && buried	0.0142938
charged(HlaPreSeq145) && buried	0.0120174
polar(HlaPreSeq145) && buried(E9	0.00995381

cyclic(HIaPreSeq147) && buried(E9)	0.0136875
aromatic(HIaPreSeq147) && buried(E9)	0.0112092
aliphatic(HIaPreSeq149) && buried(E9)	0.0144052
buried(HIaPreSeq149) && buried(E9)	0.0119507
hydrophobic(HIaPreSeq149) && buried(E9)	0.00974078
aliphatic(HIaPreSeq152) && buried(E9)	0.0200946
buried(HIaPreSeq152) && buried(E9)	0.0172165
hydrophobic(HIaPreSeq152) && buried(E9)	0.0144714
small(HIaPreSeq152) && buried(E9)	-0.0196055
large(HIaPreSeq161) && buried(E9)	0.0125893
large(HIaPreSeq163) && buried(E9)	-0.0278244
positive(HIaPreSeq163) && buried(E9)	-0.0244157
charged(HIaPreSeq163) && buried(E9)	-0.0251125
hydrophobic(E9)	-0.0408284
aliphatic(HIaPreSeq1) && hydrophobic(E9)	-0.0234192
hydrophobic(HIaPreSeq1) && hydrophobic(E9)	-0.0186944
small(HIaPreSeq1) && hydrophobic(E9)	-0.0148111
cyclic(HIaPreSeq9) && hydrophobic(E9)	-0.0310095
aromatic(HIaPreSeq9) && hydrophobic(E9)	-0.0258258
hydrophobic(HIaPreSeq9) && hydrophobic(E9)	-0.0123109
large(HIaPreSeq9) && hydrophobic(E9)	-0.0192174
aliphatic(HIaPreSeq24) && hydrophobic(E9)	-0.014225
buried(HIaPreSeq24) && hydrophobic(E9)	-0.0129148
polar(HIaPreSeq32) && hydrophobic(E9)	0.0108239
large(HIaPreSeq63) && hydrophobic(E9)	-0.0181701
negative(HIaPreSeq63) && hydrophobic(E9)	-0.0236007
charged(HIaPreSeq63) && hydrophobic(E9)	-0.0207564
medium(HIaPreSeq66) && hydrophobic(E9)	-0.0030856
cyclic(HIaPreSeq70) && hydrophobic(E9)	0.0227629
aromatic(HIaPreSeq70) && hydrophobic(E9)	0.0224859
positive(HIaPreSeq70) && hydrophobic(E9)	0.0128721
charged(HIaPreSeq70) && hydrophobic(E9)	0.0121073
polar(HIaPreSeq71) && hydrophobic(E9)	0.0066699
medium(HIaPreSeq74) && hydrophobic(E9)	-0.0196685
negative(HIaPreSeq74) && hydrophobic(E9)	-0.0186344
aliphatic(HIaPreSeq76) && hydrophobic(E9)	-0.0182726
buried(HIaPreSeq76) && hydrophobic(E9)	-0.0170081
hydrophobic(HIaPreSeq76) && hydrophobic(E9)	-0.0154571
small(HIaPreSeq76) && hydrophobic(E9)	0.0154653
medium(HIaPreSeq80) && hydrophobic(E9)	0.0096522
polar(HIaPreSeq80) && hydrophobic(E9)	0.0100335
medium(HIaPreSeq90) && hydrophobic(E9)	-0.0129249
negative(HIaPreSeq90) && hydrophobic(E9)	-0.0132372
charged(HIaPreSeq90) && hydrophobic(E9)	-0.0135063
polar(HIaPreSeq90) && hydrophobic(E9)	-0.0137237
aliphatic(HIaPreSeq97) && hydrophobic(E9)	-0.0201658
buried(HIaPreSeq97) && hydrophobic(E9)	-0.0095353

hydrophobic(HlaPreSeq97) && hyc	-0.0103938
large(HlaPreSeq97) && hydrophok	0.0186319
charged(HlaPreSeq114) && hydrof	0.0118905
medium(HlaPreSeq116) && hydro	-0.0282417
negative(HlaPreSeq116) && hydro	-0.0262749
charged(HlaPreSeq116) && hydrof	-0.0206784
polar(HlaPreSeq116) && hydrophc	-0.0172703
medium(HlaPreSeq127) && hydro	-0.0170893
medium(HlaPreSeq143) && hydro	0.0118914
aliphatic(HlaPreSeq152) && hydro	0.018088
buried(HlaPreSeq152) && hydropt	0.0153801
hydrophobic(HlaPreSeq152) && h	0.0128397
small(HlaPreSeq152) && hydrophc	-0.0147722
positive(HlaPreSeq156) && hydrof	0.0168247
large(HlaPreSeq163) && hydrophc	-0.02458
positive(HlaPreSeq163) && hydrof	-0.0166806
charged(HlaPreSeq163) && hydrof	-0.0233555
medium(HlaPreSeq166) && hydro	0.0121898
aliphatic(HlaPreSeq167) && hydro	0.0121339
small(HlaPreSeq167) && hydrophc	0.00998271
large(E9)	0.0176514
aliphatic(HlaPreSeq1) && large(E9)	0.0299081
hydrophobic(HlaPreSeq1) && larg	0.0262116
small(HlaPreSeq1) && large(E9)	0.0224328
cyclic(HlaPreSeq9) && large(E9)	-0.0169485
aromatic(HlaPreSeq9) && large(E9)	-0.015396
buried(HlaPreSeq9) && large(E9)	-0.0189952
large(HlaPreSeq9) && large(E9)	-0.0120165
polar(HlaPreSeq11) && large(E9)	0.0177784
positive(HlaPreSeq14) && large(E9)	0.00661375
aliphatic(HlaPreSeq24) && large(E9)	0.0179357
buried(HlaPreSeq24) && large(E9)	0.0151103
large(HlaPreSeq45) && large(E9)	-0.0043969
large(HlaPreSeq62) && large(E9)	0.0313205
polar(HlaPreSeq62) && large(E9)	0.0306809
large(HlaPreSeq63) && large(E9)	-0.0119497
negative(HlaPreSeq63) && large(E9)	-0.0126126
medium(HlaPreSeq66) && large(E9)	0.022558
hydrophobic(HlaPreSeq67) && larg	0.010271
medium(HlaPreSeq74) && large(E9)	0.0119006
negative(HlaPreSeq74) && large(E9)	0.0140743
aliphatic(HlaPreSeq76) && large(E9)	-0.0168055
medium(HlaPreSeq90) && large(E9)	0.00886339
negative(HlaPreSeq90) && large(E9)	0.00891044
charged(HlaPreSeq90) && large(E9)	0.00913077
polar(HlaPreSeq90) && large(E9)	0.009524
aliphatic(HlaPreSeq95) && large(E9)	0.0113046

large(HlaPreSeq95) && large(E9)	0.0239976
aliphatic(HlaPreSeq107) && large(E9)	0.026418
small(HlaPreSeq107) && large(E9)	0.0232943
hydrophobic(HlaPreSeq113) && large(E9)	-0.0223362
charged(HlaPreSeq114) && large(E9)	0.0122612
medium(HlaPreSeq116) && large(E9)	0.0127255
negative(HlaPreSeq116) && large(E9)	0.0155
charged(HlaPreSeq116) && large(E9)	0.0199559
polar(HlaPreSeq116) && large(E9)	0.0320143
aliphatic(HlaPreSeq142) && large(E9)	0.0194681
buried(HlaPreSeq142) && large(E9)	0.0157143
medium(HlaPreSeq143) && large(E9)	-0.0052907
positive(HlaPreSeq145) && large(E9)	-0.0174754
charged(HlaPreSeq145) && large(E9)	-0.0157857
polar(HlaPreSeq145) && large(E9)	-0.0137782
aliphatic(HlaPreSeq149) && large(E9)	-0.0190136
buried(HlaPreSeq149) && large(E9)	-0.0156023
hydrophobic(HlaPreSeq149) && large(E9)	-0.0125941
polar(HlaPreSeq156) && large(E9)	0.022267
large(HlaPreSeq163) && large(E9)	0.0113858
polar(HlaPreSeq163) && large(E9)	-0.0159075
medium(HlaPreSeq166) && large(E9)	0.0132729
aliphatic(HlaPreSeq167) && large(E9)	0.0132267
hydrophobic(HlaPreSeq171) && large(E9)	0.0109232
L in NFlank	-0.0115463
L in NFlank[1@]	-0.0111935
P in CFlank	0.0135039
P in CFlank[@1]	0.0136388
aliphatic in NFlank	-0.0037295
buried in NFlank	-0.0518789
hydrophobic in NFlank	-0.0238279
large in NFlank	-0.019276
aliphatic in NFlank[1@]	-0.0120808
buried in NFlank[1@]	-0.0562582
hydrophobic in NFlank[1@]	-0.0219244
large in NFlank[1@]	-0.0163941
hydrophobic in CFlank	-0.0479842
medium in CFlank	0.00947072
hydrophobic in CFlank[@1]	-0.0467996
medium in CFlank[@1]	0.00793558
WI in Epitope	0.036921
IY in Epitope	0.0289218
QG in Epitope	0.0415513
GY in Epitope	-0.0135755
YF in Epitope	-0.0116893
IY in Epitope[@2-3]	0.0185813
HT in Epitope[@4-5]	0.0112195

cyclic,buried in Epitope	0.0222236
cyclic,hydrophobic in Epitope	-0.0362955
cyclic,large in Epitope	0.0294087
aromatic,buried in Epitope	0.0283672
buried,aliphatic in Epitope	-0.0613077
buried,buried in Epitope	-0.0357885
buried,hydrophobic in Epitope	0.008203
hydrophobic,hydrophobic in Epitope	-0.0240898
large,aliphatic in Epitope	-0.050252
large,hydrophobic in Epitope	-0.0301016
large,large in Epitope	-0.0326539
aliphatic,cyclic in Epitope	-0.0172853
aliphatic,aromatic in Epitope	-0.0209337
aliphatic,hydrophobic in Epitope	0.020276
buried,cyclic in Epitope	0.0662812
buried,aromatic in Epitope	0.0432075
hydrophobic,aromatic in Epitope	0.0193812
large,cyclic in Epitope	-0.0203396
cyclic,positive in Epitope	0.0395002
cyclic,polar in Epitope	-0.0456327
aromatic,cyclic in Epitope	0.0235147
aromatic,aromatic in Epitope	0.0433274
aromatic,positive in Epitope	0.0215172
aromatic,charged in Epitope	0.00628386
aromatic,polar in Epitope	-0.0327834
hydrophobic,positive in Epitope	0.0242772
hydrophobic,polar in Epitope	-0.0256126
large,charged in Epitope	-0.0377463
large,polar in Epitope	0.00887288
cyclic,medium in Epitope	-0.0085176
aromatic,medium in Epitope	0.0280411
large,medium in Epitope	-0.0168111
positive,polar in Epitope	0.0256663
charged,medium in Epitope	-0.0433316
charged,polar in Epitope	-0.0165286
polar,medium in Epitope	-0.0370605
polar,polar in Epitope	0.0320605
medium,large in Epitope	-0.0848194
medium,polar in Epitope	-0.0145959
polar,large in Epitope	-0.024792
large,small in Epitope	-0.0060578
polar,aliphatic in Epitope	0.0148593
polar,small in Epitope	-0.0597894
small,cyclic in Epitope	-0.0073983
small,hydrophobic in Epitope	-0.0176585
cyclic,aliphatic in Epitope[@1-2]	-0.0204347
cyclic,buried in Epitope[@1-2]	-0.0176625

cyclic,hydrophobic in Epitope[@1-	-0.0169009
aromatic,aliphatic in Epitope[@1-2	-0.016629
aromatic,large in Epitope[@1-2]	0.0170847
buried,aliphatic in Epitope[@1-2]	-0.0356301
buried,buried in Epitope[@1-2]	-0.0011843
buried,hydrophobic in Epitope[@1	4.01E-05
buried,large in Epitope[@1-2]	0.00903273
hydrophobic,aliphatic in Epitope[€	-0.0221644
hydrophobic,buried in Epitope[@1	0.00865828
hydrophobic,hydrophobic in Epitope|	0.0106257
hydrophobic,large in Epitope[@1-2	0.0349863
large,aliphatic in Epitope[@1-2]	0.0388676
large,buried in Epitope[@1-2]	0.0475003
large,hydrophobic in Epitope[@1-2	0.0615304
aliphatic,cyclic in Epitope[@2-3]	-0.032972
buried,cyclic in Epitope[@2-3]	0.0232404
buried,aromatic in Epitope[@2-3]	0.0265271
buried,hydrophobic in Epitope[@2	0.0270282
buried,large in Epitope[@2-3]	0.013343
hydrophobic,hydrophobic in Epitope|	0.0317567
hydrophobic,large in Epitope[@2-3	0.0343891
large,cyclic in Epitope[@2-3]	0.0362909
large,aromatic in Epitope[@2-3]	0.043682
large,hydrophobic in Epitope[@2-3	0.041059
large,large in Epitope[@2-3]	0.0258346
cyclic,cyclic in Epitope[@3-4]	0.0132162
cyclic,aromatic in Epitope[@3-4]	0.0265585
cyclic,positive in Epitope[@3-4]	0.0382087
cyclic,charged in Epitope[@3-4]	0.0608471
cyclic,polar in Epitope[@3-4]	0.0505371
aromatic,cyclic in Epitope[@3-4]	0.0167365
aromatic,aromatic in Epitope[@3-4	0.0242355
aromatic,positive in Epitope[@3-4	0.0257725
aromatic,charged in Epitope[@3-4	0.0319916
aromatic,polar in Epitope[@3-4]	0.0389677
hydrophobic,cyclic in Epitope[@3-4	0.0363813
hydrophobic,aromatic in Epitope[€	0.0151555
hydrophobic,large in Epitope[@3-4	0.025639
hydrophobic,charged in Epitope[@	0.0272146
hydrophobic,polar in Epitope[@3-4	0.0115267
large,positive in Epitope[@3-4]	0.0152296
large,charged in Epitope[@3-4]	0.0485437
large,polar in Epitope[@3-4]	0.0344881
cyclic,medium in Epitope[@4-5]	0.0283103
cyclic,polar in Epitope[@4-5]	-0.0169662
aromatic,medium in Epitope[@4-5	0.0096833
positive,polar in Epitope[@4-5]	-0.007883

charged,medium in Epitope[@4-5]	0.0278824
charged,polar in Epitope[@4-5]	-0.0104732
polar,medium in Epitope[@4-5]	0.0256665
medium,large in Epitope[@5-6]	-0.0292805
medium,polar in Epitope[@5-6]	-0.0200146
polar,polar in Epitope[@5-6]	0.0357716
large,hydrophobic in Epitope[@6-7]	0.018897
large,small in Epitope[@6-7]	0.0350382
polar,small in Epitope[@6-7]	-0.0172347
aliphatic,cyclic in Epitope[@7-8]	0.014231
aliphatic,hydrophobic in Epitope[@7-8]	0.0233914
aliphatic,large in Epitope[@7-8]	0.0202539
hydrophobic,cyclic in Epitope[@7-8]	-0.0172493
hydrophobic,hydrophobic in Epitope[@7-8]	0.014188
hydrophobic,large in Epitope[@7-8]	0.0253952
small,cyclic in Epitope[@7-8]	0.0120399
small,aromatic in Epitope[@7-8]	0.0184503
small,hydrophobic in Epitope[@7-8]	0.0235667
small,large in Epitope[@7-8]	0.0290227
cyclic,buried in Epitope[@8-9]	-0.0162407
cyclic,hydrophobic in Epitope[@8-9]	-0.0119534
cyclic,large in Epitope[@8-9]	-0.0159475
hydrophobic,cyclic in Epitope[@8-9]	-0.010131
hydrophobic,buried in Epitope[@8-9]	-0.0082125
hydrophobic,hydrophobic in Epitope[@8-9]	-0.0134519
hydrophobic,large in Epitope[@8-9]	-0.0283376
aliphatic in NFlank[1@] && cyclic in Epitope	0.0344073
aliphatic in NFlank[1@] && aromatic in Epitope	0.034647
aliphatic in NFlank[1@] && hydrophobic in Epitope	0.0352989
buried in NFlank[1@] && aromatic in Epitope	0.0175262
buried in NFlank[1@] && buried in Epitope	-0.0157213
buried in NFlank[1@] && large in Epitope	-0.0127203
hydrophobic in NFlank[1@] && cyclic in Epitope	0.0310416
hydrophobic in NFlank[1@] && aromatic in Epitope	0.0379349
hydrophobic in NFlank[1@] && hydrophobic in Epitope	0.020237
large in NFlank[1@] && cyclic in Epitope	-0.0230895
large in NFlank[1@] && buried in Epitope	0.0298226
large in NFlank[1@] && hydrophobic in Epitope	0.0165713
cyclic in Epitope[@9] && cyclic in Epitope	0.0125999
cyclic in Epitope[@9] && hydrophobic in Epitope	-0.009284
cyclic in Epitope[@9] && medium in Epitope	0.021629
aromatic in Epitope[@9] && cyclic in Epitope	0.0181238
aromatic in Epitope[@9] && medium in Epitope	0.0173904
buried in Epitope[@9] && hydrophobic in Epitope	0.026776
buried in Epitope[@9] && medium in Epitope	-0.0083953
hydrophobic in Epitope[@9] && medium in Epitope	0.0221422
large in Epitope[@9] && cyclic in Epitope	0.0378337

large in Epitope[@9] && hydrophc	0.041555
large in Epitope[@9] && medium i	0.0181447
HlaPreSeq41=Ala && E1=Leu	-0.0172975
HlaPreSeq65=Arg && E1=Leu	0.017051
HlaPreSeq74=Asp && E1=Leu	-0.0224093
HlaPreSeq77=Asn && E1=Leu	-0.0162045
HlaPreSeq82=Arg && E1=Leu	0.0162536
HlaPreSeq83=Gly && E1=Leu	0.0163966
HlaPreSeq94=Thr && E1=Leu	-0.015713
HlaPreSeq105=Pro && E1=Leu	-0.0150419
HlaPreSeq107=Gly && E1=Leu	-0.0188524
HlaPreSeq142=Ile && E1=Leu	-0.0152606
HlaPreSeq143=Thr && E1=Leu	-0.015269
HlaPreSeq145=Arg && E1=Leu	-0.0141882
HlaPreSeq147=Trp && E1=Leu	-0.0152632
aliphatic(E1)	0.00782641
polar(HlaPreSeq11) && aliphatic(E	0.0108581
large(HlaPreSeq45) && aliphatic(E	0.0260165
large(HlaPreSeq63) && aliphatic(E	0.0277553
negative(HlaPreSeq63) && aliphatic	0.0285502
charged(HlaPreSeq63) && aliphatic	0.0267504
positive(HlaPreSeq65) && aliphatic	0.0218793
charged(HlaPreSeq65) && aliphatic	0.0211557
buried(HlaPreSeq67) && aliphatic(E	-0.0176267
large(HlaPreSeq67) && aliphatic(E	-0.008522
aliphatic(HlaPreSeq69) && aliphatic	0.0167934
buried(HlaPreSeq69) && aliphatic(E	0.0154079
hydrophobic(HlaPreSeq69) && aliphatic	0.0140455
small(HlaPreSeq69) && aliphatic(E	0.012725
polar(HlaPreSeq71) && aliphatic(E	-0.0154624
medium(HlaPreSeq73) && aliphatic	-0.0190785
polar(HlaPreSeq73) && aliphatic(E	-0.0196143
aliphatic(HlaPreSeq79) && aliphatic	0.00836088
hydrophobic(HlaPreSeq79) && aliphatic	0.00925843
small(HlaPreSeq79) && aliphatic(E	0.0101015
large(HlaPreSeq95) && aliphatic(E	-0.0103163
cyclic(HlaPreSeq105) && aliphatic(E	-0.0096813
hydrophobic(HlaPreSeq105) && aliphatic	-0.0098899
medium(HlaPreSeq105) && aliphatic	-0.0100078
charged(HlaPreSeq116) && aliphatic	0.016474
HlaPreSeq9=Phe && E2=Val	-0.0119993
HlaPreSeq11=Ser && E2=Val	0.0203524
HlaPreSeq43=Gln && E2=Val	0.016995
HlaPreSeq45=Met && E2=Val	0.0211512
HlaPreSeq62=Gln && E2=Val	0.0131073
HlaPreSeq65=Arg && E2=Val	0.0201644
HlaPreSeq66=Asn && E2=Val	0.0256235

HlaPreSeq70=His && E2=Val	-0.0051427
HlaPreSeq77=Asn && E2=Val	-0.0089687
HlaPreSeq90=Asp && E2=Val	0.0122146
HlaPreSeq95=Ile && E2=Val	0.0181827
HlaPreSeq97=Ile && E2=Val	0.0195085
HlaPreSeq149=Ala && E2=Val	0.00090294
HlaPreSeq163=Arg && E2=Val	0.0112664
cyclic(HlaPreSeq9) && medium(E2	0.0203576
aromatic(HlaPreSeq9) && medium	0.0207521
buried(HlaPreSeq9) && medium(E	-0.0096888
hydrophobic(HlaPreSeq9) && med	0.0388579
large(HlaPreSeq9) && medium(E2)	0.0200851
aliphatic(HlaPreSeq12) && mediur	-0.0213651
medium(HlaPreSeq12) && mediun	-0.0217248
large(HlaPreSeq17) && medium(E:	-0.0112598
small(HlaPreSeq24) && medium(E	0.0124777
polar(HlaPreSeq32) && medium(E	0.00973527
hydrophobic(HlaPreSeq45) && me	-0.0111093
large(HlaPreSeq52) && medium(E:	0.00938633
polar(HlaPreSeq62) && medium(E	0.00321795
large(HlaPreSeq63) && medium(E:	-0.0501372
negative(HlaPreSeq63) && mediur	-0.0471916
charged(HlaPreSeq63) && mediun	-0.0480555
large(HlaPreSeq65) && medium(E:	0.00902394
positive(HlaPreSeq65) && mediun	0.0149572
charged(HlaPreSeq65) && mediun	0.0141848
polar(HlaPreSeq65) && medium(E	0.00840282
medium(HlaPreSeq66) && mediun	0.0215773
polar(HlaPreSeq66) && medium(E	-0.0121684
buried(HlaPreSeq67) && medium(	-0.0195441
hydrophobic(HlaPreSeq67) && me	0.0310694
large(HlaPreSeq67) && medium(E:	0.0308367
aliphatic(HlaPreSeq69) && mediur	0.0250318
buried(HlaPreSeq69) && medium(	0.0247492
hydrophobic(HlaPreSeq69) && me	0.0243188
small(HlaPreSeq69) && medium(E	0.0237428
cyclic(HlaPreSeq70) && medium(E	-0.015481
aromatic(HlaPreSeq70) && mediun	-0.0158559
positive(HlaPreSeq70) && mediun	-0.0272976
charged(HlaPreSeq70) && mediun	-0.0277178
small(HlaPreSeq71) && medium(E	0.0100065
polar(HlaPreSeq71) && medium(E	-0.0247693
medium(HlaPreSeq77) && mediun	-0.0260574
large(HlaPreSeq81) && medium(E:	0.00764798
positive(HlaPreSeq82) && mediun	0.0186057
charged(HlaPreSeq82) && mediun	0.0189831
polar(HlaPreSeq82) && medium(E	0.0190971

aliphatic(HlaPreSeq83) && mediur	0.0189514
hydrophobic(HlaPreSeq83) && me	0.0185651
small(HlaPreSeq83) && medium(E	0.0179684
medium(HlaPreSeq94) && mediun	-0.0204397
polar(HlaPreSeq94) && medium(E	-0.0207711
buried(HlaPreSeq97) && medium(	-0.0173213
hydrophobic(HlaPreSeq97) && me	-0.017327
large(HlaPreSeq97) && medium(E:	-0.0192122
medium(HlaPreSeq103) && mediu	-0.0185582
cyclic(HlaPreSeq105) && medium(	0.00891532
hydrophobic(HlaPreSeq105) && m	0.0103957
medium(HlaPreSeq105) && mediu	0.0116827
aliphatic(HlaPreSeq107) && mediu	0.00564049
small(HlaPreSeq107) && medium(	0.00638902
hydrophobic(HlaPreSeq113) && m	-0.0315798
large(HlaPreSeq114) && medium(l	-0.015646
positive(HlaPreSeq114) && mediu	-0.0262158
charged(HlaPreSeq114) && mediu	0.0128917
polar(HlaPreSeq116) && medium(	0.0143414
medium(HlaPreSeq127) && mediu	0.00837278
positive(HlaPreSeq144) && mediu	-0.0148347
charged(HlaPreSeq144) && mediu	-0.0151549
positive(HlaPreSeq156) && mediu	0.0185437
charged(HlaPreSeq156) && mediu	0.0164217
large(HlaPreSeq163) && medium(l	0.0144546
medium(HlaPreSeq166) && mediu	-0.0179632
aliphatic(HlaPreSeq167) && mediu	-0.0179549
small(HlaPreSeq167) && medium(	-0.0168223
hydrophobic(HlaPreSeq171) && m	0.0111217
HlaPreSeq12=Val && E3=Asp	0.0268408
HlaPreSeq63=Glu && E3=Asp	0.0200159
HlaPreSeq73=Thr && E3=Asp	0.0248938
HlaPreSeq94=Thr && E3=Asp	0.0229907
HlaPreSeq103=Val && E3=Asp	0.0186993
HlaPreSeq113=Tyr && E3=Asp	0.0199049
HlaPreSeq147=Trp && E3=Asp	0.0202358
HlaPreSeq149=Ala && E3=Asp	0.0246075
buried(HlaPreSeq9) && medium(E	-0.0034399
positive(HlaPreSeq35) && mediun	-0.0075739
charged(HlaPreSeq35) && mediun	-0.0099441
large(HlaPreSeq62) && medium(E:	0.0141232
large(HlaPreSeq63) && medium(E:	0.0195744
buried(HlaPreSeq67) && medium(	-0.0252085
cyclic(HlaPreSeq70) && medium(E	-0.0187008
aromatic(HlaPreSeq70) && mediu	-0.0193564
positive(HlaPreSeq70) && mediun	-0.0255144
charged(HlaPreSeq70) && mediun	-0.0259619

medium(HlaPreSeq73) && mediun	0.0154555
polar(HlaPreSeq73) && medium(E	0.0145597
medium(HlaPreSeq80) && mediun	0.014037
polar(HlaPreSeq116) && medium(	-0.009507
positive(HlaPreSeq156) && mediu	0.0230104
charged(HlaPreSeq156) && mediu	0.0199666
polar(HlaPreSeq156) && medium(	0.0162325
large(HlaPreSeq163) && medium(l	-0.0033603
hydrophobic(HlaPreSeq167) && m	-0.0061642
small(HlaPreSeq167) && medium(	0.0107325
cyclic(HlaPreSeq9) && negative(E3	0.0186466
aromatic(HlaPreSeq9) && negativ	0.0187097
buried(HlaPreSeq9) && negative(E	0.0252261
large(HlaPreSeq9) && negative(E3	0.0187223
aliphatic(HlaPreSeq12) && negativ	0.0303273
medium(HlaPreSeq12) && negativ	0.0301965
medium(HlaPreSeq30) && negativ	-0.0125898
negative(HlaPreSeq30) && negativ	-0.0128401
charged(HlaPreSeq30) && negativ	-0.0131242
polar(HlaPreSeq30) && negative(E	-0.013432
positive(HlaPreSeq35) && negativ	-0.0071101
charged(HlaPreSeq35) && negativ	-0.0074572
large(HlaPreSeq45) && negative(E	-0.0180092
large(HlaPreSeq52) && negative(E	-0.0088837
medium(HlaPreSeq66) && negativ	-0.0119556
buried(HlaPreSeq67) && negative(	-0.0131389
hydrophobic(HlaPreSeq67) && ne	-0.0193211
aliphatic(HlaPreSeq69) && negativ	-0.0181226
buried(HlaPreSeq69) && negative(	-0.0182676
hydrophobic(HlaPreSeq69) && ne	-0.018399
small(HlaPreSeq69) && negative(E	-0.0185143
cyclic(HlaPreSeq70) && negative(E	0.0216502
aromatic(HlaPreSeq70) && negativ	0.0215481
positive(HlaPreSeq70) && negativ	0.0193649
charged(HlaPreSeq70) && negativ	0.0192771
aliphatic(HlaPreSeq76) && negativ	0.0156456
buried(HlaPreSeq76) && negative(	0.0155832
hydrophobic(HlaPreSeq76) && ne	0.0155445
small(HlaPreSeq76) && negative(E	0.0157504
medium(HlaPreSeq94) && negativ	0.0172106
polar(HlaPreSeq94) && negative(E	0.0172414
large(HlaPreSeq97) && negative(E	0.0248552
hydrophobic(HlaPreSeq113) && n	0.0135818
large(HlaPreSeq131) && negative(	-0.0087558
positive(HlaPreSeq131) && negati	-0.0087526
charged(HlaPreSeq131) && negati	-0.0087479
medium(HlaPreSeq150) && negati	0.0197032

large(HlaPreSeq156) && negative(	0.0128755
polar(HlaPreSeq156) && negative(	-0.0209078
medium(HlaPreSeq158) && negati	0.0228035
large(HlaPreSeq163) && negative(	-0.0236363
polar(HlaPreSeq163) && negative(	0.0145399
medium(HlaPreSeq166) && negati	0.0125949
aliphatic(HlaPreSeq167) && negat	0.0126012
small(HlaPreSeq167) && negative(	0.011218
hydrophobic(HlaPreSeq171) && nε	-0.0251559
charged(E3)	0.00174655
cyclic(HlaPreSeq9) && charged(E3)	-0.0001649
aromatic(HlaPreSeq9) && charged	-0.0019923
hydrophobic(HlaPreSeq9) && char	-0.0152563
large(HlaPreSeq9) && charged(E3)	-0.0049102
polar(HlaPreSeq11) && charged(E:	-0.0098224
positive(HlaPreSeq14) && charged	-0.0087687
charged(HlaPreSeq14) && chargec	-0.0105348
polar(HlaPreSeq14) && charged(E:	-0.0117735
aliphatic(HlaPreSeq16) && chargec	-0.010193
hydrophobic(HlaPreSeq16) && cha	-0.0105694
large(HlaPreSeq17) && charged(E:	-0.0142517
aliphatic(HlaPreSeq24) && chargec	-0.0244572
buried(HlaPreSeq24) && charged(l	-0.0244504
hydrophobic(HlaPreSeq24) && cha	-0.0243547
medium(HlaPreSeq30) && chargec	-0.0184233
negative(HlaPreSeq30) && chargec	-0.0176115
charged(HlaPreSeq30) && chargec	-0.0166311
polar(HlaPreSeq30) && charged(E:	-0.0155368
large(HlaPreSeq63) && charged(E:	-0.0269017
medium(HlaPreSeq66) && chargec	-0.020672
large(HlaPreSeq67) && charged(E:	0.0151317
aliphatic(HlaPreSeq69) && chargec	-0.0282638
buried(HlaPreSeq69) && charged(l	-0.0276813
hydrophobic(HlaPreSeq69) && cha	-0.0270579
small(HlaPreSeq69) && charged(E:	-0.0263892
cyclic(HlaPreSeq70) && charged(E:	0.0108532
aromatic(HlaPreSeq70) && charge	0.0111516
positive(HlaPreSeq70) && charged	0.01478
charged(HlaPreSeq70) && chargec	0.0150489
small(HlaPreSeq71) && charged(E:	-0.0223528
medium(HlaPreSeq77) && chargec	-0.0233962
medium(HlaPreSeq80) && chargec	0.0176694
polar(HlaPreSeq80) && charged(E:	0.017732
large(HlaPreSeq81) && charged(E:	0.0198228
medium(HlaPreSeq94) && chargec	0.0248461
polar(HlaPreSeq94) && charged(E:	0.0253037
large(HlaPreSeq97) && charged(E:	-0.0131999

medium(HlaPreSeq103) && charge	0.0155019
cyclic(HlaPreSeq109) && charged	-0.0131713
aromatic(HlaPreSeq109) && charge	-0.0131411
positive(HlaPreSeq114) && charge	-0.0148989
charged(HlaPreSeq114) && charge	-0.0234685
medium(HlaPreSeq116) && charge	-0.0191559
negative(HlaPreSeq116) && charge	-0.0173018
charged(HlaPreSeq116) && charge	-0.0147862
polar(HlaPreSeq116) && charged	-0.020333
buried(HlaPreSeq138) && charged	-0.0121386
hydrophobic(HlaPreSeq138) && charge	-0.0120648
medium(HlaPreSeq150) && charge	0.013214
charged(HlaPreSeq156) && charge	0.0196114
medium(HlaPreSeq158) && charge	0.0148971
large(HlaPreSeq163) && charged	-0.0283154
polar(HlaPreSeq163) && charged	0.0204833
hydrophobic(HlaPreSeq167) && charge	0.0117983
hydrophobic(HlaPreSeq171) && charge	-0.0115929
buried(HlaPreSeq9) && polar(E3)	-0.0164357
hydrophobic(HlaPreSeq9) && polar	-0.0155053
positive(HlaPreSeq35) && polar(E3)	-0.0369202
charged(HlaPreSeq35) && polar(E3)	-0.0338053
large(HlaPreSeq62) && polar(E3)	0.00372661
polar(HlaPreSeq62) && polar(E3)	0.00560686
large(HlaPreSeq63) && polar(E3)	-0.0337228
negative(HlaPreSeq63) && polar(E3)	-0.0312292
charged(HlaPreSeq63) && polar(E3)	-0.0288347
large(HlaPreSeq65) && polar(E3)	0.00688668
polar(HlaPreSeq65) && polar(E3)	0.00761464
buried(HlaPreSeq67) && polar(E3)	0.00428648
medium(HlaPreSeq74) && polar(E3)	0.0104385
negative(HlaPreSeq74) && polar(E3)	0.0107444
large(HlaPreSeq81) && polar(E3)	0.0228463
medium(HlaPreSeq103) && polar	-0.0162802
cyclic(HlaPreSeq105) && polar(E3)	0.00915394
hydrophobic(HlaPreSeq105) && polar	0.00971564
medium(HlaPreSeq105) && polar	0.0100503
positive(HlaPreSeq114) && polar	-0.0244919
charged(HlaPreSeq114) && polar	-0.0352397
medium(HlaPreSeq127) && polar	0.0110872
medium(HlaPreSeq158) && polar	0.014186
large(HlaPreSeq161) && polar(E3)	0.00605405
large(HlaPreSeq163) && polar(E3)	-0.0206392
polar(HlaPreSeq163) && polar(E3)	0.0132213
HlaPreSeq9=Phe && E4=Phe	-0.0164085
HlaPreSeq43=Gln && E4=Phe	-0.0194131
HlaPreSeq70=His && E4=Phe	-0.0205573

HlaPreSeq74=Asp && E4=Phe	0.00855663
HlaPreSeq131=Arg && E4=Phe	-0.018826
HlaPreSeq151=His && E4=Phe	-0.0172826
HlaPreSeq161=Glu && E4=Phe	-0.0259817
HlaPreSeq171=Tyr && E4=Phe	-0.0283089
aliphatic(HlaPreSeq12) && buried(	-0.005879
medium(HlaPreSeq12) && buried(	-0.0064959
small(HlaPreSeq24) && buried(E4)	-0.004409
large(HlaPreSeq45) && buried(E4)	0.021285
polar(HlaPreSeq62) && buried(E4)	0.0106288
medium(HlaPreSeq74) && buried(	0.0172243
negative(HlaPreSeq74) && buried(	0.0170628
charged(HlaPreSeq74) && buried(l	0.0105545
medium(HlaPreSeq80) && buried(	0.0184401
aliphatic(HlaPreSeq95) && buried(	-0.0191744
buried(HlaPreSeq97) && buried(E4	0.00681621
hydrophobic(HlaPreSeq97) && bui	0.00661366
large(HlaPreSeq97) && buried(E4)	-0.0209532
positive(HlaPreSeq114) && buried	0.0127495
medium(HlaPreSeq116) && buriec	0.0181626
negative(HlaPreSeq116) && buriec	0.019979
charged(HlaPreSeq116) && buried	0.0151725
large(HlaPreSeq156) && buried(E4	-0.0235296
charged(HlaPreSeq156) && buried	0.0210802
polar(HlaPreSeq156) && buried(E4	0.0126148
large(HlaPreSeq161) && buried(E4	-0.0210802
small(HlaPreSeq167) && buried(E4	0.0108618
cyclic(HlaPreSeq9) && hydrophobi	0.00818573
aromatic(HlaPreSeq9) && hydroph	0.00727385
hydrophobic(HlaPreSeq9) && hydr	0.0139794
large(HlaPreSeq9) && hydrophobi	0.0050995
polar(HlaPreSeq66) && hydrophok	0.00189084
medium(HlaPreSeq74) && hydroph	0.0056573
negative(HlaPreSeq74) && hydroph	0.00544439
aliphatic(HlaPreSeq76) && hydroph	0.0146378
buried(HlaPreSeq76) && hydrophc	0.0152321
hydrophobic(HlaPreSeq76) && hyc	0.015529
medium(HlaPreSeq77) && hydroph	-0.0254739
large(HlaPreSeq95) && hydrophok	-0.0184028
large(HlaPreSeq97) && hydrophok	-0.0149764
charged(HlaPreSeq114) && hydroph	-0.0250858
medium(HlaPreSeq116) && hydroph	0.0103417
negative(HlaPreSeq116) && hydroph	0.00929828
cyclic(HlaPreSeq151) && hydrophc	0.00993264
aromatic(HlaPreSeq151) && hydroc	0.010769
HlaPreSeq11=Ser && E5=Arg	0.0187702
HlaPreSeq12=Val && E5=Arg	0.0244449

HlaPreSeq63=Glu && E5=Arg	0.0217655
HlaPreSeq66=Asn && E5=Arg	-0.0161593
HlaPreSeq70=His && E5=Arg	0.0176725
HlaPreSeq90=Asp && E5=Arg	-0.0097889
HlaPreSeq95=Ile && E5=Arg	-0.0135356
HlaPreSeq97=Ile && E5=Arg	-0.0100333
HlaPreSeq105=Pro && E5=Arg	-0.0032164
HlaPreSeq107=Gly && E5=Arg	0.00217619
HlaPreSeq113=Tyr && E5=Arg	0.0223927
HlaPreSeq114=Arg && E5=Arg	-0.0103726
HlaPreSeq127=Asn && E5=Arg	-0.002161
aliphatic(HlaPreSeq1) && large(E5)	0.0106899
hydrophobic(HlaPreSeq1) && large(E5)	0.0099014
small(HlaPreSeq1) && large(E5)	0.00898275
cyclic(HlaPreSeq9) && large(E5)	-0.0259088
aromatic(HlaPreSeq9) && large(E5)	-0.02407
buried(HlaPreSeq9) && large(E5)	0.0120208
hydrophobic(HlaPreSeq9) && large(E5)	-0.0206168
large(HlaPreSeq9) && large(E5)	-0.020185
cyclic(HlaPreSeq70) && large(E5)	0.0143058
aromatic(HlaPreSeq70) && large(E5)	0.0146631
positive(HlaPreSeq70) && large(E5)	0.0211523
charged(HlaPreSeq70) && large(E5)	0.0210444
medium(HlaPreSeq74) && large(E5)	0.0243268
charged(HlaPreSeq74) && large(E5)	0.0205502
large(HlaPreSeq95) && large(E5)	-0.0034246
aliphatic(HlaPreSeq97) && large(E5)	-0.0126634
charged(HlaPreSeq114) && large(E5)	-0.0178674
large(HlaPreSeq156) && large(E5)	-0.0073561
large(HlaPreSeq163) && large(E5)	-0.0218722
charged(HlaPreSeq163) && large(E5)	-0.0179416
hydrophobic(HlaPreSeq45) && positive(E5)	-0.0121355
large(HlaPreSeq45) && positive(E5)	0.0200849
medium(HlaPreSeq66) && positive(E5)	-0.0092781
polar(HlaPreSeq66) && positive(E5)	-0.0185986
buried(HlaPreSeq67) && positive(E5)	0.016338
small(HlaPreSeq71) && positive(E5)	-0.0144781
polar(HlaPreSeq71) && positive(E5)	0.0164705
charged(HlaPreSeq74) && positive(E5)	0.0176041
polar(HlaPreSeq74) && positive(E5)	0.0173473
medium(HlaPreSeq77) && positive(E5)	-0.0133295
medium(HlaPreSeq80) && positive(E5)	0.0186937
medium(HlaPreSeq94) && positive(E5)	0.0147267
polar(HlaPreSeq94) && positive(E5)	0.014518
large(HlaPreSeq97) && positive(E5)	-0.0192577
medium(HlaPreSeq103) && positive(E5)	0.0186591
charged(HlaPreSeq114) && positive(E5)	-0.0320495

medium(HlaPreSeq116) && positiv	0.0121617
polar(HlaPreSeq116) && positive(f	-0.010046
medium(HlaPreSeq127) && positiv	0.0208063
aliphatic(HlaPreSeq142) && positiv	0.0208496
buried(HlaPreSeq142) && positive	0.0206745
hydrophobic(HlaPreSeq142) && p	0.0205071
large(HlaPreSeq142) && positive(E	0.0203429
large(HlaPreSeq156) && positive(E	-0.0161212
charged(HlaPreSeq156) && positiv	0.0199966
polar(HlaPreSeq156) && positive(f	0.0170942
cyclic(HlaPreSeq9) && charged(E5	-0.0188314
aromatic(HlaPreSeq9) && charged	-0.0192938
buried(HlaPreSeq9) && charged(E!	0.00583471
hydrophobic(HlaPreSeq9) && char	-0.0203525
large(HlaPreSeq9) && charged(E5)	-0.0199489
buried(HlaPreSeq45) && charged(l	-0.0215081
large(HlaPreSeq45) && charged(E!	-0.018318
large(HlaPreSeq63) && charged(E!	-0.0143313
medium(HlaPreSeq66) && charge	-0.0118411
polar(HlaPreSeq66) && charged(E!	-0.0162218
buried(HlaPreSeq67) && charged(l	0.00777158
large(HlaPreSeq67) && charged(E!	0.0248037
aliphatic(HlaPreSeq69) && charge	-0.0247078
buried(HlaPreSeq69) && charged(l	-0.0247055
hydrophobic(HlaPreSeq69) && cha	-0.0246003
small(HlaPreSeq69) && charged(E!	-0.0243868
small(HlaPreSeq71) && charged(E!	-0.0165573
medium(HlaPreSeq77) && charge	-0.0198685
large(HlaPreSeq95) && charged(E!	-0.0023072
aliphatic(HlaPreSeq97) && charge	-0.0160848
cyclic(HlaPreSeq109) && charged(	-0.0255697
aromatic(HlaPreSeq109) && charg	-0.0249074
positive(HlaPreSeq114) && charge	-0.032592
charged(HlaPreSeq114) && charge	-0.0177988
medium(HlaPreSeq127) && charge	0.0274837
positive(HlaPreSeq144) && charge	-0.0284403
charged(HlaPreSeq144) && charge	-0.0277028
large(HlaPreSeq163) && charged(f	-0.0058245
charged(HlaPreSeq163) && charge	-0.0126931
small(HlaPreSeq167) && charged(l	-0.0102629
HlaPreSeq69=Ala && E6=Glu	-0.0208641
HlaPreSeq70=His && E6=Glu	-0.0155425
aliphatic(HlaPreSeq1) && negative	-0.0173219
hydrophobic(HlaPreSeq1) && nega	-0.017276
small(HlaPreSeq1) && negative(E6	-0.0172503
aliphatic(HlaPreSeq12) && negativ	-0.0269723
medium(HlaPreSeq12) && negativ	-0.0269753

small(HlaPreSeq24) && negative(E	-0.020802
polar(HlaPreSeq32) && negative(E	-0.0180322
aliphatic(HlaPreSeq41) && negativ	-0.0235817
buried(HlaPreSeq41) && negative(	-0.0236443
hydrophobic(HlaPreSeq41) && neξ	-0.0237017
small(HlaPreSeq41) && negative(E	-0.0237498
aliphatic(HlaPreSeq69) && negativ	-0.0210918
buried(HlaPreSeq69) && negative(	-0.0211269
hydrophobic(HlaPreSeq69) && neξ	-0.0211627
small(HlaPreSeq69) && negative(E	-0.0211982
small(HlaPreSeq71) && negative(E	-0.0221485
hydrophobic(HlaPreSeq171) && ne	0.00257905
cyclic(HlaPreSeq9) && charged(E6	-0.026941
aromatic(HlaPreSeq9) && charged	-0.0267325
large(HlaPreSeq9) && charged(E6)	-0.0264286
aliphatic(HlaPreSeq12) && charge	-0.0285379
medium(HlaPreSeq12) && charge	-0.0279532
large(HlaPreSeq45) && charged(E	0.00494246
large(HlaPreSeq67) && charged(E	-0.0244905
polar(HlaPreSeq71) && charged(E	0.0020024
medium(HlaPreSeq103) && charge	-0.0008065
large(HlaPreSeq156) && charged(E	-0.0253263
polar(HlaPreSeq156) && charged(I	0.00201432
HlaPreSeq9=Phe && E7=Leu	0.0219516
HlaPreSeq11=Ser && E7=Leu	0.0161113
HlaPreSeq12=Val && E7=Leu	0.0136869
HlaPreSeq65=Arg && E7=Leu	0.0158099
HlaPreSeq76=Ala && E7=Leu	0.016572
HlaPreSeq79=Gly && E7=Leu	0.0138765
HlaPreSeq80=Thr && E7=Leu	0.0169775
HlaPreSeq105=Pro && E7=Leu	-0.013221
HlaPreSeq113=Tyr && E7=Leu	0.0198446
HlaPreSeq116=Asp && E7=Leu	0.0110794
aliphatic(HlaPreSeq12) && buried(	0.0165496
medium(HlaPreSeq12) && buried(	0.0177784
aliphatic(HlaPreSeq24) && buried(	0.0231482
buried(HlaPreSeq24) && buried(E	0.0237345
hydrophobic(HlaPreSeq24) && bui	0.0237245
large(HlaPreSeq45) && buried(E7)	0.00857098
large(HlaPreSeq62) && buried(E7)	0.00040129
polar(HlaPreSeq62) && buried(E7)	-0.0113994
large(HlaPreSeq63) && buried(E7)	0.0220306
buried(HlaPreSeq67) && buried(E	0.0236372
aliphatic(HlaPreSeq76) && buried(	0.0143589
buried(HlaPreSeq76) && buried(E	0.0145256
hydrophobic(HlaPreSeq76) && bui	0.0145196
large(HlaPreSeq95) && buried(E7)	-0.0092347

aliphatic(HIaPreSeq97) && buried(	-0.0141689
cyclic(HIaPreSeq105) && buried(E7	-0.0086601
hydrophobic(HIaPreSeq105) && bi	-0.0088968
medium(HIaPreSeq105) && buriec	-0.0090838
aliphatic(HIaPreSeq107) && buriec	-0.0041078
small(HIaPreSeq107) && buried(E7	-0.0049733
hydrophobic(HIaPreSeq113) && bi	0.0161513
positive(HIaPreSeq114) && buried	0.0211397
polar(HIaPreSeq116) && buried(E7	-0.0144932
aliphatic(HIaPreSeq142) && buriec	-0.0090088
buried(HIaPreSeq142) && buried(f	-0.0095166
hydrophobic(HIaPreSeq142) && bi	-0.0097957
large(HIaPreSeq142) && buried(E7	-0.0098654
large(HIaPreSeq163) && buried(E7	-0.0195441
small(HIaPreSeq167) && buried(E7	-0.015269
large(HIaPreSeq63) && large(E7)	-0.0025372
buried(HIaPreSeq67) && large(E7)	0.0279548
hydrophobic(HIaPreSeq67) && lar	-0.0055313
large(HIaPreSeq67) && large(E7)	-0.0219124
polar(HIaPreSeq71) && large(E7)	0.0290273
medium(HIaPreSeq94) && large(E7	0.0298653
polar(HIaPreSeq94) && large(E7)	0.0274344
charged(HIaPreSeq114) && large(f	-0.0223417
large(HIaPreSeq131) && large(E7)	-0.0074392
medium(HIaPreSeq143) && large(l	0.0147209
positive(HIaPreSeq144) && large(E	0.0173481
aliphatic(HIaPreSeq152) && large(	-0.0112256
buried(HIaPreSeq152) && large(E7	-0.010817
hydrophobic(HIaPreSeq152) && la	-0.0101638
large(HIaPreSeq163) && large(E7)	-0.0216996
hydrophobic(HIaPreSeq167) && la	0.0181071
small(HIaPreSeq167) && large(E7)	-0.0180537
hydrophobic(HIaPreSeq171) && la	-0.007868
HIaPreSeq12=Val && E8=Asn	-0.0074775
HIaPreSeq24=Ala && E8=Asn	0.0253501
HIaPreSeq30=Asp && E8=Asn	0.021781
HIaPreSeq66=Asn && E8=Asn	0.0121135
HIaPreSeq69=Ala && E8=Asn	0.019275
HIaPreSeq95=Ile && E8=Asn	0.0226897
HIaPreSeq107=Gly && E8=Asn	0.0194509
HIaPreSeq116=Asp && E8=Asn	0.0150889
HIaPreSeq171=Tyr && E8=Asn	0.0187499
buried(HIaPreSeq9) && medium(E	-0.0123451
aliphatic(HIaPreSeq12) && mediur	-0.0120732
medium(HIaPreSeq12) && mediun	-0.0114435
aliphatic(HIaPreSeq24) && mediur	0.016144
buried(HIaPreSeq24) && medium(	0.0162692

hydrophobic(HlaPreSeq24) && me	0.0161978
polar(HlaPreSeq62) && medium(E	0.01169
large(HlaPreSeq63) && medium(E	-0.0210914
negative(HlaPreSeq63) && mediu	-0.0174259
charged(HlaPreSeq63) && mediun	-0.0170647
medium(HlaPreSeq80) && mediun	0.0197742
large(HlaPreSeq163) && medium(l	0.0180011
polar(HlaPreSeq163) && medium(	-0.0113248
cyclic(HlaPreSeq9) && polar(E8)	0.0127831
large(HlaPreSeq63) && polar(E8)	-0.0180112
negative(HlaPreSeq63) && polar(E	-0.0138071
charged(HlaPreSeq63) && polar(E	-0.0126998
positive(HlaPreSeq70) && polar(E	0.0175795
charged(HlaPreSeq70) && polar(E	0.0172844
charged(HlaPreSeq114) && polar(l	-0.0158873
polar(HlaPreSeq156) && polar(E8)	-0.0202612
hydrophobic(HlaPreSeq171) && p	-0.0077877
E9=Lys	0.0132763
HlaPreSeq1=Gly && E9=Lys	0.0181817
HlaPreSeq6=Arg && E9=Lys	0.015697
HlaPreSeq11=Ser && E9=Lys	0.0220976
HlaPreSeq12=Val && E9=Lys	0.012165
HlaPreSeq14=Arg && E9=Lys	0.0200561
HlaPreSeq16=Gly && E9=Lys	0.0214685
HlaPreSeq17=Arg && E9=Lys	0.0242422
HlaPreSeq21=Arg && E9=Lys	0.0253474
HlaPreSeq24=Ala && E9=Lys	0.0295592
HlaPreSeq30=Asp && E9=Lys	0.0339424
HlaPreSeq32=Gln && E9=Lys	0.0236654
HlaPreSeq35=Arg && E9=Lys	0.0333031
HlaPreSeq41=Ala && E9=Lys	0.0370286
HlaPreSeq43=Gln && E9=Lys	0.0326544
HlaPreSeq45=Met && E9=Lys	0.0323896
HlaPreSeq46=Glu && E9=Lys	0.0365119
HlaPreSeq49=Ala && E9=Lys	0.0386341
HlaPreSeq52=Ile && E9=Lys	0.0476712
HlaPreSeq56=Gly && E9=Lys	0.0416227
HlaPreSeq62=Gln && E9=Lys	0.0489918
HlaPreSeq63=Glu && E9=Lys	0.0497926
HlaPreSeq65=Arg && E9=Lys	0.0334915
HlaPreSeq66=Asn && E9=Lys	0.0367193
HlaPreSeq69=Ala && E9=Lys	0.0500688
HlaPreSeq70=His && E9=Lys	-0.0151504
HlaPreSeq71=Ser && E9=Lys	0.0399751
HlaPreSeq73=Thr && E9=Lys	0.0531345
HlaPreSeq74=Asp && E9=Lys	0.0556949
HlaPreSeq76=Ala && E9=Lys	-0.0147026

HlaPreSeq77=Asn && E9=Lys	-0.0220506
HlaPreSeq79=Gly && E9=Lys	0.040285
HlaPreSeq80=Thr && E9=Lys	0.0480074
HlaPreSeq81=Leu && E9=Lys	0.0473799
HlaPreSeq82=Arg && E9=Lys	0.0372467
HlaPreSeq83=Gly && E9=Lys	0.0372687
HlaPreSeq90=Asp && E9=Lys	0.0242126
HlaPreSeq91=Gly && E9=Lys	0.0457682
HlaPreSeq94=Thr && E9=Lys	0.0490438
HlaPreSeq95=Ile && E9=Lys	0.039552
HlaPreSeq97=Ile && E9=Lys	0.0554178
HlaPreSeq99=Tyr && E9=Lys	0.0443456
HlaPreSeq103=Val && E9=Lys	0.05257
HlaPreSeq105=Pro && E9=Lys	0.0315144
HlaPreSeq107=Gly && E9=Lys	0.0467741
HlaPreSeq109=Phe && E9=Lys	0.0409301
HlaPreSeq113=Tyr && E9=Lys	0.0344874
HlaPreSeq114=Arg && E9=Lys	0.0489562
HlaPreSeq116=Asp && E9=Lys	0.0515681
HlaPreSeq127=Asn && E9=Lys	0.0414476
HlaPreSeq131=Arg && E9=Lys	0.0358423
HlaPreSeq138=Met && E9=Lys	0.0360578
HlaPreSeq142=Ile && E9=Lys	0.0402996
HlaPreSeq143=Thr && E9=Lys	0.0369697
HlaPreSeq144=Lys && E9=Lys	0.0487011
HlaPreSeq145=Arg && E9=Lys	0.0383858
HlaPreSeq147=Trp && E9=Lys	0.0348521
HlaPreSeq149=Ala && E9=Lys	0.0344469
HlaPreSeq151=His && E9=Lys	0.0429
HlaPreSeq152=Ala && E9=Lys	0.0278646
HlaPreSeq161=Glu && E9=Lys	0.0118556
HlaPreSeq163=Arg && E9=Lys	0.0257474
HlaPreSeq171=Tyr && E9=Lys	0.030485
HlaPreSeq173=Glu && E9=Lys	0.0277073
positive(E9)	0.0237449
aliphatic(HlaPreSeq1) && positive(	0.0276136
hydrophobic(HlaPreSeq1) && posi	0.0247511
small(HlaPreSeq1) && positive(E9)	0.0218745
cyclic(HlaPreSeq9) && positive(E9)	0.0167446
aromatic(HlaPreSeq9) && positive	0.0147229
buried(HlaPreSeq9) && positive(E9)	-0.0107978
hydrophobic(HlaPreSeq9) && posi	0.0153934
polar(HlaPreSeq11) && positive(E9)	0.0170504
hydrophobic(HlaPreSeq16) && po	0.00430209
charged(HlaPreSeq17) && positive	0.00539124
small(HlaPreSeq24) && positive(E9)	0.00132972
medium(HlaPreSeq30) && positive	0.00184461

negative(HlaPreSeq30) && positive	-0.0001441
charged(HlaPreSeq30) && positive	-0.0019266
polar(HlaPreSeq30) && positive(E	-0.0035037
polar(HlaPreSeq32) && positive(E	-0.0081039
positive(HlaPreSeq35) && positive	-0.0073851
charged(HlaPreSeq35) && positive	-0.0083622
hydrophobic(HlaPreSeq45) && po	-0.013074
aliphatic(HlaPreSeq56) && positiv	-0.0165843
hydrophobic(HlaPreSeq56) && po	-0.0169451
small(HlaPreSeq56) && positive(E	-0.01717
large(HlaPreSeq62) && positive(E	0.00826469
polar(HlaPreSeq62) && positive(E	0.0172539
medium(HlaPreSeq66) && positiv	0.0225407
large(HlaPreSeq67) && positive(E	-0.0164915
buried(HlaPreSeq69) && positive(f	0.00357993
hydrophobic(HlaPreSeq69) && po	0.00377069
small(HlaPreSeq69) && positive(E	0.00408351
cyclic(HlaPreSeq70) && positive(E	-0.0283489
aromatic(HlaPreSeq70) && positiv	-0.0283281
positive(HlaPreSeq70) && positive	-0.0245174
charged(HlaPreSeq70) && positive	-0.0244468
medium(HlaPreSeq74) && positiv	0.0153759
negative(HlaPreSeq74) && positiv	0.0155088
small(HlaPreSeq76) && positive(E	-0.0245067
aliphatic(HlaPreSeq79) && positiv	0.00573045
hydrophobic(HlaPreSeq79) && po	0.00634171
small(HlaPreSeq79) && positive(E	0.00703437
aliphatic(HlaPreSeq95) && positiv	-0.0158868
aliphatic(HlaPreSeq97) && positiv	0.0217384
buried(HlaPreSeq97) && positive(f	0.0143141
hydrophobic(HlaPreSeq97) && po	0.0145147
large(HlaPreSeq97) && positive(E	-0.019954
aliphatic(HlaPreSeq107) && positiv	0.0111899
hydrophobic(HlaPreSeq113) && pr	-0.0116733
large(HlaPreSeq114) && positive(E	0.0129236
medium(HlaPreSeq116) && positiv	0.0366649
negative(HlaPreSeq116) && positiv	0.0398543
charged(HlaPreSeq116) && positiv	0.0366293
polar(HlaPreSeq116) && positive(f	0.0236393
medium(HlaPreSeq127) && positiv	0.0125971
positive(HlaPreSeq144) && positiv	0.0122645
charged(HlaPreSeq144) && positiv	0.0126218
small(HlaPreSeq152) && positive(f	0.0190247
large(HlaPreSeq156) && positive(E	-0.0105759
positive(HlaPreSeq156) && positiv	-0.0144894
polar(HlaPreSeq156) && positive(f	0.0185671
aliphatic(HlaPreSeq158) && positiv	-0.0041072

buried(HlaPreSeq158) && positive	-0.0044058
hydrophobic(HlaPreSeq158) && positive	-0.0048459
large(HlaPreSeq161) && positive(E9)	-0.016812
positive(HlaPreSeq163) && positive(E9)	0.0118716
polar(HlaPreSeq163) && positive(E9)	-0.0096499
medium(HlaPreSeq166) && positive(E9)	-0.0103884
aliphatic(HlaPreSeq167) && positive(E9)	-0.010392
hydrophobic(HlaPreSeq167) && positive(E9)	-0.0037218
small(HlaPreSeq167) && positive(E9)	-0.0132813
hydrophobic(HlaPreSeq171) && positive(E9)	-0.0153882
negative(HlaPreSeq173) && positive(E9)	-0.0073863
charged(E9)	-0.0233012
aliphatic(HlaPreSeq1) && charged(E9)	-0.0168044
hydrophobic(HlaPreSeq1) && charged(E9)	-0.0188236
small(HlaPreSeq1) && charged(E9)	-0.0208105
cyclic(HlaPreSeq9) && charged(E9)	-0.0154677
aromatic(HlaPreSeq9) && charged(E9)	-0.0166223
buried(HlaPreSeq9) && charged(E9)	-0.02887
large(HlaPreSeq9) && charged(E9)	-0.0176621
aliphatic(HlaPreSeq12) && charged(E9)	-0.0293314
medium(HlaPreSeq12) && charged(E9)	-0.0303098
positive(HlaPreSeq14) && charged(E9)	-0.0349036
charged(HlaPreSeq14) && charged(E9)	-0.0359727
polar(HlaPreSeq14) && charged(E9)	-0.0367646
aliphatic(HlaPreSeq16) && charged(E9)	-0.0384324
hydrophobic(HlaPreSeq16) && charged(E9)	-0.0386574
large(HlaPreSeq17) && charged(E9)	-0.0337764
positive(HlaPreSeq17) && charged(E9)	-0.0334964
charged(HlaPreSeq17) && charged(E9)	-0.03301
small(HlaPreSeq24) && charged(E9)	-0.029233
medium(HlaPreSeq30) && charged(E9)	-0.0314563
negative(HlaPreSeq30) && charged(E9)	-0.030559
charged(HlaPreSeq30) && charged(E9)	-0.0295366
polar(HlaPreSeq30) && charged(E9)	-0.0284127
polar(HlaPreSeq32) && charged(E9)	-0.0259991
positive(HlaPreSeq35) && charged(E9)	-0.0277738
charged(HlaPreSeq35) && charged(E9)	-0.0263943
aliphatic(HlaPreSeq41) && charged(E9)	-0.0201438
buried(HlaPreSeq41) && charged(E9)	-0.0187875
hydrophobic(HlaPreSeq41) && charged(E9)	-0.0174424
small(HlaPreSeq41) && charged(E9)	-0.0161222
hydrophobic(HlaPreSeq45) && charged(E9)	-0.022128
aliphatic(HlaPreSeq49) && charged(E9)	-0.0209475
buried(HlaPreSeq49) && charged(E9)	-0.0196524
hydrophobic(HlaPreSeq49) && charged(E9)	-0.0184251
small(HlaPreSeq49) && charged(E9)	-0.0172638
aliphatic(HlaPreSeq56) && charged(E9)	-0.0206342

hydrophobic(HlaPreSeq56) && charged(E)	-0.0195457
small(HlaPreSeq56) && charged(E)	-0.0185007
polar(HlaPreSeq62) && charged(E)	0.0163701
large(HlaPreSeq63) && charged(E)	-0.0253096
positive(HlaPreSeq65) && charged(E)	0.00741118
charged(HlaPreSeq65) && charged(E)	0.00847
medium(HlaPreSeq66) && charged(E)	0.0274685
large(HlaPreSeq67) && charged(E)	-0.0157948
aliphatic(HlaPreSeq69) && charged(E)	0.0156186
buried(HlaPreSeq69) && charged(E)	0.0166577
hydrophobic(HlaPreSeq69) && charged(E)	0.0175961
small(HlaPreSeq69) && charged(E)	0.0184206
cyclic(HlaPreSeq70) && charged(E)	-0.0204349
aromatic(HlaPreSeq70) && charged(E)	-0.0203228
large(HlaPreSeq70) && charged(E)	0.00977799
positive(HlaPreSeq70) && charged(E)	-0.0180423
charged(HlaPreSeq70) && charged(E)	-0.0179038
medium(HlaPreSeq74) && charged(E)	0.0226855
negative(HlaPreSeq74) && charged(E)	0.0227212
aliphatic(HlaPreSeq76) && charged(E)	0.00989095
buried(HlaPreSeq76) && charged(E)	0.0105363
hydrophobic(HlaPreSeq76) && charged(E)	0.0111409
small(HlaPreSeq76) && charged(E)	-0.0184903
aliphatic(HlaPreSeq79) && charged(E)	0.0193471
hydrophobic(HlaPreSeq79) && charged(E)	0.0199234
small(HlaPreSeq79) && charged(E)	0.0204404
medium(HlaPreSeq90) && charged(E)	0.0116315
negative(HlaPreSeq90) && charged(E)	0.0115885
charged(HlaPreSeq90) && charged(E)	0.0115405
polar(HlaPreSeq90) && charged(E)	0.0114883
aliphatic(HlaPreSeq95) && charged(E)	-0.0075383
aliphatic(HlaPreSeq97) && charged(E)	0.0221325
large(HlaPreSeq97) && charged(E)	-0.0165962
cyclic(HlaPreSeq109) && charged(E)	0.0175743
aromatic(HlaPreSeq109) && charged(E)	0.0175835
hydrophobic(HlaPreSeq113) && charged(E)	-0.0091268
large(HlaPreSeq114) && charged(E)	0.0179359
charged(HlaPreSeq114) && charged(E)	-0.0123112
medium(HlaPreSeq116) && charged(E)	0.0416474
negative(HlaPreSeq116) && charged(E)	0.0403479
charged(HlaPreSeq116) && charged(E)	0.0358398
polar(HlaPreSeq116) && charged(E)	0.0229684
buried(HlaPreSeq138) && charged(E)	0.0145104
hydrophobic(HlaPreSeq138) && charged(E)	0.0143625
large(HlaPreSeq138) && charged(E)	0.011969
charged(HlaPreSeq145) && charged(E)	-0.0050978
polar(HlaPreSeq145) && charged(E)	-0.0061754

aliphatic(HlaPreSeq149) && charged	-0.0145132
buried(HlaPreSeq149) && charged	-0.0154189
hydrophobic(HlaPreSeq149) && charged	-0.0162673
small(HlaPreSeq149) && charged	-0.0170319
medium(HlaPreSeq150) && charged	-0.0097598
cyclic(HlaPreSeq151) && charged	0.0121349
aromatic(HlaPreSeq151) && charged	0.0120361
aliphatic(HlaPreSeq152) && charged	-0.0122407
buried(HlaPreSeq152) && charged	-0.0125238
hydrophobic(HlaPreSeq152) && charged	-0.0127865
small(HlaPreSeq152) && charged	0.0148021
large(HlaPreSeq156) && charged	-0.0152029
polar(HlaPreSeq156) && charged	0.0154788
aliphatic(HlaPreSeq158) && charged	-0.0124835
buried(HlaPreSeq158) && charged	-0.012873
hydrophobic(HlaPreSeq158) && charged	-0.0131664
medium(HlaPreSeq158) && charged	-0.0104013
large(HlaPreSeq161) && charged	-0.0227045
large(HlaPreSeq163) && charged	0.0165168
positive(HlaPreSeq163) && charged	0.0163116
charged(HlaPreSeq163) && charged	0.0181785
polar(HlaPreSeq163) && charged	-0.0125056
medium(HlaPreSeq166) && charged	-0.0131566
aliphatic(HlaPreSeq167) && charged	-0.0131636
small(HlaPreSeq167) && charged	-0.0179535
hydrophobic(HlaPreSeq171) && charged	-0.0207347
negative(HlaPreSeq173) && charged	-0.0138427
polar(E9)	-0.0272876
aliphatic(HlaPreSeq1) && polar(E9)	-0.0206237
hydrophobic(HlaPreSeq1) && polar(E9)	-0.0243577
small(HlaPreSeq1) && polar(E9)	-0.0277183
cyclic(HlaPreSeq9) && polar(E9)	-0.0129575
aromatic(HlaPreSeq9) && polar(E9)	-0.0145956
buried(HlaPreSeq9) && polar(E9)	-0.0203459
hydrophobic(HlaPreSeq9) && polar(E9)	-0.0147004
large(HlaPreSeq9) && polar(E9)	-0.0170576
polar(HlaPreSeq11) && polar(E9)	-0.0361001
aliphatic(HlaPreSeq12) && polar(E9)	-0.0339785
medium(HlaPreSeq12) && polar(E9)	-0.0343421
positive(HlaPreSeq14) && polar(E9)	-0.0451816
charged(HlaPreSeq14) && polar(E9)	-0.0452872
polar(HlaPreSeq14) && polar(E9)	-0.0448397
aliphatic(HlaPreSeq16) && polar(E9)	-0.0450884
hydrophobic(HlaPreSeq16) && polar(E9)	-0.0436873
large(HlaPreSeq17) && polar(E9)	-0.0351128
positive(HlaPreSeq17) && polar(E9)	-0.0331751
charged(HlaPreSeq17) && polar(E9)	-0.0310901

aliphatic(HlaPreSeq24) && polar(E	-0.0152897
buried(HlaPreSeq24) && polar(E9)	-0.0136637
hydrophobic(HlaPreSeq24) && pol	-0.0120598
small(HlaPreSeq24) && polar(E9)	-0.0296023
medium(HlaPreSeq30) && polar(E	-0.0207464
negative(HlaPreSeq30) && polar(E	-0.0189557
charged(HlaPreSeq30) && polar(E	-0.0172437
polar(HlaPreSeq30) && polar(E9)	-0.0156206
polar(HlaPreSeq32) && polar(E9)	-0.0271114
positive(HlaPreSeq35) && polar(E	-0.0293007
charged(HlaPreSeq35) && polar(E	-0.0274881
aliphatic(HlaPreSeq41) && polar(E	-0.0146751
buried(HlaPreSeq41) && polar(E9)	-0.0132056
hydrophobic(HlaPreSeq41) && pol	-0.0118208
small(HlaPreSeq41) && polar(E9)	-0.010528
negative(HlaPreSeq63) && polar(E	0.00619517
charged(HlaPreSeq63) && polar(E	0.00756199
positive(HlaPreSeq65) && polar(E	0.00212519
charged(HlaPreSeq65) && polar(E	0.00352508
large(HlaPreSeq67) && polar(E9)	-0.0109121
large(HlaPreSeq70) && polar(E9)	0.00605554
medium(HlaPreSeq73) && polar(E	-0.0104858
polar(HlaPreSeq73) && polar(E9)	-0.0098571
aliphatic(HlaPreSeq76) && polar(E	0.0156841
buried(HlaPreSeq76) && polar(E9)	0.0164754
hydrophobic(HlaPreSeq76) && pol	0.0171592
small(HlaPreSeq76) && polar(E9)	-0.0167119
aliphatic(HlaPreSeq79) && polar(E	0.0103426
hydrophobic(HlaPreSeq79) && pol	0.0110949
small(HlaPreSeq79) && polar(E9)	0.0117436
hydrophobic(HlaPreSeq91) && pol	-0.0028235
small(HlaPreSeq91) && polar(E9)	-0.0038008
aliphatic(HlaPreSeq95) && polar(E	-0.0136178
large(HlaPreSeq95) && polar(E9)	-0.0070206
large(HlaPreSeq97) && polar(E9)	-0.0171694
cyclic(HlaPreSeq99) && polar(E9)	-0.0080247
aromatic(HlaPreSeq99) && polar(E	-0.0083372
hydrophobic(HlaPreSeq99) && pol	-0.0085345
charged(HlaPreSeq114) && polar(l	-0.0296233
medium(HlaPreSeq116) && polar(	0.0231244
negative(HlaPreSeq116) && polar(	0.0225356
charged(HlaPreSeq116) && polar(l	0.0165369
aliphatic(HlaPreSeq149) && polar(	-0.0078607
buried(HlaPreSeq149) && polar(E	-0.0074931
hydrophobic(HlaPreSeq149) && p	-0.0072373
small(HlaPreSeq149) && polar(E9)	-0.007057
aliphatic(HlaPreSeq152) && polar(	-0.0239443

buried(HlaPreSeq152) && polar(E9)	-0.0239206
hydrophobic(HlaPreSeq152) && polar(E9)	-0.0238739
charged(HlaPreSeq156) && polar(E9)	-0.0077968
large(HlaPreSeq161) && polar(E9)	-0.0094544
positive(HlaPreSeq163) && polar(E9)	0.0112425
medium(HlaPreSeq166) && polar(E9)	-0.0138758
aliphatic(HlaPreSeq167) && polar(E9)	-0.0138925
small(HlaPreSeq167) && polar(E9)	-0.0163071
hydrophobic(HlaPreSeq171) && polar(E9)	-0.013136
K in NFlank	0.0342569
K in NFlank[1@]	0.0342198
R in CFlank	-0.0181609
R in CFlank[@1]	-0.0182634
charged in NFlank	-0.0079533
positive in CFlank	0.0257772
polar in CFlank	0.0280823
positive in CFlank[@1]	0.0282466
charged in CFlank[@1]	0.0123308
polar in CFlank[@1]	0.028862
LV in Epitope	0.0111235
VD in Epitope	-0.0133127
DF in Epitope	-0.0083069
RE in Epitope	-0.0125449
EL in Epitope	0.0240297
LV in Epitope[@1-2]	0.0159134
aliphatic,aliphatic in Epitope	0.0341647
aliphatic,buried in Epitope	0.0151195
buried,medium in Epitope	0.0646071
aliphatic,negative in Epitope	-0.0129345
aliphatic,charged in Epitope	0.0129944
buried,negative in Epitope	0.0138518
buried,charged in Epitope	0.0314257
buried,polar in Epitope	0.0652927
medium,medium in Epitope	-0.0115123
medium,negative in Epitope	-0.0188966
medium,charged in Epitope	-0.0239569
medium,cyclic in Epitope	-0.0470856
medium,aromatic in Epitope	-0.0431019
medium,buried in Epitope	-0.0114205
negative,cyclic in Epitope	-0.0221673
negative,buried in Epitope	0.0714177
negative,hydrophobic in Epitope	0.0489432
negative,large in Epitope	0.0423194
charged,cyclic in Epitope	-0.0114338
charged,buried in Epitope	0.025639
charged,large in Epitope	-0.0134729
polar,cyclic in Epitope	0.0152506

polar,aromatic in Epitope	-0.0219576
positive,large in Epitope	-0.0232853
positive,negative in Epitope	-0.0234626
positive,charged in Epitope	-0.0336398
charged,negative in Epitope	-0.0189878
charged,charged in Epitope	-0.0478472
polar,negative in Epitope	0.0593001
polar,charged in Epitope	0.0496893
negative,aliphatic in Epitope	0.0418109
charged,aliphatic in Epitope	0.027544
medium,positive in Epitope	-0.014277
hydrophobic,medium in Epitope[@	0.0201981
large,medium in Epitope[@1-2]	0.0174316
aliphatic,medium in Epitope[@2-3	-0.0202816
buried,medium in Epitope[@2-3]	0.0256522
hydrophobic,negative in Epitope[€	-0.0090918
medium,buried in Epitope[@3-4]	0.0225119
medium,hydrophobic in Epitope[@	0.0139031
negative,large in Epitope[@3-4]	0.0329793
charged,cyclic in Epitope[@3-4]	0.0218142
charged,aromatic in Epitope[@3-4	0.0139404
charged,large in Epitope[@3-4]	0.0383307
polar,cyclic in Epitope[@3-4]	-0.0166424
polar,aromatic in Epitope[@3-4]	-0.0230632
polar,large in Epitope[@3-4]	-0.0117071
cyclic,large in Epitope[@4-5]	-0.0136701
cyclic,charged in Epitope[@4-5]	-0.0173961
aromatic,large in Epitope[@4-5]	-0.0171544
aromatic,positive in Epitope[@4-5	0.0134328
aromatic,charged in Epitope[@4-5	-0.0112971
buried,large in Epitope[@4-5]	-0.014973
buried,positive in Epitope[@4-5]	-0.0186117
hydrophobic,large in Epitope[@4-5]	0.0254595
large,positive in Epitope[@4-5]	0.0146642
large,charged in Epitope[@4-5]	0.021924
large,large in Epitope[@5-6]	0.0518125
large,negative in Epitope[@5-6]	0.0147437
large,charged in Epitope[@5-6]	0.0210472
large,polar in Epitope[@5-6]	0.0451311
positive,negative in Epitope[@5-6]	0.0122708
positive,polar in Epitope[@5-6]	0.0183869
charged,large in Epitope[@5-6]	0.0381078
charged,negative in Epitope[@5-6]	0.0228371
charged,charged in Epitope[@5-6]	0.030699
charged,polar in Epitope[@5-6]	0.0209679
polar,negative in Epitope[@5-6]	0.00979553
large,large in Epitope[@6-7]	-0.0400136

negative,large in Epitope[@6-7]	-0.0200941
charged,buried in Epitope[@6-7]	0.00698826
charged,large in Epitope[@6-7]	-0.029263
polar,buried in Epitope[@6-7]	0.0123962
polar,large in Epitope[@6-7]	0.0101649
aliphatic,polar in Epitope[@7-8]	-0.0122695
buried,medium in Epitope[@7-8]	0.0475217
hydrophobic,medium in Epitope[@7-8]	-0.0092115
hydrophobic,polar in Epitope[@7-8]	-0.00883
large,medium in Epitope[@7-8]	0.0591588
large,polar in Epitope[@7-8]	0.0500363
medium,large in Epitope[@8-9]	0.0350213
medium,positive in Epitope[@8-9]	0.0154545
medium,charged in Epitope[@8-9]	0.0242199
polar,large in Epitope[@8-9]	0.0606346
polar,polar in Epitope[@8-9]	-0.0287989
K in Epitope[@9] && R in CFlank[1@]	-0.0113213
large in NFlank[1@] && aliphatic in Epitope[@9]	0.0104015
positive in NFlank[1@] && buried in Epitope[@9]	-0.0225115
positive in NFlank[1@] && hydrophobic in Epitope[@9]	-0.0116318
positive in NFlank[1@] && large in Epitope[@9]	-0.0214518
charged in NFlank[1@] && buried in Epitope[@9]	-0.02094
charged in NFlank[1@] && hydrophobic in Epitope[@9]	-0.0186613
charged in NFlank[1@] && large in Epitope[@9]	-0.0088825
polar in NFlank[1@] && aliphatic in Epitope[@9]	0.0130276
polar in NFlank[1@] && hydrophobic in Epitope[@9]	-0.0063407
large in Epitope[@9] && large in CFlank[1@]	0.0205807
large in Epitope[@9] && positive in Epitope[@9]	0.0113734
large in Epitope[@9] && charged in Epitope[@9]	-0.0067046
positive in Epitope[@9] && large in Epitope[@9]	0.0155656
charged in Epitope[@9] && large in Epitope[@9]	0.0170485
HlaPreSeq11=Ser && E1=Val	0.0160412
HlaPreSeq12=Val && E1=Val	0.0144753
HlaPreSeq24=Ala && E1=Val	-0.0133145
HlaPreSeq63=Glu && E1=Val	0.0126123
HlaPreSeq80=Thr && E1=Val	0.0134238
HlaPreSeq94=Thr && E1=Val	0.0105644
HlaPreSeq103=Val && E1=Val	0.00785885
HlaPreSeq113=Tyr && E1=Val	0.00783706
buried(HlaPreSeq9) && medium(Epitolope)	-0.010836
positive(HlaPreSeq14) && medium(Epitolope)	0.00227928
charged(HlaPreSeq14) && medium(Epitolope)	-0.0007255
polar(HlaPreSeq14) && medium(Epitolope)	-0.0035535
aliphatic(HlaPreSeq16) && medium(Epitolope)	-0.00657
hydrophobic(HlaPreSeq16) && medium(Epitolope)	-0.0087109
large(HlaPreSeq17) && medium(Epitolope)	-0.0099024
positive(HlaPreSeq17) && medium(Epitolope)	-0.0112163

charged(HlaPreSeq17) && mediun	-0.0121529
aliphatic(HlaPreSeq24) && mediur	-0.0099231
buried(HlaPreSeq24) && medium(	-0.0104577
hydrophobic(HlaPreSeq24) && me	-0.0109159
medium(HlaPreSeq30) && mediun	-0.0254291
negative(HlaPreSeq30) && mediur	-0.0253652
charged(HlaPreSeq30) && mediun	-0.02498
polar(HlaPreSeq30) && medium(E	-0.0243199
positive(HlaPreSeq35) && mediun	-0.0256376
charged(HlaPreSeq35) && mediun	-0.0242825
large(HlaPreSeq62) && medium(E:	0.00718422
polar(HlaPreSeq62) && medium(E	0.00839991
large(HlaPreSeq63) && medium(E:	-0.0179058
negative(HlaPreSeq63) && mediur	-0.0170331
charged(HlaPreSeq63) && mediun	-0.0164855
charged(HlaPreSeq65) && mediun	-0.0136294
hydrophobic(HlaPreSeq67) && me	-0.0231902
large(HlaPreSeq67) && medium(E:	-0.0254686
medium(HlaPreSeq74) && mediun	0.010713
negative(HlaPreSeq74) && mediur	0.0111421
medium(HlaPreSeq80) && mediun	0.00354713
medium(HlaPreSeq94) && mediun	0.00699054
polar(HlaPreSeq94) && medium(E	0.0072746
large(HlaPreSeq95) && medium(E:	0.00555053
large(HlaPreSeq97) && medium(E:	0.0200143
cyclic(HlaPreSeq105) && medium(	0.00140319
hydrophobic(HlaPreSeq105) && m	0.00189378
medium(HlaPreSeq105) && mediu	0.00240025
aliphatic(HlaPreSeq107) && mediu	0.0118555
small(HlaPreSeq107) && medium(	0.0123222
hydrophobic(HlaPreSeq113) && m	0.0107071
large(HlaPreSeq131) && medium(l	-0.0142768
positive(HlaPreSeq131) && mediu	-0.0145403
charged(HlaPreSeq131) && mediu	-0.0148569
aliphatic(HlaPreSeq142) && mediu	0.00594205
buried(HlaPreSeq142) && mediunr	0.0060804
hydrophobic(HlaPreSeq142) && m	0.00619246
large(HlaPreSeq142) && medium(l	0.00627396
large(HlaPreSeq156) && medium(l	0.00906132
large(HlaPreSeq163) && medium(l	-0.0198793
medium(HlaPreSeq166) && mediu	0.016079
aliphatic(HlaPreSeq167) && mediu	0.0160745
hydrophobic(HlaPreSeq171) && m	-0.0215309
HlaPreSeq24=Ala && E2=His	-0.0128791
HlaPreSeq63=Glu && E2=His	-0.0210398
HlaPreSeq69=Ala && E2=His	-0.0129776
HlaPreSeq80=Thr && E2=His	-0.013643

HlaPreSeq113=Tyr && E2=His	-0.0172053
cyclic(E2)	0.0115872
aliphatic(HlaPreSeq1) && cyclic(E2)	0.0229549
hydrophobic(HlaPreSeq1) && cycli	0.0233866
small(HlaPreSeq1) && cyclic(E2)	0.0236094
buried(HlaPreSeq9) && cyclic(E2)	-0.0247791
hydrophobic(HlaPreSeq9) && cycli	0.0162564
polar(HlaPreSeq11) && cyclic(E2)	0.0237452
aliphatic(HlaPreSeq16) && cyclic(E	0.0132015
hydrophobic(HlaPreSeq16) && cyc	0.0128288
large(HlaPreSeq17) && cyclic(E2)	0.0170856
positive(HlaPreSeq17) && cyclic(E:	0.0165304
charged(HlaPreSeq17) && cyclic(E:	0.0158887
aliphatic(HlaPreSeq24) && cyclic(E	0.0125898
buried(HlaPreSeq24) && cyclic(E2)	0.012252
hydrophobic(HlaPreSeq24) && cyc	0.0119065
small(HlaPreSeq24) && cyclic(E2)	0.0246762
medium(HlaPreSeq30) && cyclic(E	0.0213827
negative(HlaPreSeq30) && cyclic(E	0.0204529
charged(HlaPreSeq30) && cyclic(E:	0.0194579
polar(HlaPreSeq30) && cyclic(E2)	0.0184159
polar(HlaPreSeq32) && cyclic(E2)	0.0158903
positive(HlaPreSeq35) && cyclic(E:	0.011443
charged(HlaPreSeq35) && cyclic(E:	0.0104095
aliphatic(HlaPreSeq41) && cyclic(E	0.0113405
buried(HlaPreSeq41) && cyclic(E2)	0.0104225
hydrophobic(HlaPreSeq41) && cyc	0.00955417
large(HlaPreSeq43) && cyclic(E2)	-0.0155133
polar(HlaPreSeq43) && cyclic(E2)	-0.0159602
buried(HlaPreSeq45) && cyclic(E2)	-0.0179154
hydrophobic(HlaPreSeq45) && cyc	-0.0291909
large(HlaPreSeq62) && cyclic(E2)	0.0215718
polar(HlaPreSeq62) && cyclic(E2)	0.0116065
large(HlaPreSeq63) && cyclic(E2)	-0.0368735
negative(HlaPreSeq63) && cyclic(E	-0.0470758
charged(HlaPreSeq63) && cyclic(E:	-0.0472466
large(HlaPreSeq65) && cyclic(E2)	-0.022217
positive(HlaPreSeq65) && cyclic(E:	-0.0408277
charged(HlaPreSeq65) && cyclic(E:	-0.0409412
polar(HlaPreSeq65) && cyclic(E2)	-0.0224892
medium(HlaPreSeq66) && cyclic(E	-0.0235662
polar(HlaPreSeq66) && cyclic(E2)	-0.0338455
buried(HlaPreSeq67) && cyclic(E2)	-0.0136003
hydrophobic(HlaPreSeq67) && cyc	0.0108494
large(HlaPreSeq67) && cyclic(E2)	0.0277571
positive(HlaPreSeq70) && cyclic(E:	-0.0166502
charged(HlaPreSeq70) && cyclic(E:	-0.016728

polar(HlaPreSeq71) && cyclic(E2)	-0.0184708
charged(HlaPreSeq74) && cyclic(E	-0.0179853
polar(HlaPreSeq74) && cyclic(E2)	-0.0178997
aliphatic(HlaPreSeq76) && cyclic(E	-0.0398429
buried(HlaPreSeq76) && cyclic(E2)	-0.0398341
hydrophobic(HlaPreSeq76) && cyc	-0.0398302
medium(HlaPreSeq77) && cyclic(E	-0.0171167
aliphatic(HlaPreSeq79) && cyclic(E	-0.0338169
hydrophobic(HlaPreSeq79) && cyc	-0.0338384
small(HlaPreSeq79) && cyclic(E2)	-0.0338646
medium(HlaPreSeq80) && cyclic(E	-0.0288757
polar(HlaPreSeq80) && cyclic(E2)	-0.0266897
large(HlaPreSeq81) && cyclic(E2)	-0.0130963
positive(HlaPreSeq82) && cyclic(E:	-0.0111551
charged(HlaPreSeq82) && cyclic(E:	-0.011029
polar(HlaPreSeq82) && cyclic(E2)	-0.0108684
aliphatic(HlaPreSeq83) && cyclic(E	-0.0106728
hydrophobic(HlaPreSeq83) && cyc	-0.0104433
small(HlaPreSeq83) && cyclic(E2)	-0.0101816
medium(HlaPreSeq90) && cyclic(E	-0.008825
negative(HlaPreSeq90) && cyclic(E	-0.0088122
charged(HlaPreSeq90) && cyclic(E:	-0.0087991
polar(HlaPreSeq90) && cyclic(E2)	-0.0087856
small(HlaPreSeq91) && cyclic(E2)	0.00612462
large(HlaPreSeq95) && cyclic(E2)	0.020828
aliphatic(HlaPreSeq97) && cyclic(E	-0.023379
cyclic(HlaPreSeq99) && cyclic(E2)	0.00386715
aromatic(HlaPreSeq99) && cyclic(f	0.00548389
hydrophobic(HlaPreSeq99) && cyc	0.00689938
large(HlaPreSeq99) && cyclic(E2)	0.00809593
medium(HlaPreSeq103) && cyclic(	-0.0147762
aliphatic(HlaPreSeq107) && cyclic(	0.0276005
small(HlaPreSeq107) && cyclic(E2)	0.0284546
cyclic(HlaPreSeq109) && cyclic(E2)	-0.0112337
aromatic(HlaPreSeq109) && cyclic	-0.0112571
hydrophobic(HlaPreSeq113) && cy	-0.0310091
large(HlaPreSeq114) && cyclic(E2)	-0.0175351
charged(HlaPreSeq114) && cyclic(	0.029839
medium(HlaPreSeq116) && cyclic(	-0.0175477
negative(HlaPreSeq116) && cyclic(	-0.0148774
charged(HlaPreSeq116) && cyclic(	-0.0202702
polar(HlaPreSeq116) && cyclic(E2)	-0.0099458
medium(HlaPreSeq127) && cyclic(	0.012484
large(HlaPreSeq131) && cyclic(E2)	-0.0091141
positive(HlaPreSeq131) && cyclic(l	-0.0091562
charged(HlaPreSeq131) && cyclic(	-0.0091804
buried(HlaPreSeq138) && cyclic(E:	-0.0114787

hydrophobic(HlaPreSeq138) && cy	-0.0114707
large(HlaPreSeq138) && cyclic(E2)	-0.0145081
aliphatic(HlaPreSeq142) && cyclic(E	0.0344216
buried(HlaPreSeq142) && cyclic(E2)	0.0348274
hydrophobic(HlaPreSeq142) && cy	0.0350035
large(HlaPreSeq142) && cyclic(E2)	0.0349426
positive(HlaPreSeq144) && cyclic(I	-0.0097116
charged(HlaPreSeq144) && cyclic(E	-0.0097206
positive(HlaPreSeq145) && cyclic(I	0.0181827
charged(HlaPreSeq145) && cyclic(E	0.0174533
polar(HlaPreSeq145) && cyclic(E2)	0.0165684
aliphatic(HlaPreSeq149) && cyclic(E	0.0182436
buried(HlaPreSeq149) && cyclic(E2)	0.0172289
hydrophobic(HlaPreSeq149) && cy	0.016162
small(HlaPreSeq149) && cyclic(E2)	0.0150684
cyclic(HlaPreSeq151) && cyclic(E2)	-0.0176351
aromatic(HlaPreSeq151) && cyclic(E	-0.0177509
large(HlaPreSeq156) && cyclic(E2)	0.0267555
positive(HlaPreSeq156) && cyclic(I	0.0268098
polar(HlaPreSeq156) && cyclic(E2)	0.0225613
large(HlaPreSeq163) && cyclic(E2)	0.0315067
positive(HlaPreSeq163) && cyclic(I	-0.0135812
polar(HlaPreSeq163) && cyclic(E2)	-0.0213338
medium(HlaPreSeq166) && cyclic(E	0.0197459
aliphatic(HlaPreSeq167) && cyclic(E	0.019667
small(HlaPreSeq167) && cyclic(E2)	0.0143788
hydrophobic(HlaPreSeq171) && cy	0.024347
cyclic(HlaPreSeq9) && aromatic(E2)	-0.0368366
aromatic(HlaPreSeq9) && aromatic(E	-0.0368964
buried(HlaPreSeq9) && aromatic(E	-0.0188432
hydrophobic(HlaPreSeq9) && aromatic(E	-0.0285223
large(HlaPreSeq9) && aromatic(E2)	-0.0370947
polar(HlaPreSeq11) && aromatic(E	0.014574
positive(HlaPreSeq14) && aromatic(E	-0.0148527
charged(HlaPreSeq14) && aromatic(E	-0.0154084
polar(HlaPreSeq14) && aromatic(E	-0.0159613
aliphatic(HlaPreSeq16) && aromatic(E	-0.0057091
hydrophobic(HlaPreSeq16) && arc	-0.0062321
buried(HlaPreSeq45) && aromatic(E	0.0110205
large(HlaPreSeq46) && aromatic(E	-0.0111197
negative(HlaPreSeq46) && aromatic(E	-0.0115186
charged(HlaPreSeq46) && aromatic(E	-0.0118886
polar(HlaPreSeq46) && aromatic(E	-0.0122254
aliphatic(HlaPreSeq49) && aromatic(E	-0.0168364
buried(HlaPreSeq49) && aromatic(E	-0.017109
hydrophobic(HlaPreSeq49) && arc	-0.0173266
small(HlaPreSeq49) && aromatic(E	-0.0174868

large(HIaPreSeq62) && aromatic(E	0.0073115
large(HIaPreSeq65) && aromatic(E	-0.0325299
positive(HIaPreSeq65) && aromati	-0.0161553
charged(HIaPreSeq65) && aromati	-0.0161883
polar(HIaPreSeq65) && aromatic(E	-0.0326808
hydrophobic(HIaPreSeq67) && arc	-0.0166072
large(HIaPreSeq67) && aromatic(E	-0.0207544
aliphatic(HIaPreSeq76) && aromat	-0.0101089
buried(HIaPreSeq76) && aromatic	-0.01014
hydrophobic(HIaPreSeq76) && arc	-0.0101691
medium(HIaPreSeq77) && aromat	0.00686565
aliphatic(HIaPreSeq79) && aromat	-0.0144882
hydrophobic(HIaPreSeq79) && arc	-0.0145104
small(HIaPreSeq79) && aromatic(E	-0.0145302
medium(HIaPreSeq80) && aromat	-0.0324267
polar(HIaPreSeq80) && aromatic(E	-0.0262189
large(HIaPreSeq81) && aromatic(E	-0.0184635
positive(HIaPreSeq82) && aromati	-0.0199308
charged(HIaPreSeq82) && aromati	-0.0200609
polar(HIaPreSeq82) && aromatic(E	-0.0201967
aliphatic(HIaPreSeq83) && aromat	-0.0203364
hydrophobic(HIaPreSeq83) && arc	-0.0204787
small(HIaPreSeq83) && aromatic(E	-0.0206216
large(HIaPreSeq95) && aromatic(E	0.00774563
buried(HIaPreSeq97) && aromatic	0.0171674
hydrophobic(HIaPreSeq97) && arc	0.0170976
large(HIaPreSeq97) && aromatic(E	0.00962275
cyclic(HIaPreSeq105) && aromatic	-0.0250829
hydrophobic(HIaPreSeq105) && ar	-0.0250102
medium(HIaPreSeq105) && aromæ	-0.0249387
aliphatic(HIaPreSeq107) && aromæ	0.0053348
small(HIaPreSeq107) && aromatic	0.00560467
cyclic(HIaPreSeq109) && aromatic	0.00654784
aromatic(HIaPreSeq109) && arom	0.0067408
large(HIaPreSeq114) && aromatic(	0.00300444
positive(HIaPreSeq114) && aroma	0.0118654
charged(HIaPreSeq114) && aroma	0.00612511
polar(HIaPreSeq116) && aromatic(	-0.0110691
medium(HIaPreSeq127) && aromæ	-0.0150904
buried(HIaPreSeq138) && aromati	0.00690695
hydrophobic(HIaPreSeq138) && ar	0.00729274
large(HIaPreSeq138) && aromatic(	0.00518608
aliphatic(HIaPreSeq142) && aromæ	0.00993192
buried(HIaPreSeq142) && aromati	0.0104837
hydrophobic(HIaPreSeq142) && ar	0.0110132
large(HIaPreSeq142) && aromatic(	0.0115118
positive(HIaPreSeq144) && aroma	0.00580504

charged(HlaPreSeq144) && aroma	0.00610104
large(HlaPreSeq156) && aromatic(	0.00913129
charged(HlaPreSeq156) && aroma	-0.0124198
large(HlaPreSeq163) && aromatic(	-0.0140083
charged(HlaPreSeq163) && aroma	-0.019162
medium(HlaPreSeq166) && aroma	0.0261523
aliphatic(HlaPreSeq167) && aroma	0.0262104
small(HlaPreSeq167) && aromatic	0.0230292
aliphatic(HlaPreSeq1) && positive(	-0.0206279
hydrophobic(HlaPreSeq1) && posi	-0.0207146
small(HlaPreSeq1) && positive(E2)	-0.0207944
polar(HlaPreSeq11) && positive(E2)	-0.0106573
positive(HlaPreSeq14) && positive	-0.0122318
charged(HlaPreSeq14) && positive	-0.0124463
polar(HlaPreSeq14) && positive(E2)	-0.0126479
aliphatic(HlaPreSeq16) && positiv	-0.0159101
hydrophobic(HlaPreSeq16) && po	-0.01605
large(HlaPreSeq17) && positive(E2)	-0.0134065
positive(HlaPreSeq17) && positive	-0.0134999
charged(HlaPreSeq17) && positive	-0.0135691
aliphatic(HlaPreSeq24) && positiv	-0.0342508
buried(HlaPreSeq24) && positive(I	-0.0342474
hydrophobic(HlaPreSeq24) && po	-0.0342439
small(HlaPreSeq24) && positive(E2)	-0.0114675
polar(HlaPreSeq32) && positive(E2)	-0.0146865
positive(HlaPreSeq35) && positive	-0.0185581
charged(HlaPreSeq35) && positive	-0.0185113
large(HlaPreSeq43) && positive(E2)	-0.017805
polar(HlaPreSeq43) && positive(E2)	-0.0178148
buried(HlaPreSeq45) && positive(I	-0.0290242
hydrophobic(HlaPreSeq45) && po	-0.0200928
aliphatic(HlaPreSeq49) && positiv	-0.0136261
buried(HlaPreSeq49) && positive(I	-0.0134687
hydrophobic(HlaPreSeq49) && po	-0.013261
large(HlaPreSeq52) && positive(E2)	-0.0248452
positive(HlaPreSeq65) && positive	-0.0139601
charged(HlaPreSeq65) && positive	-0.0139608
polar(HlaPreSeq66) && positive(E2)	-0.0131608
buried(HlaPreSeq67) && positive(I	0.010613
hydrophobic(HlaPreSeq67) && po	-0.0292753
positive(HlaPreSeq70) && positive	0.0113212
charged(HlaPreSeq70) && positive	0.0113301
polar(HlaPreSeq71) && positive(E2)	-0.0326357
medium(HlaPreSeq73) && positiv	-0.0203008
polar(HlaPreSeq73) && positive(E2)	-0.0199656
medium(HlaPreSeq74) && positiv	0.0132174
negative(HlaPreSeq74) && positiv	0.0132893

charged(HlaPreSeq74) && positive	0.00597564
polar(HlaPreSeq74) && positive(E2	0.00616897
medium(HlaPreSeq77) && positive	-0.018863
aliphatic(HlaPreSeq79) && positive	-0.0148583
hydrophobic(HlaPreSeq79) && po	-0.0148512
small(HlaPreSeq79) && positive(E2	-0.0148441
large(HlaPreSeq81) && positive(E2	0.00189791
medium(HlaPreSeq94) && positive	0.00243237
polar(HlaPreSeq94) && positive(E2	0.00289355
large(HlaPreSeq97) && positive(E2	-0.0189672
cyclic(HlaPreSeq105) && positive(l	0.0112183
hydrophobic(HlaPreSeq105) && p	0.0116881
medium(HlaPreSeq105) && positi	0.0121908
cyclic(HlaPreSeq109) && positive(l	-0.0233339
aromatic(HlaPreSeq109) && positi	-0.0233206
medium(HlaPreSeq116) && positiv	0.011514
negative(HlaPreSeq116) && positi	0.0115667
charged(HlaPreSeq116) && positiv	0.00944971
medium(HlaPreSeq127) && positiv	0.00536459
large(HlaPreSeq131) && positive(E	-0.0213597
positive(HlaPreSeq131) && positiv	-0.0212803
charged(HlaPreSeq131) && positiv	-0.0212018
buried(HlaPreSeq138) && positive	-0.0168255
hydrophobic(HlaPreSeq138) && p	-0.0168136
large(HlaPreSeq138) && positive(E	-0.0126998
positive(HlaPreSeq144) && positiv	-0.0160908
charged(HlaPreSeq144) && positiv	-0.0160832
cyclic(HlaPreSeq151) && positive(l	-0.0174203
aromatic(HlaPreSeq151) && positi	-0.0174129
aliphatic(HlaPreSeq152) && positiv	-0.0253771
buried(HlaPreSeq152) && positive	-0.0250677
hydrophobic(HlaPreSeq152) && p	-0.024755
large(HlaPreSeq156) && positive(E	0.00490607
positive(HlaPreSeq156) && positiv	0.0112953
polar(HlaPreSeq156) && positive(f	-0.0145975
medium(HlaPreSeq158) && positiv	0.0188904
large(HlaPreSeq163) && positive(E	0.00478778
charged(HlaPreSeq163) && positiv	0.00861934
hydrophobic(HlaPreSeq167) && p	0.00401297
small(HlaPreSeq167) && positive(f	-0.0121316
aliphatic(HlaPreSeq1) && charged(l	-0.012709
hydrophobic(HlaPreSeq1) && char	-0.0117779
small(HlaPreSeq1) && charged(E2]	-0.010909
hydrophobic(HlaPreSeq9) && char	-0.0174801
aliphatic(HlaPreSeq24) && charge	-0.054011
buried(HlaPreSeq24) && charged(l	-0.0539975
hydrophobic(HlaPreSeq24) && cha	-0.053997

small(HlaPreSeq24) && charged(E:	-0.0305319
medium(HlaPreSeq30) && charged(E:	-0.0121652
negative(HlaPreSeq30) && charged(E:	-0.0115357
charged(HlaPreSeq30) && charged(E:	-0.0108984
polar(HlaPreSeq32) && charged(E:	-0.0350887
aliphatic(HlaPreSeq41) && charged(E:	-0.0190994
buried(HlaPreSeq41) && charged(E:	-0.0189332
hydrophobic(HlaPreSeq41) && charged(E:	-0.0187418
small(HlaPreSeq41) && charged(E:	-0.0185197
large(HlaPreSeq43) && charged(E:	-0.0174287
polar(HlaPreSeq43) && charged(E:	-0.0174567
buried(HlaPreSeq45) && charged(E:	-0.0324928
hydrophobic(HlaPreSeq45) && charged(E:	-0.0302388
large(HlaPreSeq45) && charged(E:	0.00920818
large(HlaPreSeq46) && charged(E:	0.0110562
negative(HlaPreSeq46) && charged(E:	0.0119841
charged(HlaPreSeq46) && charged(E:	0.0128858
polar(HlaPreSeq46) && charged(E:	0.0137314
large(HlaPreSeq62) && charged(E:	0.0100951
polar(HlaPreSeq62) && charged(E:	0.0090086
large(HlaPreSeq63) && charged(E:	0.0105613
negative(HlaPreSeq63) && charged(E:	0.00893151
charged(HlaPreSeq63) && charged(E:	0.0094799
large(HlaPreSeq65) && charged(E:	0.0130149
positive(HlaPreSeq65) && charged(E:	-0.0156749
charged(HlaPreSeq65) && charged(E:	-0.0157018
polar(HlaPreSeq65) && charged(E:	0.0134783
medium(HlaPreSeq66) && charged(E:	-0.0147248
polar(HlaPreSeq66) && charged(E:	-0.0219953
buried(HlaPreSeq67) && charged(E:	-0.0163612
hydrophobic(HlaPreSeq67) && charged(E:	-0.0511431
large(HlaPreSeq67) && charged(E:	-0.0283291
aliphatic(HlaPreSeq69) && charged(E:	-0.0201741
buried(HlaPreSeq69) && charged(E:	-0.0201843
hydrophobic(HlaPreSeq69) && charged(E:	-0.0202124
small(HlaPreSeq69) && charged(E:	-0.0202568
small(HlaPreSeq71) && charged(E:	-0.0171342
medium(HlaPreSeq77) && charged(E:	-0.0187275
aliphatic(HlaPreSeq79) && charged(E:	-0.0121653
hydrophobic(HlaPreSeq79) && charged(E:	-0.0122111
small(HlaPreSeq79) && charged(E:	-0.0122593
medium(HlaPreSeq80) && charged(E:	0.0209659
polar(HlaPreSeq80) && charged(E:	0.0194719
large(HlaPreSeq81) && charged(E:	0.0170957
medium(HlaPreSeq94) && charged(E:	0.0158437
polar(HlaPreSeq94) && charged(E:	0.0159952
aliphatic(HlaPreSeq97) && charged(E:	-0.0173601

buried(HlaPreSeq97) && charged(E)	-0.0205102
hydrophobic(HlaPreSeq97) && charged(E)	-0.0205348
medium(HlaPreSeq103) && charged(E)	0.0255238
cyclic(HlaPreSeq105) && charged(E)	0.0203657
hydrophobic(HlaPreSeq105) && charged(E)	0.0209532
medium(HlaPreSeq105) && charged(E)	0.0215118
cyclic(HlaPreSeq109) && charged(E)	-0.022377
aromatic(HlaPreSeq109) && charged(E)	-0.0224458
hydrophobic(HlaPreSeq113) && charged(E)	0.0162576
medium(HlaPreSeq116) && charged(E)	0.0218606
negative(HlaPreSeq116) && charged(E)	0.0219315
charged(HlaPreSeq116) && charged(E)	0.0187118
medium(HlaPreSeq127) && charged(E)	0.0189708
large(HlaPreSeq131) && charged(E)	-0.0153896
positive(HlaPreSeq131) && charged(E)	-0.0156704
charged(HlaPreSeq131) && charged(E)	-0.0159731
buried(HlaPreSeq138) && charged(E)	-0.0164869
hydrophobic(HlaPreSeq138) && charged(E)	-0.0165912
large(HlaPreSeq138) && charged(E)	-0.0144349
positive(HlaPreSeq144) && charged(E)	-0.0187051
charged(HlaPreSeq144) && charged(E)	-0.0187733
cyclic(HlaPreSeq151) && charged(E)	-0.0203978
aromatic(HlaPreSeq151) && charged(E)	-0.0204729
charged(HlaPreSeq156) && charged(E)	0.00810761
medium(HlaPreSeq158) && charged(E)	0.0166219
hydrophobic(HlaPreSeq167) && charged(E)	-0.0074577
hydrophobic(HlaPreSeq9) && polar(E2)	-0.0050258
polar(HlaPreSeq11) && polar(E2)	-0.0110541
aliphatic(HlaPreSeq24) && polar(E2)	-0.0374213
buried(HlaPreSeq24) && polar(E2)	-0.0380296
hydrophobic(HlaPreSeq24) && polar(E2)	-0.0383377
small(HlaPreSeq24) && polar(E2)	-0.0197156
polar(HlaPreSeq32) && polar(E2)	-0.0159013
large(HlaPreSeq45) && polar(E2)	0.015795
aliphatic(HlaPreSeq49) && polar(E2)	0.00351275
buried(HlaPreSeq49) && polar(E2)	0.00414777
hydrophobic(HlaPreSeq49) && polar(E2)	0.00448725
small(HlaPreSeq49) && polar(E2)	0.00459166
large(HlaPreSeq62) && polar(E2)	0.00508641
polar(HlaPreSeq62) && polar(E2)	0.00516216
large(HlaPreSeq63) && polar(E2)	0.0328481
negative(HlaPreSeq63) && polar(E2)	0.0312296
charged(HlaPreSeq63) && polar(E2)	0.0307901
large(HlaPreSeq65) && polar(E2)	0.0129959
polar(HlaPreSeq65) && polar(E2)	0.011115
medium(HlaPreSeq66) && polar(E2)	0.0287452
hydrophobic(HlaPreSeq67) && polar(E2)	-0.0509612

large(HlaPreSeq67) && polar(E2)	-0.0246371
aliphatic(HlaPreSeq69) && polar(E)	-0.0171799
buried(HlaPreSeq69) && polar(E2)	-0.017341
hydrophobic(HlaPreSeq69) && pol	-0.0173239
small(HlaPreSeq69) && polar(E2)	-0.0171425
cyclic(HlaPreSeq70) && polar(E2)	-0.0094996
aromatic(HlaPreSeq70) && polar(E)	-0.0098238
large(HlaPreSeq70) && polar(E2)	-0.0212512
small(HlaPreSeq71) && polar(E2)	-0.0128034
medium(HlaPreSeq74) && polar(E)	0.00396624
negative(HlaPreSeq74) && polar(E)	0.00512046
small(HlaPreSeq76) && polar(E2)	0.0161961
medium(HlaPreSeq80) && polar(E)	0.0198533
polar(HlaPreSeq80) && polar(E2)	0.0140363
large(HlaPreSeq81) && polar(E2)	0.0105188
medium(HlaPreSeq90) && polar(E)	0.00619371
negative(HlaPreSeq90) && polar(E)	0.00625133
charged(HlaPreSeq90) && polar(E)	0.00632272
polar(HlaPreSeq90) && polar(E2)	0.00640829
large(HlaPreSeq95) && polar(E2)	0.0151007
aliphatic(HlaPreSeq97) && polar(E)	0.0193791
buried(HlaPreSeq97) && polar(E2)	0.0198143
hydrophobic(HlaPreSeq97) && pol	0.0200555
medium(HlaPreSeq103) && polar(	0.0159317
cyclic(HlaPreSeq105) && polar(E2)	0.02941
hydrophobic(HlaPreSeq105) && p	0.0288573
medium(HlaPreSeq105) && polar(	0.0279553
aliphatic(HlaPreSeq107) && polar(	0.0137187
small(HlaPreSeq107) && polar(E2)	0.0123732
cyclic(HlaPreSeq109) && polar(E2)	-0.0158354
aromatic(HlaPreSeq109) && polar	-0.0160172
hydrophobic(HlaPreSeq113) && p	0.0150724
charged(HlaPreSeq114) && polar(l	-0.024745
medium(HlaPreSeq116) && polar(	0.0246938
negative(HlaPreSeq116) && polar(	0.0259909
charged(HlaPreSeq116) && polar(l	0.0282334
polar(HlaPreSeq116) && polar(E2)	0.00825135
medium(HlaPreSeq127) && polar(	0.0172303
large(HlaPreSeq131) && polar(E2)	-0.0226244
positive(HlaPreSeq131) && polar(f	-0.0234013
charged(HlaPreSeq131) && polar(l	-0.0239461
buried(HlaPreSeq138) && polar(E2)	-0.0107087
hydrophobic(HlaPreSeq138) && p	-0.010626
positive(HlaPreSeq144) && polar(f	-0.0108676
charged(HlaPreSeq144) && polar(l	-0.0107279
positive(HlaPreSeq145) && polar(f	-0.0139781
charged(HlaPreSeq145) && polar(l	-0.0143178

polar(HlaPreSeq145) && polar(E2)	-0.0142498
medium(HlaPreSeq150) && polar(E2)	0.0168221
cyclic(HlaPreSeq151) && polar(E2)	-0.0144703
aromatic(HlaPreSeq151) && polar(E2)	-0.0140683
small(HlaPreSeq152) && polar(E2)	0.012876
large(HlaPreSeq156) && polar(E2)	-0.0114156
positive(HlaPreSeq156) && polar(E2)	0.0113263
charged(HlaPreSeq156) && polar(E2)	0.0139179
aliphatic(HlaPreSeq158) && polar(E2)	-0.0159376
buried(HlaPreSeq158) && polar(E2)	-0.0149589
medium(HlaPreSeq158) && polar(E2)	0.0246503
positive(HlaPreSeq163) && polar(E2)	0.00875545
HlaPreSeq9=Phe && E3=Arg	-0.0148456
HlaPreSeq11=Ser && E3=Arg	0.01103
HlaPreSeq12=Val && E3=Arg	0.00792586
HlaPreSeq43=Gln && E3=Arg	-0.0174601
HlaPreSeq69=Ala && E3=Arg	0.00748448
HlaPreSeq73=Thr && E3=Arg	-0.0115876
HlaPreSeq74=Asp && E3=Arg	0.018133
HlaPreSeq161=Glu && E3=Arg	-0.0131229
cyclic(HlaPreSeq9) && positive(E3)	-0.0089605
aromatic(HlaPreSeq9) && positive(E3)	-0.0089559
hydrophobic(HlaPreSeq9) && positive(E3)	-0.011889
large(HlaPreSeq9) && positive(E3)	-0.0089832
polar(HlaPreSeq11) && positive(E3)	-0.0065568
aliphatic(HlaPreSeq12) && positive(E3)	-0.017864
medium(HlaPreSeq12) && positive(E3)	-0.017856
hydrophobic(HlaPreSeq45) && positive(E3)	-0.0114394
large(HlaPreSeq45) && positive(E3)	0.0249427
large(HlaPreSeq63) && positive(E3)	-0.0179167
negative(HlaPreSeq63) && positive(E3)	-0.0101832
charged(HlaPreSeq63) && positive(E3)	-0.010253
polar(HlaPreSeq66) && positive(E3)	-0.0171579
buried(HlaPreSeq67) && positive(E3)	0.0181634
hydrophobic(HlaPreSeq67) && positive(E3)	0.015416
large(HlaPreSeq67) && positive(E3)	0.0203448
medium(HlaPreSeq74) && positive(E3)	0.0195933
negative(HlaPreSeq74) && positive(E3)	0.0194256
aliphatic(HlaPreSeq76) && positive(E3)	-0.017837
buried(HlaPreSeq76) && positive(E3)	-0.0177822
hydrophobic(HlaPreSeq76) && positive(E3)	-0.0177214
small(HlaPreSeq76) && positive(E3)	-0.0112709
medium(HlaPreSeq77) && positive(E3)	-0.0113301
buried(HlaPreSeq97) && positive(E3)	-0.0094511
hydrophobic(HlaPreSeq97) && positive(E3)	-0.0094634
large(HlaPreSeq97) && positive(E3)	-0.0329136
hydrophobic(HlaPreSeq113) && positive(E3)	-0.0179118

positive(HlaPreSeq114) && positiv	-0.0150436
charged(HlaPreSeq114) && positiv	-0.0253132
charged(HlaPreSeq116) && positiv	-0.0075486
polar(HlaPreSeq116) && positive(f	-0.0163991
large(HlaPreSeq131) && positive(E	0.013703
positive(HlaPreSeq131) && positiv	0.0136431
charged(HlaPreSeq131) && positiv	0.0136029
small(HlaPreSeq152) && positive(f	-0.0135409
large(HlaPreSeq156) && positive(E	-0.0176269
charged(HlaPreSeq156) && positiv	0.0196937
polar(HlaPreSeq156) && positive(f	0.0128553
small(HlaPreSeq167) && positive(f	-0.0137215
hydrophobic(HlaPreSeq171) && p	0.017645
HlaPreSeq32=Gln && E4=Gly	0.0232093
HlaPreSeq41=Ala && E4=Gly	0.0252128
HlaPreSeq62=Gln && E4=Gly	-0.015579
HlaPreSeq97=Ile && E4=Gly	-0.0154546
HlaPreSeq161=Glu && E4=Gly	0.0248049
cyclic(HlaPreSeq9) && aliphatic(E4	0.028527
aromatic(HlaPreSeq9) && aliphatic	0.0276416
hydrophobic(HlaPreSeq9) && alipt	0.0202576
large(HlaPreSeq9) && aliphatic(E4	0.0253212
aliphatic(HlaPreSeq24) && aliphati	-0.0062375
buried(HlaPreSeq24) && aliphatic(	-0.0065105
hydrophobic(HlaPreSeq24) && aliq	-0.0066901
large(HlaPreSeq43) && aliphatic(E	-0.0103014
polar(HlaPreSeq43) && aliphatic(E	-0.0097963
polar(HlaPreSeq62) && aliphatic(E	0.0152991
large(HlaPreSeq63) && aliphatic(E	-0.0180538
medium(HlaPreSeq80) && aliphati	0.0191274
medium(HlaPreSeq116) && alipha	0.0161267
negative(HlaPreSeq116) && alipha	0.0133543
charged(HlaPreSeq116) && aliphatic	0.00589071
polar(HlaPreSeq116) && aliphatic(	0.014908
cyclic(HlaPreSeq151) && aliphatic(	0.011813
aromatic(HlaPreSeq151) && aliphatic	0.0121326
buried(HlaPreSeq9) && small(E4)	0.0152951
aliphatic(HlaPreSeq24) && small(E	-0.0120043
buried(HlaPreSeq24) && small(E4)	-0.0116186
hydrophobic(HlaPreSeq24) && sm	-0.0112215
large(HlaPreSeq67) && small(E4)	-0.0154216
polar(HlaPreSeq71) && small(E4)	0.0212946
aliphatic(HlaPreSeq76) && small(E	0.0130537
buried(HlaPreSeq76) && small(E4)	0.0134218
hydrophobic(HlaPreSeq76) && sm	0.0137825
medium(HlaPreSeq77) && small(E	0.00881187
medium(HlaPreSeq90) && small(E	0.00987641

negative(HlaPreSeq90) && small(E	0.00988732
charged(HlaPreSeq90) && small(E	0.00989993
polar(HlaPreSeq90) && small(E4)	0.00991428
medium(HlaPreSeq94) && small(E	0.0158414
polar(HlaPreSeq94) && small(E4)	0.0154625
large(HlaPreSeq95) && small(E4)	-0.0176054
cyclic(HlaPreSeq99) && small(E4)	-0.0035959
aromatic(HlaPreSeq99) && small(E	-0.0044456
hydrophobic(HlaPreSeq99) && sm	-0.0052154
large(HlaPreSeq99) && small(E4)	-0.0058705
charged(HlaPreSeq114) && small(l	-0.0111441
medium(HlaPreSeq116) && small(	0.0139503
negative(HlaPreSeq116) && small(	0.011156
cyclic(HlaPreSeq151) && small(E4)	0.0163251
aromatic(HlaPreSeq151) && small	0.0165068
positive(HlaPreSeq156) && small(f	-0.0163866
aliphatic(HlaPreSeq158) && small(	-0.0113575
buried(HlaPreSeq158) && small(E	-0.0117514
hydrophobic(HlaPreSeq171) && sr	0.0133788
HlaPreSeq82=Arg && E5=Gly	0.0267173
HlaPreSeq83=Gly && E5=Gly	0.0266107
HlaPreSeq94=Thr && E5=Gly	0.025197
HlaPreSeq95=Ile && E5=Gly	-0.0131753
HlaPreSeq103=Val && E5=Gly	0.0254608
HlaPreSeq131=Arg && E5=Gly	0.0189988
large(HlaPreSeq67) && aliphatic(E	0.0187374
large(HlaPreSeq70) && aliphatic(E	0.0182052
positive(HlaPreSeq70) && aliphatic	0.0151764
charged(HlaPreSeq70) && aliphatic	0.0140784
medium(HlaPreSeq73) && aliphatic	-0.0143803
polar(HlaPreSeq73) && aliphatic(E	-0.0170485
aliphatic(HlaPreSeq76) && aliphatic	0.00675429
buried(HlaPreSeq76) && aliphatic(	0.00693908
hydrophobic(HlaPreSeq76) && aliq	0.00724124
aliphatic(HlaPreSeq97) && aliphatic	-0.0258973
buried(HlaPreSeq97) && aliphatic(	-0.0230205
hydrophobic(HlaPreSeq97) && aliq	-0.0228588
aliphatic(HlaPreSeq107) && aliphatic	-0.0143967
small(HlaPreSeq107) && aliphatic(	-0.0156484
negative(HlaPreSeq116) && aliphatic	0.00527183
aliphatic(HlaPreSeq142) && aliphatic	-0.0193432
buried(HlaPreSeq142) && aliphatic(	-0.0199436
hydrophobic(HlaPreSeq142) && al	-0.0201675
large(HlaPreSeq142) && aliphatic(	-0.0200482
medium(HlaPreSeq150) && aliphatic	0.0106663
positive(HlaPreSeq156) && aliphatic	0.0193188
medium(HlaPreSeq158) && aliphatic	0.0131103

aliphatic(HlaPreSeq1) && hydroph	0.0128106
hydrophobic(HlaPreSeq1) && hydr	0.0139789
small(HlaPreSeq1) && hydrophobi	0.0141222
cyclic(HlaPreSeq9) && hydrophobi	0.0235607
aromatic(HlaPreSeq9) && hydroph	0.0218251
buried(HlaPreSeq9) && hydrophot	-0.0057308
large(HlaPreSeq9) && hydrophobi	0.0205115
medium(HlaPreSeq66) && hydroph	0.00882645
buried(HlaPreSeq67) && hydrophc	-0.0232326
large(HlaPreSeq70) && hydrophot	0.00983148
aliphatic(HlaPreSeq95) && hydroph	-0.0198623
cyclic(HlaPreSeq109) && hydrophc	0.0140611
aromatic(HlaPreSeq109) && hydroc	0.0150004
medium(HlaPreSeq116) && hydro	0.0153411
negative(HlaPreSeq116) && hydro	0.0187348
charged(HlaPreSeq116) && hydro	0.0198186
large(HlaPreSeq131) && hydrophc	-0.0092771
large(HlaPreSeq163) && hydrophc	0.0163787
buried(HlaPreSeq9) && small(E5)	-0.0113471
hydrophobic(HlaPreSeq9) && sma	0.0185601
polar(HlaPreSeq11) && small(E5)	-0.0121816
aliphatic(HlaPreSeq12) && small(E	-0.0165866
medium(HlaPreSeq12) && small(E	-0.0173925
positive(HlaPreSeq14) && small(E!	-0.0112146
charged(HlaPreSeq14) && small(E!	-0.0126849
polar(HlaPreSeq14) && small(E5)	-0.0138752
aliphatic(HlaPreSeq16) && small(E	-0.0156178
hydrophobic(HlaPreSeq16) && sm	-0.016125
positive(HlaPreSeq35) && small(E!	-0.0235909
charged(HlaPreSeq35) && small(E!	-0.0234067
aliphatic(HlaPreSeq41) && small(E	-0.0241314
buried(HlaPreSeq41) && small(E5)	-0.0236828
large(HlaPreSeq63) && small(E5)	-0.0273452
positive(HlaPreSeq70) && small(E!	-0.0176822
charged(HlaPreSeq70) && small(E!	-0.0174211
medium(HlaPreSeq94) && small(E	-0.0024027
polar(HlaPreSeq94) && small(E5)	-0.0014267
charged(HlaPreSeq114) && small(I	-0.0213082
polar(HlaPreSeq116) && small(E5)	-0.0276937
cyclic(HlaPreSeq151) && small(E5)	0.00423931
aromatic(HlaPreSeq151) && small	0.00482799
aliphatic(HlaPreSeq152) && small(	-0.0245259
buried(HlaPreSeq152) && small(E!	-0.0238907
hydrophobic(HlaPreSeq152) && sr	-0.023234
HlaPreSeq9=Phe && E6=Phe	-0.0205947
HlaPreSeq80=Thr && E6=Phe	-0.0253678
HlaPreSeq149=Ala && E6=Phe	-0.0289004

aliphatic(HlaPreSeq1) && cyclic(E6	0.0095991
hydrophobic(HlaPreSeq1) && cycli	0.00984415
small(HlaPreSeq1) && cyclic(E6)	0.0100197
cyclic(HlaPreSeq9) && cyclic(E6)	0.0103556
aromatic(HlaPreSeq9) && cyclic(E6)	0.0103535
large(HlaPreSeq9) && cyclic(E6)	0.0102996
polar(HlaPreSeq11) && cyclic(E6)	0.0130179
large(HlaPreSeq17) && cyclic(E6)	0.00661835
positive(HlaPreSeq17) && cyclic(E6)	0.00625754
charged(HlaPreSeq17) && cyclic(E6)	0.00587402
large(HlaPreSeq63) && cyclic(E6)	0.0129764
medium(HlaPreSeq66) && cyclic(E6)	0.0271171
buried(HlaPreSeq67) && cyclic(E6)	-0.0192045
hydrophobic(HlaPreSeq67) && cyclic(E6)	-0.0108136
large(HlaPreSeq67) && cyclic(E6)	-0.0202075
cyclic(HlaPreSeq70) && cyclic(E6)	-0.0144884
aromatic(HlaPreSeq70) && cyclic(E6)	-0.0145849
positive(HlaPreSeq70) && cyclic(E6)	-0.0165244
charged(HlaPreSeq70) && cyclic(E6)	-0.0165753
small(HlaPreSeq76) && cyclic(E6)	0.0151518
medium(HlaPreSeq103) && cyclic(E6)	0.0294221
aliphatic(HlaPreSeq107) && cyclic(E6)	0.0149809
small(HlaPreSeq107) && cyclic(E6)	0.014937
medium(HlaPreSeq116) && cyclic(E6)	0.0330959
negative(HlaPreSeq116) && cyclic(E6)	0.0338296
charged(HlaPreSeq116) && cyclic(E6)	0.0296121
polar(HlaPreSeq116) && cyclic(E6)	0.0217836
hydrophobic(HlaPreSeq171) && cyclic(E6)	-0.0116246
aliphatic(HlaPreSeq12) && aromatic(E6)	-0.0142353
medium(HlaPreSeq12) && aromatic(E6)	-0.0142933
polar(HlaPreSeq32) && aromatic(E6)	-0.0182514
aliphatic(HlaPreSeq41) && aromatic(E6)	-0.0188262
buried(HlaPreSeq41) && aromatic(E6)	-0.018997
hydrophobic(HlaPreSeq41) && aromatic(E6)	-0.0191441
small(HlaPreSeq41) && aromatic(E6)	-0.0192573
hydrophobic(HlaPreSeq45) && aromatic(E6)	-0.0098065
large(HlaPreSeq46) && aromatic(E6)	0.00513457
negative(HlaPreSeq46) && aromatic(E6)	0.00512985
charged(HlaPreSeq46) && aromatic(E6)	0.00514303
polar(HlaPreSeq46) && aromatic(E6)	0.00516882
large(HlaPreSeq67) && aromatic(E6)	-0.0189148
polar(HlaPreSeq71) && aromatic(E6)	0.010963
medium(HlaPreSeq116) && aromatic(E6)	0.0222475
negative(HlaPreSeq116) && aromatic(E6)	0.0229449
charged(HlaPreSeq116) && aromatic(E6)	0.0195088
large(HlaPreSeq163) && aromatic(E6)	0.0104515
buried(E6)	0.0124106

aliphatic(HlaPreSeq1) && buried(E	0.0206963
hydrophobic(HlaPreSeq1) && bur	0.0206952
small(HlaPreSeq1) && buried(E6)	0.0199358
cyclic(HlaPreSeq9) && buried(E6)	0.016222
aromatic(HlaPreSeq9) && buried(E	0.0153695
hydrophobic(HlaPreSeq9) && bur	0.0150568
large(HlaPreSeq9) && buried(E6)	0.0136364
polar(HlaPreSeq11) && buried(E6)	0.0197747
aliphatic(HlaPreSeq12) && buried(	0.0127711
medium(HlaPreSeq12) && buried(	0.0117784
positive(HlaPreSeq14) && buried(f	0.00610948
large(HlaPreSeq43) && buried(E6)	0.016643
polar(HlaPreSeq43) && buried(E6)	0.0171063
large(HlaPreSeq46) && buried(E6)	0.0153517
negative(HlaPreSeq46) && buried(	0.0117885
charged(HlaPreSeq46) && buried(l	0.00883089
positive(HlaPreSeq65) && buried(f	0.012209
charged(HlaPreSeq65) && buried(l	0.013003
buried(HlaPreSeq67) && buried(E€	0.0122255
cyclic(HlaPreSeq70) && buried(E6)	0.0185229
aromatic(HlaPreSeq70) && buried	0.0185527
medium(HlaPreSeq73) && buried(	-0.0131931
polar(HlaPreSeq73) && buried(E6)	-0.0137934
small(HlaPreSeq76) && buried(E6)	-0.0122606
aliphatic(HlaPreSeq95) && buried(	-0.0162919
cyclic(HlaPreSeq105) && buried(E€	-0.0165425
hydrophobic(HlaPreSeq105) && b	-0.0175551
medium(HlaPreSeq105) && buriec	-0.0183392
aliphatic(HlaPreSeq107) && buriec	-0.0188658
small(HlaPreSeq107) && buried(E€	-0.0190373
cyclic(HlaPreSeq109) && buried(E€	0.0125476
aromatic(HlaPreSeq109) && burie	0.0139058
charged(HlaPreSeq114) && buried	-0.016157
large(HlaPreSeq131) && buried(E€	0.0113652
positive(HlaPreSeq131) && buried	0.0113997
charged(HlaPreSeq131) && buried	0.0111138
aliphatic(HlaPreSeq142) && buriec	-0.0155426
buried(HlaPreSeq142) && buried(E	-0.0157961
hydrophobic(HlaPreSeq142) && b	-0.0157689
cyclic(HlaPreSeq147) && buried(E€	-0.0156181
cyclic(HlaPreSeq151) && buried(E€	0.0154079
aromatic(HlaPreSeq151) && burie	0.0159689
charged(HlaPreSeq156) && buried	-0.0157174
polar(HlaPreSeq156) && buried(E€	-0.021949
hydrophobic(E6)	-0.0183896
aliphatic(HlaPreSeq1) && hydroph	-0.0097947
buried(HlaPreSeq9) && hydrophok	-0.0184355

medium(HlaPreSeq66) && hydrop	0.00950737
hydrophobic(HlaPreSeq67) && hyc	-0.0262594
large(HlaPreSeq67) && hydrophob	-0.0269059
large(HlaPreSeq95) && hydrophob	0.00062809
buried(HlaPreSeq97) && hydrophc	-0.0243808
hydrophobic(HlaPreSeq97) && hyc	-0.0236513
negative(HlaPreSeq116) && hydro	0.00887716
charged(HlaPreSeq116) && hydrof	0.0119036
polar(HlaPreSeq156) && hydrophc	-0.0170051
HlaPreSeq63=Glu && E7=Phe	-0.015938
HlaPreSeq127=Asn && E7=Phe	-0.0012159
HlaPreSeq144=Lys && E7=Phe	-0.0105813
HlaPreSeq151=His && E7=Phe	-0.011564
polar(HlaPreSeq11) && cyclic(E7)	0.0106565
positive(HlaPreSeq14) && cyclic(E	0.00888993
charged(HlaPreSeq14) && cyclic(E	0.00967848
polar(HlaPreSeq14) && cyclic(E7)	0.0104743
aliphatic(HlaPreSeq16) && cyclic(E	0.00842759
hydrophobic(HlaPreSeq16) && cyc	0.00916672
large(HlaPreSeq17) && cyclic(E7)	0.011203
positive(HlaPreSeq17) && cyclic(E	0.0116314
charged(HlaPreSeq17) && cyclic(E	0.0119196
hydrophobic(HlaPreSeq67) && cyc	0.0246181
medium(HlaPreSeq80) && cyclic(E	0.0248979
buried(HlaPreSeq97) && cyclic(E7)	-0.0205738
hydrophobic(HlaPreSeq97) && cyc	-0.0205328
aliphatic(HlaPreSeq152) && cyclic(	0.0336452
buried(HlaPreSeq152) && cyclic(E	0.0335364
hydrophobic(HlaPreSeq152) && cy	0.0332875
hydrophobic(HlaPreSeq9) && arom	-0.0029824
medium(HlaPreSeq66) && arom	-0.0217894
large(HlaPreSeq95) && aromatic(E	-0.0198261
buried(HlaPreSeq97) && aromatic	-0.0202331
hydrophobic(HlaPreSeq97) && arc	-0.0202264
aliphatic(HlaPreSeq107) && arom	-0.0176072
small(HlaPreSeq107) && aromatic	-0.0176805
medium(HlaPreSeq116) && arom	-0.0188883
negative(HlaPreSeq116) && arom	-0.0188697
charged(HlaPreSeq116) && aroma	-0.0204617
aliphatic(HlaPreSeq152) && arom	0.0241636
buried(HlaPreSeq152) && aromati	0.0242218
hydrophobic(HlaPreSeq152) && ar	0.0242621
HlaPreSeq74=Asp && E8=Val	-0.01291
HlaPreSeq103=Val && E8=Val	-0.0199664
HlaPreSeq113=Tyr && E8=Val	-0.0265262
HlaPreSeq116=Asp && E8=Val	-0.0190416
buried(HlaPreSeq45) && aliphatic(	-0.0098495

hydrophobic(HlaPreSeq45) && aliq	-0.0098298
negative(HlaPreSeq63) && aliphatic	-0.010688
charged(HlaPreSeq63) && aliphatic	-0.0098312
buried(HlaPreSeq67) && aliphatic	-0.0085509
positive(HlaPreSeq70) && aliphatic	-0.0129835
charged(HlaPreSeq70) && aliphatic	-0.0126574
medium(HlaPreSeq77) && aliphatic	-0.0185987
aliphatic(HlaPreSeq97) && aliphatic	-0.0131447
buried(HlaPreSeq97) && aliphatic	-0.0100476
hydrophobic(HlaPreSeq97) && aliq	-0.009885
large(HlaPreSeq97) && aliphatic(E	-0.0104746
cyclic(HlaPreSeq105) && aliphatic	0.0216718
hydrophobic(HlaPreSeq105) && al	0.021046
medium(HlaPreSeq105) && alpha	0.0204071
large(HlaPreSeq114) && aliphatic	-0.0053224
polar(HlaPreSeq116) && aliphatic	-0.0082028
polar(HlaPreSeq156) && aliphatic	0.0177481
hydrophobic(HlaPreSeq171) && al	-0.0032378
cyclic(HlaPreSeq9) && buried(E8)	-0.0151612
aromatic(HlaPreSeq9) && buried(E	-0.0152217
buried(HlaPreSeq9) && buried(E8)	-0.0193706
large(HlaPreSeq9) && buried(E8)	-0.0141148
large(HlaPreSeq63) && buried(E8)	0.00610743
buried(HlaPreSeq67) && buried(E8	-0.0170451
large(HlaPreSeq67) && buried(E8)	-0.0061793
medium(HlaPreSeq77) && buried	-0.0220738
aliphatic(HlaPreSeq79) && buried	-0.0168302
hydrophobic(HlaPreSeq79) && bui	-0.0156677
small(HlaPreSeq79) && buried(E8)	-0.0145476
large(HlaPreSeq81) && buried(E8)	-0.0090486
medium(HlaPreSeq94) && buried	0.0161315
polar(HlaPreSeq94) && buried(E8)	0.0153834
aliphatic(HlaPreSeq97) && buried	-0.0183285
polar(HlaPreSeq116) && buried(E8	-0.0161065
charged(HlaPreSeq163) && buried	-0.0073631
E9=Gly	-0.0206772
HlaPreSeq1=Gly && E9=Gly	-0.0203538
HlaPreSeq6=Arg && E9=Gly	-0.020667
HlaPreSeq9=Phe && E9=Gly	-0.0109441
HlaPreSeq11=Ser && E9=Gly	-0.0163577
HlaPreSeq12=Val && E9=Gly	-0.0174171
HlaPreSeq14=Arg && E9=Gly	-0.020448
HlaPreSeq16=Gly && E9=Gly	-0.0206453
HlaPreSeq17=Arg && E9=Gly	-0.0205456
HlaPreSeq21=Arg && E9=Gly	-0.020626
HlaPreSeq24=Ala && E9=Gly	-0.0161447
HlaPreSeq30=Asp && E9=Gly	-0.0198936

HlaPreSeq32=Gln && E9=Gly	-0.0195013
HlaPreSeq35=Arg && E9=Gly	-0.0202292
HlaPreSeq41=Ala && E9=Gly	-0.0198112
HlaPreSeq43=Gln && E9=Gly	-0.0131258
HlaPreSeq45=Met && E9=Gly	-0.0141294
HlaPreSeq46=Glu && E9=Gly	-0.0203201
HlaPreSeq49=Ala && E9=Gly	-0.0204006
HlaPreSeq52=Ile && E9=Gly	-0.0193239
HlaPreSeq56=Gly && E9=Gly	-0.0204552
HlaPreSeq63=Glu && E9=Gly	-0.0156433
HlaPreSeq65=Arg && E9=Gly	-0.0131842
HlaPreSeq69=Ala && E9=Gly	-0.0154668
HlaPreSeq70=His && E9=Gly	-0.0122086
HlaPreSeq71=Ser && E9=Gly	-0.0138187
HlaPreSeq73=Thr && E9=Gly	-0.0192904
HlaPreSeq79=Gly && E9=Gly	-0.0129453
HlaPreSeq80=Thr && E9=Gly	-0.0139922
HlaPreSeq81=Leu && E9=Gly	-0.0180581
HlaPreSeq82=Arg && E9=Gly	-0.0176393
HlaPreSeq83=Gly && E9=Gly	-0.017636
HlaPreSeq91=Gly && E9=Gly	-0.0205556
HlaPreSeq94=Thr && E9=Gly	-0.019197
HlaPreSeq99=Tyr && E9=Gly	-0.0193433
HlaPreSeq103=Val && E9=Gly	-0.018437
HlaPreSeq109=Phe && E9=Gly	-0.0138994
HlaPreSeq113=Tyr && E9=Gly	-0.0163009
HlaPreSeq131=Arg && E9=Gly	-0.0167046
HlaPreSeq138=Met && E9=Gly	-0.0137797
HlaPreSeq143=Thr && E9=Gly	-0.0201806
HlaPreSeq144=Lys && E9=Gly	-0.013005
HlaPreSeq147=Trp && E9=Gly	-0.0200903
HlaPreSeq149=Ala && E9=Gly	-0.0203981
HlaPreSeq151=His && E9=Gly	-0.0130636
HlaPreSeq161=Glu && E9=Gly	-0.0199251
HlaPreSeq171=Tyr && E9=Gly	-0.0184909
HlaPreSeq173=Glu && E9=Gly	-0.0205134
aliphatic(E9)	0.0149142
aliphatic(HlaPreSeq1) && aliphatic	0.0247078
hydrophobic(HlaPreSeq1) && alipt	0.0264098
small(HlaPreSeq1) && aliphatic(E9	0.0262313
cyclic(HlaPreSeq9) && aliphatic(E9	0.0232993
aromatic(HlaPreSeq9) && aliphatic	0.0216593
buried(HlaPreSeq9) && aliphatic(E	0.020983
hydrophobic(HlaPreSeq9) && alipt	0.0335129
large(HlaPreSeq9) && aliphatic(E9	0.0156125
positive(HlaPreSeq14) && aliphatic	0.0150627
charged(HlaPreSeq14) && aliphatic	0.0119337

aliphatic(HlaPreSeq24) && aliphatic	-0.0069712
buried(HlaPreSeq24) && aliphatic	-0.0071108
hydrophobic(HlaPreSeq24) && aliphatic	-0.006974
medium(HlaPreSeq30) && aliphatic	0.0192136
negative(HlaPreSeq30) && aliphatic	0.016895
charged(HlaPreSeq30) && aliphatic	0.014582
polar(HlaPreSeq30) && aliphatic(E	0.0123839
large(HlaPreSeq62) && aliphatic(E	-0.0219783
polar(HlaPreSeq62) && aliphatic(E	-0.0257543
large(HlaPreSeq63) && aliphatic(E	-0.0138486
negative(HlaPreSeq63) && aliphatic	-0.0154136
charged(HlaPreSeq63) && aliphatic	-0.0136181
medium(HlaPreSeq66) && aliphatic	-0.0263306
buried(HlaPreSeq67) && aliphatic	0.0337692
positive(HlaPreSeq70) && aliphatic	0.0215107
charged(HlaPreSeq70) && aliphatic	0.0208256
charged(HlaPreSeq74) && aliphatic	0.0219018
polar(HlaPreSeq74) && aliphatic(E	1.97E-02
medium(HlaPreSeq80) && aliphatic	7.35E-05
medium(HlaPreSeq94) && aliphatic	0.0200423
polar(HlaPreSeq94) && aliphatic(E	0.0175764
aliphatic(HlaPreSeq95) && aliphatic	-0.0252841
large(HlaPreSeq95) && aliphatic(E	-0.040636
aliphatic(HlaPreSeq97) && aliphatic	-0.035157
buried(HlaPreSeq97) && aliphatic	-0.0150981
hydrophobic(HlaPreSeq97) && aliphatic	-0.0150758
large(HlaPreSeq97) && aliphatic(E	-0.0166296
aliphatic(HlaPreSeq107) && aliphatic	-0.0428348
small(HlaPreSeq107) && aliphatic	-0.0412903
positive(HlaPreSeq114) && aliphatic	0.026499
medium(HlaPreSeq116) && aliphatic	-0.0271491
negative(HlaPreSeq116) && aliphatic	-0.0263736
charged(HlaPreSeq116) && aliphatic	-0.033655
polar(HlaPreSeq116) && aliphatic	-0.0572038
medium(HlaPreSeq127) && aliphatic	-0.0494419
aliphatic(HlaPreSeq142) && aliphatic	-0.0480129
buried(HlaPreSeq142) && aliphatic	-0.0448552
hydrophobic(HlaPreSeq142) && aliphatic	-0.0414228
large(HlaPreSeq142) && aliphatic	-0.0378557
positive(HlaPreSeq144) && aliphatic	0.0216871
charged(HlaPreSeq144) && aliphatic	0.021182
aliphatic(HlaPreSeq149) && aliphatic	0.0147239
buried(HlaPreSeq149) && aliphatic	0.0151727
hydrophobic(HlaPreSeq149) && aliphatic	0.0146674
polar(HlaPreSeq156) && aliphatic	-0.0121468
large(HlaPreSeq161) && aliphatic	0.0233116
positive(HlaPreSeq163) && aliphatic	-0.0109842

polar(HlaPreSeq163) && aliphatic(	0.0263451
small(HlaPreSeq167) && aliphatic(	-0.0146254
small(HlaPreSeq1) && small(E9)	-0.0049335
positive(HlaPreSeq14) && small(E9)	-0.004681
charged(HlaPreSeq14) && small(E9)	-0.0055409
polar(HlaPreSeq14) && small(E9)	-0.006523
aliphatic(HlaPreSeq16) && small(E9)	-0.0081576
hydrophobic(HlaPreSeq16) && small(E9)	-0.0093491
large(HlaPreSeq17) && small(E9)	-0.0101397
positive(HlaPreSeq17) && small(E9)	-0.011465
charged(HlaPreSeq17) && small(E9)	-0.012838
aliphatic(HlaPreSeq24) && small(E9)	-0.015848
buried(HlaPreSeq24) && small(E9)	-0.016568
hydrophobic(HlaPreSeq24) && small(E9)	-0.0173049
small(HlaPreSeq24) && small(E9)	-0.0256272
medium(HlaPreSeq30) && small(E9)	-0.0173764
negative(HlaPreSeq30) && small(E9)	-0.0186721
charged(HlaPreSeq30) && small(E9)	-0.0199399
polar(HlaPreSeq30) && small(E9)	-0.0211688
polar(HlaPreSeq32) && small(E9)	-0.0321357
positive(HlaPreSeq35) && small(E9)	-0.0240338
charged(HlaPreSeq35) && small(E9)	-0.0251513
aliphatic(HlaPreSeq41) && small(E9)	-0.037381
buried(HlaPreSeq41) && small(E9)	-0.0382399
hydrophobic(HlaPreSeq41) && small(E9)	-0.0390195
small(HlaPreSeq41) && small(E9)	-0.039717
large(HlaPreSeq43) && small(E9)	-0.0160815
polar(HlaPreSeq43) && small(E9)	-0.0164345
buried(HlaPreSeq45) && small(E9)	-0.0203311
hydrophobic(HlaPreSeq45) && small(E9)	-0.0197024
large(HlaPreSeq45) && small(E9)	-0.0203936
large(HlaPreSeq46) && small(E9)	-0.02713
negative(HlaPreSeq46) && small(E9)	-0.0275133
charged(HlaPreSeq46) && small(E9)	-0.0278018
polar(HlaPreSeq46) && small(E9)	-0.0279987
aliphatic(HlaPreSeq49) && small(E9)	-0.0310827
buried(HlaPreSeq49) && small(E9)	-0.0311021
hydrophobic(HlaPreSeq49) && small(E9)	-0.031037
small(HlaPreSeq49) && small(E9)	-0.0308922
large(HlaPreSeq52) && small(E9)	-0.0321984
aliphatic(HlaPreSeq56) && small(E9)	-0.0301636
hydrophobic(HlaPreSeq56) && small(E9)	-0.0298116
small(HlaPreSeq56) && small(E9)	-0.0294001
large(HlaPreSeq62) && small(E9)	-0.0188747
polar(HlaPreSeq62) && small(E9)	-0.0181371
large(HlaPreSeq63) && small(E9)	-0.0134973
negative(HlaPreSeq63) && small(E9)	-0.0125893

charged(HlaPreSeq63) && small(E9)	-0.0123299
large(HlaPreSeq65) && small(E9)	-0.0228072
positive(HlaPreSeq65) && small(E9)	-0.0129095
charged(HlaPreSeq65) && small(E9)	-0.0126794
polar(HlaPreSeq65) && small(E9)	-0.021766
polar(HlaPreSeq66) && small(E9)	-0.0174893
buried(HlaPreSeq67) && small(E9)	-0.0417032
hydrophobic(HlaPreSeq67) && small(E9)	-0.0304926
large(HlaPreSeq67) && small(E9)	-0.0167438
aliphatic(HlaPreSeq69) && small(E9)	-0.0161757
buried(HlaPreSeq69) && small(E9)	-0.0158185
hydrophobic(HlaPreSeq69) && small(E9)	-0.0154563
small(HlaPreSeq69) && small(E9)	-0.0150907
cyclic(HlaPreSeq70) && small(E9)	-0.0154667
aromatic(HlaPreSeq70) && small(E9)	-0.0151993
large(HlaPreSeq70) && small(E9)	-0.0113329
positive(HlaPreSeq70) && small(E9)	-0.0174406
charged(HlaPreSeq70) && small(E9)	-0.0171585
small(HlaPreSeq71) && small(E9)	-0.0124686
polar(HlaPreSeq71) && small(E9)	-0.0219832
medium(HlaPreSeq73) && small(E9)	-0.0228195
polar(HlaPreSeq73) && small(E9)	-0.022181
medium(HlaPreSeq74) && small(E9)	-0.014728
negative(HlaPreSeq74) && small(E9)	-0.0146772
charged(HlaPreSeq74) && small(E9)	-0.0179062
polar(HlaPreSeq74) && small(E9)	-0.0173865
medium(HlaPreSeq77) && small(E9)	-0.0184913
aliphatic(HlaPreSeq95) && small(E9)	-0.020864
aliphatic(HlaPreSeq142) && small(E9)	-0.0197893
buried(HlaPreSeq142) && small(E9)	-0.0196964
hydrophobic(HlaPreSeq142) && small(E9)	-0.0196033
large(HlaPreSeq142) && small(E9)	-0.0195102
medium(HlaPreSeq143) && small(E9)	-0.0246853
cyclic(HlaPreSeq147) && small(E9)	-0.0261293
aromatic(HlaPreSeq147) && small(E9)	-0.0254726
polar(HlaPreSeq156) && small(E9)	-0.0170656
H in CFlank	0.0209247
H in CFlank[@1]	0.0209064
HR in Epitope	-0.0165179
GF in Epitope	-0.0155374
FF in Epitope	0.0172269
FV in Epitope	0.00466908
VG in Epitope	-0.0306691
FV in Epitope[@7-8]	0.0163051
charged,positive in Epitope	0.0163922
positive,aliphatic in Epitope	0.0129243
positive,hydrophobic in Epitope	-0.0154319

positive,small in Epitope	0.0234159
aliphatic,small in Epitope	0.0374564
hydrophobic,small in Epitope	0.0109279
small,small in Epitope	0.0391589
buried,small in Epitope	-0.0441254
medium,aliphatic in Epitope	0.00895023
medium,small in Epitope	-0.0049489
aliphatic,charged in Epitope[@1-2]	-0.003441
buried,cyclic in Epitope[@1-2]	0.00680549
buried,aromatic in Epitope[@1-2]	0.00893296
hydrophobic,cyclic in Epitope[@1-	0.0228078
hydrophobic,aromatic in Epitope[	0.0195522
hydrophobic,charged in Epitope[	-0.0059962
medium,large in Epitope[@1-2]	0.0286192
medium,charged in Epitope[@1-2]	0.0103506
medium,polar in Epitope[@1-2]	0.0115651
cyclic,positive in Epitope[@2-3]	0.0135792
aromatic,large in Epitope[@2-3]	-0.029554
aromatic,charged in Epitope[@2-3]	0.00765782
large,charged in Epitope[@2-3]	0.021271
positive,large in Epitope[@2-3]	0.0111622
positive,polar in Epitope[@2-3]	-0.0093792
charged,large in Epitope[@2-3]	0.0243799
charged,positive in Epitope[@2-3]	-0.0077713
charged,charged in Epitope[@2-3]	-0.0199405
charged,polar in Epitope[@2-3]	-0.0206442
polar,positive in Epitope[@2-3]	-0.0107825
large,hydrophobic in Epitope[@3-4]	-0.0140381
large,small in Epitope[@3-4]	0.0150073
positive,aliphatic in Epitope[@3-4]	0.0274999
charged,aliphatic in Epitope[@3-4]	0.0279444
charged,small in Epitope[@3-4]	-0.0144963
polar,aliphatic in Epitope[@3-4]	0.0352162
polar,small in Epitope[@3-4]	0.0146339
aliphatic,hydrophobic in Epitope[	-0.0159256
aliphatic,small in Epitope[@4-5]	0.016998
small,aliphatic in Epitope[@4-5]	-0.0126795
small,hydrophobic in Epitope[@4-5]	-0.0125121
aliphatic,buried in Epitope[@5-6]	0.0169456
aliphatic,large in Epitope[@5-6]	0.0164542
hydrophobic,buried in Epitope[@5-6]	0.0126681
hydrophobic,hydrophobic in Epitope	0.0263055
small,cyclic in Epitope[@5-6]	0.0156899
small,aromatic in Epitope[@5-6]	0.0132902
small,buried in Epitope[@5-6]	0.00424637
small,hydrophobic in Epitope[@5-6]	0.0101181
cyclic,cyclic in Epitope[@6-7]	-0.0254225

cyclic,aromatic in Epitope[@6-7]	-0.0119359
cyclic,buried in Epitope[@6-7]	0.0176145
cyclic,large in Epitope[@6-7]	-0.0054509
aromatic,hydrophobic in Epitope[	-0.0156339
buried,cyclic in Epitope[@6-7]	0.0475452
buried,aromatic in Epitope[@6-7]	0.0305299
buried,buried in Epitope[@6-7]	-0.0250112
buried,hydrophobic in Epitope[	-0.0169816
buried,large in Epitope[@6-7]	0.0154335
hydrophobic,cyclic in Epitope[	0.0146247
large,cyclic in Epitope[@6-7]	0.0236851
cyclic,aliphatic in Epitope[	0.0252504
cyclic,buried in Epitope[	0.0349866
cyclic,hydrophobic in Epitope[	0.0208655
cyclic,medium in Epitope[	-0.0140951
aromatic,aliphatic in Epitope[	0.0191819
aromatic,buried in Epitope[	0.0232306
aromatic,hydrophobic in Epitope[	0.0179981
buried,aliphatic in Epitope[	0.0253477
buried,buried in Epitope[	0.0115984
hydrophobic,aliphatic in Epitope[	0.049027
hydrophobic,buried in Epitope[	0.0327295
large,buried in Epitope[	-0.0288404
large,hydrophobic in Epitope[	-0.0426337
aliphatic,aliphatic in Epitope[	-0.0182366
aliphatic,hydrophobic in Epitope[	-0.0098599
aliphatic,small in Epitope[	0.0173077
buried,aliphatic in Epitope[	-0.0155659
buried,small in Epitope[	0.0144179
hydrophobic,aliphatic in Epitope[	-0.0271697
hydrophobic,small in Epitope[	0.0253873
medium,small in Epitope[	-0.0222517
large in NFlank[1@] && medium ir	-0.0154359
charged in NFlank[1@] && mediur	-0.0187958
aliphatic in Epitope[@9] && large i	0.0189218
aliphatic in Epitope[@9] && positi	0.0217295
aliphatic in Epitope[@9] && charg	0.0440157
aliphatic in Epitope[@9] && polar	0.00824519
hydrophobic in Epitope[@9] && p	0.0281536
hydrophobic in Epitope[@9] && cl	0.0169719
hydrophobic in Epitope[@9] && p	0.025005
small in Epitope[@9] && cyclic in C	-0.0209208
small in Epitope[@9] && aromatic	-0.0181984
small in Epitope[@9] && large in C	0.00866893
small in Epitope[@9] && positive i	0.0200195
small in Epitope[@9] && charged i	0.0136724
small in Epitope[@9] && polar in C	0.0237811

HlaPreSeq66=Asn && E1=Gln	0.00836343
HlaPreSeq70=His && E1=Gln	-0.0165473
HlaPreSeq77=Asn && E1=Gln	0.0138733
HlaPreSeq95=Ile && E1=Gln	0.0112041
polar(E1)	0.00951637
aliphatic(HlaPreSeq1) && polar(E1	0.0204863
hydrophobic(HlaPreSeq1) && pola	0.0199438
small(HlaPreSeq1) && polar(E1)	0.0187453
polar(HlaPreSeq11) && polar(E1)	0.0185802
large(HlaPreSeq62) && polar(E1)	0.0225366
polar(HlaPreSeq62) && polar(E1)	0.025125
large(HlaPreSeq63) && polar(E1)	-0.0135808
negative(HlaPreSeq63) && polar(E	-0.0109249
charged(HlaPreSeq63) && polar(E:	-0.0109655
medium(HlaPreSeq74) && polar(E	0.0185172
negative(HlaPreSeq74) && polar(E	0.0187359
aliphatic(HlaPreSeq79) && polar(E	-0.013475
hydrophobic(HlaPreSeq79) && pol	-0.013946
small(HlaPreSeq79) && polar(E1)	-0.0141799
aliphatic(HlaPreSeq91) && polar(E	0.00702398
hydrophobic(HlaPreSeq91) && pol	0.00582917
medium(HlaPreSeq94) && polar(E	0.0111759
polar(HlaPreSeq94) && polar(E1)	0.00998584
large(HlaPreSeq95) && polar(E1)	0.0103302
large(HlaPreSeq163) && polar(E1)	-0.0259644
polar(HlaPreSeq163) && polar(E1)	0.0134954
E2=Ala	0.0159021
HlaPreSeq6=Arg && E2=Ala	0.0155064
HlaPreSeq9=Phe && E2=Ala	-0.0195179
HlaPreSeq11=Ser && E2=Ala	-0.0196093
HlaPreSeq17=Arg && E2=Ala	0.0173004
HlaPreSeq24=Ala && E2=Ala	0.0205325
HlaPreSeq32=Gln && E2=Ala	0.0181832
HlaPreSeq41=Ala && E2=Ala	0.0165055
HlaPreSeq43=Gln && E2=Ala	-0.0224988
HlaPreSeq45=Met && E2=Ala	-0.0188118
HlaPreSeq62=Gln && E2=Ala	-0.0139826
HlaPreSeq63=Glu && E2=Ala	-0.0084728
HlaPreSeq65=Arg && E2=Ala	-0.0084705
HlaPreSeq69=Ala && E2=Ala	-0.016736
HlaPreSeq70=His && E2=Ala	-0.0119182
HlaPreSeq71=Ser && E2=Ala	-0.0190842
HlaPreSeq79=Gly && E2=Ala	-0.0161891
HlaPreSeq80=Thr && E2=Ala	-0.0193088
HlaPreSeq94=Thr && E2=Ala	-0.0012105
HlaPreSeq97=Ile && E2=Ala	-0.0184789
HlaPreSeq103=Val && E2=Ala	-0.0040275

HlaPreSeq105=Pro && E2=Ala	0.0208042
HlaPreSeq109=Phe && E2=Ala	-0.0159143
HlaPreSeq131=Arg && E2=Ala	-0.0054726
HlaPreSeq138=Met && E2=Ala	-0.0199915
HlaPreSeq144=Lys && E2=Ala	-0.0173933
HlaPreSeq151=His && E2=Ala	-0.0190708
HlaPreSeq171=Tyr && E2=Ala	-0.006612
HlaPreSeq173=Glu && E2=Ala	0.0030044
small(E2)	-0.0125681
aliphatic(HlaPreSeq1) && small(E2)	-0.0177204
hydrophobic(HlaPreSeq1) && sma	-0.0198433
small(HlaPreSeq1) && small(E2)	-0.0218015
cyclic(HlaPreSeq9) && small(E2)	-0.0137482
aromatic(HlaPreSeq9) && small(E2)	-0.0151371
buried(HlaPreSeq9) && small(E2)	-0.0307272
hydrophobic(HlaPreSeq9) && sma	-0.0106056
large(HlaPreSeq9) && small(E2)	-0.0175882
polar(HlaPreSeq11) && small(E2)	-0.0282293
aliphatic(HlaPreSeq12) && small(E	-0.0220251
medium(HlaPreSeq12) && small(E	-0.0228613
positive(HlaPreSeq14) && small(E2)	-0.0311122
charged(HlaPreSeq14) && small(E2)	-0.0321066
polar(HlaPreSeq14) && small(E2)	-0.0327438
aliphatic(HlaPreSeq16) && small(E	-0.0292279
hydrophobic(HlaPreSeq16) && sm	-0.0291984
large(HlaPreSeq17) && small(E2)	-0.0296909
positive(HlaPreSeq17) && small(E2)	-0.0291831
charged(HlaPreSeq17) && small(E2)	-0.0284746
small(HlaPreSeq24) && small(E2)	-0.0151775
medium(HlaPreSeq30) && small(E	-0.0261931
negative(HlaPreSeq30) && small(E	-0.0251031
charged(HlaPreSeq30) && small(E	-0.0239384
polar(HlaPreSeq30) && small(E2)	-0.0227233
polar(HlaPreSeq32) && small(E2)	-0.0114784
positive(HlaPreSeq35) && small(E2)	-0.0232702
charged(HlaPreSeq35) && small(E2)	-0.0220181
aliphatic(HlaPreSeq41) && small(E	-0.0102879
buried(HlaPreSeq41) && small(E2)	-0.0090856
large(HlaPreSeq43) && small(E2)	-0.0132204
polar(HlaPreSeq43) && small(E2)	-0.0129162
buried(HlaPreSeq45) && small(E2)	-0.0127099
large(HlaPreSeq45) && small(E2)	-0.0392772
large(HlaPreSeq46) && small(E2)	-0.014482
negative(HlaPreSeq46) && small(E	-0.0136473
charged(HlaPreSeq46) && small(E	-0.0128526
polar(HlaPreSeq46) && small(E2)	-0.0120948
aliphatic(HlaPreSeq49) && small(E	-0.0156166

buried(HlaPreSeq49) && small(E2)	-0.0147971
hydrophobic(HlaPreSeq49) && sm	-0.0139723
small(HlaPreSeq49) && small(E2)	-0.0131456
large(HlaPreSeq52) && small(E2)	-0.01772
aliphatic(HlaPreSeq56) && small(E	-0.0148377
hydrophobic(HlaPreSeq56) && sm	-0.0140009
small(HlaPreSeq56) && small(E2)	-0.01317
large(HlaPreSeq63) && small(E2)	-0.0136819
negative(HlaPreSeq63) && small(E	-0.009129
charged(HlaPreSeq63) && small(E:	-0.0089039
medium(HlaPreSeq66) && small(E	0.0222349
polar(HlaPreSeq66) && small(E2)	0.0136847
buried(HlaPreSeq67) && small(E2)	0.010137
large(HlaPreSeq67) && small(E2)	0.0215178
aliphatic(HlaPreSeq69) && small(E	-0.0120117
buried(HlaPreSeq69) && small(E2)	-0.0118417
hydrophobic(HlaPreSeq69) && sm	-0.0116986
small(HlaPreSeq69) && small(E2)	-0.0115798
large(HlaPreSeq70) && small(E2)	-0.0142746
positive(HlaPreSeq70) && small(E:	-0.0064689
charged(HlaPreSeq70) && small(E:	-0.0064966
charged(HlaPreSeq74) && small(E:	-0.013613
polar(HlaPreSeq74) && small(E2)	-0.0134627
medium(HlaPreSeq80) && small(E	-0.019124
polar(HlaPreSeq80) && small(E2)	-0.0175475
large(HlaPreSeq81) && small(E2)	-0.0118348
positive(HlaPreSeq82) && small(E:	-0.0099055
charged(HlaPreSeq82) && small(E:	-0.0095671
polar(HlaPreSeq82) && small(E2)	-0.0092358
aliphatic(HlaPreSeq83) && small(E	-0.0089109
hydrophobic(HlaPreSeq83) && sm	-0.0085912
small(HlaPreSeq83) && small(E2)	-0.0082763
medium(HlaPreSeq94) && small(E	-0.0145304
polar(HlaPreSeq94) && small(E2)	-0.0144435
large(HlaPreSeq95) && small(E2)	0.0173726
buried(HlaPreSeq97) && small(E2)	0.0145422
hydrophobic(HlaPreSeq97) && sm	0.0146073
cyclic(HlaPreSeq105) && small(E2)	0.0180441
hydrophobic(HlaPreSeq105) && sr	0.0187215
medium(HlaPreSeq105) && small(	0.019439
aliphatic(HlaPreSeq107) && small(	0.0169286
small(HlaPreSeq107) && small(E2)	0.0177565
positive(HlaPreSeq114) && small(t	-0.0166436
charged(HlaPreSeq114) && small(l	-0.0258798
medium(HlaPreSeq127) && small(	0.0130754
aliphatic(HlaPreSeq142) && small(	0.0141949
buried(HlaPreSeq142) && small(E:	0.0148694

hydrophobic(HIaPreSeq142) && sr	0.0154938
large(HIaPreSeq142) && small(E2)	0.0160571
large(HIaPreSeq163) && small(E2)	0.0218855
positive(HIaPreSeq163) && small(E2)	0.0173499
polar(HIaPreSeq163) && small(E2)	-0.0118604
hydrophobic(HIaPreSeq171) && sr	-0.002245
HIaPreSeq73=Thr && E3=Leu	0.022329
HIaPreSeq74=Asp && E3=Leu	-0.0203743
HIaPreSeq94=Thr && E3=Leu	-0.0093882
HIaPreSeq95=Ile && E3=Leu	0.0202268
HIaPreSeq131=Arg && E3=Leu	-0.0144073
HIaPreSeq171=Tyr && E3=Leu	0.0218844
polar(HIaPreSeq11) && aliphatic(E2)	-0.0176746
aliphatic(HIaPreSeq12) && aliphatic(E2)	-0.0233095
medium(HIaPreSeq12) && aliphatic(E2)	-0.022704
medium(HIaPreSeq66) && aliphatic(E2)	-0.0196396
buried(HIaPreSeq67) && aliphatic(E2)	-0.0163285
medium(HIaPreSeq74) && aliphatic(E2)	-0.0249525
negative(HIaPreSeq74) && aliphatic(E2)	-0.0242142
large(HIaPreSeq95) && aliphatic(E2)	-0.0100675
aliphatic(HIaPreSeq97) && aliphatic(E2)	-0.0250373
charged(HIaPreSeq114) && aliphatic(E2)	0.0162514
medium(HIaPreSeq127) && aliphatic(E2)	-0.0150922
aliphatic(HIaPreSeq152) && aliphatic(E2)	0.0173452
polar(HIaPreSeq163) && aliphatic(E2)	-0.0225
hydrophobic(HIaPreSeq171) && aliphatic(E2)	0.0134409
cyclic(HIaPreSeq9) && buried(E3)	0.0164653
aromatic(HIaPreSeq9) && buried(E3)	0.0181314
hydrophobic(HIaPreSeq9) && buried(E3)	0.016707
large(HIaPreSeq9) && buried(E3)	0.0201081
polar(HIaPreSeq11) && buried(E3)	0.0178551
hydrophobic(HIaPreSeq45) && buried(E3)	-0.0077767
large(HIaPreSeq67) && buried(E3)	-0.0136402
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buried(HIaPreSeq69) && buried(E3)	0.033012
hydrophobic(HIaPreSeq69) && buried(E3)	0.0324432
small(HIaPreSeq69) && buried(E3)	0.0313454
polar(HIaPreSeq71) && buried(E3)	0.00129108
small(HIaPreSeq76) && buried(E3)	-0.0198056
medium(HIaPreSeq94) && buried(E3)	-0.0058138
buried(HIaPreSeq97) && buried(E3)	-0.0143453
hydrophobic(HIaPreSeq97) && buried(E3)	-0.0140326
large(HIaPreSeq114) && buried(E3)	0.0175047
positive(HIaPreSeq114) && buried(E3)	0.0137109
charged(HIaPreSeq114) && buried(E3)	0.0221363
medium(HIaPreSeq150) && buried(E3)	-0.014148
large(HIaPreSeq156) && buried(E3)	0.0184182

charged(HlaPreSeq156) && buried	-0.0260173
polar(HlaPreSeq156) && buried(E3	-0.0190012
medium(HlaPreSeq158) && buriec	-0.0154869
large(HlaPreSeq163) && buried(E3	0.0126854
polar(HlaPreSeq163) && buried(E3	-0.0162627
medium(HlaPreSeq166) && buriec	-0.0076605
aliphatic(HlaPreSeq167) && buriec	-0.0076418
small(HlaPreSeq167) && buried(E3	-0.0124366
HlaPreSeq9=Phe && E4=Val	-0.0192044
HlaPreSeq11=Ser && E4=Val	-0.0306326
HlaPreSeq12=Val && E4=Val	-0.0289698
HlaPreSeq35=Arg && E4=Val	-0.0298822
HlaPreSeq41=Ala && E4=Val	-0.0266663
HlaPreSeq43=Gln && E4=Val	-0.0218824
HlaPreSeq71=Ser && E4=Val	-0.0221039
HlaPreSeq81=Leu && E4=Val	-0.0228977
HlaPreSeq83=Gly && E4=Val	-0.0220549
HlaPreSeq94=Thr && E4=Val	-0.0326126
HlaPreSeq95=Ile && E4=Val	0.00856433
HlaPreSeq103=Val && E4=Val	-0.0242757
HlaPreSeq109=Phe && E4=Val	-0.0221925
HlaPreSeq113=Tyr && E4=Val	-0.0218092
HlaPreSeq138=Met && E4=Val	-0.022227
HlaPreSeq144=Lys && E4=Val	-0.0253501
HlaPreSeq151=His && E4=Val	-0.0267626
buried(HlaPreSeq9) && medium(E	-0.0271059
aliphatic(HlaPreSeq12) && mediur	0.0122175
medium(HlaPreSeq12) && mediun	0.0122188
positive(HlaPreSeq14) && mediur	0.00798385
charged(HlaPreSeq14) && mediun	0.00783153
aliphatic(HlaPreSeq24) && mediur	0.025133
buried(HlaPreSeq24) && medium(	0.0250205
hydrophobic(HlaPreSeq24) && me	0.0247373
medium(HlaPreSeq30) && mediun	0.0132903
negative(HlaPreSeq63) && mediur	-0.0111796
charged(HlaPreSeq63) && mediun	-0.0111499
positive(HlaPreSeq65) && mediur	-0.0030141
hydrophobic(HlaPreSeq67) && me	0.016806
large(HlaPreSeq70) && medium(E4	0.0110085
medium(HlaPreSeq73) && mediun	0.00940801
medium(HlaPreSeq74) && mediun	0.015504
negative(HlaPreSeq74) && mediur	0.0157047
medium(HlaPreSeq77) && mediun	-0.0204437
medium(HlaPreSeq80) && mediun	0.0180102
medium(HlaPreSeq90) && mediun	-0.0134048
negative(HlaPreSeq90) && mediur	-0.0133812
charged(HlaPreSeq90) && mediun	-0.0133546

polar(HlaPreSeq90) && medium(E	-0.0133251
medium(HlaPreSeq94) && mediun	-0.0144587
polar(HlaPreSeq94) && medium(E	-0.0146362
aliphatic(HlaPreSeq97) && mediur	-0.0127281
medium(HlaPreSeq103) && mediu	-0.0190562
positive(HlaPreSeq144) && mediu	-0.0191555
charged(HlaPreSeq144) && mediu	-0.0189352
cyclic(HlaPreSeq151) && medium(	-0.0237103
aromatic(HlaPreSeq151) && mediu	-0.0231848
medium(HlaPreSeq158) && mediu	-0.0112857
large(HlaPreSeq161) && medium(l	0.0144661
HlaPreSeq70=His && E6=Pro	-0.011398
HlaPreSeq103=Val && E6=Pro	0.0195627
medium(E6)	0.00922356
aliphatic(HlaPreSeq1) && medium	0.0122809
hydrophobic(HlaPreSeq1) && med	0.013259
small(HlaPreSeq1) && medium(E6	0.013852
cyclic(HlaPreSeq9) && medium(E6	0.0299111
aromatic(HlaPreSeq9) && medium	0.0298173
buried(HlaPreSeq9) && medium(E	0.0162295
hydrophobic(HlaPreSeq9) && med	0.0216318
large(HlaPreSeq9) && medium(E6)	0.0289492
polar(HlaPreSeq11) && medium(E	0.0221266
aliphatic(HlaPreSeq12) && mediur	0.0318603
medium(HlaPreSeq12) && mediun	0.0305996
medium(HlaPreSeq30) && mediun	-0.0060499
negative(HlaPreSeq30) && mediur	-0.0075586
charged(HlaPreSeq30) && mediun	-0.0087566
polar(HlaPreSeq30) && medium(E	-0.0096259
hydrophobic(HlaPreSeq45) && me	0.0163846
large(HlaPreSeq46) && medium(E	-0.013333
negative(HlaPreSeq46) && mediur	-0.0137106
charged(HlaPreSeq46) && mediun	-0.0137938
polar(HlaPreSeq46) && medium(E	-0.013619
polar(HlaPreSeq66) && medium(E	0.0100408
buried(HlaPreSeq67) && medium(	-0.0165563
small(HlaPreSeq71) && medium(E	0.0171374
polar(HlaPreSeq71) && medium(E	-0.0178678
medium(HlaPreSeq77) && mediun	-0.0267454
large(HlaPreSeq95) && medium(E	-0.0151571
large(HlaPreSeq97) && medium(E	0.0156009
cyclic(HlaPreSeq105) && medium(	0.010328
hydrophobic(HlaPreSeq105) && m	0.0105554
medium(HlaPreSeq105) && mediu	0.0107354
large(HlaPreSeq114) && medium(l	-0.004315
medium(HlaPreSeq116) && mediu	-0.0101325
negative(HlaPreSeq116) && mediu	-0.0100494

charged(HIaPreSeq116) && mediu	-0.0087233
large(HIaPreSeq131) && medium(I	-0.0045612
positive(HIaPreSeq131) && mediu	-0.0043188
charged(HIaPreSeq131) && mediu	-0.0040831
large(HIaPreSeq156) && medium(I	0.0269339
positive(HIaPreSeq156) && mediu	0.0324438
large(HIaPreSeq161) && medium(I	0.0211218
charged(HIaPreSeq163) && mediu	0.01082
hydrophobic(HIaPreSeq171) && m	-0.0091819
HIaPreSeq9=Phe && E7=Val	-0.0175394
HIaPreSeq11=Ser && E7=Val	-0.019264
HIaPreSeq12=Val && E7=Val	-0.0112023
HIaPreSeq24=Ala && E7=Val	0.0162762
HIaPreSeq35=Arg && E7=Val	-0.0122551
HIaPreSeq69=Ala && E7=Val	-0.0195175
HIaPreSeq80=Thr && E7=Val	-0.0176273
HIaPreSeq94=Thr && E7=Val	-0.0112395
HIaPreSeq95=Ile && E7=Val	0.0159695
HIaPreSeq103=Val && E7=Val	-0.021596
HIaPreSeq116=Asp && E7=Val	-0.0054148
buried(HIaPreSeq9) && medium(E	-0.0180639
charged(HIaPreSeq35) && mediun	-0.004573
buried(HIaPreSeq45) && medium(	-0.0140185
large(HIaPreSeq45) && medium(E:	-0.012917
large(HIaPreSeq46) && medium(E:	0.0179608
negative(HIaPreSeq46) && mediun	0.0169783
charged(HIaPreSeq46) && mediun	0.0158076
polar(HIaPreSeq46) && medium(E	0.0145263
large(HIaPreSeq52) && medium(E:	-0.0115475
aliphatic(HIaPreSeq56) && mediun	-0.0096266
large(HIaPreSeq63) && medium(E:	0.0209544
negative(HIaPreSeq63) && mediun	0.015427
charged(HIaPreSeq63) && mediun	0.0157709
polar(HIaPreSeq66) && medium(E	0.00825606
buried(HIaPreSeq67) && medium(	-0.0218946
medium(HIaPreSeq94) && mediun	-0.0113569
polar(HIaPreSeq94) && medium(E	-0.0115154
large(HIaPreSeq97) && medium(E:	0.0191913
cyclic(HIaPreSeq99) && medium(E	-0.0063339
aromatic(HIaPreSeq99) && mediun	-0.0067246
medium(HIaPreSeq103) && mediu	-0.0153957
hydrophobic(HIaPreSeq113) && m	0.014731
cyclic(HIaPreSeq151) && medium(	-0.022432
aromatic(HIaPreSeq151) && medi	-0.0220081
polar(HIaPreSeq156) && medium(	0.0190407
hydrophobic(HIaPreSeq167) && m	-0.0084016
small(HIaPreSeq167) && medium(	0.0148917

E9=Ala	-0.0016054
HlaPreSeq6=Arg && E9=Ala	-0.001252
HlaPreSeq9=Phe && E9=Ala	0.00945093
HlaPreSeq11=Ser && E9=Ala	0.01667
HlaPreSeq12=Val && E9=Ala	1.75E-02
HlaPreSeq14=Arg && E9=Ala	-3.17E-05
HlaPreSeq16=Gly && E9=Ala	7.99E-06
HlaPreSeq17=Arg && E9=Ala	0.00053443
HlaPreSeq21=Arg && E9=Ala	1.04E-03
HlaPreSeq35=Arg && E9=Ala	1.87E-05
HlaPreSeq45=Met && E9=Ala	0.00730011
HlaPreSeq46=Glu && E9=Ala	0.00388333
HlaPreSeq49=Ala && E9=Ala	0.00226224
HlaPreSeq52=Ile && E9=Ala	0.0032442
HlaPreSeq56=Gly && E9=Ala	0.00294033
HlaPreSeq63=Glu && E9=Ala	0.00587816
HlaPreSeq65=Arg && E9=Ala	0.0137777
HlaPreSeq69=Ala && E9=Ala	0.0147322
HlaPreSeq71=Ser && E9=Ala	0.011011
HlaPreSeq73=Thr && E9=Ala	0.00524315
HlaPreSeq77=Asn && E9=Ala	-0.0156253
HlaPreSeq79=Gly && E9=Ala	0.0157841
HlaPreSeq80=Thr && E9=Ala	0.0146099
HlaPreSeq81=Leu && E9=Ala	0.0136658
HlaPreSeq82=Arg && E9=Ala	0.0150477
HlaPreSeq83=Gly && E9=Ala	0.0152106
HlaPreSeq91=Gly && E9=Ala	0.00427086
HlaPreSeq94=Thr && E9=Ala	0.00868776
HlaPreSeq99=Tyr && E9=Ala	0.0102388
HlaPreSeq103=Val && E9=Ala	0.00619631
HlaPreSeq109=Phe && E9=Ala	0.0121383
HlaPreSeq113=Tyr && E9=Ala	0.0122015
HlaPreSeq138=Met && E9=Ala	0.0123324
HlaPreSeq144=Lys && E9=Ala	0.0150503
HlaPreSeq149=Ala && E9=Ala	0.00708782
HlaPreSeq151=His && E9=Ala	0.014312
AL in Epitope	-0.0364507
VR in Epitope	0.0192706
RP in Epitope	0.0183462
PV in Epitope	0.0086492
QA in Epitope[@1-2]	0.0201988
AL in Epitope[@2-3]	-0.0115271
polar,aliphatic in Epitope[@1-2]	0.023977
polar,buried in Epitope[@1-2]	0.0203693
polar,hydrophobic in Epitope[@1-2]	0.022766
polar,small in Epitope[@1-2]	0.0434069
aliphatic,buried in Epitope[@2-3]	0.00980617

buried,aliphatic in Epitope[@2-3]	-0.0119883
small,aliphatic in Epitope[@2-3]	-0.019998
small,buried in Epitope[@2-3]	-0.0222208
small,hydrophobic in Epitope[@2-3]	-0.0115826
aliphatic,aliphatic in Epitope[@3-4]	-0.024918
aliphatic,buried in Epitope[@3-4]	0.0203373
aliphatic,hydrophobic in Epitope[@3-4]	0.0246373
buried,aliphatic in Epitope[@3-4]	-0.041454
buried,buried in Epitope[@3-4]	-0.0416288
hydrophobic,aliphatic in Epitope[@3-4]	-0.0352198
large,buried in Epitope[@3-4]	-0.0568281
aliphatic,polar in Epitope[@4-5]	0.0174604
medium,large in Epitope[@4-5]	-0.0130962
medium,positive in Epitope[@4-5]	-0.017953
medium,charged in Epitope[@4-5]	-0.0069202
medium,polar in Epitope[@4-5]	-0.014943
large,cyclic in Epitope[@5-6]	-0.0302853
large,hydrophobic in Epitope[@5-6]	-0.0385376
large,medium in Epitope[@5-6]	-0.0052585
positive,hydrophobic in Epitope[@5-6]	-0.0110637
positive,medium in Epitope[@5-6]	-0.0088201
charged,cyclic in Epitope[@5-6]	-0.0066683
charged,hydrophobic in Epitope[@5-6]	-0.0076424
charged,medium in Epitope[@5-6]	-0.0050717
polar,hydrophobic in Epitope[@5-6]	-0.0304493
polar,medium in Epitope[@5-6]	0.0209074
cyclic,aliphatic in Epitope[@6-7]	0.0315428
medium,buried in Epitope[@6-7]	0.031084
medium,hydrophobic in Epitope[@6-7]	-0.0130571
medium,medium in Epitope[@7-8]	-0.0489366
medium,polar in Epitope[@7-8]	-0.0271046
polar,aliphatic in Epitope[@8-9]	0.0315199
polar,buried in Epitope[@8-9]	0.0406401
polar,hydrophobic in Epitope[@8-9]	0.0254705
polar,small in Epitope[@8-9]	-0.0386876
aliphatic in NFlank[1@] && polar in E1	-0.0157383
buried in NFlank[1@] && polar in E1	-0.0272042
large in NFlank[1@] && polar in E1	0.014829
buried in Epitope[@9] && large in E1	0.0303198
buried in Epitope[@9] && positive in E1	0.0229081
buried in Epitope[@9] && charged in E1	0.0256228
HlaPreSeq12=Val && E1=Glu	-0.0190417
HlaPreSeq62=Gln && E1=Glu	-0.0157366
HlaPreSeq63=Glu && E1=Glu	-0.0265655
HlaPreSeq80=Thr && E1=Glu	-0.0144094
HlaPreSeq81=Leu && E1=Glu	-0.0175494
HlaPreSeq97=Ile && E1=Glu	-0.0184298

HlaPreSeq114=Arg && E1=Glu	-0.0141188
HlaPreSeq144=Lys && E1=Glu	-0.0149447
HlaPreSeq147=Trp && E1=Glu	-0.009402
HlaPreSeq149=Ala && E1=Glu	-0.0198184
HlaPreSeq171=Tyr && E1=Glu	-0.0143885
negative(E1)	-0.0033806
cyclic(HlaPreSeq9) && negative(E1)	-0.0159001
aromatic(HlaPreSeq9) && negative(E1)	-0.0162036
buried(HlaPreSeq9) && negative(E1)	-0.019607
hydrophobic(HlaPreSeq9) && negative(E1)	-0.0198068
large(HlaPreSeq9) && negative(E1)	-0.0166832
polar(HlaPreSeq11) && negative(E1)	-0.0161163
aliphatic(HlaPreSeq12) && negative(E1)	-0.020393
medium(HlaPreSeq12) && negative(E1)	-0.0206725
aliphatic(HlaPreSeq24) && negative(E1)	-0.0155324
buried(HlaPreSeq24) && negative(E1)	-0.0156662
hydrophobic(HlaPreSeq24) && negative(E1)	-0.0157999
medium(HlaPreSeq30) && negative(E1)	-0.0172695
negative(HlaPreSeq30) && negative(E1)	-0.0176107
charged(HlaPreSeq30) && negative(E1)	-0.0179169
polar(HlaPreSeq30) && negative(E1)	-0.0181822
large(HlaPreSeq45) && negative(E1)	-0.0152581
large(HlaPreSeq62) && negative(E1)	0.011745
polar(HlaPreSeq62) && negative(E1)	0.015263
large(HlaPreSeq63) && negative(E1)	-0.0337701
negative(HlaPreSeq63) && negative(E1)	-0.0301352
charged(HlaPreSeq63) && negative(E1)	-0.0301815
aliphatic(HlaPreSeq69) && negative(E1)	-0.0197409
buried(HlaPreSeq69) && negative(E1)	-0.0197976
hydrophobic(HlaPreSeq69) && negative(E1)	-0.0198486
small(HlaPreSeq69) && negative(E1)	-0.0198936
large(HlaPreSeq70) && negative(E1)	-0.0219934
small(HlaPreSeq71) && negative(E1)	-0.0210107
polar(HlaPreSeq71) && negative(E1)	0.00808204
aliphatic(HlaPreSeq79) && negative(E1)	-0.019245
hydrophobic(HlaPreSeq79) && negative(E1)	-0.0192547
small(HlaPreSeq79) && negative(E1)	-0.0192623
polar(HlaPreSeq80) && negative(E1)	-0.0220595
large(HlaPreSeq81) && negative(E1)	-0.030322
large(HlaPreSeq95) && negative(E1)	0.0104251
aliphatic(HlaPreSeq97) && negative(E1)	-0.0202835
cyclic(HlaPreSeq105) && negative(E1)	0.01266
hydrophobic(HlaPreSeq105) && negative(E1)	0.012764
medium(HlaPreSeq105) && negative(E1)	0.0129092
aliphatic(HlaPreSeq107) && negative(E1)	0.013021
small(HlaPreSeq107) && negative(E1)	0.0133523
positive(HlaPreSeq114) && negative(E1)	-0.0244068

charged(HlaPreSeq114) && negati	-0.023648
large(HlaPreSeq163) && negative(	-0.0141518
charged(HlaPreSeq163) && negati	-0.0128295
small(HlaPreSeq167) && negative(	0.0206588
hydrophobic(HlaPreSeq171) && n	-0.0264027
large(HlaPreSeq17) && charged(E1	0.00616824
large(HlaPreSeq62) && charged(E1	0.0120696
polar(HlaPreSeq62) && charged(E:	0.0169376
large(HlaPreSeq63) && charged(E1	-0.0141134
negative(HlaPreSeq63) && charge	-0.0095462
charged(HlaPreSeq63) && chargec	-0.008657
medium(HlaPreSeq66) && chargec	0.0133724
medium(HlaPreSeq74) && chargec	0.0171509
negative(HlaPreSeq74) && charge	0.0177317
aliphatic(HlaPreSeq79) && charge	-0.0141716
hydrophobic(HlaPreSeq79) && cha	-0.0139944
small(HlaPreSeq79) && charged(E:	-0.0137699
medium(HlaPreSeq80) && chargec	-0.010016
polar(HlaPreSeq80) && charged(E:	-0.0112946
large(HlaPreSeq81) && charged(E1	-0.0138033
positive(HlaPreSeq82) && charged	-0.0194877
charged(HlaPreSeq82) && chargec	-0.0186364
polar(HlaPreSeq82) && charged(E:	-0.0177172
aliphatic(HlaPreSeq83) && charge	-0.0167464
hydrophobic(HlaPreSeq83) && cha	-0.0157394
small(HlaPreSeq83) && charged(E:	-0.0147121
medium(HlaPreSeq94) && chargec	0.0239083
polar(HlaPreSeq94) && charged(E:	0.0243523
large(HlaPreSeq95) && charged(E1	0.0215768
aliphatic(HlaPreSeq97) && charge	-0.0197334
aliphatic(HlaPreSeq107) && charg	0.0230681
small(HlaPreSeq107) && charged(l	0.0226246
hydrophobic(HlaPreSeq113) && cl	0.0273855
positive(HlaPreSeq114) && charge	-0.0017828
charged(HlaPreSeq114) && charge	-0.0144713
medium(HlaPreSeq143) && charge	0.0252504
aliphatic(HlaPreSeq149) && charg	-0.0023879
small(HlaPreSeq152) && charged(l	-0.0173462
polar(HlaPreSeq156) && charged(l	-0.0189473
large(HlaPreSeq163) && charged(E	-0.0205435
polar(HlaPreSeq163) && charged(l	0.0267816
hydrophobic(HlaPreSeq171) && cl	-0.0079561
E2=Gly	-0.0191872
HlaPreSeq1=Gly && E2=Gly	-0.0147277
HlaPreSeq6=Arg && E2=Gly	-0.0192204
HlaPreSeq12=Val && E2=Gly	-0.0141924
HlaPreSeq14=Arg && E2=Gly	-0.0191956

HlaPreSeq16=Gly && E2=Gly	-0.0189755
HlaPreSeq17=Arg && E2=Gly	-0.0173527
HlaPreSeq21=Arg && E2=Gly	-0.0188464
HlaPreSeq24=Ala && E2=Gly	-0.0138869
HlaPreSeq30=Asp && E2=Gly	-0.0188028
HlaPreSeq32=Gln && E2=Gly	-0.0220286
HlaPreSeq35=Arg && E2=Gly	-0.0187047
HlaPreSeq41=Ala && E2=Gly	-0.0225732
HlaPreSeq46=Glu && E2=Gly	-0.0178118
HlaPreSeq49=Ala && E2=Gly	-0.0194832
HlaPreSeq52=Ile && E2=Gly	-0.0128855
HlaPreSeq56=Gly && E2=Gly	-0.0207748
HlaPreSeq63=Glu && E2=Gly	-0.0204911
HlaPreSeq69=Ala && E2=Gly	-0.0115116
HlaPreSeq73=Thr && E2=Gly	-0.0151324
HlaPreSeq74=Asp && E2=Gly	-0.0122307
HlaPreSeq81=Leu && E2=Gly	-0.0162634
HlaPreSeq82=Arg && E2=Gly	-0.0155441
HlaPreSeq83=Gly && E2=Gly	-0.0155714
HlaPreSeq91=Gly && E2=Gly	-0.019823
HlaPreSeq94=Thr && E2=Gly	-0.0126285
HlaPreSeq99=Tyr && E2=Gly	-0.0174131
HlaPreSeq105=Pro && E2=Gly	-0.011563
HlaPreSeq107=Gly && E2=Gly	-0.0163896
HlaPreSeq127=Asn && E2=Gly	-0.0141117
HlaPreSeq131=Arg && E2=Gly	-0.0101933
HlaPreSeq142=Ile && E2=Gly	-0.0161315
HlaPreSeq143=Thr && E2=Gly	-0.019591
HlaPreSeq144=Lys && E2=Gly	-0.0119924
HlaPreSeq145=Arg && E2=Gly	-0.0161211
HlaPreSeq147=Trp && E2=Gly	-0.0192603
HlaPreSeq149=Ala && E2=Gly	-0.0309724
HlaPreSeq161=Glu && E2=Gly	-0.0186022
HlaPreSeq171=Tyr && E2=Gly	-0.0186482
HlaPreSeq173=Glu && E2=Gly	-0.0201553
HlaPreSeq11=Ser && E3=Lys	-0.0230825
HlaPreSeq12=Val && E3=Lys	-0.0348926
HlaPreSeq52=Ile && E3=Lys	0.0222535
HlaPreSeq62=Gln && E3=Lys	-0.0121562
HlaPreSeq63=Glu && E3=Lys	-0.0114091
HlaPreSeq69=Ala && E3=Lys	-0.0116429
HlaPreSeq77=Asn && E3=Lys	-0.0090629
HlaPreSeq97=Ile && E3=Lys	-0.0103417
HlaPreSeq113=Tyr && E3=Lys	-0.0188877
HlaPreSeq114=Arg && E3=Lys	-0.0135933
HlaPreSeq116=Asp && E3=Lys	-0.0128847
HlaPreSeq156=Arg && E3=Lys	-0.0126673

HlaPreSeq171=Tyr && E3=Lys	0.0209508
HlaPreSeq9=Phe && E4=Leu	0.0116283
HlaPreSeq62=Gln && E4=Leu	0.013737
HlaPreSeq74=Asp && E4=Leu	0.0160784
HlaPreSeq80=Thr && E4=Leu	0.0117443
HlaPreSeq113=Tyr && E4=Leu	0.0085116
HlaPreSeq144=Lys && E4=Leu	0.0122971
HlaPreSeq151=His && E4=Leu	0.0146477
HlaPreSeq1=Gly && E5=Leu	-0.0122171
HlaPreSeq24=Ala && E5=Leu	-0.0170644
HlaPreSeq52=Ile && E5=Leu	-0.0231154
HlaPreSeq56=Gly && E5=Leu	-0.0125007
HlaPreSeq62=Gln && E5=Leu	-0.0156916
HlaPreSeq73=Thr && E5=Leu	-0.0315886
HlaPreSeq77=Asn && E5=Leu	0.0164633
HlaPreSeq90=Asp && E5=Leu	0.0110668
HlaPreSeq97=Ile && E5=Leu	-0.0173693
HlaPreSeq103=Val && E5=Leu	-0.0229693
HlaPreSeq113=Tyr && E5=Leu	0.0122182
HlaPreSeq127=Asn && E5=Leu	-0.0140354
HlaPreSeq142=Ile && E5=Leu	-0.0149649
HlaPreSeq145=Arg && E5=Leu	-0.0170346
buried(HlaPreSeq9) && buried(E5)	-0.0170224
large(HlaPreSeq45) && buried(E5)	-0.006792
large(HlaPreSeq62) && buried(E5)	0.0354224
polar(HlaPreSeq62) && buried(E5)	0.0289694
negative(HlaPreSeq63) && buried(E5)	-0.0135784
charged(HlaPreSeq63) && buried(E5)	-0.0131109
positive(HlaPreSeq65) && buried(E5)	-0.010336
charged(HlaPreSeq65) && buried(E5)	-0.0102696
buried(HlaPreSeq67) && buried(E5)	-0.0191823
large(HlaPreSeq70) && buried(E5)	0.0137096
medium(HlaPreSeq74) && buried(E5)	0.0306069
negative(HlaPreSeq74) && buried(E5)	0.0312523
large(HlaPreSeq95) && buried(E5)	0.0182947
aliphatic(HlaPreSeq97) && buried(E5)	-0.0119447
buried(HlaPreSeq97) && buried(E5)	0.0189538
hydrophobic(HlaPreSeq97) && buried(E5)	0.0193093
large(HlaPreSeq97) && buried(E5)	0.0174885
aliphatic(HlaPreSeq107) && buried(E5)	0.0230449
small(HlaPreSeq107) && buried(E5)	0.0214746
large(HlaPreSeq131) && buried(E5)	-0.0113786
positive(HlaPreSeq131) && buried(E5)	-0.0121947
charged(HlaPreSeq131) && buried(E5)	-0.0126883
cyclic(HlaPreSeq147) && buried(E5)	0.0127968
cyclic(HlaPreSeq151) && buried(E5)	-0.0183796
aromatic(HlaPreSeq151) && buried(E5)	-0.0180441

aliphatic(HlaPreSeq152) && buried	-0.0192765
buried(HlaPreSeq152) && buried(E	-0.0192112
hydrophobic(HlaPreSeq152) && bi	-0.0187165
large(HlaPreSeq156) && buried(E5	0.0149644
medium(HlaPreSeq158) && buried	0.0120094
medium(HlaPreSeq166) && buried	0.00900052
aliphatic(HlaPreSeq167) && buried	0.00905856
small(HlaPreSeq167) && buried(E	0.00667124
HlaPreSeq9=Phe && E7=Gln	-0.0126454
HlaPreSeq11=Ser && E7=Gln	-0.0108865
HlaPreSeq65=Arg && E7=Gln	-0.0105883
HlaPreSeq79=Gly && E7=Gln	-0.0129627
HlaPreSeq80=Thr && E7=Gln	-0.009013
HlaPreSeq107=Gly && E7=Gln	0.0140405
HlaPreSeq131=Arg && E7=Gln	-0.0124696
HlaPreSeq142=Ile && E7=Gln	0.0148474
HlaPreSeq151=His && E7=Gln	-0.0171435
polar(E7)	0.0149999
aliphatic(HlaPreSeq1) && polar(E7	0.0271291
hydrophobic(HlaPreSeq1) && pola	0.0269975
small(HlaPreSeq1) && polar(E7)	0.0258176
negative(HlaPreSeq63) && polar(E	0.0218615
charged(HlaPreSeq63) && polar(E	0.0222099
cyclic(HlaPreSeq70) && polar(E7)	0.0188668
aromatic(HlaPreSeq70) && polar(E	0.0188006
positive(HlaPreSeq70) && polar(E	0.0177232
charged(HlaPreSeq70) && polar(E	0.0171609
medium(HlaPreSeq73) && polar(E	-0.0019836
polar(HlaPreSeq73) && polar(E7)	-0.004207
medium(HlaPreSeq90) && polar(E	0.0257085
negative(HlaPreSeq90) && polar(E	0.0258822
charged(HlaPreSeq90) && polar(E	0.026058
polar(HlaPreSeq90) && polar(E7)	0.0262343
large(HlaPreSeq95) && polar(E7)	0.0036123
medium(HlaPreSeq103) && polar(	0.0155293
charged(HlaPreSeq114) && polar(I	-0.0133777
positive(HlaPreSeq156) && polar(I	-0.0095381
charged(HlaPreSeq156) && polar(I	-0.0119915
polar(HlaPreSeq156) && polar(E7)	-0.0092274
large(HlaPreSeq161) && polar(E7)	0.0160509
large(HlaPreSeq163) && polar(E7)	0.0205419
positive(HlaPreSeq163) && polar(I	0.0181722
polar(HlaPreSeq163) && polar(E7)	-0.0124579
aliphatic in CFlank	-0.020531
buried in CFlank	-0.0194939
aliphatic in CFlank[@1]	-0.0174407
buried in CFlank[@1]	-0.016163

EG in Epitope	0.0239399
GK in Epitope	0.0269089
LL in Epitope	-0.0231356
LC in Epitope	-0.0101403
QV in Epitope	0.0113436
negative,small in Epitope	-0.0195726
small,polar in Epitope	0.0136977
positive,buried in Epitope	-0.005353
negative,aliphatic in Epitope[@1-2	0.0167585
negative,small in Epitope[@1-2]	0.015336
charged,aliphatic in Epitope[@1-2]	0.0472224
charged,small in Epitope[@1-2]	0.024525
hydrophobic,positive in Epitope[@	0.0173199
small,polar in Epitope[@2-3]	0.0190744
aliphatic,buried in Epitope[@4-5]	-0.0460953
buried,aliphatic in Epitope[@4-5]	0.0331748
hydrophobic,buried in Epitope[@4	-0.0236216
large,aliphatic in Epitope[@4-5]	0.016179
aliphatic,medium in Epitope[@5-6	-0.031247
buried,polar in Epitope[@5-6]	0.0301477
hydrophobic,medium in Epitope[@	-0.0211312
hydrophobic,polar in Epitope[@5-6]	-0.0271899
large,buried in Epitope[@5-6]	-0.033073
buried,polar in Epitope[@6-7]	0.0195866
medium,polar in Epitope[@6-7]	0.0135789
polar,polar in Epitope[@6-7]	0.0199927
polar,aliphatic in Epitope[@7-8]	-0.0347149
polar,buried in Epitope[@7-8]	-0.0268338
polar,medium in Epitope[@7-8]	0.00966463
hydrophobic in NFlank[1@] && ne	0.00957627
hydrophobic in NFlank[1@] && ch	0.035949
medium in NFlank[1@] && large ir	0.0198155
medium in NFlank[1@] && charge	0.0121008
aliphatic in Epitope[@9] && aliphatic	0.0243008
aliphatic in Epitope[@9] && buried	-0.0156082
hydrophobic in Epitope[@9] && aliphatic	0.00730208
small in Epitope[@9] && aliphatic	-0.0174539
small in Epitope[@9] && hydrophobic	-0.0355922
HlaPreSeq30=Asp && E2=Pro	0.0166259
HlaPreSeq43=Gln && E2=Pro	-0.0212589
HlaPreSeq45=Met && E2=Pro	-0.0290544
HlaPreSeq46=Glu && E2=Pro	0.0115818
HlaPreSeq52=Ile && E2=Pro	0.0173165
HlaPreSeq62=Gln && E2=Pro	-0.0100352
HlaPreSeq63=Glu && E2=Pro	-0.0405619
HlaPreSeq65=Arg && E2=Pro	-0.0249028
HlaPreSeq66=Asn && E2=Pro	-0.0223494

HlaPreSeq70=His && E2=Pro	-0.0117897
HlaPreSeq71=Ser && E2=Pro	-0.0240561
HlaPreSeq79=Gly && E2=Pro	-0.0195599
HlaPreSeq80=Thr && E2=Pro	-0.0285413
HlaPreSeq94=Thr && E2=Pro	-0.0139147
HlaPreSeq97=Ile && E2=Pro	-0.0100228
HlaPreSeq99=Tyr && E2=Pro	0.0125141
HlaPreSeq103=Val && E2=Pro	-0.0252134
HlaPreSeq105=Pro && E2=Pro	0.0222955
HlaPreSeq107=Gly && E2=Pro	0.00929747
HlaPreSeq109=Phe && E2=Pro	-0.0244235
HlaPreSeq113=Tyr && E2=Pro	-0.0381916
HlaPreSeq114=Arg && E2=Pro	-0.0130689
HlaPreSeq116=Asp && E2=Pro	-0.0168854
HlaPreSeq127=Asn && E2=Pro	0.0161347
HlaPreSeq138=Met && E2=Pro	-0.0240545
HlaPreSeq142=Ile && E2=Pro	0.0116991
HlaPreSeq144=Lys && E2=Pro	-0.0190564
HlaPreSeq145=Arg && E2=Pro	0.0119678
HlaPreSeq149=Ala && E2=Pro	0.0100989
HlaPreSeq151=His && E2=Pro	-0.0222542
HlaPreSeq156=Arg && E2=Pro	0.0251809
HlaPreSeq161=Glu && E2=Pro	0.0124553
HlaPreSeq171=Tyr && E2=Pro	0.0163175
HlaPreSeq173=Glu && E2=Pro	0.012135
HlaPreSeq11=Ser && E3=Met	0.0196866
HlaPreSeq12=Val && E3=Met	0.0228262
HlaPreSeq43=Gln && E3=Met	0.0184409
HlaPreSeq45=Met && E3=Met	0.0144839
HlaPreSeq46=Glu && E3=Met	0.0139469
HlaPreSeq63=Glu && E3=Met	0.01611
HlaPreSeq65=Arg && E3=Met	0.0153371
HlaPreSeq69=Ala && E3=Met	0.0201
HlaPreSeq71=Ser && E3=Met	0.0177939
HlaPreSeq74=Asp && E3=Met	0.0144917
HlaPreSeq79=Gly && E3=Met	0.0157157
HlaPreSeq80=Thr && E3=Met	0.0161249
HlaPreSeq90=Asp && E3=Met	0.009157
HlaPreSeq103=Val && E3=Met	0.0141658
HlaPreSeq109=Phe && E3=Met	0.0177662
HlaPreSeq113=Tyr && E3=Met	0.0209945
HlaPreSeq116=Asp && E3=Met	0.0108981
HlaPreSeq131=Arg && E3=Met	0.0210395
HlaPreSeq138=Met && E3=Met	0.0178282
HlaPreSeq144=Lys && E3=Met	0.0166107
HlaPreSeq151=His && E3=Met	0.0165262
HlaPreSeq1=Gly && E4=Tyr	-0.0195784

HlaPreSeq73=Thr && E4=Tyr	-0.0218926
HlaPreSeq17=Arg && E6=Arg	-0.0214834
HlaPreSeq24=Ala && E6=Arg	-0.0220816
HlaPreSeq56=Gly && E6=Arg	-0.0252832
HlaPreSeq70=His && E6=Arg	0.00727989
HlaPreSeq95=Ile && E6=Arg	-0.015134
HlaPreSeq107=Gly && E6=Arg	-0.0180286
HlaPreSeq114=Arg && E6=Arg	-0.0169106
HlaPreSeq127=Asn && E6=Arg	-0.0165939
HlaPreSeq142=Ile && E6=Arg	-0.018527
HlaPreSeq145=Arg && E6=Arg	-0.0183032
cyclic(HlaPreSeq9) && positive(E6)	-0.0092666
aromatic(HlaPreSeq9) && positive	-0.0092239
large(HlaPreSeq9) && positive(E6)	-0.0091903
large(HlaPreSeq97) && positive(E6)	-0.0106968
medium(HlaPreSeq103) && positive	0.0214396
large(HlaPreSeq156) && positive(E6)	-0.0076864
hydrophobic(HlaPreSeq171) && positive	-0.0084748
HlaPreSeq24=Ala && E7=Ala	-0.0098084
HlaPreSeq62=Gln && E7=Ala	-0.0124501
HlaPreSeq66=Asn && E7=Ala	-0.0134899
HlaPreSeq80=Thr && E7=Ala	-0.0092819
HlaPreSeq95=Ile && E7=Ala	-0.0167344
HlaPreSeq97=Ile && E7=Ala	-0.0123924
HlaPreSeq113=Tyr && E7=Ala	-0.0116154
HlaPreSeq114=Arg && E7=Ala	-0.0159821
HlaPreSeq116=Asp && E7=Ala	-0.0157511
HlaPreSeq65=Arg && E8=Arg	0.010978
HlaPreSeq70=His && E8=Arg	0.0190428
HlaPreSeq74=Asp && E8=Arg	-0.017878
HlaPreSeq79=Gly && E8=Arg	0.011725
HlaPreSeq95=Ile && E8=Arg	-0.0125426
HlaPreSeq103=Val && E8=Arg	-0.0172024
HlaPreSeq105=Pro && E8=Arg	-0.0248202
HlaPreSeq107=Gly && E8=Arg	-0.0321647
HlaPreSeq116=Asp && E8=Arg	-0.0139894
HlaPreSeq127=Asn && E8=Arg	-0.0257139
HlaPreSeq142=Ile && E8=Arg	-0.0279808
HlaPreSeq144=Lys && E8=Arg	0.0103567
HlaPreSeq145=Arg && E8=Arg	-0.0274762
HlaPreSeq151=His && E8=Arg	0.00996148
aliphatic(HlaPreSeq12) && positive	0.017945
medium(HlaPreSeq12) && positive	0.0179388
hydrophobic(HlaPreSeq45) && positive	0.0210885
large(HlaPreSeq67) && positive(E6)	0.0111239
large(HlaPreSeq70) && positive(E6)	0.0221954
small(HlaPreSeq71) && positive(E6)	0.0244071

polar(HlaPreSeq71) && positive(E8)	-0.0143811
medium(HlaPreSeq90) && positive(E8)	0.0154292
negative(HlaPreSeq90) && positive(E8)	0.0154355
charged(HlaPreSeq90) && positive(E8)	0.0154421
polar(HlaPreSeq90) && positive(E8)	0.0154492
medium(HlaPreSeq103) && positive(E8)	-0.0098499
cyclic(HlaPreSeq147) && positive(E8)	-0.0082922
large(HlaPreSeq156) && positive(E8)	0.0129258
charged(HlaPreSeq156) && positive(E8)	-0.012339
polar(HlaPreSeq156) && positive(E8)	-0.0083323
aromatic(HlaPreSeq9) && charged(E8)	-0.0226664
large(HlaPreSeq9) && charged(E8)	-0.0226852
large(HlaPreSeq67) && charged(E8)	0.0101153
polar(HlaPreSeq71) && charged(E8)	-0.0178104
medium(HlaPreSeq80) && charged(E8)	-0.0204797
medium(HlaPreSeq90) && charged(E8)	0.0173053
negative(HlaPreSeq90) && charged(E8)	0.0173534
charged(HlaPreSeq90) && charged(E8)	0.0174033
polar(HlaPreSeq90) && charged(E8)	0.0174549
large(HlaPreSeq95) && charged(E8)	0.00882054
buried(HlaPreSeq97) && charged(E8)	0.0244469
hydrophobic(HlaPreSeq97) && charged(E8)	0.0245584
medium(HlaPreSeq103) && charged(E8)	-0.0174922
polar(HlaPreSeq116) && charged(E8)	0.00817034
medium(HlaPreSeq166) && charged(E8)	0.0134774
aliphatic(HlaPreSeq167) && charged(E8)	0.0134873
HlaPreSeq1=Gly && E9=Leu	0.0144484
HlaPreSeq6=Arg && E9=Leu	0.0178115
HlaPreSeq9=Phe && E9=Leu	-0.0082711
HlaPreSeq14=Arg && E9=Leu	0.0248907
HlaPreSeq16=Gly && E9=Leu	0.0241968
HlaPreSeq17=Arg && E9=Leu	0.0290533
HlaPreSeq21=Arg && E9=Leu	0.0261944
HlaPreSeq30=Asp && E9=Leu	0.0340961
HlaPreSeq32=Gln && E9=Leu	0.0188556
HlaPreSeq35=Arg && E9=Leu	0.0197918
HlaPreSeq41=Ala && E9=Leu	0.0308996
HlaPreSeq46=Glu && E9=Leu	0.0262789
HlaPreSeq49=Ala && E9=Leu	0.0227263
HlaPreSeq56=Gly && E9=Leu	0.0246901
HlaPreSeq62=Gln && E9=Leu	-0.0308612
HlaPreSeq63=Glu && E9=Leu	-0.0077696
HlaPreSeq65=Arg && E9=Leu	-0.0112194
HlaPreSeq66=Asn && E9=Leu	-0.0145063
HlaPreSeq74=Asp && E9=Leu	0.0205046
HlaPreSeq79=Gly && E9=Leu	-0.0084475
HlaPreSeq80=Thr && E9=Leu	-0.0109939

HlaPreSeq81=Leu && E9=Leu	0.0298801
HlaPreSeq82=Arg && E9=Leu	0.018512
HlaPreSeq97=Ile && E9=Leu	-0.0322399
HlaPreSeq105=Pro && E9=Leu	0.0120589
HlaPreSeq114=Arg && E9=Leu	-0.0202027
HlaPreSeq116=Asp && E9=Leu	-0.0136784
HlaPreSeq127=Asn && E9=Leu	-0.0119606
HlaPreSeq152=Ala && E9=Leu	-0.0121265
HlaPreSeq161=Glu && E9=Leu	0.0227251
HlaPreSeq163=Arg && E9=Leu	-0.0137357
HlaPreSeq171=Tyr && E9=Leu	0.032831
H in NFlank	-0.0162192
H in NFlank[1@]	-0.0162258
G in CFlank	0.0187258
G in CFlank[@1]	0.018831
small in CFlank	-0.024168
small in CFlank[@1]	-0.0236626
LP in Epitope	-0.0228173
MY in Epitope	0.0127594
RR in Epitope	0.0151329
RA in Epitope	0.0196478
AR in Epitope	-0.0393981
RL in Epitope	0.0213163
RA in Epitope[@6-7]	0.0106377
RL in Epitope[@8-9]	0.0105705
medium,buried in Epitope[@2-3]	0.0217328
buried,cyclic in Epitope[@3-4]	0.0236683
buried,aromatic in Epitope[@3-4]	0.0083101
buried,large in Epitope[@3-4]	-0.0198352
positive,buried in Epitope[@6-7]	0.014092
charged,small in Epitope[@6-7]	0.0205056
buried,large in Epitope[@7-8]	-0.0149066
small,polar in Epitope[@7-8]	-0.0272281
positive,large in Epitope[@8-9]	0.0180696
charged,hydrophobic in Epitope[@	0.00316826
charged,large in Epitope[@8-9]	0.0336358
L in Epitope[@9] && G in CFlank[	0.0167106
cyclic in NFlank[1@] && aliphatic i	-0.0271716
cyclic in NFlank[1@] && hydropho	-0.0179853
aromatic in NFlank[1@] && alipha	-0.0230748
aliphatic in Epitope[@9] && small	0.0137066
buried in Epitope[@9] && aliphatic	0.0266238
buried in Epitope[@9] && small in	0.0116256
large in Epitope[@9] && small in C	-0.0108689
HlaPreSeq24=Ala && E3=Ser	0.012012
HlaPreSeq63=Glu && E3=Ser	-0.01658
HlaPreSeq66=Asn && E3=Ser	0.017348

HlaPreSeq94=Thr && E3=Ser	-0.0152457
HlaPreSeq95=Ile && E3=Ser	0.027667
HlaPreSeq99=Tyr && E3=Ser	-0.0135494
HlaPreSeq103=Val && E3=Ser	-0.0116286
HlaPreSeq149=Ala && E3=Ser	-0.0161004
small(E3)	-0.0159903
cyclic(HlaPreSeq9) && small(E3)	-0.012234
aromatic(HlaPreSeq9) && small(E3)	-0.0126207
buried(HlaPreSeq9) && small(E3)	-0.0104942
large(HlaPreSeq9) && small(E3)	-0.0130714
polar(HlaPreSeq11) && small(E3)	-0.0107352
aliphatic(HlaPreSeq12) && small(E3)	-0.0203587
medium(HlaPreSeq12) && small(E3)	-0.0206038
positive(HlaPreSeq14) && small(E3)	-0.0209174
charged(HlaPreSeq14) && small(E3)	-0.0208297
polar(HlaPreSeq14) && small(E3)	-0.0205595
aliphatic(HlaPreSeq16) && small(E3)	-0.0172955
hydrophobic(HlaPreSeq16) && small(E3)	-0.016708
large(HlaPreSeq156) && small(E3)	0.00184692
charged(HlaPreSeq156) && small(E3)	-0.0135113
polar(HlaPreSeq156) && small(E3)	-0.0132906
large(HlaPreSeq163) && small(E3)	0.0137645
charged(HlaPreSeq163) && small(E3)	0.013039
hydrophobic(HlaPreSeq171) && small(E3)	-0.0021468
HlaPreSeq24=Ala && E6=Ser	0.0152414
HlaPreSeq43=Gln && E6=Ser	0.014848
HlaPreSeq62=Gln && E6=Ser	0.0131982
HlaPreSeq71=Ser && E6=Ser	0.0138489
HlaPreSeq79=Gly && E6=Ser	0.014508
HlaPreSeq80=Thr && E6=Ser	0.0163855
HlaPreSeq95=Ile && E6=Ser	0.0135078
HlaPreSeq97=Ile && E6=Ser	0.0124965
HlaPreSeq105=Pro && E6=Ser	-0.0129806
HlaPreSeq109=Phe && E6=Ser	0.0142047
HlaPreSeq113=Tyr && E6=Ser	0.0248374
HlaPreSeq138=Met && E6=Ser	0.013818
HlaPreSeq144=Lys && E6=Ser	0.015017
HlaPreSeq151=His && E6=Ser	0.012312
aliphatic(HlaPreSeq12) && small(E6)	-0.01308
medium(HlaPreSeq12) && small(E6)	-0.0135149
positive(HlaPreSeq14) && small(E6)	-0.0096727
charged(HlaPreSeq14) && small(E6)	-0.0107298
polar(HlaPreSeq14) && small(E6)	-0.0117311
aliphatic(HlaPreSeq16) && small(E6)	-0.0107841
hydrophobic(HlaPreSeq16) && small(E6)	-0.0115873
large(HlaPreSeq17) && small(E6)	-0.013342
positive(HlaPreSeq17) && small(E6)	-0.0138085

charged(HlaPreSeq17) && small(E6)	-0.0141177
small(HlaPreSeq24) && small(E6)	-0.0150577
large(HlaPreSeq62) && small(E6)	0.00978244
polar(HlaPreSeq62) && small(E6)	0.0120066
large(HlaPreSeq67) && small(E6)	-0.0176796
cyclic(HlaPreSeq70) && small(E6)	-0.0202766
aromatic(HlaPreSeq70) && small(E6)	-0.0203498
positive(HlaPreSeq70) && small(E6)	-0.0193766
charged(HlaPreSeq70) && small(E6)	-0.0193973
small(HlaPreSeq71) && small(E6)	-0.0263999
polar(HlaPreSeq71) && small(E6)	8.94E-03
medium(HlaPreSeq77) && small(E6)	6.26E-05
large(HlaPreSeq97) && small(E6)	0.0036625
cyclic(HlaPreSeq105) && small(E6)	-0.0189732
hydrophobic(HlaPreSeq105) && small(E6)	-0.0189122
medium(HlaPreSeq105) && small(E6)	-0.0188583
positive(HlaPreSeq114) && small(E6)	0.00307779
large(HlaPreSeq138) && small(E6)	0.00399605
positive(HlaPreSeq144) && small(E6)	0.00300287
charged(HlaPreSeq144) && small(E6)	0.0033943
cyclic(HlaPreSeq151) && small(E6)	0.0042631
aromatic(HlaPreSeq151) && small(E6)	0.00466134
large(HlaPreSeq156) && small(E6)	-0.0159139
charged(HlaPreSeq163) && small(E6)	-0.0194731
polar(HlaPreSeq163) && small(E6)	-0.0188077
HlaPreSeq12=Val && E8=Gln	0.00720843
HlaPreSeq35=Arg && E8=Gln	-0.0200192
HlaPreSeq52=Ile && E8=Gln	-0.0165963
HlaPreSeq95=Ile && E8=Gln	-0.019347
HlaPreSeq145=Arg && E8=Gln	-0.0190945
E9=Thr	0.0188426
HlaPreSeq1=Gly && E9=Thr	0.0212982
HlaPreSeq6=Arg && E9=Thr	0.0188051
HlaPreSeq9=Phe && E9=Thr	0.0214976
HlaPreSeq11=Ser && E9=Thr	0.0161721
HlaPreSeq12=Val && E9=Thr	0.0178295
HlaPreSeq14=Arg && E9=Thr	0.0190109
HlaPreSeq16=Gly && E9=Thr	0.0187556
HlaPreSeq17=Arg && E9=Thr	0.019791
HlaPreSeq21=Arg && E9=Thr	0.0189606
HlaPreSeq24=Ala && E9=Thr	0.0193788
HlaPreSeq30=Asp && E9=Thr	0.0195368
HlaPreSeq32=Gln && E9=Thr	0.0211792
HlaPreSeq35=Arg && E9=Thr	0.0201051
HlaPreSeq41=Ala && E9=Thr	0.0210425
HlaPreSeq43=Gln && E9=Thr	0.0154768
HlaPreSeq45=Met && E9=Thr	0.0206934

HlaPreSeq49=Ala && E9=Thr	0.0187093
HlaPreSeq52=Ile && E9=Thr	0.0186793
HlaPreSeq56=Gly && E9=Thr	0.0195988
HlaPreSeq63=Glu && E9=Thr	0.0240963
HlaPreSeq65=Arg && E9=Thr	0.0160326
HlaPreSeq69=Ala && E9=Thr	0.0166315
HlaPreSeq70=His && E9=Thr	0.0187507
HlaPreSeq73=Thr && E9=Thr	0.0173251
HlaPreSeq91=Gly && E9=Thr	0.018288
HlaPreSeq94=Thr && E9=Thr	0.0184835
HlaPreSeq103=Val && E9=Thr	0.0223258
HlaPreSeq143=Thr && E9=Thr	0.0183688
HlaPreSeq147=Trp && E9=Thr	0.019152
HlaPreSeq149=Ala && E9=Thr	0.019123
HlaPreSeq161=Glu && E9=Thr	0.0181994
HlaPreSeq173=Glu && E9=Thr	0.0180493
medium(E9)	-0.0131324
aliphatic(HlaPreSeq1) && medium	-0.0095891
hydrophobic(HlaPreSeq1) && med	-0.0102048
small(HlaPreSeq1) && medium(E9	-0.0106514
polar(HlaPreSeq11) && medium(E	-0.0221943
aliphatic(HlaPreSeq24) && mediur	-0.0173867
buried(HlaPreSeq24) && medium(	-0.0170268
hydrophobic(HlaPreSeq24) && me	-0.0164947
positive(HlaPreSeq35) && mediur	-0.0249922
charged(HlaPreSeq35) && mediun	-0.0244057
large(HlaPreSeq62) && medium(E!	-0.0207649
polar(HlaPreSeq62) && medium(E	-0.0195779
medium(HlaPreSeq66) && mediun	-0.0150925
positive(HlaPreSeq70) && mediur	-0.0047189
charged(HlaPreSeq70) && mediun	-0.0036398
medium(HlaPreSeq73) && mediun	0.00067267
charged(HlaPreSeq74) && mediun	0.00620686
polar(HlaPreSeq74) && medium(E	0.00745693
aliphatic(HlaPreSeq76) && mediur	0.00603956
buried(HlaPreSeq76) && medium(	0.0073412
hydrophobic(HlaPreSeq76) && me	0.00861884
aliphatic(HlaPreSeq79) && mediur	0.00595006
hydrophobic(HlaPreSeq79) && me	0.0070777
small(HlaPreSeq79) && medium(E	0.00811523
medium(HlaPreSeq80) && mediun	0.0176425
large(HlaPreSeq81) && medium(E!	0.0136341
medium(HlaPreSeq94) && mediun	0.0193549
polar(HlaPreSeq94) && medium(E	0.0187605
aliphatic(HlaPreSeq95) && mediur	-0.0124211
large(HlaPreSeq95) && medium(E!	-0.0237463
aliphatic(HlaPreSeq97) && mediur	-0.0091983

buried(HlaPreSeq97) && medium(	-0.0099193
hydrophobic(HlaPreSeq97) && me	-0.0099646
large(HlaPreSeq97) && medium(E'	-0.0146683
cyclic(HlaPreSeq99) && medium(E	-0.0062567
aromatic(HlaPreSeq99) && mediu	-0.0070453
hydrophobic(HlaPreSeq99) && me	-0.0076591
large(HlaPreSeq99) && medium(E'	-0.0080973
aliphatic(HlaPreSeq107) && mediu	-0.0237056
small(HlaPreSeq107) && medium(	-0.024267
cyclic(HlaPreSeq109) && medium(	-0.0109664
charged(HlaPreSeq114) && mediu	-0.0333031
medium(HlaPreSeq116) && mediu	-0.0177087
negative(HlaPreSeq116) && mediu	-0.0175843
charged(HlaPreSeq116) && mediu	-0.0205556
polar(HlaPreSeq116) && medium(	-0.0404915
medium(HlaPreSeq127) && mediu	-0.0151899
aliphatic(HlaPreSeq142) && mediu	-0.026131
buried(HlaPreSeq142) && medium	-0.0266885
hydrophobic(HlaPreSeq142) && m	-0.0272426
large(HlaPreSeq142) && medium(l	-0.0277845
positive(HlaPreSeq144) && mediu	0.00175358
charged(HlaPreSeq144) && mediu	0.0027515
polar(HlaPreSeq156) && medium(	-0.0129166
large(HlaPreSeq163) && medium(l	-0.0188831
polar(HlaPreSeq163) && medium(	0.010566
small(HlaPreSeq167) && medium(	-0.0103339
hydrophobic(HlaPreSeq171) && m	-0.0181657
T in CFlank	0.0323544
T in CFlank[@1]	0.0323085
negative in NFlank	-0.0134114
negative in NFlank[1@]	-0.0135753
IS in Epitope	0.0101423
SV in Epitope	-0.0261247
VS in Epitope	0.0499071
SA in Epitope	-0.0429799
AQ in Epitope	-0.028631
QT in Epitope	-0.0228146
SA in Epitope[@6-7]	-0.0104635
medium,aliphatic in Epitope[@1-2	-0.0164044
aliphatic,small in Epitope[@2-3]	0.0223056
small,buried in Epitope[@3-4]	0.0307683
small,hydrophobic in Epitope[@3-	0.00357233
buried,small in Epitope[@4-5]	0.0272926
small,polar in Epitope[@5-6]	-0.0175718
polar,small in Epitope[@5-6]	-0.020637
small,buried in Epitope[@6-7]	-0.0202426
small,small in Epitope[@6-7]	-0.0352947

large,medium in Epitope[@8-9]	0.0152987
large,polar in Epitope[@8-9]	0.0107122
polar,medium in Epitope[@8-9]	-0.0219281
negative in NFlank[1@] && mediu	-0.0216857
charged in NFlank[1@] && polar ir	0.00940258
medium in Epitope[@9] && mediu	0.0357702
polar in Epitope[@9] && medium i	0.0137158
HlaPreSeq12=Val && E1=Ser	0.00566149
HlaPreSeq43=Gln && E1=Ser	0.00709949
HlaPreSeq62=Gln && E1=Ser	0.0115686
HlaPreSeq63=Glu && E1=Ser	0.00748265
HlaPreSeq71=Ser && E1=Ser	0.0076822
HlaPreSeq73=Thr && E1=Ser	-0.0002786
HlaPreSeq79=Gly && E1=Ser	0.00949813
HlaPreSeq80=Thr && E1=Ser	0.00469669
HlaPreSeq81=Leu && E1=Ser	0.00081963
HlaPreSeq82=Arg && E1=Ser	0.00683247
HlaPreSeq83=Gly && E1=Ser	0.00699476
HlaPreSeq97=Ile && E1=Ser	0.0145638
HlaPreSeq103=Val && E1=Ser	0.00154759
HlaPreSeq109=Phe && E1=Ser	0.0099229
HlaPreSeq114=Arg && E1=Ser	0.0130824
HlaPreSeq131=Arg && E1=Ser	0.00821498
HlaPreSeq138=Met && E1=Ser	0.00845833
HlaPreSeq144=Lys && E1=Ser	0.0147108
HlaPreSeq151=His && E1=Ser	0.00973435
HlaPreSeq152=Ala && E1=Ser	0.00953661
small(E1)	-0.0077941
aliphatic(HlaPreSeq1) && small(E1	0.00219519
hydrophobic(HlaPreSeq1) && sma	0.00479775
small(HlaPreSeq1) && small(E1)	0.00703794
aliphatic(HlaPreSeq12) && small(E	0.00499732
medium(HlaPreSeq12) && small(E	0.0066714
large(HlaPreSeq63) && small(E1)	0.019606
negative(HlaPreSeq63) && small(E	0.0210307
charged(HlaPreSeq63) && small(E:	0.0219366
positive(HlaPreSeq70) && small(E:	-0.0049131
charged(HlaPreSeq70) && small(E:	-0.0046576
small(HlaPreSeq76) && small(E1)	-0.0140763
polar(HlaPreSeq80) && small(E1)	0.0251229
large(HlaPreSeq81) && small(E1)	0.0217848
positive(HlaPreSeq82) && small(E:	0.0273069
charged(HlaPreSeq82) && small(E:	0.0270794
polar(HlaPreSeq82) && small(E1)	0.0266262
aliphatic(HlaPreSeq83) && small(E	0.0259717
hydrophobic(HlaPreSeq83) && sm	0.0251421
small(HlaPreSeq83) && small(E1)	0.0241655

large(HlaPreSeq95) && small(E1)	-0.01129
medium(HlaPreSeq103) && small(E1)	0.00191474
aliphatic(HlaPreSeq107) && small(E1)	-0.0151359
small(HlaPreSeq107) && small(E1)	-0.0155954
large(HlaPreSeq131) && small(E1)	0.0189909
positive(HlaPreSeq131) && small(E1)	0.0182159
charged(HlaPreSeq131) && small(E1)	0.0174332
small(HlaPreSeq152) && small(E1)	0.00759851
polar(HlaPreSeq156) && small(E1)	0.0215504
charged(HlaPreSeq163) && small(E1)	0.0099312
medium(HlaPreSeq166) && small(E1)	-0.0153967
aliphatic(HlaPreSeq167) && small(E1)	-0.0153927
E2=Ser	0.0105964
HlaPreSeq1=Gly && E2=Ser	0.0108709
HlaPreSeq6=Arg && E2=Ser	0.0108663
HlaPreSeq11=Ser && E2=Ser	0.0173404
HlaPreSeq12=Val && E2=Ser	0.0148084
HlaPreSeq14=Arg && E2=Ser	0.0104342
HlaPreSeq16=Gly && E2=Ser	0.0127021
HlaPreSeq21=Arg && E2=Ser	0.0129364
HlaPreSeq24=Ala && E2=Ser	0.0284107
HlaPreSeq30=Asp && E2=Ser	0.0120666
HlaPreSeq32=Gln && E2=Ser	0.0196024
HlaPreSeq35=Arg && E2=Ser	0.0126217
HlaPreSeq41=Ala && E2=Ser	0.0189345
HlaPreSeq43=Gln && E2=Ser	0.0203782
HlaPreSeq45=Met && E2=Ser	0.0234999
HlaPreSeq49=Ala && E2=Ser	0.0109601
HlaPreSeq52=Ile && E2=Ser	0.0107685
HlaPreSeq62=Gln && E2=Ser	0.0270259
HlaPreSeq63=Glu && E2=Ser	0.028035
HlaPreSeq65=Arg && E2=Ser	0.0240909
HlaPreSeq66=Asn && E2=Ser	0.0283984
HlaPreSeq67=Met && E2=Ser	0.0179484
HlaPreSeq69=Ala && E2=Ser	0.0227821
HlaPreSeq71=Ser && E2=Ser	0.0204262
HlaPreSeq73=Thr && E2=Ser	0.0126193
HlaPreSeq74=Asp && E2=Ser	0.0129531
HlaPreSeq77=Asn && E2=Ser	0.0136363
HlaPreSeq79=Gly && E2=Ser	0.0159951
HlaPreSeq90=Asp && E2=Ser	0.0232489
HlaPreSeq91=Gly && E2=Ser	0.0117106
HlaPreSeq95=Ile && E2=Ser	0.0307889
HlaPreSeq97=Ile && E2=Ser	0.0280921
HlaPreSeq105=Pro && E2=Ser	0.0110988
HlaPreSeq107=Gly && E2=Ser	0.016234
HlaPreSeq109=Phe && E2=Ser	0.0212388

HlaPreSeq113=Tyr && E2=Ser	0.0152109
HlaPreSeq114=Arg && E2=Ser	0.020576
HlaPreSeq127=Asn && E2=Ser	0.0117012
HlaPreSeq138=Met && E2=Ser	0.0204753
HlaPreSeq142=Ile && E2=Ser	0.0170652
HlaPreSeq143=Thr && E2=Ser	0.0120684
HlaPreSeq144=Lys && E2=Ser	0.0232384
HlaPreSeq145=Arg && E2=Ser	0.0183369
HlaPreSeq147=Trp && E2=Ser	0.0126296
HlaPreSeq149=Ala && E2=Ser	0.0134558
HlaPreSeq151=His && E2=Ser	0.0209801
HlaPreSeq152=Ala && E2=Ser	0.0221151
HlaPreSeq161=Glu && E2=Ser	0.0120375
HlaPreSeq163=Arg && E2=Ser	0.0213198
HlaPreSeq166=Asp && E2=Ser	0.014274
HlaPreSeq167=Gly && E2=Ser	0.0142737
HlaPreSeq171=Tyr && E2=Ser	0.016588
HlaPreSeq9=Phe && E3=Gly	0.0241276
HlaPreSeq43=Gln && E3=Gly	0.0121559
HlaPreSeq45=Met && E3=Gly	0.017607
HlaPreSeq63=Glu && E3=Gly	0.0239163
HlaPreSeq79=Gly && E3=Gly	0.0151422
HlaPreSeq80=Thr && E3=Gly	0.0261772
HlaPreSeq95=Ile && E3=Gly	-0.0146825
HlaPreSeq103=Val && E3=Gly	0.0179542
HlaPreSeq105=Pro && E3=Gly	-0.0168499
HlaPreSeq107=Gly && E3=Gly	-0.0158435
HlaPreSeq113=Tyr && E3=Gly	0.0162075
HlaPreSeq131=Arg && E3=Gly	0.0133891
HlaPreSeq142=Ile && E3=Gly	-0.00997
HlaPreSeq144=Lys && E3=Gly	0.0176128
HlaPreSeq145=Arg && E3=Gly	-0.012566
HlaPreSeq151=His && E3=Gly	0.0149701
HlaPreSeq73=Thr && E5=Asp	0.00125896
HlaPreSeq74=Asp && E5=Asp	-0.0066005
large(HlaPreSeq45) && negative(E	-0.0265004
large(HlaPreSeq52) && negative(E	-0.0068826
polar(HlaPreSeq66) && negative(E	0.013348
large(HlaPreSeq67) && negative(E	0.0309291
medium(HlaPreSeq73) && negativ	-0.0076053
polar(HlaPreSeq73) && negative(E	-0.0079079
medium(HlaPreSeq80) && negativ	-0.0126799
medium(HlaPreSeq94) && negativ	-0.0086096
polar(HlaPreSeq94) && negative(E	-0.0088769
large(HlaPreSeq95) && negative(E	-0.0015625
large(HlaPreSeq97) && negative(E	0.0165291
medium(HlaPreSeq103) && negati	-0.0175315

charged(HlaPreSeq114) && negati	0.0159417
medium(HlaPreSeq116) && negati	-0.0175311
negative(HlaPreSeq116) && negat	-0.0159626
charged(HlaPreSeq116) && negati	-0.0152385
polar(HlaPreSeq116) && negative(	0.0189914
polar(HlaPreSeq156) && negative(	-0.0109033
HlaPreSeq24=Ala && E7=Glu	0.0158231
HlaPreSeq74=Asp && E7=Glu	-0.0208585
HlaPreSeq103=Val && E7=Glu	-0.0138782
HlaPreSeq116=Asp && E7=Glu	-0.0134244
cyclic(HlaPreSeq9) && negative(E7	-0.0095381
aromatic(HlaPreSeq9) && negativ	-0.0095207
buried(HlaPreSeq9) && negative(E	-0.0159609
hydrophobic(HlaPreSeq9) && nega	-0.0159067
large(HlaPreSeq9) && negative(E7	-0.0095471
positive(HlaPreSeq14) && negativ	-0.0059006
charged(HlaPreSeq14) && negativ	-0.0063575
polar(HlaPreSeq14) && negative(E	-0.0068656
large(HlaPreSeq17) && negative(E	-0.0116539
positive(HlaPreSeq17) && negativ	-0.0121646
charged(HlaPreSeq17) && negativ	-0.0126844
aliphatic(HlaPreSeq41) && negativ	-0.007389
buried(HlaPreSeq41) && negative(	-0.0079048
hydrophobic(HlaPreSeq41) && ne	-0.008407
small(HlaPreSeq41) && negative(E	-0.0088879
large(HlaPreSeq45) && negative(E	-0.0178102
large(HlaPreSeq52) && negative(E	-0.0127233
aliphatic(HlaPreSeq56) && negativ	-0.0156025
hydrophobic(HlaPreSeq56) && ne	-0.0159261
small(HlaPreSeq56) && negative(E	-0.0161883
large(HlaPreSeq67) && negative(E	0.0125688
large(HlaPreSeq81) && negative(E	0.0113497
medium(HlaPreSeq103) && negati	-0.0315743
medium(HlaPreSeq116) && negati	-0.0271299
negative(HlaPreSeq116) && negat	-0.027112
charged(HlaPreSeq116) && negati	-0.0181639
aliphatic(HlaPreSeq152) && negat	0.00533569
buried(HlaPreSeq152) && negativ	0.00521753
hydrophobic(HlaPreSeq152) && n	0.00512233
large(HlaPreSeq161) && negative(	0.00429279
hydrophobic(HlaPreSeq171) && n	0.00477293
cyclic(HlaPreSeq9) && charged(E7,	-0.019721
aromatic(HlaPreSeq9) && charged	-0.019657
buried(HlaPreSeq9) && charged(E	-0.0296546
hydrophobic(HlaPreSeq9) && char	-0.0207323
large(HlaPreSeq9) && charged(E7)	-0.0191155
polar(HlaPreSeq62) && charged(E	0.0150647

large(HlaPreSeq63) && charged(E-	-0.0209862
negative(HlaPreSeq63) && charged(E-	-0.0149747
charged(HlaPreSeq63) && charged(E-	-0.0147709
large(HlaPreSeq67) && charged(E-	0.0183796
medium(HlaPreSeq73) && charged(E-	-0.0122544
medium(HlaPreSeq80) && charged(E-	-0.0111233
positive(HlaPreSeq82) && charged(E-	0.0160237
charged(HlaPreSeq82) && charged(E-	0.0159918
polar(HlaPreSeq82) && charged(E-	0.0158515
aliphatic(HlaPreSeq83) && charged(E-	0.0155997
hydrophobic(HlaPreSeq83) && charged(E-	0.0152398
small(HlaPreSeq83) && charged(E-	0.0147801
medium(HlaPreSeq90) && charged(E-	0.0189432
negative(HlaPreSeq90) && charged(E-	0.0189841
charged(HlaPreSeq90) && charged(E-	0.0190247
polar(HlaPreSeq90) && charged(E-	0.0190649
large(HlaPreSeq95) && charged(E-	0.0109728
cyclic(HlaPreSeq105) && charged(E-	0.016956
hydrophobic(HlaPreSeq105) && charged(E-	0.0169137
medium(HlaPreSeq105) && charged(E-	0.0168584
hydrophobic(HlaPreSeq113) && charged(E-	-0.0113573
large(HlaPreSeq114) && charged(E-	-0.0165586
positive(HlaPreSeq114) && charged(E-	-0.0321921
charged(HlaPreSeq114) && charged(E-	-0.030192
medium(HlaPreSeq116) && charged(E-	-0.0264401
negative(HlaPreSeq116) && charged(E-	-0.03029
charged(HlaPreSeq116) && charged(E-	-0.022065
positive(HlaPreSeq144) && charged(E-	-0.0157752
charged(HlaPreSeq144) && charged(E-	-0.0156493
large(HlaPreSeq161) && charged(E-	0.0148099
R in NFlank	-0.015734
R in NFlank[1@]	-0.015831
SG in Epitope	-0.0091615
GD in Epitope	-0.0199679
DP in Epitope	-0.026028
PE in Epitope	-0.0166485
VA in Epitope	0.0111286
GG in Epitope[@3-4]	-0.0151627
VA in Epitope[@8-9]	-0.0142807
small,negative in Epitope	-0.0183485
negative,medium in Epitope	-0.0323322
cyclic,negative in Epitope	-0.0220522
small,polar in Epitope[@1-2]	0.0154621
polar,aliphatic in Epitope[@2-3]	-0.0173381
aliphatic,small in Epitope[@3-4]	-0.0268778
aliphatic,medium in Epitope[@4-5]	-0.02639
hydrophobic,medium in Epitope[@4-5]	-0.0209224

small,negative in Epitope[@4-5]	-0.0123044
small,polar in Epitope[@4-5]	0.0133127
medium,cyclic in Epitope[@5-6]	0.0164199
medium,hydrophobic in Epitope[	0.0230611
medium,medium in Epitope[@5-6]	0.0158566
cyclic,negative in Epitope[@6-7]	-0.0132822
cyclic,charged in Epitope[@6-7]	-0.0081099
hydrophobic,negative in Epitope[	-0.0219713
negative,buried in Epitope[@7-8]	-0.0113173
charged,aliphatic in Epitope[@7-8]	-0.0123643
charged,buried in Epitope[@7-8]	-0.0293941
charged,hydrophobic in Epitope[	-0.0193464
charged,medium in Epitope[@7-8]	0.0332301
large in NFlank[1@] && small in Ep	0.0269245
positive in NFlank[1@] && small ir	0.0219272
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charged in NFlank[1@] && small ir	0.0180007
HlaPreSeq43=Gln && E1=Ala	-0.0161523
HlaPreSeq45=Met && E1=Ala	-0.016814
HlaPreSeq70=His && E1=Ala	-0.0132251
HlaPreSeq99=Tyr && E1=Ala	0.0111583
HlaPreSeq103=Val && E1=Ala	-0.0143424
HlaPreSeq127=Asn && E1=Ala	0.0111997
E2=Thr	0.0043299
HlaPreSeq1=Gly && E2=Thr	0.00560779
HlaPreSeq6=Arg && E2=Thr	0.00451918
HlaPreSeq9=Phe && E2=Thr	0.0135327
HlaPreSeq11=Ser && E2=Thr	0.00979077
HlaPreSeq14=Arg && E2=Thr	0.00636168
HlaPreSeq16=Gly && E2=Thr	0.00651809
HlaPreSeq17=Arg && E2=Thr	0.0062549
HlaPreSeq21=Arg && E2=Thr	0.00943219
HlaPreSeq24=Ala && E2=Thr	0.0320915
HlaPreSeq30=Asp && E2=Thr	0.0128331
HlaPreSeq32=Gln && E2=Thr	0.015143
HlaPreSeq35=Arg && E2=Thr	0.00550246
HlaPreSeq41=Ala && E2=Thr	0.016676
HlaPreSeq43=Gln && E2=Thr	0.0260461
HlaPreSeq45=Met && E2=Thr	0.0395815
HlaPreSeq49=Ala && E2=Thr	0.0128487
HlaPreSeq52=Ile && E2=Thr	0.0131636
HlaPreSeq56=Gly && E2=Thr	0.0137702
HlaPreSeq62=Gln && E2=Thr	0.0163109
HlaPreSeq63=Glu && E2=Thr	0.0236083
HlaPreSeq65=Arg && E2=Thr	0.0479515
HlaPreSeq66=Asn && E2=Thr	0.0390835
HlaPreSeq67=Met && E2=Thr	0.017116

HlaPreSeq69=Ala && E2=Thr	0.0398728
HlaPreSeq70=His && E2=Thr	0.0150562
HlaPreSeq71=Ser && E2=Thr	0.031908
HlaPreSeq73=Thr && E2=Thr	0.018301
HlaPreSeq74=Asp && E2=Thr	0.0114025
HlaPreSeq79=Gly && E2=Thr	0.0367213
HlaPreSeq80=Thr && E2=Thr	0.0308811
HlaPreSeq81=Leu && E2=Thr	0.018518
HlaPreSeq82=Arg && E2=Thr	0.021029
HlaPreSeq83=Gly && E2=Thr	0.0214383
HlaPreSeq90=Asp && E2=Thr	0.00883431
HlaPreSeq91=Gly && E2=Thr	0.0189237
HlaPreSeq94=Thr && E2=Thr	0.014596
HlaPreSeq95=Ile && E2=Thr	0.0341516
HlaPreSeq97=Ile && E2=Thr	0.013925
HlaPreSeq99=Tyr && E2=Thr	0.0263631
HlaPreSeq103=Val && E2=Thr	0.0227072
HlaPreSeq107=Gly && E2=Thr	0.00977173
HlaPreSeq109=Phe && E2=Thr	0.0321333
HlaPreSeq113=Tyr && E2=Thr	0.0318922
HlaPreSeq114=Arg && E2=Thr	0.0150391
HlaPreSeq116=Asp && E2=Thr	0.0198036
HlaPreSeq131=Arg && E2=Thr	0.0258069
HlaPreSeq138=Met && E2=Thr	0.0357951
HlaPreSeq143=Thr && E2=Thr	0.0222147
HlaPreSeq144=Lys && E2=Thr	0.0342912
HlaPreSeq147=Trp && E2=Thr	0.0219053
HlaPreSeq149=Ala && E2=Thr	0.017466
HlaPreSeq151=His && E2=Thr	0.0374047
HlaPreSeq152=Ala && E2=Thr	0.00946024
HlaPreSeq161=Glu && E2=Thr	0.0119504
HlaPreSeq163=Arg && E2=Thr	0.0118215
HlaPreSeq171=Tyr && E2=Thr	0.0274627
HlaPreSeq173=Glu && E2=Thr	0.0195456
HlaPreSeq30=Asp && E4=Asp	0.0214637
HlaPreSeq65=Arg && E4=Asp	-0.0086952
HlaPreSeq66=Asn && E4=Asp	-0.0167414
HlaPreSeq103=Val && E4=Asp	-0.0084106
HlaPreSeq131=Arg && E4=Asp	0.0206759
HlaPreSeq171=Tyr && E4=Asp	0.0256159
aliphatic(HlaPreSeq1) && negative	0.016439
hydrophobic(HlaPreSeq1) && nega	0.0162208
small(HlaPreSeq1) && negative(E4	0.0160697
buried(HlaPreSeq9) && negative(E	0.0207898
aliphatic(HlaPreSeq12) && negativ	0.0209378
medium(HlaPreSeq12) && negativ	0.0208768
small(HlaPreSeq24) && negative(E	0.0237363

large(HlaPreSeq45) && negative(E	-0.0058044
medium(HlaPreSeq66) && negativ	-0.0137387
buried(HlaPreSeq67) && negative(	-0.0028273
aliphatic(HlaPreSeq69) && negativ	-0.0030948
buried(HlaPreSeq69) && negative(	-0.0031624
hydrophobic(HlaPreSeq69) && ne	-0.0032178
small(HlaPreSeq69) && negative(E	-0.0032606
medium(HlaPreSeq74) && negativ	-0.0144013
negative(HlaPreSeq74) && negativ	-0.0143277
large(HlaPreSeq95) && negative(E	-0.0116277
large(HlaPreSeq97) && negative(E	0.0205978
aliphatic(HlaPreSeq107) && negat	-0.0105436
small(HlaPreSeq107) && negative(	-0.0106377
charged(HlaPreSeq114) && negati	0.022713
medium(HlaPreSeq116) && negati	-0.0134922
charged(HlaPreSeq116) && negati	-0.0134508
large(HlaPreSeq163) && negative(	-0.0109441
charged(HlaPreSeq163) && negati	-0.0124234
HlaPreSeq62=Gln && E7=Lys	0.0136303
HlaPreSeq66=Asn && E7=Lys	0.0209129
HlaPreSeq74=Asp && E7=Lys	0.0136541
HlaPreSeq90=Asp && E7=Lys	0.01492
HlaPreSeq97=Ile && E7=Lys	0.0143217
HlaPreSeq103=Val && E7=Lys	0.010095
HlaPreSeq107=Gly && E7=Lys	0.0120495
HlaPreSeq116=Asp && E7=Lys	0.0120835
HlaPreSeq127=Asn && E7=Lys	0.0121351
HlaPreSeq142=Ile && E7=Lys	0.0135578
HlaPreSeq145=Arg && E7=Lys	0.0135465
HlaPreSeq163=Arg && E7=Lys	0.0140955
HlaPreSeq171=Tyr && E7=Lys	-0.011062
cyclic(HlaPreSeq9) && positive(E7)	-0.0034999
aromatic(HlaPreSeq9) && positive	-0.0038214
large(HlaPreSeq9) && positive(E7)	-0.0041664
polar(HlaPreSeq62) && positive(E7)	0.0219137
large(HlaPreSeq63) && positive(E7)	-0.0220407
negative(HlaPreSeq63) && positiv	-0.0188067
charged(HlaPreSeq63) && positive	-0.019029
large(HlaPreSeq97) && positive(E7)	-0.0096134
medium(HlaPreSeq103) && positiv	0.0176939
hydrophobic(HlaPreSeq113) && p	-0.0108296
positive(HlaPreSeq114) && positiv	-0.0215534
charged(HlaPreSeq114) && positiv	-0.0204224
aliphatic(HlaPreSeq152) && positiv	-0.0142207
buried(HlaPreSeq152) && positive	-0.0144299
hydrophobic(HlaPreSeq152) && p	-0.0146156
large(HlaPreSeq63) && negative(E	-0.021986

negative(HlaPreSeq63) && negativ	-0.0215956
charged(HlaPreSeq63) && negativ	-0.0215869
buried(HlaPreSeq97) && negative(	-0.0153489
hydrophobic(HlaPreSeq97) && ne	-0.0153496
positive(HlaPreSeq114) && negati	-0.0159867
aliphatic(HlaPreSeq149) && negat	-0.0196576
buried(HlaPreSeq149) && negativ	-0.0196597
hydrophobic(HlaPreSeq149) && n	-0.0196631
small(HlaPreSeq149) && negative(	-0.0196676
aliphatic(HlaPreSeq152) && negat	-0.0186622
buried(HlaPreSeq152) && negativ	-0.0186581
hydrophobic(HlaPreSeq152) && n	-0.0186543
Y in CFlank	0.0203775
Y in CFlank[@1]	0.0204303
AT in Epitope	0.0158891
TS in Epitope	0.0115692
SD in Epitope	-0.0133406
SK in Epitope	0.0384396
KN in Epitope	0.013045
AT in Epitope[@1-2]	0.0115413
KN in Epitope[@7-8]	0.0182353
negative,polar in Epitope	0.0143928
small,charged in Epitope[@3-4]	-0.0260388
small,polar in Epitope[@3-4]	-0.0175068
polar,negative in Epitope[@3-4]	-0.0127957
polar,charged in Epitope[@3-4]	-0.0124959
medium,medium in Epitope[@4-5]	0.0216756
negative,medium in Epitope[@4-5]	0.0221088
medium,small in Epitope[@5-6]	0.0194679
small,large in Epitope[@6-7]	0.0370432
small,positive in Epitope[@6-7]	0.0106266
polar,positive in Epitope[@6-7]	-0.0175707
positive,medium in Epitope[@7-8]	0.0360333
charged,polar in Epitope[@7-8]	0.0177237
polar,polar in Epitope[@7-8]	0.00043802
medium,medium in Epitope[@8-9]	-0.0155693
V in NFlank[1@] && A in Epitope[	-0.0148266
buried in NFlank[1@] && aliphatic	-0.0141294
hydrophobic in NFlank[1@] && ali	-0.0196601
medium in NFlank[1@] && small in	-0.0327655
medium in Epitope[@9] && arom	-0.0102363
medium in Epitope[@9] && large i	-0.0317314
charged in Epitope[@9] && hydro	0.0115108
polar in Epitope[@9] && cyclic in C	0.0275719
HlaPreSeq74=Asp && E1=Ile	0.0191662
HlaPreSeq107=Gly && E1=Ile	0.0233517
HlaPreSeq142=Ile && E1=Ile	0.0191828

HlaPreSeq145=Arg && E1=Ile	0.0208775
HlaPreSeq166=Asp && E1=Ile	0.0106478
HlaPreSeq167=Gly && E1=Ile	0.0106502
HlaPreSeq62=Gln && E3=Trp	-0.0086536
HlaPreSeq66=Asn && E3=Trp	-0.0089981
HlaPreSeq70=His && E3=Trp	0.0187539
HlaPreSeq74=Asp && E3=Trp	-0.0136919
HlaPreSeq95=Ile && E3=Trp	-0.0119183
HlaPreSeq97=Ile && E3=Trp	-0.0081456
HlaPreSeq107=Gly && E3=Trp	-0.0118107
HlaPreSeq114=Arg && E3=Trp	-0.0104798
HlaPreSeq116=Asp && E3=Trp	-0.0082622
HlaPreSeq127=Asn && E3=Trp	-0.007462
HlaPreSeq142=Ile && E3=Trp	-0.0118202
HlaPreSeq145=Arg && E3=Trp	-0.0118245
HlaPreSeq161=Glu && E3=Trp	0.0154573
HlaPreSeq30=Asp && E4=Glu	-0.0117696
HlaPreSeq74=Asp && E4=Glu	-0.0253056
HlaPreSeq103=Val && E4=Glu	0.0130201
cyclic(HlaPreSeq9) && cyclic(E5)	0.0225829
buried(HlaPreSeq9) && cyclic(E5)	-0.002455
large(HlaPreSeq63) && cyclic(E5)	0.0223221
negative(HlaPreSeq63) && cyclic(E5)	0.0160143
charged(HlaPreSeq63) && cyclic(E5)	0.015945
positive(HlaPreSeq65) && cyclic(E5)	0.0282869
charged(HlaPreSeq65) && cyclic(E5)	0.0281697
medium(HlaPreSeq66) && cyclic(E5)	0.0244789
buried(HlaPreSeq67) && cyclic(E5)	-0.0046812
large(HlaPreSeq67) && cyclic(E5)	-0.0221542
cyclic(HlaPreSeq70) && cyclic(E5)	-0.0162906
aromatic(HlaPreSeq70) && cyclic(E5)	-0.0163379
positive(HlaPreSeq70) && cyclic(E5)	-0.0218984
charged(HlaPreSeq70) && cyclic(E5)	-0.021957
medium(HlaPreSeq74) && cyclic(E5)	-0.0185102
negative(HlaPreSeq74) && cyclic(E5)	-0.0185648
charged(HlaPreSeq74) && cyclic(E5)	-0.0157654
polar(HlaPreSeq74) && cyclic(E5)	-0.0160889
aliphatic(HlaPreSeq97) && cyclic(E5)	0.020476
charged(HlaPreSeq114) && cyclic(E5)	0.0143145
small(HlaPreSeq152) && cyclic(E5)	0.0123438
positive(HlaPreSeq156) && cyclic(E5)	-0.0110968
charged(HlaPreSeq156) && cyclic(E5)	-0.0184669
large(HlaPreSeq163) && cyclic(E5)	0.0255388
polar(HlaPreSeq163) && cyclic(E5)	-0.0192514
buried(HlaPreSeq45) && aromatic(E5)	0.0265644
hydrophobic(HlaPreSeq45) && aromatic(E5)	0.0196766
polar(HlaPreSeq62) && aromatic(E5)	-0.0194189

large(HlaPreSeq63) && aromatic(E	0.0232373
negative(HlaPreSeq63) && aromat	0.0178584
charged(HlaPreSeq63) && aromati	0.0179257
positive(HlaPreSeq65) && aromati	0.0256002
charged(HlaPreSeq65) && aromati	0.0255729
buried(HlaPreSeq67) && aromatic	-0.0028726
large(HlaPreSeq67) && aromatic(E	-0.0181732
positive(HlaPreSeq70) && aromati	-0.0068167
charged(HlaPreSeq70) && aromati	-0.0067617
medium(HlaPreSeq74) && aromat	-0.0167699
negative(HlaPreSeq74) && aromat	-0.0167278
charged(HlaPreSeq74) && aromati	-0.0083658
polar(HlaPreSeq74) && aromatic(E	-0.0084332
aliphatic(HlaPreSeq95) && aromat	-0.01297
charged(HlaPreSeq156) && aroma	-0.016682
large(HlaPreSeq163) && aromatic(	0.0176359
polar(HlaPreSeq163) && aromatici	-0.0147275
HlaPreSeq74=Asp && E6=Asp	-0.0182483
HlaPreSeq94=Thr && E6=Asp	-0.0128877
HlaPreSeq145=Arg && E6=Asp	-0.0218575
IA in Epitope	-0.049447
VQ in Epitope	-0.0125878
buried,small in Epitope[@1-2]	-0.0162568
hydrophobic,small in Epitope[@1-	-0.0378329
cyclic,negative in Epitope[@3-4]	0.0208364
buried,negative in Epitope[@3-4]	0.017587
buried,polar in Epitope[@3-4]	-0.0151764
hydrophobic,negative in Epitope[€	0.0214516
large,negative in Epitope[@3-4]	0.0304768
large,cyclic in Epitope[@4-5]	-0.0163866
charged,aromatic in Epitope[@4-5	0.0153189
charged,hydrophobic in Epitope[@	0.017929
polar,cyclic in Epitope[@4-5]	0.0110408
polar,aromatic in Epitope[@4-5]	0.0198617
polar,large in Epitope[@4-5]	-0.0194171
cyclic,polar in Epitope[@5-6]	-0.0133861
aromatic,medium in Epitope[@5-€	0.017738
hydrophobic,negative in Epitope[€	-0.0242258
hydrophobic,charged in Epitope[@	-0.0223608
negative,medium in Epitope[@6-7	-0.0125359
medium,large in Epitope[@7-8]	0.0143225
medium in Epitope[@9] && buried	-0.0316708
polar in Epitope[@9] && aliphatic	-0.0224216
polar in Epitope[@9] && buried in	-0.0160901
HlaPreSeq80=Thr && E1=Tyr	0.0232559
HlaPreSeq156=Arg && E1=Tyr	0.015783
HlaPreSeq171=Tyr && E1=Tyr	0.0319022

HlaPreSeq66=Asn && E2=Phe	0.0150721
HlaPreSeq70=His && E2=Phe	-0.0137508
HlaPreSeq95=Ile && E2=Phe	0.017546
HlaPreSeq114=Arg && E2=Phe	0.0160286
HlaPreSeq127=Asn && E2=Phe	0.0171768
HlaPreSeq67=Met && E3=Pro	0.0151611
HlaPreSeq77=Asn && E3=Pro	0.016115
HlaPreSeq79=Gly && E3=Pro	-0.017828
HlaPreSeq80=Thr && E3=Pro	-0.018856
HlaPreSeq81=Leu && E3=Pro	-0.0159369
HlaPreSeq82=Arg && E3=Pro	-0.0156912
HlaPreSeq83=Gly && E3=Pro	-0.0156987
HlaPreSeq99=Tyr && E3=Pro	-0.0100648
HlaPreSeq113=Tyr && E3=Pro	-0.0147521
HlaPreSeq156=Arg && E3=Pro	0.0115128
HlaPreSeq24=Ala && E5=Trp	0.0227395
HlaPreSeq30=Asp && E5=Trp	0.0246145
HlaPreSeq32=Gln && E5=Trp	0.0257644
HlaPreSeq35=Arg && E5=Trp	0.0254181
HlaPreSeq45=Met && E5=Trp	0.0262395
HlaPreSeq52=Ile && E5=Trp	0.0248911
HlaPreSeq69=Ala && E5=Trp	0.0214279
HlaPreSeq70=His && E5=Trp	0.015979
HlaPreSeq77=Asn && E5=Trp	0.0182464
HlaPreSeq12=Val && E7=Asn	0.0133265
HlaPreSeq24=Ala && E7=Asn	-0.0092495
HlaPreSeq63=Glu && E7=Asn	0.0196124
HlaPreSeq82=Arg && E7=Asn	-0.0078811
HlaPreSeq83=Gly && E7=Asn	-0.0079061
HlaPreSeq94=Thr && E7=Asn	0.0184466
HlaPreSeq103=Val && E7=Asn	0.0192246
HlaPreSeq113=Tyr && E7=Asn	0.0152506
G in NFlank	0.0386254
G in NFlank[1@]	0.0386342
small in NFlank	-0.014629
small in NFlank[1@]	-0.0152875
FP in Epitope	0.0236888
DW in Epitope	0.0182455
NY in Epitope	0.0142262
FP in Epitope[@2-3]	0.0296314
PD in Epitope[@3-4]	0.0235715
DW in Epitope[@4-5]	0.0284873
WQ in Epitope[@5-6]	0.0174678
QN in Epitope[@6-7]	0.0182797
NY in Epitope[@7-8]	0.0202874
YT in Epitope[@8-9]	0.0257823
cyclic,medium in Epitope[@2-3]	0.0222661

aromatic,hydrophobic in Epitope[①	-0.0062087
aromatic,medium in Epitope[②-3	0.034177
medium,negative in Epitope[③-4	-0.0160221
medium,charged in Epitope[③-4]	-0.0107182
medium,polar in Epitope[③-4]	-0.0108865
medium,buried in Epitope[④-5]	0.0175319
negative,buried in Epitope[④-5]	0.0334261
charged,buried in Epitope[④-5]	0.0351693
polar,buried in Epitope[④-5]	0.0180576
buried,large in Epitope[⑤-6]	-0.0117955
medium,hydrophobic in Epitope[⑥	0.0257036
polar,cyclic in Epitope[⑦-8]	0.014771
polar,aromatic in Epitope[⑦-8]	0.0166228
polar,large in Epitope[⑦-8]	-0.0200625
hydrophobic,medium in Epitope[⑧	0.0158923
hydrophobic,polar in Epitope[⑧-!	0.0275267
G in NFlank[1@] && Y in Epitope[①	0.016053
T in Epitope[⑨] && P in CFlank[①	0.0262409
small in NFlank[1@] && cyclic in E|	0.0132754
small in NFlank[1@] && aromatic i	0.0154196
small in NFlank[1@] && large in Ep	-0.0180472
HlaPreSeq43=Gln && E1=Arg	-0.0059156
HlaPreSeq65=Arg && E1=Arg	-0.0094275
HlaPreSeq66=Asn && E1=Arg	-0.0118385
HlaPreSeq74=Asp && E1=Arg	0.015142
HlaPreSeq95=Ile && E1=Arg	-0.0148892
buried(HlaPreSeq9) && positive(E:	0.024949
polar(HlaPreSeq11) && positive(E1	0.0234643
aliphatic(HlaPreSeq12) && positive	0.0228262
medium(HlaPreSeq12) && positive	0.0225594
hydrophobic(HlaPreSeq45) && po:	0.0145885
large(HlaPreSeq63) && positive(E1	0.0158067
negative(HlaPreSeq63) && positiv	0.0157887
charged(HlaPreSeq63) && positive	0.0157877
aliphatic(HlaPreSeq69) && positiv	0.018124
buried(HlaPreSeq69) && positive(l	0.0179032
hydrophobic(HlaPreSeq69) && po:	0.0176743
small(HlaPreSeq69) && positive(E:	0.0174306
large(HlaPreSeq70) && positive(E1	0.0189321
small(HlaPreSeq71) && positive(E:	0.0194052
polar(HlaPreSeq71) && positive(E1	-0.0146414
positive(HlaPreSeq82) && positive	-0.0089346
charged(HlaPreSeq82) && positive	-0.0093074
polar(HlaPreSeq82) && positive(E1	-0.009664
aliphatic(HlaPreSeq83) && positiv	-0.009993
hydrophobic(HlaPreSeq83) && po:	-0.0102841
small(HlaPreSeq83) && positive(E:	-0.0105288

large(HlaPreSeq97) && positive(E1	-0.0178867
cyclic(HlaPreSeq105) && positive(l	-0.013568
hydrophobic(HlaPreSeq105) && p	-0.0137348
medium(HlaPreSeq105) && positiv	-0.0138837
large(HlaPreSeq114) && positive(E	0.0127286
positive(HlaPreSeq114) && positiv	0.0109631
aliphatic(HlaPreSeq152) && positiv	-0.0177174
buried(HlaPreSeq152) && positive	-0.0179139
hydrophobic(HlaPreSeq152) && p	-0.0180582
small(HlaPreSeq152) && positive(f	-0.0171906
polar(HlaPreSeq156) && positive(f	-0.022906
large(HlaPreSeq161) && positive(E	-0.0157797
large(HlaPreSeq163) && positive(E	-0.0147707
positive(HlaPreSeq163) && positiv	-0.0123992
polar(HlaPreSeq163) && positive(f	0.0137908
small(HlaPreSeq167) && positive(f	-0.0138252
E2=Lys	-0.0171868
HlaPreSeq1=Gly && E2=Lys	-0.0176426
HlaPreSeq6=Arg && E2=Lys	-0.0171623
HlaPreSeq11=Ser && E2=Lys	-0.0211674
HlaPreSeq12=Val && E2=Lys	-0.0240198
HlaPreSeq14=Arg && E2=Lys	-0.0167412
HlaPreSeq16=Gly && E2=Lys	-0.0170829
HlaPreSeq17=Arg && E2=Lys	-0.0168755
HlaPreSeq21=Arg && E2=Lys	-0.016987
HlaPreSeq35=Arg && E2=Lys	-0.0207058
HlaPreSeq41=Ala && E2=Lys	-0.0122062
HlaPreSeq45=Met && E2=Lys	-0.0121307
HlaPreSeq46=Glu && E2=Lys	-0.0134392
HlaPreSeq49=Ala && E2=Lys	-0.0170439
HlaPreSeq52=Ile && E2=Lys	-0.0150508
HlaPreSeq56=Gly && E2=Lys	-0.0168036
HlaPreSeq69=Ala && E2=Lys	-0.0126194
HlaPreSeq74=Asp && E2=Lys	-0.0150895
HlaPreSeq80=Thr && E2=Lys	-0.0149582
HlaPreSeq81=Leu && E2=Lys	-0.0144742
HlaPreSeq91=Gly && E2=Lys	-0.0170267
HlaPreSeq94=Thr && E2=Lys	-0.0125835
HlaPreSeq95=Ile && E2=Lys	-0.0108943
HlaPreSeq107=Gly && E2=Lys	-0.0137278
HlaPreSeq113=Tyr && E2=Lys	-0.0202582
HlaPreSeq127=Asn && E2=Lys	-0.0122936
HlaPreSeq131=Arg && E2=Lys	-0.0142476
HlaPreSeq142=Ile && E2=Lys	-0.0134624
HlaPreSeq143=Thr && E2=Lys	-0.0160138
HlaPreSeq145=Arg && E2=Lys	-0.01298
HlaPreSeq147=Trp && E2=Lys	-0.0152922

HlaPreSeq149=Ala && E2=Lys	-0.0168679
HlaPreSeq161=Glu && E2=Lys	-0.0151869
HlaPreSeq171=Tyr && E2=Lys	-0.0149618
HlaPreSeq173=Glu && E2=Lys	-0.0168643
HlaPreSeq70=His && E4=Lys	0.0158522
HlaPreSeq74=Asp && E4=Lys	-0.010166
HlaPreSeq107=Gly && E4=Lys	-0.0123439
HlaPreSeq127=Asn && E4=Lys	-0.0168815
HlaPreSeq12=Val && E6=Thr	0.0214882
HlaPreSeq44=Lys && E6=Thr	0.0112067
HlaPreSeq67=Met && E6=Thr	0.0118189
HlaPreSeq73=Thr && E6=Thr	0.0107381
HlaPreSeq74=Asp && E6=Thr	0.0179896
HlaPreSeq94=Thr && E6=Thr	0.0117613
HlaPreSeq105=Pro && E6=Thr	0.0212947
HlaPreSeq107=Gly && E6=Thr	0.0140523
HlaPreSeq113=Tyr && E6=Thr	0.0144838
HlaPreSeq127=Asn && E6=Thr	0.0161971
HlaPreSeq142=Ile && E6=Thr	0.0153573
HlaPreSeq145=Arg && E6=Thr	0.0128946
HlaPreSeq147=Trp && E6=Thr	0.0103852
HlaPreSeq150=Val && E6=Thr	0.0112072
HlaPreSeq152=Ala && E6=Thr	0.0118957
HlaPreSeq156=Arg && E6=Thr	0.0187264
HlaPreSeq158=Val && E6=Thr	0.0112088
HlaPreSeq161=Glu && E6=Thr	0.0121967
HlaPreSeq163=Arg && E6=Thr	0.0124903
HlaPreSeq166=Asp && E6=Thr	0.0104358
HlaPreSeq167=Gly && E6=Thr	0.0104372
A in NFlank	-0.0380652
A in NFlank[1@]	-0.0380126
F in CFlank	-0.037327
F in CFlank[@1]	-0.0372964
RK in Epitope	-0.011291
KH in Epitope	0.0192143
KS in Epitope	-0.0206491
ST in Epitope	0.0111223
TV in Epitope	0.0312911
positive,aromatic in Epitope	0.0113657
large,positive in Epitope[@1-2]	-0.0102843
large,charged in Epitope[@1-2]	-0.0216039
large,polar in Epitope[@1-2]	-0.0358189
positive,large in Epitope[@1-2]	-0.0145789
positive,charged in Epitope[@1-2]	-0.0141529
charged,large in Epitope[@1-2]	-0.0191334
charged,charged in Epitope[@1-2]	-0.0116211
positive,cyclic in Epitope[@2-3]	0.0112082

positive,aromatic in Epitope[@2-3	0.0141009
charged,cyclic in Epitope[@2-3]	0.0173689
charged,aromatic in Epitope[@2-3	0.0230783
polar,cyclic in Epitope[@2-3]	0.0169335
polar,aromatic in Epitope[@2-3]	0.0148918
positive,positive in Epitope[@3-4]	0.0184199
charged,positive in Epitope[@3-4]	0.0198426
charged,charged in Epitope[@3-4]	-0.012229
large,small in Epitope[@4-5]	0.0106606
medium,positive in Epitope[@7-8]	-0.0124683
medium,charged in Epitope[@7-8]	-0.0241742
buried in NFlank[1@] && charged	0.0277556
hydrophobic in NFlank[1@] && po	0.0204942
small in NFlank[1@] && positive ir	-0.0335458
small in NFlank[1@] && charged ir	-0.0498384
small in NFlank[1@] && polar in E	-0.0182482
HlaPreSeq62=Gln && E1=Phe	-0.0151665
HlaPreSeq97=Ile && E1=Phe	-0.0132112
HlaPreSeq105=Pro && E1=Phe	-0.0191908
HlaPreSeq127=Asn && E1=Phe	-0.017965
HlaPreSeq9=Phe && E4=Arg	-0.0188681
HlaPreSeq45=Met && E4=Arg	-0.0170899
HlaPreSeq56=Gly && E4=Arg	-0.0146256
HlaPreSeq73=Thr && E4=Arg	-0.0149637
HlaPreSeq77=Asn && E4=Arg	0.0201662
HlaPreSeq79=Gly && E4=Arg	-0.01863
HlaPreSeq81=Leu && E4=Arg	-0.016805
HlaPreSeq82=Arg && E4=Arg	-0.0184104
HlaPreSeq83=Gly && E4=Arg	-0.0184462
HlaPreSeq94=Thr && E4=Arg	-0.0140225
HlaPreSeq95=Ile && E4=Arg	0.0127646
HlaPreSeq99=Tyr && E4=Arg	-0.0156002
HlaPreSeq103=Val && E4=Arg	-0.0161654
HlaPreSeq109=Phe && E4=Arg	-0.0170848
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HlaPreSeq151=His && E4=Arg	-0.0217146
HlaPreSeq70=His && E5=Pro	-0.0184901
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HlaPreSeq95=Ile && E8=Pro	0.012993
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HlaPreSeq105=Pro && E8=Pro	-0.0190189
HlaPreSeq161=Glu && E8=Pro	-0.0226508
S in NFlank	-0.0163021
S in NFlank[1@]	-0.0164407
GR in Epitope	-0.0147719
PA in Epitope	0.0112828

EP in Epitope[@7-8]	0.00812504
aromatic,small in Epitope	-0.0061805
cyclic,small in Epitope[@1-2]	-0.0145035
aromatic,small in Epitope[@1-2]	-0.011203
positive,cyclic in Epitope[@4-5]	0.0150878
cyclic,hydrophobic in Epitope[@5-	0.00757829
large,cyclic in Epitope[@7-8]	-0.0282485
negative,cyclic in Epitope[@7-8]	-0.0184665
cyclic,aliphatic in Epitope[@8-9]	-0.0333855
small in NFlank[1@] && buried in I	-0.0151679
polar in NFlank[1@] && cyclic in E|	-0.0357481
polar in NFlank[1@] && aromatic i	-0.0252301
aliphatic in Epitope[@9] && mediu	-0.031091
small in Epitope[@9] && medium	-0.0182728
HlaPreSeq9=Phe && E3=Thr	-0.0198212
HlaPreSeq46=Glu && E3=Thr	-0.0217359
HlaPreSeq82=Arg && E3=Thr	-0.0176638
HlaPreSeq83=Gly && E3=Thr	-0.0176692
HlaPreSeq99=Tyr && E3=Thr	-0.0184895
HlaPreSeq103=Val && E3=Thr	-0.0184135
HlaPreSeq24=Ala && E4=Cys	0.0249472
HlaPreSeq32=Gln && E4=Cys	0.0262079
HlaPreSeq41=Ala && E4=Cys	0.0256403
HlaPreSeq94=Thr && E6=Val	-0.0139778
HlaPreSeq95=Ile && E6=Val	0.0111812
polar(HlaPreSeq11) && aliphatic(E	0.00781911
negative(HlaPreSeq63) && aliphatic	0.0124401
charged(HlaPreSeq63) && aliphatic	0.0124581
medium(HlaPreSeq73) && aliphatic	-0.0166153
polar(HlaPreSeq73) && aliphatic(E	-0.0151622
small(HlaPreSeq76) && aliphatic(E	-0.0191185
medium(HlaPreSeq94) && aliphatic	0.0155445
polar(HlaPreSeq94) && aliphatic(E	0.0149087
aliphatic(HlaPreSeq95) && aliphatic	-0.0189788
cyclic(HlaPreSeq105) && aliphatic(	-0.0246863
hydrophobic(HlaPreSeq105) && al	-0.0240039
medium(HlaPreSeq105) && aliphatic	-0.0231235
positive(HlaPreSeq156) && aliphatic	-0.0123999
charged(HlaPreSeq156) && aliphatic	-0.0130336
polar(HlaPreSeq156) && aliphatic(	-0.0207968
HlaPreSeq65=Arg && E9=Met	-0.0091754
HlaPreSeq66=Asn && E9=Met	-0.0097187
HlaPreSeq171=Tyr && E9=Met	0.0186958
F in NFlank	-0.0385962
F in NFlank[1@]	-0.0385605
CG in Epitope	0.0169467
GV in Epitope	0.0193943

VE in Epitope	-0.0176306
EQ in Epitope	-0.012687
FT in Epitope[@2-3]	0.00972959
CG in Epitope[@4-5]	0.0157329
GV in Epitope[@5-6]	0.0174434
polar,aliphatic in Epitope[@4-5]	-0.01434
hydrophobic,aliphatic in Epitope[ⓒ	0.0351909
buried,charged in Epitope[@6-7]	0.039308
large,large in Epitope[@7-8]	-0.0349153
negative,large in Epitope[@7-8]	-0.0096592
charged,large in Epitope[@7-8]	-0.0461136
large in Epitope[@9] && aromatic	0.0394303
E2=Asn	-0.0188108
HlaPreSeq1=Gly && E2=Asn	-0.0168966
HlaPreSeq6=Arg && E2=Asn	-0.0186984
HlaPreSeq11=Ser && E2=Asn	-0.01444
HlaPreSeq12=Val && E2=Asn	-0.0153515
HlaPreSeq14=Arg && E2=Asn	-0.0167218
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HlaPreSeq21=Arg && E2=Asn	-0.0172107
HlaPreSeq24=Ala && E2=Asn	-0.0265632
HlaPreSeq30=Asp && E2=Asn	-0.0205724
HlaPreSeq32=Gln && E2=Asn	-0.017963
HlaPreSeq35=Arg && E2=Asn	-0.0184802
HlaPreSeq41=Ala && E2=Asn	-0.0189562
HlaPreSeq43=Gln && E2=Asn	-0.0124013
HlaPreSeq45=Met && E2=Asn	-0.0171309
HlaPreSeq49=Ala && E2=Asn	-0.0166543
HlaPreSeq56=Gly && E2=Asn	-0.0178555
HlaPreSeq62=Gln && E2=Asn	-0.0134728
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HlaPreSeq71=Ser && E2=Asn	-0.0127942
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HlaPreSeq90=Asp && E2=Asn	-0.0133464
HlaPreSeq91=Gly && E2=Asn	-0.0175821
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HlaPreSeq105=Pro && E2=Asn	-0.0174739
HlaPreSeq107=Gly && E2=Asn	-0.0179799
HlaPreSeq109=Phe && E2=Asn	-0.0125505
HlaPreSeq113=Tyr && E2=Asn	-0.0157358
HlaPreSeq114=Arg && E2=Asn	-0.0113834
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HlaPreSeq142=Ile && E2=Asn	-0.0167105
HlaPreSeq143=Thr && E2=Asn	-0.0173673
HlaPreSeq144=Lys && E2=Asn	-0.0155021
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HlaPreSeq147=Trp && E2=Asn	-0.0168878
HlaPreSeq151=His && E2=Asn	-0.0179688
HlaPreSeq163=Arg && E2=Asn	-0.0116295
HlaPreSeq171=Tyr && E2=Asn	-0.0214583
HlaPreSeq173=Glu && E2=Asn	-0.0163173
HlaPreSeq9=Phe && E4=Gln	-0.0060179
HlaPreSeq43=Gln && E4=Gln	-0.0079887
HlaPreSeq63=Glu && E4=Gln	-0.005168
HlaPreSeq105=Pro && E4=Gln	0.021678
HlaPreSeq9=Phe && E7=Asp	-0.014479
HlaPreSeq77=Asn && E7=Asp	0.0165449
HlaPreSeq103=Val && E7=Asp	-0.0150709
HlaPreSeq116=Asp && E7=Asp	-0.0133295
HlaPreSeq24=Ala && E8=Trp	0.0222116
HlaPreSeq30=Asp && E8=Trp	0.0248382
HlaPreSeq43=Gln && E8=Trp	0.0196913
HlaPreSeq45=Met && E8=Trp	0.0221206
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HlaPreSeq80=Thr && E8=Trp	0.021545
HlaPreSeq113=Tyr && E8=Trp	0.0200024
HlaPreSeq171=Tyr && E8=Trp	0.0241555
HlaPreSeq63=Glu && E9=Glu	-0.0159877
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SN in Epitope	0.0116361
YQ in Epitope	0.0111824
CS in Epitope	-0.0175169
polar,medium in Epitope[@1-2]	-0.0285741
medium,cyclic in Epitope[@2-3]	-0.0240227
medium,aromatic in Epitope[@2-3	-0.0236539
polar,negative in Epitope[@6-7]	0.0124498
negative,aromatic in Epitope[@7-8]	-0.0235285
aromatic,charged in Epitope[@8-9	-0.015198
large,negative in Epitope[@8-9]	-0.0181059
large,charged in Epitope[@8-9]	-0.0259602
negative in Epitope[@9] && polar	-0.0089448
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HlaPreSeq11=Ser && E2=Arg	0.0210284
HlaPreSeq12=Val && E2=Arg	0.0431737
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HlaPreSeq16=Gly && E2=Arg	0.0178892
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HlaPreSeq46=Glu && E2=Arg	0.0227538
HlaPreSeq49=Ala && E2=Arg	0.0215228
HlaPreSeq56=Gly && E2=Arg	0.0210666
HlaPreSeq63=Glu && E2=Arg	0.0301155
HlaPreSeq69=Ala && E2=Arg	0.0232084
HlaPreSeq74=Asp && E2=Arg	0.0491454
HlaPreSeq80=Thr && E2=Arg	0.022791
HlaPreSeq81=Leu && E2=Arg	0.0257111
HlaPreSeq90=Asp && E2=Arg	0.016724
HlaPreSeq91=Gly && E2=Arg	0.0199405
HlaPreSeq94=Thr && E2=Arg	0.0248324
HlaPreSeq99=Tyr && E2=Arg	0.0155692
HlaPreSeq103=Val && E2=Arg	0.0175038
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HlaPreSeq107=Gly && E2=Arg	0.023486
HlaPreSeq113=Tyr && E2=Arg	0.0462987
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HlaPreSeq142=Ile && E3=Phe	0.00286648
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HlaPreSeq80=Thr && E8=Ile	-0.022218
HlaPreSeq109=Phe && E8=Ile	-0.0180524
HlaPreSeq113=Tyr && E8=Ile	-0.0222422
HlaPreSeq138=Met && E8=Ile	-0.0183723
HlaPreSeq63=Glu && E9=Ser	0.0127392
FM in Epitope	-0.0106021
DE in Epitope	-0.0205583
cyclic,polar in Epitope[@1-2]	0.0107654
aromatic,charged in Epitope[@1-2]	0.0119536
aromatic,polar in Epitope[@1-2]	0.0161323
positive,hydrophobic in Epitope[@	0.00999934
charged,hydrophobic in Epitope[@	0.0202865
polar,buried in Epitope[@2-3]	-0.0178631
cyclic,buried in Epitope[@3-4]	-0.0294884
cyclic,hydrophobic in Epitope[@3-	-0.0382002
aromatic,buried in Epitope[@3-4]	-0.0213487
aromatic,hydrophobic in Epitope[-0.0227962
buried,medium in Epitope[@4-5]	-0.0169744
buried,negative in Epitope[@4-5]	0.0144485
medium,negative in Epitope[@5-6]	-0.0302365
medium,charged in Epitope[@5-6]	-0.0262027
negative,large in Epitope[@5-6]	0.0332491
negative,negative in Epitope[@5-6]	0.0107918
negative,charged in Epitope[@5-6]	0.021997
large,charged in Epitope[@6-7]	-0.012113
charged,charged in Epitope[@6-7]	-0.0225961
aliphatic,polar in Epitope[@8-9]	0.0248005
positive in NFlank[1@] && cyclic ir	-0.0173299
positive in NFlank[1@] && arom	-0.0141707
charged in NFlank[1@] && cyclic ir	-0.0191784
charged in NFlank[1@] && arom	-0.0094015
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HlaPreSeq163=Arg && E9=Tyr	0.0140101
HlaPreSeq166=Asp && E9=Tyr	0.0132811
HlaPreSeq167=Gly && E9=Tyr	0.0132889
HlaPreSeq171=Tyr && E9=Tyr	0.0141586
HlaPreSeq173=Glu && E9=Tyr	0.0174839
KV in Epitope	-0.0131513
VV in Epitope	-0.0349736
RL in Epitope[@1-2]	0.0131483
LP in Epitope[@2-3]	-0.0213081
GS in Epitope[@4-5]	0.00948489
positive,aliphatic in Epitope[@1-2]	0.0254238
charged,buried in Epitope[@1-2]	0.0172044
cyclic,aliphatic in Epitope[@3-4]	-0.0221035
medium,small in Epitope[@3-4]	-0.0151079
small,positive in Epitope[@5-6]	-0.0128812
aliphatic,aliphatic in Epitope[@7-8]	0.0217514
medium,aliphatic in Epitope[@7-8]	-0.0070232
aliphatic,cyclic in Epitope[@8-9]	-0.0071535
aliphatic,large in Epitope[@8-9]	-0.0106969
buried,aromatic in Epitope[@8-9]	0.0147682
cyclic in Epitope[@9] && aliphatic	-0.028945
aromatic in Epitope[@9] && aliphatic	-0.0333712
large in Epitope[@9] && buried in	0.0223039
HlaPreSeq9=Phe && E4=Thr	-0.017387
HlaPreSeq24=Ala && E4=Thr	-0.016942
HlaPreSeq30=Asp && E4=Thr	-0.0217254
HlaPreSeq76=Ala && E4=Thr	0.0101751
HlaPreSeq131=Arg && E4=Thr	-0.0153078
HlaPreSeq144=Lys && E4=Thr	-0.0142171
HlaPreSeq151=His && E4=Thr	-0.0132683
HlaPreSeq171=Tyr && E4=Thr	-0.0168629
HlaPreSeq173=Glu && E4=Thr	-0.0185497

E6=Asn	-0.015889
HlaPreSeq1=Gly && E6=Asn	-0.014655
HlaPreSeq6=Arg && E6=Asn	-0.0159082
HlaPreSeq11=Ser && E6=Asn	-0.0140705
HlaPreSeq14=Arg && E6=Asn	-0.0149798
HlaPreSeq16=Gly && E6=Asn	-0.0148589
HlaPreSeq17=Arg && E6=Asn	-0.0168037
HlaPreSeq24=Ala && E6=Asn	-0.0141755
HlaPreSeq35=Arg && E6=Asn	-0.0162645
HlaPreSeq49=Ala && E6=Asn	-0.0156092
HlaPreSeq52=Ile && E6=Asn	-0.0227028
HlaPreSeq56=Gly && E6=Asn	-0.016861
HlaPreSeq62=Gln && E6=Asn	-0.011413
HlaPreSeq63=Glu && E6=Asn	-0.016184
HlaPreSeq66=Asn && E6=Asn	-0.017916
HlaPreSeq69=Ala && E6=Asn	-0.0183459
HlaPreSeq73=Thr && E6=Asn	-0.0240856
HlaPreSeq80=Thr && E6=Asn	-0.0177243
HlaPreSeq91=Gly && E6=Asn	-0.0157603
HlaPreSeq95=Ile && E6=Asn	-0.0168845
HlaPreSeq103=Val && E6=Asn	-0.0247905
HlaPreSeq107=Gly && E6=Asn	-0.0217708
HlaPreSeq114=Arg && E6=Asn	-0.0119931
HlaPreSeq116=Asp && E6=Asn	-0.0217634
HlaPreSeq127=Asn && E6=Asn	-0.0211687
HlaPreSeq142=Ile && E6=Asn	-0.0213366
HlaPreSeq143=Thr && E6=Asn	-0.0182379
HlaPreSeq145=Arg && E6=Asn	-0.0206926
HlaPreSeq147=Trp && E6=Asn	-0.02182
HlaPreSeq149=Ala && E6=Asn	-0.0175635
HlaPreSeq173=Glu && E6=Asn	-0.0153143
HlaPreSeq77=Asn && E7=Thr	-0.0244045
HlaPreSeq81=Leu && E7=Thr	0.00584862
HlaPreSeq82=Arg && E7=Thr	0.0103717
HlaPreSeq83=Gly && E7=Thr	0.0103178
HlaPreSeq173=Glu && E7=Thr	-0.0191512
GT in Epitope	-0.0329152
TL in Epitope	0.0343763
NT in Epitope	0.0249316
NT in Epitope[@6-7]	0.0164721
aliphatic,polar in Epitope[@3-4]	-0.0347543
negative in NFlank[1@] && hydrox	-0.0082613
HlaPreSeq12=Val && E5=Ile	-0.0219303
HlaPreSeq24=Ala && E5=Ile	-0.0176855
HlaPreSeq45=Met && E5=Ile	-0.0201766
HlaPreSeq77=Asn && E5=Ile	-0.0209694
HlaPreSeq90=Asp && E5=Ile	-0.0127836

HlaPreSeq94=Thr && E5=Ile	-0.0148535
HlaPreSeq113=Tyr && E5=Ile	-0.0146437
HlaPreSeq131=Arg && E5=Ile	-0.0151413
HlaPreSeq161=Glu && E5=Ile	-0.0184816
HlaPreSeq14=Arg && E9=Val	0.0149618
HlaPreSeq16=Gly && E9=Val	0.0140761
HlaPreSeq17=Arg && E9=Val	0.0157816
HlaPreSeq21=Arg && E9=Val	0.018815
HlaPreSeq30=Asp && E9=Val	0.0225631
HlaPreSeq32=Gln && E9=Val	0.0172016
HlaPreSeq35=Arg && E9=Val	0.0165957
HlaPreSeq41=Ala && E9=Val	0.0144388
HlaPreSeq43=Gln && E9=Val	0.0207346
HlaPreSeq45=Met && E9=Val	0.0239304
HlaPreSeq46=Glu && E9=Val	0.0191071
HlaPreSeq49=Ala && E9=Val	0.0229729
HlaPreSeq52=Ile && E9=Val	0.0252948
HlaPreSeq56=Gly && E9=Val	0.0225548
HlaPreSeq65=Arg && E9=Val	0.0291554
HlaPreSeq69=Ala && E9=Val	0.0165063
HlaPreSeq71=Ser && E9=Val	0.0227337
HlaPreSeq73=Thr && E9=Val	0.0246059
HlaPreSeq74=Asp && E9=Val	0.00688055
HlaPreSeq77=Asn && E9=Val	-0.0138685
HlaPreSeq79=Gly && E9=Val	0.0309418
HlaPreSeq80=Thr && E9=Val	0.0328861
HlaPreSeq81=Leu && E9=Val	0.0266385
HlaPreSeq82=Arg && E9=Val	0.0269832
HlaPreSeq83=Gly && E9=Val	0.0261736
HlaPreSeq94=Thr && E9=Val	0.0269371
HlaPreSeq99=Tyr && E9=Val	0.026903
HlaPreSeq103=Val && E9=Val	0.0178455
HlaPreSeq113=Tyr && E9=Val	0.0171337
HlaPreSeq131=Arg && E9=Val	0.0177931
HlaPreSeq142=Ile && E9=Val	-0.0132054
HlaPreSeq145=Arg && E9=Val	-0.0174412
A in CFlank	-0.0271122
A in CFlank[@1]	-0.0271362
MP in Epitope	-0.0072334
small,buried in Epitope[@1-2]	-0.0100175
large,small in Epitope[@5-6]	-0.0369992
HlaPreSeq9=Phe && E1=Lys	0.0185913
HlaPreSeq11=Ser && E1=Lys	0.0136844
HlaPreSeq12=Val && E1=Lys	0.0133191
HlaPreSeq65=Arg && E1=Lys	0.0180317
HlaPreSeq161=Glu && E1=Lys	-0.0147443
HlaPreSeq24=Ala && E2=Glu	-0.0137935

HlaPreSeq30=Asp && E2=Glu	-0.0081901
HlaPreSeq32=Gln && E2=Glu	-0.0188404
HlaPreSeq41=Ala && E2=Glu	-0.0229292
HlaPreSeq52=Ile && E2=Glu	0.0189249
HlaPreSeq62=Gln && E2=Glu	-0.009262
HlaPreSeq66=Asn && E2=Glu	-0.0082467
HlaPreSeq69=Ala && E2=Glu	-0.0096051
HlaPreSeq73=Thr && E2=Glu	0.0167217
HlaPreSeq74=Asp && E2=Glu	-0.0263372
HlaPreSeq82=Arg && E2=Glu	0.0173211
HlaPreSeq83=Gly && E2=Glu	0.0171582
HlaPreSeq90=Asp && E2=Glu	-0.0118328
HlaPreSeq97=Ile && E2=Glu	-0.0090852
HlaPreSeq103=Val && E2=Glu	0.0176107
HlaPreSeq149=Ala && E2=Glu	0.00797691
HlaPreSeq161=Glu && E2=Glu	0.0117054
HlaPreSeq173=Glu && E2=Glu	0.00757093
hydrophobic(HlaPreSeq9) && nega	-0.0265838
aliphatic(HlaPreSeq24) && negativ	-0.0238417
buried(HlaPreSeq24) && negative(	-0.0238824
hydrophobic(HlaPreSeq24) && neξ	-0.0239224
small(HlaPreSeq24) && negative(E	-0.0293604
medium(HlaPreSeq30) && negativ	-0.0211807
negative(HlaPreSeq30) && negativ	-0.0212567
charged(HlaPreSeq30) && negativ	-0.0212956
polar(HlaPreSeq30) && negative(E	-0.021299
polar(HlaPreSeq32) && negative(E	-0.0321354
aliphatic(HlaPreSeq41) && negativ	-0.0398036
buried(HlaPreSeq41) && negative(	-0.0398667
hydrophobic(HlaPreSeq41) && neξ	-0.0399035
small(HlaPreSeq41) && negative(E	-0.0399148
hydrophobic(HlaPreSeq45) && neξ	-0.0154383
large(HlaPreSeq63) && negative(E	0.00710752
medium(HlaPreSeq66) && negativ	-0.0104964
polar(HlaPreSeq66) && negative(E	-0.0160703
buried(HlaPreSeq67) && negative(	-0.0407544
hydrophobic(HlaPreSeq67) && neξ	-0.0323302
large(HlaPreSeq67) && negative(E	-0.0304496
aliphatic(HlaPreSeq69) && negativ	-0.0208738
buried(HlaPreSeq69) && negative(	-0.0208704
hydrophobic(HlaPreSeq69) && neξ	-0.0208666
small(HlaPreSeq69) && negative(E	-0.0208628
large(HlaPreSeq70) && negative(E	-0.0239842
small(HlaPreSeq71) && negative(E	-0.0290752
polar(HlaPreSeq71) && negative(E	0.0201416
medium(HlaPreSeq74) && negativ	-0.0308248
negative(HlaPreSeq74) && negativ	-0.0308056

charged(HlaPreSeq74) && negativ	-0.0265415
polar(HlaPreSeq74) && negative(E	-0.0265234
medium(HlaPreSeq80) && negativ	0.0134741
polar(HlaPreSeq80) && negative(E	0.0104897
medium(HlaPreSeq90) && negativ	-0.0128115
negative(HlaPreSeq90) && negativ	-0.0128073
charged(HlaPreSeq90) && negativ	-0.0128031
polar(HlaPreSeq90) && negative(E	-0.0127989
aliphatic(HlaPreSeq97) && negativ	-0.0124508
buried(HlaPreSeq97) && negative(	-0.0143408
hydrophobic(HlaPreSeq97) && neξ	-0.0143327
large(HlaPreSeq97) && negative(E	0.0115943
medium(HlaPreSeq103) && negati	0.00743611
large(HlaPreSeq114) && negative(	-0.0118392
aliphatic(HlaPreSeq152) && negat	0.0167775
buried(HlaPreSeq152) && negativε	0.0171355
hydrophobic(HlaPreSeq152) && nε	0.0175156
large(HlaPreSeq156) && negative(	-0.014977
charged(HlaPreSeq156) && negati	0.00663605
hydrophobic(HlaPreSeq167) && nε	-0.0249386
small(HlaPreSeq167) && negative(	0.0189789
HlaPreSeq131=Arg && E5=His	-0.0193882
HlaPreSeq12=Val && E6=Leu	0.0167901
HlaPreSeq24=Ala && E6=Leu	-0.0182516
HlaPreSeq52=Ile && E6=Leu	-0.013449
HlaPreSeq63=Glu && E6=Leu	0.0237644
HlaPreSeq73=Thr && E6=Leu	-0.0222713
HlaPreSeq90=Asp && E6=Leu	0.0128276
HlaPreSeq94=Thr && E6=Leu	0.0125351
HlaPreSeq95=Ile && E6=Leu	-0.0235413
HlaPreSeq131=Arg && E6=Leu	0.015389
HlaPreSeq152=Ala && E6=Leu	0.00778256
cyclic(HlaPreSeq9) && negative(E8	-0.0160716
aromatic(HlaPreSeq9) && negativε	-0.0160722
hydrophobic(HlaPreSeq9) && negα	-0.0212702
large(HlaPreSeq9) && negative(E8	-0.0161616
positive(HlaPreSeq14) && negativε	-0.0127849
charged(HlaPreSeq14) && negativ	-0.0130854
polar(HlaPreSeq14) && negative(E	-0.0134062
aliphatic(HlaPreSeq24) && negativ	-0.0169094
buried(HlaPreSeq24) && negative(	-0.0170711
hydrophobic(HlaPreSeq24) && neξ	-0.0172395
medium(HlaPreSeq30) && negativ	-0.0138303
negative(HlaPreSeq30) && negativ	-0.0141134
charged(HlaPreSeq30) && negativ	-0.014366
polar(HlaPreSeq30) && negative(E	-0.0145794
polar(HlaPreSeq62) && negative(E	0.00878097

aliphatic(HlaPreSeq69) && negativ	-0.0222971
buried(HlaPreSeq69) && negative(	-0.0224133
hydrophobic(HlaPreSeq69) && neξ	-0.0225227
small(HlaPreSeq69) && negative(E	-0.0226231
cyclic(HlaPreSeq70) && negative(E	-0.0189151
aromatic(HlaPreSeq70) && negativ	-0.0189675
positive(HlaPreSeq70) && negativ	-0.0183581
charged(HlaPreSeq70) && negativ	-0.018403
buried(HlaPreSeq97) && negative(	0.00496187
hydrophobic(HlaPreSeq97) && neξ	0.00495268
aliphatic(HlaPreSeq142) && negat	0.0021871
buried(HlaPreSeq142) && negativ	0.00219015
hydrophobic(HlaPreSeq142) && nξ	0.00221708
large(HlaPreSeq142) && negative(	0.00226762
large(HlaPreSeq156) && negative(	-0.0246231
polar(HlaPreSeq156) && negative(	0.0144555
HL in Epitope	-0.0298199
EL in Epitope[@8-9]	0.0168967
negative,charged in Epitope[@2-3]	-0.0134588
cyclic,aliphatic in Epitope[@5-6]	0.026802
cyclic,buried in Epitope[@5-6]	-0.0172442
aromatic,aliphatic in Epitope[@5-6]	0.011919
large,aliphatic in Epitope[@5-6]	-0.0210748
positive,buried in Epitope[@5-6]	-0.015864
charged,buried in Epitope[@5-6]	0.0234047
polar,aliphatic in Epitope[@5-6]	-0.04127
aliphatic,positive in Epitope[@6-7]	0.0104453
buried,positive in Epitope[@6-7]	0.0390805
hydrophobic,positive in Epitope[@6-7]	0.0208431
large,charged in Epitope[@7-8]	0.00844121
positive,large in Epitope[@7-8]	-0.0370851
positive,negative in Epitope[@7-8]	0.01264
polar,negative in Epitope[@7-8]	-0.0180347
negative,hydrophobic in Epitope[@7-8]	0.00167967
negative,large in Epitope[@8-9]	0.0129902
L in Epitope[@9] && l in CFlank[@9]	-0.0310758
large in NFlank[1@] && charged in NFlank[1@]	0.0353732
positive in NFlank[1@] && positive in NFlank[1@]	-0.0140441
positive in NFlank[1@] && charged in NFlank[1@]	-0.0165554
charged in NFlank[1@] && positive in NFlank[1@]	-0.0162176
charged in NFlank[1@] && charged in NFlank[1@]	-0.0129123
polar in NFlank[1@] && positive in NFlank[1@]	-0.0221704
polar in NFlank[1@] && charged in NFlank[1@]	-0.0349468
HlaPreSeq62=Gln && E1=Gly	-0.0123565
HlaPreSeq114=Arg && E1=Gly	-0.0128853
HlaPreSeq161=Glu && E1=Gly	0.00978519
HlaPreSeq9=Phe && E3=Glu	0.0121065

HlaPreSeq12=Val && E3=Glu	0.00591761
HlaPreSeq30=Asp && E3=Glu	-0.0196183
HlaPreSeq44=Lys && E3=Glu	0.0137689
HlaPreSeq69=Ala && E3=Glu	-0.0154354
HlaPreSeq70=His && E3=Glu	0.0111922
HlaPreSeq76=Ala && E3=Glu	0.0129683
HlaPreSeq77=Asn && E3=Glu	0.00289996
HlaPreSeq95=Ile && E3=Glu	-0.0157113
HlaPreSeq150=Val && E3=Glu	0.0137717
HlaPreSeq156=Arg && E3=Glu	0.0103902
HlaPreSeq158=Val && E3=Glu	0.0137719
HlaPreSeq171=Tyr && E3=Glu	-0.0272513
HlaPreSeq9=Phe && E7=Ser	0.016625
HlaPreSeq45=Met && E7=Ser	0.0170474
HlaPreSeq65=Arg && E7=Ser	0.0161384
HlaPreSeq74=Asp && E7=Ser	-0.0153206
HlaPreSeq79=Gly && E7=Ser	0.016424
HlaPreSeq107=Gly && E7=Ser	-0.0195695
HlaPreSeq142=Ile && E7=Ser	-0.019275
HlaPreSeq144=Lys && E7=Ser	0.0147798
HlaPreSeq145=Arg && E7=Ser	-0.0180493
HlaPreSeq11=Ser && E8=Leu	0.021542
HlaPreSeq12=Val && E8=Leu	0.0162531
HlaPreSeq43=Gln && E8=Leu	0.020175
HlaPreSeq46=Glu && E8=Leu	0.0177299
HlaPreSeq62=Gln && E8=Leu	0.0133162
HlaPreSeq74=Asp && E8=Leu	0.0169214
HlaPreSeq95=Ile && E8=Leu	0.015468
HlaPreSeq103=Val && E8=Leu	0.0245019
HlaPreSeq107=Gly && E8=Leu	0.0172527
HlaPreSeq113=Tyr && E8=Leu	0.0219689
HlaPreSeq116=Asp && E8=Leu	0.0273605
HlaPreSeq142=Ile && E8=Leu	0.0167961
HlaPreSeq145=Arg && E8=Leu	0.0175104
HlaPreSeq171=Tyr && E8=Leu	-0.0037583
T in NFlank	-0.0126019
T in NFlank[1@]	-0.012741
N in CFlank	-0.0183904
N in CFlank[@1]	-0.0184561
LR in Epitope	0.0107963
RS in Epitope	-0.0115812
SL in Epitope	-0.0347843
LY in Epitope	-0.045026
EE in Epitope[@3-4]	0.0133759
EL in Epitope[@4-5]	-0.010573
SL in Epitope[@7-8]	0.0136076
polar,negative in Epitope[@2-3]	0.0142028

negative,negative in Epitope[@3-4	-0.0096291
negative,charged in Epitope[@3-4	-0.0079187
charged,negative in Epitope[@3-4	-0.032073
aliphatic,positive in Epitope[@5-6]	0.0158312
buried,charged in Epitope[@5-6]	-0.0264175
small,buried in Epitope[@7-8]	0.0273869
HlaPreSeq11=Ser && E6=His	0.0261718
Y in NFlank	0.0213819
Y in NFlank[1@]	0.0213383
LE in Epitope	0.0293277
YG in Epitope	0.0115581
DA in Epitope	-0.0162712
negative,aromatic in Epitope[@2-3	0.00856882
aromatic,aliphatic in Epitope[@3-4	-0.0149056
aromatic,small in Epitope[@3-4]	0.0153457
positive,large in Epitope[@6-7]	-0.0081813
positive,charged in Epitope[@6-7]	-0.0141456
HlaPreSeq9=Phe && E2=Met	0.034465
HlaPreSeq11=Ser && E2=Met	0.0182635
HlaPreSeq12=Val && E2=Met	0.013935
HlaPreSeq24=Ala && E2=Met	0.0186624
HlaPreSeq43=Gln && E2=Met	0.0235038
HlaPreSeq45=Met && E2=Met	0.022955
HlaPreSeq52=Ile && E2=Met	0.0119985
HlaPreSeq63=Glu && E2=Met	0.0189051
HlaPreSeq65=Arg && E2=Met	0.0258157
HlaPreSeq69=Ala && E2=Met	0.0193526
HlaPreSeq70=His && E2=Met	0.0335389
HlaPreSeq71=Ser && E2=Met	0.0232668
HlaPreSeq73=Thr && E2=Met	0.0120575
HlaPreSeq74=Asp && E2=Met	-0.0187837
HlaPreSeq79=Gly && E2=Met	0.0276495
HlaPreSeq80=Thr && E2=Met	0.0264338
HlaPreSeq81=Leu && E2=Met	0.015173
HlaPreSeq82=Arg && E2=Met	0.0161473
HlaPreSeq83=Gly && E2=Met	0.0161771
HlaPreSeq94=Thr && E2=Met	0.0122764
HlaPreSeq95=Ile && E2=Met	-0.0102557
HlaPreSeq99=Tyr && E2=Met	0.0123922
HlaPreSeq103=Val && E2=Met	0.0149306
HlaPreSeq105=Pro && E2=Met	-0.0168805
HlaPreSeq107=Gly && E2=Met	-0.0241787
HlaPreSeq109=Phe && E2=Met	0.0251755
HlaPreSeq113=Tyr && E2=Met	0.0177631
HlaPreSeq127=Asn && E2=Met	-0.020813
HlaPreSeq131=Arg && E2=Met	0.0162128
HlaPreSeq138=Met && E2=Met	0.0237198

HlaPreSeq142=Ile && E2=Met	-0.0235051
HlaPreSeq144=Lys && E2=Met	0.0300857
HlaPreSeq145=Arg && E2=Met	-0.0235053
HlaPreSeq147=Trp && E2=Met	0.0113329
HlaPreSeq151=His && E2=Met	0.0329408
HlaPreSeq171=Tyr && E2=Met	0.0120371
IM in Epitope	0.0159951
MG in Epitope	-0.0137517
PN in Epitope	-0.0091541
NE in Epitope	-0.0151292
negative,medium in Epitope[@8-9	-0.0195522
negative,polar in Epitope[@8-9]	-0.0150292
charged,medium in Epitope[@8-9]	-0.0358908
charged,polar in Epitope[@8-9]	-0.0141093
HlaPreSeq69=Ala && E5=Gln	0.028865
HlaPreSeq12=Val && E7=Pro	-0.0074675
HlaPreSeq66=Asn && E7=Pro	0.0120856
HlaPreSeq94=Thr && E7=Pro	-0.0101111
HlaPreSeq95=Ile && E7=Pro	0.0194288
HlaPreSeq12=Val && E8=Gly	0.0223066
HlaPreSeq65=Arg && E8=Gly	0.0232562
HlaPreSeq69=Ala && E8=Gly	0.0283799
HlaPreSeq80=Thr && E8=Gly	0.0246143
small(E8)	-0.0074922
aliphatic(HlaPreSeq1) && small(E8	-0.0145219
hydrophobic(HlaPreSeq1) && sma	-0.0151154
small(HlaPreSeq1) && small(E8)	-0.0155221
polar(HlaPreSeq11) && small(E8)	-0.0165762
large(HlaPreSeq17) && small(E8)	-0.0131807
aliphatic(HlaPreSeq24) && small(E	-0.0162724
buried(HlaPreSeq24) && small(E8)	-0.0166877
hydrophobic(HlaPreSeq24) && sm	-0.0169604
large(HlaPreSeq95) && small(E8)	-0.0250886
aliphatic(HlaPreSeq107) && small(	-0.0212236
small(HlaPreSeq107) && small(E8)	-0.0207456
positive(HlaPreSeq114) && small(f	-0.0216348
charged(HlaPreSeq114) && small(l	-0.0176366
charged(HlaPreSeq156) && small(l	0.0116571
E9=Gln	-0.0174189
HlaPreSeq1=Gly && E9=Gln	-0.0160414
HlaPreSeq6=Arg && E9=Gln	-0.0174328
HlaPreSeq11=Ser && E9=Gln	-0.0104475
HlaPreSeq12=Val && E9=Gln	-0.0121586
HlaPreSeq14=Arg && E9=Gln	-0.0174359
HlaPreSeq16=Gly && E9=Gln	-0.0173191
HlaPreSeq17=Arg && E9=Gln	-0.0167748
HlaPreSeq21=Arg && E9=Gln	-0.0173094

HlaPreSeq30=Asp && E9=Gln	-0.0161603
HlaPreSeq32=Gln && E9=Gln	-0.0144512
HlaPreSeq35=Arg && E9=Gln	-0.0171297
HlaPreSeq41=Ala && E9=Gln	-0.0144844
HlaPreSeq46=Glu && E9=Gln	-0.0167355
HlaPreSeq49=Ala && E9=Gln	-0.0175254
HlaPreSeq52=Ile && E9=Gln	-0.0160018
HlaPreSeq56=Gly && E9=Gln	-0.0167976
HlaPreSeq66=Asn && E9=Gln	-0.0095407
HlaPreSeq73=Thr && E9=Gln	-0.0149398
HlaPreSeq74=Asp && E9=Gln	-0.0162525
HlaPreSeq81=Leu && E9=Gln	-0.0136679
HlaPreSeq82=Arg && E9=Gln	-0.0130198
HlaPreSeq83=Gly && E9=Gln	-0.0130247
HlaPreSeq91=Gly && E9=Gln	-0.0175816
HlaPreSeq94=Thr && E9=Gln	-0.0130715
HlaPreSeq95=Ile && E9=Gln	-0.013526
HlaPreSeq99=Tyr && E9=Gln	-0.0145657
HlaPreSeq103=Val && E9=Gln	-0.013317
HlaPreSeq105=Pro && E9=Gln	-0.0135621
HlaPreSeq107=Gly && E9=Gln	-0.0216828
HlaPreSeq113=Tyr && E9=Gln	-0.0118847
HlaPreSeq116=Asp && E9=Gln	-0.0106429
HlaPreSeq127=Asn && E9=Gln	-0.0189648
HlaPreSeq131=Arg && E9=Gln	-0.0117703
HlaPreSeq142=Ile && E9=Gln	-0.0212044
HlaPreSeq143=Thr && E9=Gln	-0.0169721
HlaPreSeq145=Arg && E9=Gln	-0.0208418
HlaPreSeq147=Trp && E9=Gln	-0.0168324
HlaPreSeq149=Ala && E9=Gln	-0.0171455
HlaPreSeq161=Glu && E9=Gln	-0.0157161
HlaPreSeq171=Tyr && E9=Gln	-0.0165778
HlaPreSeq173=Glu && E9=Gln	-0.0177047
W in NFlank	0.0210346
W in NFlank[1@]	0.0210377
QD in Epitope	0.0421787
VS in Epitope[@1-2]	0.011699
medium,cyclic in Epitope[@6-7]	-0.0117366
polar,cyclic in Epitope[@6-7]	-0.0036279
medium,small in Epitope[@7-8]	0.030498
small,large in Epitope[@8-9]	-0.0172771
hydrophobic in NFlank[1@] && mε	0.00777237
HlaPreSeq32=Gln && E4=Asn	-0.022686
HlaPreSeq41=Ala && E4=Asn	-0.0266118
HlaPreSeq46=Glu && E4=Asn	-0.0241993
HlaPreSeq105=Pro && E4=Asn	-0.0196114
HlaPreSeq161=Glu && E4=Asn	-0.0297967

E in CFlank	0.0188621
E in CFlank[@1]	0.0187372
negative in CFlank	-0.0216061
negative in CFlank[@1]	-0.0219265
GN in Epitope	-0.0154258
WP in Epitope	-0.0116759
small,aliphatic in Epitope[@1-2]	-0.0258593
small,hydrophobic in Epitope[@1-2]	-0.0254665
buried,hydrophobic in Epitope[@5]	-0.0380294
small in NFlank[1@] && aliphatic in NFlank[1@]	-0.0150879
cyclic in Epitope[@9] && large in CFlank[1@]	-0.0205631
cyclic in Epitope[@9] && negative in Epitope[@9]	-0.0294185
cyclic in Epitope[@9] && charged in Epitope[@9]	-0.0262905
aromatic in Epitope[@9] && negative in Epitope[@9]	-0.0282906
aromatic in Epitope[@9] && charged in Epitope[@9]	-0.0204815
hydrophobic in Epitope[@9] && negative in Epitope[@9]	-0.0170765
large in Epitope[@9] && negative in Epitope[@9]	-0.0205483
HlaPreSeq11=Ser && E2=Gln	-0.0228403
HlaPreSeq12=Val && E2=Gln	-0.0109299
HlaPreSeq43=Gln && E2=Gln	-0.0115294
HlaPreSeq46=Glu && E2=Gln	-0.0118557
HlaPreSeq65=Arg && E2=Gln	-0.0095563
HlaPreSeq69=Ala && E2=Gln	-0.0202656
HlaPreSeq70=His && E2=Gln	-0.0131715
HlaPreSeq71=Ser && E2=Gln	-0.0119135
HlaPreSeq79=Gly && E2=Gln	-0.008367
HlaPreSeq103=Val && E2=Gln	-0.0115527
HlaPreSeq105=Pro && E2=Gln	0.0106647
HlaPreSeq107=Gly && E2=Gln	0.00970711
HlaPreSeq109=Phe && E2=Gln	-0.010767
HlaPreSeq127=Asn && E2=Gln	0.0130377
HlaPreSeq131=Arg && E2=Gln	-0.0100348
HlaPreSeq138=Met && E2=Gln	-0.0117043
HlaPreSeq142=Ile && E2=Gln	0.0106594
HlaPreSeq144=Lys && E2=Gln	-0.0087092
HlaPreSeq151=His && E2=Gln	-0.0088166
HlaPreSeq9=Phe && E4=Pro	0.00203254
HlaPreSeq24=Ala && E4=Pro	0.040074
HlaPreSeq32=Gln && E4=Pro	0.0333319
HlaPreSeq41=Ala && E4=Pro	0.034656
HlaPreSeq63=Glu && E4=Pro	0.00128835
HlaPreSeq73=Thr && E4=Pro	0.0284381
HlaPreSeq80=Thr && E4=Pro	0.00533653
HlaPreSeq161=Glu && E4=Pro	0.0294259
HlaPreSeq24=Ala && E5=Val	0.0270187
HlaPreSeq156=Arg && E5=Val	0.0238145
HlaPreSeq62=Gln && E8=Thr	-0.0119034

HlaPreSeq63=Glu && E8=Thr	0.00097527
HlaPreSeq70=His && E8=Thr	0.0257583
HlaPreSeq94=Thr && E8=Thr	0.028284
HlaPreSeq95=Ile && E8=Thr	-0.0063788
HlaPreSeq97=Ile && E8=Thr	-0.0124545
HlaPreSeq103=Val && E8=Thr	0.0356888
HlaPreSeq161=Glu && E8=Thr	0.0334311
LQ in Epitope	0.0180688
GP in Epitope	0.0276464
GP in Epitope[@3-4]	0.0109769
aliphatic,cyclic in Epitope[@3-4]	0.0304858
cyclic,aliphatic in Epitope[@4-5]	0.0215246
cyclic,buried in Epitope[@4-5]	0.0173051
cyclic,hydrophobic in Epitope[@4-	0.031043
buried,negative in Epitope[@5-6]	-0.0251189
negative,small in Epitope[@6-7]	0.0188185
small,medium in Epitope[@7-8]	-0.0120682
HlaPreSeq66=Asn && E8=Ala	-0.0078224
HlaPreSeq69=Ala && E8=Ala	-0.0077072
HlaPreSeq94=Thr && E8=Ala	0.0194442
HlaPreSeq95=Ile && E8=Ala	-0.014313
HlaPreSeq161=Glu && E8=Ala	0.016767
HlaPreSeq63=Glu && E9=Trp	0.0245863
HlaPreSeq65=Arg && E9=Trp	0.0206358
HlaPreSeq66=Asn && E9=Trp	0.0199224
HlaPreSeq67=Met && E9=Trp	0.0194954
HlaPreSeq69=Ala && E9=Trp	0.0240268
HlaPreSeq77=Asn && E9=Trp	0.0331738
HlaPreSeq81=Leu && E9=Trp	-0.021657
HlaPreSeq82=Arg && E9=Trp	-0.0219178
HlaPreSeq83=Gly && E9=Trp	-0.0219096
HlaPreSeq161=Glu && E9=Trp	0.0189688
RN in Epitope	-0.0192012
PQ in Epitope	0.0162923
QS in Epitope	0.0195126
GA in Epitope	-0.0128503
small,small in Epitope[@7-8]	-0.020527
small,cyclic in Epitope[@8-9]	-0.0127301
small,buried in Epitope[@8-9]	0.0288942
small,hydrophobic in Epitope[@8-	0.00796399
medium in NFlank[1@] && positiv	0.0138476
E2=Asp	-0.0127079
HlaPreSeq1=Gly && E2=Asp	-0.0156425
HlaPreSeq6=Arg && E2=Asp	-0.0126833
HlaPreSeq14=Arg && E2=Asp	-0.0125141
HlaPreSeq16=Gly && E2=Asp	-0.0126594
HlaPreSeq17=Arg && E2=Asp	-0.012489

HlaPreSeq21=Arg && E2=Asp	-0.0125143
HlaPreSeq35=Arg && E2=Asp	-0.0121635
HlaPreSeq41=Ala && E2=Asp	-0.0142648
HlaPreSeq49=Ala && E2=Asp	-0.0124479
HlaPreSeq52=Ile && E2=Asp	-0.0143635
HlaPreSeq56=Gly && E2=Asp	-0.012411
HlaPreSeq73=Thr && E2=Asp	-0.0152454
HlaPreSeq81=Leu && E2=Asp	-0.0137231
HlaPreSeq91=Gly && E2=Asp	-0.0125261
HlaPreSeq94=Thr && E2=Asp	-0.0111877
HlaPreSeq99=Tyr && E2=Asp	-0.0129367
HlaPreSeq105=Pro && E2=Asp	-0.0152755
HlaPreSeq107=Gly && E2=Asp	-0.0119477
HlaPreSeq127=Asn && E2=Asp	-0.0112214
HlaPreSeq142=Ile && E2=Asp	-0.0114357
HlaPreSeq145=Arg && E2=Asp	-0.0113099
HlaPreSeq149=Ala && E2=Asp	-0.0122877
HlaPreSeq161=Glu && E2=Asp	-0.0173079
HlaPreSeq173=Glu && E2=Asp	-0.0122853
HlaPreSeq9=Phe && E5=Glu	0.00697536
HlaPreSeq12=Val && E5=Glu	-0.0174204
HlaPreSeq24=Ala && E5=Glu	0.0136258
HlaPreSeq52=Ile && E5=Glu	-0.0194669
HlaPreSeq94=Thr && E5=Glu	-0.0198097
HlaPreSeq95=Ile && E5=Glu	0.0129785
HlaPreSeq103=Val && E5=Glu	-0.0239091
HlaPreSeq12=Val && E6=Tyr	-0.0223704
KP in Epitope	-0.0170617
MT in Epitope	0.0416136
TG in Epitope	-0.0344947
MT in Epitope[@7-8]	0.0160074
small,charged in Epitope[@1-2]	0.00752499
positive,cyclic in Epitope[@3-4]	0.0139608
charged,medium in Epitope[@3-4]	-0.016346
cyclic,negative in Epitope[@4-5]	-0.0173185
large,aromatic in Epitope[@5-6]	-0.0220983
E1=Pro	-0.0180966
HlaPreSeq1=Gly && E1=Pro	-0.0153427
HlaPreSeq6=Arg && E1=Pro	-0.0180847
HlaPreSeq11=Ser && E1=Pro	-0.0139338
HlaPreSeq14=Arg && E1=Pro	-0.0180432
HlaPreSeq16=Gly && E1=Pro	-0.0180737
HlaPreSeq17=Arg && E1=Pro	-0.0164813
HlaPreSeq21=Arg && E1=Pro	-0.0180505
HlaPreSeq30=Asp && E1=Pro	-0.0162575
HlaPreSeq35=Arg && E1=Pro	-0.0228678
HlaPreSeq41=Ala && E1=Pro	-0.013853

HlaPreSeq46=Glu && E1=Pro	-0.0172458
HlaPreSeq49=Ala && E1=Pro	-0.0180485
HlaPreSeq52=Ile && E1=Pro	-0.0200073
HlaPreSeq56=Gly && E1=Pro	-0.0163844
HlaPreSeq69=Ala && E1=Pro	-0.0114358
HlaPreSeq70=His && E1=Pro	-0.0116279
HlaPreSeq73=Thr && E1=Pro	-0.0150546
HlaPreSeq80=Thr && E1=Pro	-0.011462
HlaPreSeq81=Leu && E1=Pro	-0.014178
HlaPreSeq82=Arg && E1=Pro	-0.0124137
HlaPreSeq83=Gly && E1=Pro	-0.0124244
HlaPreSeq91=Gly && E1=Pro	-0.0181509
HlaPreSeq94=Thr && E1=Pro	-0.0142636
HlaPreSeq99=Tyr && E1=Pro	-0.018727
HlaPreSeq103=Val && E1=Pro	-0.0193062
HlaPreSeq131=Arg && E1=Pro	-0.0119138
HlaPreSeq143=Thr && E1=Pro	-0.0180689
HlaPreSeq147=Trp && E1=Pro	-0.0179578
HlaPreSeq149=Ala && E1=Pro	-0.0179347
HlaPreSeq161=Glu && E1=Pro	-0.0197787
HlaPreSeq171=Tyr && E1=Pro	-0.0198232
HlaPreSeq173=Glu && E1=Pro	-0.0182676
HlaPreSeq77=Asn && E6=Ile	-0.0194229
HlaPreSeq90=Asp && E6=Ile	-0.0150456
HlaPreSeq99=Tyr && E6=Ile	0.0208478
PT in Epitope	-0.0147162
LI in Epitope	-0.0401452
IL in Epitope	0.0352749
medium,medium in Epitope[@1-2]	-0.0317466
aliphatic,positive in Epitope[@3-4]	-0.0170048
aliphatic,charged in Epitope[@3-4]	-0.0252458
small,positive in Epitope[@3-4]	-0.02087
buried,aliphatic in Epitope[@5-6]	-0.0376585
buried,aliphatic in Epitope[@6-7]	-0.0418559
cyclic in NFlank[1@] && cyclic in E	-0.0129649
charged in Epitope[@9] && mediu	-0.0231863
HlaPreSeq11=Ser && E3=Asn	-0.003182
HlaPreSeq62=Gln && E3=Asn	0.014438
HlaPreSeq69=Ala && E3=Asn	-0.0029978
HlaPreSeq70=His && E3=Asn	-0.0059892
HlaPreSeq97=Ile && E3=Asn	0.0146922
HlaPreSeq105=Pro && E3=Asn	0.0182574
HlaPreSeq107=Gly && E3=Asn	0.0235174
HlaPreSeq127=Asn && E3=Asn	0.0295946
HlaPreSeq142=Ile && E3=Asn	0.0259428
HlaPreSeq145=Arg && E3=Asn	0.0235465
NG in Epitope	-0.0171595

VN in Epitope	-0.0214536
NQ in Epitope	-0.0118173
aliphatic,cyclic in Epitope[@4-5]	-0.0386733
aliphatic,aromatic in Epitope[@4-5]	-0.0364599
hydrophobic,cyclic in Epitope[@4-5]	-0.0179563
hydrophobic,aromatic in Epitope[@4-5]	-0.0233856
small,large in Epitope[@4-5]	0.0186457
aliphatic,medium in Epitope[@6-7]	-0.0205597
buried in NFlank[1@] && negative i	0.0231104
small in NFlank[1@] && negative i	-0.0165266
TE in Epitope	0.0277375
HlaPreSeq66=Asn && E1=Asn	-0.0137663
HlaPreSeq9=Phe && E3=Ala	-0.0234434
HlaPreSeq11=Ser && E3=Ala	-0.0235328
HlaPreSeq12=Val && E3=Ala	-0.0269938
HlaPreSeq43=Gln && E3=Ala	-0.0232562
HlaPreSeq45=Met && E3=Ala	-0.0157324
HlaPreSeq65=Arg && E3=Ala	-0.0150704
HlaPreSeq71=Ser && E3=Ala	-0.019873
HlaPreSeq79=Gly && E3=Ala	-0.0201841
HlaPreSeq80=Thr && E3=Ala	-0.0309373
HlaPreSeq95=Ile && E3=Ala	-0.0201256
HlaPreSeq109=Phe && E3=Ala	-0.0193289
HlaPreSeq113=Tyr && E3=Ala	-0.0374963
HlaPreSeq116=Asp && E3=Ala	-0.0219593
HlaPreSeq138=Met && E3=Ala	-0.0198767
HlaPreSeq12=Val && E6=Ala	-0.0249012
HlaPreSeq32=Gln && E6=Ala	-0.027374
HlaPreSeq63=Glu && E6=Ala	-0.0260497
HlaPreSeq70=His && E6=Ala	-0.0177755
HlaPreSeq171=Tyr && E6=Ala	-0.0298645
HlaPreSeq74=Asp && E7=Arg	0.0153306
E9=Arg	0.0111665
HlaPreSeq1=Gly && E9=Arg	0.0139268
HlaPreSeq6=Arg && E9=Arg	0.0115859
HlaPreSeq14=Arg && E9=Arg	0.0121093
HlaPreSeq16=Gly && E9=Arg	0.0120214
HlaPreSeq17=Arg && E9=Arg	0.0137827
HlaPreSeq21=Arg && E9=Arg	0.0124942
HlaPreSeq24=Ala && E9=Arg	0.0192564
HlaPreSeq32=Gln && E9=Arg	0.0140146
HlaPreSeq35=Arg && E9=Arg	0.013839
HlaPreSeq41=Ala && E9=Arg	0.0134389
HlaPreSeq43=Gln && E9=Arg	0.0164064
HlaPreSeq45=Met && E9=Arg	0.0138427
HlaPreSeq46=Glu && E9=Arg	0.0152702
HlaPreSeq49=Ala && E9=Arg	0.0143436

HlaPreSeq52=Ile && E9=Arg	0.0185865
HlaPreSeq62=Gln && E9=Arg	0.0146974
HlaPreSeq65=Arg && E9=Arg	0.0215203
HlaPreSeq66=Asn && E9=Arg	0.0319514
HlaPreSeq69=Ala && E9=Arg	0.015304
HlaPreSeq71=Ser && E9=Arg	0.0165031
HlaPreSeq74=Asp && E9=Arg	0.0184055
HlaPreSeq79=Gly && E9=Arg	0.0188088
HlaPreSeq80=Thr && E9=Arg	0.0182867
HlaPreSeq82=Arg && E9=Arg	0.0113369
HlaPreSeq83=Gly && E9=Arg	0.0115765
HlaPreSeq91=Gly && E9=Arg	0.01637
HlaPreSeq94=Thr && E9=Arg	0.0139538
HlaPreSeq95=Ile && E9=Arg	0.0326214
HlaPreSeq97=Ile && E9=Arg	0.0115961
HlaPreSeq99=Tyr && E9=Arg	0.0196685
HlaPreSeq103=Val && E9=Arg	0.0196104
HlaPreSeq107=Gly && E9=Arg	0.0276139
HlaPreSeq109=Phe && E9=Arg	0.0188096
HlaPreSeq113=Tyr && E9=Arg	0.0127514
HlaPreSeq114=Arg && E9=Arg	0.0164666
HlaPreSeq116=Asp && E9=Arg	0.0342427
HlaPreSeq127=Asn && E9=Arg	0.0274587
HlaPreSeq131=Arg && E9=Arg	0.0135554
HlaPreSeq138=Met && E9=Arg	0.0196904
HlaPreSeq142=Ile && E9=Arg	0.0259266
HlaPreSeq143=Thr && E9=Arg	0.0201117
HlaPreSeq145=Arg && E9=Arg	0.0266943
HlaPreSeq147=Trp && E9=Arg	0.0206915
HlaPreSeq149=Ala && E9=Arg	0.0190097
HlaPreSeq161=Glu && E9=Arg	0.0176096
HlaPreSeq173=Glu && E9=Arg	0.0203809
NR in Epitope	-0.0078107
AM in Epitope	0.0203919
ML in Epitope	0.0191027
LA in Epitope[@5-6]	-0.016673
RE in Epitope[@7-8]	0.0119996
ER in Epitope[@8-9]	-0.012229
aliphatic in NFlank[1@] && medium	0.00668063
medium in NFlank[1@] && medium	0.0134039
HlaPreSeq9=Phe && E4=Ala	0.0118821
HlaPreSeq77=Asn && E4=Ala	-0.0177502
HlaPreSeq161=Glu && E4=Ala	-0.0194151
NP in Epitope	0.0179481
IV in Epitope	-0.0082615
VL in Epitope	0.0138359
LT in Epitope	0.0170747

PD in Epitope[@2-3]	-0.015703
polar,cyclic in Epitope[@1-2]	-0.0185975
negative,small in Epitope[@3-4]	-0.0232934
negative,buried in Epitope[@5-6]	0.0392311
buried,medium in Epitope[@8-9]	-0.0172918
G in NFlank[1@] && N in Epitope[	0.0149079
polar in Epitope[@9] && small in C	-0.0209732
N in NFlank	0.00736138
N in NFlank[1@]	0.00722318
KC in Epitope	0.0133409
LD in Epitope	0.0199809
charged,medium in Epitope[@2-3]	-0.0196767
medium,aliphatic in Epitope[@5-6]	0.0208624
medium,buried in Epitope[@5-6]	0.0300428
charged in Epitope[@9] && buried	0.0128595
HlaPreSeq9=Phe && E5=Phe	-0.0142534
HlaPreSeq66=Asn && E5=Phe	0.0158249
HlaPreSeq70=His && E5=Phe	-0.011502
HlaPreSeq77=Asn && E5=Phe	-0.0150202
HlaPreSeq43=Gln && E8=His	-0.0081023
HlaPreSeq63=Glu && E8=His	-0.0074895
HlaPreSeq113=Tyr && E8=His	-0.0069433
AP in Epitope	-0.0165549
AH in Epitope	-0.0129696
HF in Epitope	0.010101
DF in Epitope[@4-5]	-0.0114132
positive,cyclic in Epitope[@8-9]	-0.0118021
positive,aromatic in Epitope[@8-9]	-0.011951
charged,charged in Epitope[@4-5]	-0.0155113
HlaPreSeq9=Phe && E3=Ile	-0.0222097
HlaPreSeq74=Asp && E3=Ile	0.0160727
HlaPreSeq90=Asp && E3=Ile	0.0133151
HlaPreSeq107=Gly && E3=Ile	0.015105
HlaPreSeq116=Asp && E3=Ile	0.0113209
HlaPreSeq142=Ile && E3=Ile	0.0153656
HlaPreSeq144=Lys && E3=Ile	-0.0164598
HlaPreSeq145=Arg && E3=Ile	0.017528
HlaPreSeq74=Asp && E8=Ser	-0.0304352
HlaPreSeq94=Thr && E8=Ser	-0.0383957
HlaPreSeq161=Glu && E8=Ser	-0.0314825
ID in Epitope	-0.0197582
negative,charged in Epitope[@4-5]	-0.0132487
charged,negative in Epitope[@4-5]	-0.0180805
large,small in Epitope[@7-8]	-0.0188227
charged,small in Epitope[@7-8]	0.00810253
small,small in Epitope[@8-9]	0.0138035
HlaPreSeq1=Gly && E1=Asp	0.00887229

HlaPreSeq74=Asp && E1=Asp	0.0146591
HlaPreSeq105=Pro && E1=Asp	0.0149883
HlaPreSeq107=Gly && E1=Asp	0.0174086
HlaPreSeq113=Tyr && E1=Asp	0.0157463
HlaPreSeq171=Tyr && E1=Asp	-0.0095462
NA in Epitope	0.0372923
YR in Epitope[@3-4]	-0.0114294
negative,cyclic in Epitope[@1-2]	-0.0237211
negative,buried in Epitope[@1-2]	0.0105875
charged,cyclic in Epitope[@1-2]	-0.0501851
charged,aromatic in Epitope[@1-2]	-0.0390811
polar,aromatic in Epitope[@1-2]	-0.0214198
cyclic,aromatic in Epitope[@2-3]	-0.0248916
aromatic,aromatic in Epitope[@2-3]	-0.0145834
aliphatic,charged in Epitope[@8-9]	0.0124397
HlaPreSeq82=Arg && E2=Trp	-0.0154122
HlaPreSeq83=Gly && E2=Trp	-0.0154082
HlaPreSeq99=Tyr && E2=Trp	-0.0148155
E9=Pro	-0.0156186
HlaPreSeq1=Gly && E9=Pro	-0.0138593
HlaPreSeq6=Arg && E9=Pro	-0.0156667
HlaPreSeq14=Arg && E9=Pro	-0.0156028
HlaPreSeq16=Gly && E9=Pro	-0.0157191
HlaPreSeq17=Arg && E9=Pro	-0.0152525
HlaPreSeq21=Arg && E9=Pro	-0.0152994
HlaPreSeq24=Ala && E9=Pro	-0.0133408
HlaPreSeq30=Asp && E9=Pro	-0.019306
HlaPreSeq32=Gln && E9=Pro	-0.0135973
HlaPreSeq35=Arg && E9=Pro	-0.0143092
HlaPreSeq41=Ala && E9=Pro	-0.0142996
HlaPreSeq46=Glu && E9=Pro	-0.0137436
HlaPreSeq49=Ala && E9=Pro	-0.0158362
HlaPreSeq52=Ile && E9=Pro	-0.0113563
HlaPreSeq56=Gly && E9=Pro	-0.0154044
HlaPreSeq63=Glu && E9=Pro	-0.0142509
HlaPreSeq73=Thr && E9=Pro	-0.012796
HlaPreSeq74=Asp && E9=Pro	-0.009322
HlaPreSeq77=Asn && E9=Pro	-0.0105304
HlaPreSeq81=Leu && E9=Pro	-0.0110992
HlaPreSeq82=Arg && E9=Pro	-0.0101776
HlaPreSeq83=Gly && E9=Pro	-0.010198
HlaPreSeq91=Gly && E9=Pro	-0.0161083
HlaPreSeq94=Thr && E9=Pro	-0.0110051
HlaPreSeq99=Tyr && E9=Pro	-0.0149842
HlaPreSeq103=Val && E9=Pro	-0.0099157
HlaPreSeq105=Pro && E9=Pro	-0.0120609
HlaPreSeq107=Gly && E9=Pro	-0.0128716

HlaPreSeq113=Tyr && E9=Pro	-0.0145391
HlaPreSeq127=Asn && E9=Pro	-0.011946
HlaPreSeq131=Arg && E9=Pro	-0.011356
HlaPreSeq142=Ile && E9=Pro	-0.0126382
HlaPreSeq143=Thr && E9=Pro	-0.0156087
HlaPreSeq145=Arg && E9=Pro	-0.0125792
HlaPreSeq147=Trp && E9=Pro	-0.0153838
HlaPreSeq149=Ala && E9=Pro	-0.0158418
HlaPreSeq161=Glu && E9=Pro	-0.0185371
HlaPreSeq171=Tyr && E9=Pro	-0.0181752
HlaPreSeq173=Glu && E9=Pro	-0.015957
WT in Epitope	-0.0057017
PI in Epitope	0.0256133
aliphatic,negative in Epitope[@7-8	0.0158572
negative,cyclic in Epitope[@8-9]	0.00294346
P in Epitope[@9] && V in Cflank[⑥	0.00961135
large in Nflank[1@] && negative ii	0.0178826
IQ in Epitope	-0.0187363
RI in Epitope	-0.0136412
RI in Epitope[@4-5]	0.00859736
IL in Epitope[@5-6]	0.0116622
hydrophobic,small in Epitope[@6-	0.012918
S in Nflank[1@] && I in Epitope[@	0.0130276
HlaPreSeq65=Arg && E6=Gly	-0.013008
HlaPreSeq79=Gly && E6=Gly	-0.0126084
HlaPreSeq80=Thr && E6=Gly	-0.0080255
HlaPreSeq95=Ile && E6=Gly	-0.0126569
HlaPreSeq99=Tyr && E6=Gly	-0.0025709
HlaPreSeq109=Phe && E6=Gly	-0.0097969
HlaPreSeq113=Tyr && E6=Gly	-0.0107551
HlaPreSeq116=Asp && E6=Gly	-0.0116729
HlaPreSeq171=Tyr && E6=Gly	0.0251921
aromatic,small in Epitope[@5-6]	-0.024862
negative,aromatic in Epitope[@8-9	0.00677333
Y in Epitope[@9] && A in Cflank[⑥	-0.0137537
cyclic in Epitope[@9] && small in C	-0.0224669
aromatic in Epitope[@9] && small	-0.0145702
HlaPreSeq1=Gly && E3=Val	-0.0126879
HlaPreSeq63=Glu && E3=Val	-0.0151987
HlaPreSeq77=Asn && E3=Val	-0.0213752
HlaPreSeq105=Pro && E3=Val	-0.0162064
HlaPreSeq127=Asn && E3=Val	-0.0196586
HlaPreSeq142=Ile && E3=Val	-0.0208814
HlaPreSeq145=Arg && E3=Val	-0.0174868
HlaPreSeq14=Arg && E8=Phe	-0.0274844
HlaPreSeq46=Glu && E8=Phe	-0.0280865
HlaPreSeq77=Asn && E8=Phe	-0.0141162

HlaPreSeq105=Pro && E8=Phe	-0.0215095
VF in Epitope	-0.0236277
negative,small in Epitope[@5-6]	-0.0319408
charged,small in Epitope[@5-6]	-0.0185249
HlaPreSeq63=Glu && E5=Ala	-0.0277803
HlaPreSeq79=Gly && E5=Ala	-0.0215916
HlaPreSeq80=Thr && E5=Ala	-0.0275737
HlaPreSeq81=Leu && E5=Ala	-0.0307602
HlaPreSeq82=Arg && E5=Ala	-0.0286351
HlaPreSeq83=Gly && E5=Ala	-0.0286087
HlaPreSeq131=Arg && E5=Ala	-0.0240807
HlaPreSeq149=Ala && E5=Ala	-0.0247265
HlaPreSeq161=Glu && E5=Ala	-0.0212687
HlaPreSeq171=Tyr && E5=Ala	-0.028964
DR in Epitope	0.0180421
RY in Epitope	0.00585569
LG in Epitope	-0.0085491
RY in Epitope[@2-3]	0.0159158
AL in Epitope[@5-6]	-0.0261524
QL in Epitope	-0.0145862
AF in Epitope	0.0303243
QL in Epitope[@1-2]	-0.015061
LV in Epitope[@2-3]	0.021478
positive,small in Epitope[@5-6]	0.0133581
aliphatic,cyclic in Epitope[@6-7]	0.0300895
small,aromatic in Epitope[@6-7]	-0.0064009
QF in Epitope	-0.0276569
AQ in Epitope[@1-2]	-0.0106488
small,large in Epitope[@1-2]	-0.0175372
cyclic,polar in Epitope[@7-8]	-0.0107086
TE in Epitope[@8-9]	0.0148902
buried,small in Epitope[@3-4]	0.00037685
DL in Epitope	0.0435403
DL in Epitope[@4-5]	0.013203
LV in Epitope[@5-6]	-0.0124299
TT in Epitope	-0.0595881
TR in Epitope	0.0089893
EE in Epitope[@5-6]	0.0101313
TT in Epitope[@7-8]	-0.0096798
TR in Epitope[@8-9]	0.0179986
positive,negative in Epitope[@4-5]	-0.0110103
positive in Epitope[@9] && aliphatic	0.0109676
positive in Epitope[@9] && buried	0.0145015
positive in Epitope[@9] && hydrophobic	0.015962
charged in Epitope[@9] && aliphatic	0.0128369
HlaPreSeq12=Val && E5=Asn	0.00909825
HlaPreSeq95=Ile && E5=Asn	-0.0129069

HlaPreSeq113=Tyr && E5=Asn	0.0055187
HlaPreSeq127=Asn && E5=Asn	-0.0180535
NN in Epitope	-0.0145447
TL in Epitope[@3-4]	-0.0191831
aromatic,aliphatic in Epitope[@8-9]	-0.0211895
V in Epitope[@9] && I in CFlank[@	0.0285627
HlaPreSeq63=Glu && E7=Ile	0.0104559
HlaPreSeq77=Asn && E7=Ile	-0.008798
HlaPreSeq114=Arg && E7=Ile	0.016268
HlaPreSeq116=Asp && E7=Ile	0.0151936
HlaPreSeq144=Lys && E7=Ile	0.0159845
HlaPreSeq151=His && E7=Ile	0.0146459
HlaPreSeq9=Phe && E8=Lys	-0.0053792
HlaPreSeq69=Ala && E8=Lys	0.0172269
HlaPreSeq74=Asp && E8=Lys	0.0217655
HlaPreSeq77=Asn && E8=Lys	0.0201316
HlaPreSeq105=Pro && E8=Lys	0.00578445
HlaPreSeq107=Gly && E8=Lys	0.0163997
HlaPreSeq116=Asp && E8=Lys	0.0143863
HlaPreSeq127=Asn && E8=Lys	0.00731154
HlaPreSeq142=Ile && E8=Lys	0.0124526
HlaPreSeq145=Arg && E8=Lys	0.00887633
HlaPreSeq11=Ser && E9=Ile	-0.0131908
HlaPreSeq66=Asn && E9=Ile	-0.01565
HlaPreSeq74=Asp && E9=Ile	-0.0186119
HlaPreSeq77=Asn && E9=Ile	0.0181696
HlaPreSeq79=Gly && E9=Ile	-0.0092427
HlaPreSeq80=Thr && E9=Ile	-0.0074409
HlaPreSeq81=Leu && E9=Ile	-0.0292892
HlaPreSeq82=Arg && E9=Ile	-0.0286144
HlaPreSeq83=Gly && E9=Ile	-0.0287524
HlaPreSeq90=Asp && E9=Ile	0.00843374
HlaPreSeq95=Ile && E9=Ile	-0.0258866
HlaPreSeq99=Tyr && E9=Ile	-0.014289
HlaPreSeq107=Gly && E9=Ile	-0.0135029
HlaPreSeq109=Phe && E9=Ile	-0.0065023
HlaPreSeq113=Tyr && E9=Ile	-0.0167493
HlaPreSeq116=Asp && E9=Ile	-0.0094803
HlaPreSeq131=Arg && E9=Ile	-0.0111776
HlaPreSeq145=Arg && E9=Ile	-0.0125717
HlaPreSeq171=Tyr && E9=Ile	-0.0189999
TI in Epitope	-0.0229516
KI in Epitope	0.0102789
KI in Epitope[@8-9]	0.014461
D in NFlank	-0.0259779
D in NFlank[1@]	-0.026125
D in CFlank	-0.0401593

D in CFlank[@1]	-0.0402015
SR in Epitope	0.0248123
ID in Epitope[@2-3]	-0.0097515
large,negative in Epitope[@2-3]	0.00948871
positive,positive in Epitope[@7-8]	-0.0108271
LM in Epitope[@3-4]	0.0130146
negative,medium in Epitope[@1-2	-0.0137382
buried,small in Epitope[@7-8]	-0.0215343
HlaPreSeq45=Met && E9=Cys	-0.0139146
HlaPreSeq71=Ser && E9=Cys	-0.0117276
HlaPreSeq109=Phe && E9=Cys	-0.0117285
HlaPreSeq138=Met && E9=Cys	-0.0117293
NI in Epitope	-0.0110569
IT in Epitope	-0.0298079
LG in Epitope[@2-3]	-0.0128455
IT in Epitope[@6-7]	-0.0114339
EF in Epitope	0.00968361
PS in Epitope[@7-8]	0.0109941
aromatic,buried in Epitope[@2-3]	-0.0224257
M in NFlank[1@] && E in Epitope[	0.0128639
C in CFlank	0.044201
C in CFlank[@1]	0.0441813
IR in Epitope	0.0168411
NA in Epitope[@3-4]	0.0116422
small,buried in Epitope[@4-5]	-0.0233113
A in Epitope[@9] && C in CFlank[	0.0117387
IP in Epitope	0.0211542
aliphatic in Epitope[@9] && negat	0.0172806
HlaPreSeq45=Met && E1=Met	0.0182993
HlaPreSeq103=Val && E1=Met	0.0191183
HlaPreSeq151=His && E1=Met	0.0185637
LK in Epitope[@2-3]	0.0183998
L in Epitope[@9] && V in CFlank[	-0.0130131
HlaPreSeq24=Ala && E1=Thr	0.0138178
HlaPreSeq52=Ile && E1=Thr	0.0136724
HlaPreSeq77=Asn && E1=Thr	-0.0165676
HlaPreSeq171=Tyr && E1=Thr	0.00905647
HlaPreSeq62=Gln && E5=Lys	0.0150654
HlaPreSeq63=Glu && E5=Lys	-0.0202593
HlaPreSeq66=Asn && E5=Lys	0.0153941
HlaPreSeq74=Asp && E5=Lys	0.0276815
HlaPreSeq97=Ile && E5=Lys	0.011376
HlaPreSeq99=Tyr && E5=Lys	0.0167642
HlaPreSeq103=Val && E5=Lys	0.016305
HlaPreSeq105=Pro && E5=Lys	0.0170046
HlaPreSeq107=Gly && E5=Lys	0.0175566
HlaPreSeq116=Asp && E5=Lys	0.014352

HlaPreSeq127=Asn && E5=Lys	0.0314098
HlaPreSeq142=Ile && E5=Lys	0.0242777
HlaPreSeq145=Arg && E5=Lys	0.0243069
TF in Epitope	0.0174055
NS in Epitope	-0.0196473
SY in Epitope	-0.029606
YK in Epitope	0.0185993
hydrophobic,positive in Epitope[@	0.0191621
E4=Trp	0.0159871
HlaPreSeq1=Gly && E4=Trp	0.0164482
HlaPreSeq6=Arg && E4=Trp	0.0160065
HlaPreSeq14=Arg && E4=Trp	0.0163591
HlaPreSeq16=Gly && E4=Trp	0.0160245
HlaPreSeq21=Arg && E4=Trp	0.0160338
HlaPreSeq30=Asp && E4=Trp	0.018546
HlaPreSeq35=Arg && E4=Trp	0.0166075
HlaPreSeq43=Gln && E4=Trp	0.0151474
HlaPreSeq45=Met && E4=Trp	0.0129695
HlaPreSeq46=Glu && E4=Trp	0.0169659
HlaPreSeq49=Ala && E4=Trp	0.0164072
HlaPreSeq52=Ile && E4=Trp	0.0189899
HlaPreSeq69=Ala && E4=Trp	0.0159892
HlaPreSeq70=His && E4=Trp	0.0205429
HlaPreSeq71=Ser && E4=Trp	0.0138907
HlaPreSeq73=Thr && E4=Trp	0.0194018
HlaPreSeq91=Gly && E4=Trp	0.0160815
HlaPreSeq103=Val && E4=Trp	0.0194479
HlaPreSeq113=Tyr && E4=Trp	0.01328
HlaPreSeq131=Arg && E4=Trp	0.020941
HlaPreSeq138=Met && E4=Trp	0.0139064
HlaPreSeq143=Thr && E4=Trp	0.0161417
HlaPreSeq147=Trp && E4=Trp	0.0161502
HlaPreSeq149=Ala && E4=Trp	0.0153675
HlaPreSeq161=Glu && E4=Trp	0.0206947
HlaPreSeq171=Tyr && E4=Trp	0.0208051
HlaPreSeq173=Glu && E4=Trp	0.0161354
GW in Epitope	0.0348866
aromatic,negative in Epitope[@4-5	-0.0239018
aromatic in Epitope[@9] && arom	0.0137574
K in CFlank	0.0224761
K in CFlank[@1]	0.0223118
EN in Epitope	-0.0171303
NV in Epitope	-0.019027
aliphatic,positive in Epitope[@8-9]	0.0169249
DG in Epitope	-0.0314461
GA in Epitope[@8-9]	0.0126849
LW in Epitope	0.0347185

PL in Epitope[@8-9]	-0.0261748
buried,cyclic in Epitope[@4-5]	-0.0504849
buried,aromatic in Epitope[@4-5]	-0.0329171
positive,cyclic in Epitope[@7-8]	0.00886301
NF in Epitope	-0.0196099
RH in Epitope	-0.0110622
aromatic,positive in Epitope[@6-7]	0.00925632
large,aromatic in Epitope[@7-8]	-0.0100992
positive,aromatic in Epitope[@7-8]	0.0168001
HlaPreSeq66=Asn && E7=His	-0.0127854
HlaPreSeq74=Asp && E7=His	-0.0168072
HlaPreSeq107=Gly && E7=His	-0.0135873
HlaPreSeq116=Asp && E7=His	-0.0128124
HlaPreSeq127=Asn && E7=His	-0.0130573
HlaPreSeq142=Ile && E7=His	-0.0135529
HlaPreSeq145=Arg && E7=His	-0.0135011
CD in Epitope	0.0134415
YL in Epitope	-0.0096023
aromatic,polar in Epitope[@7-8]	-0.0088974
positive,buried in Epitope[@7-8]	-0.0200971
AK in Epitope	-0.0189461
KF in Epitope	-0.0168022
GL in Epitope	-0.0073138
VS in Epitope[@6-7]	0.00990741
GL in Epitope[@8-9]	-0.0142796
A in NFlank[1@] && T in Epitope[⑆	0.011695
AA in Epitope	0.0174873
QP in Epitope	-0.0237039
small,positive in Epitope[@8-9]	0.0057484
K in Epitope[@9] && N in CFlank[⑆	-0.0109246
HlaPreSeq62=Gly	-0.0188873
HlaPreSeq66=Lys	-0.0207765
HlaPreSeq74=His	-0.0140419
HlaPreSeq77=Asp	0.00840183
HlaPreSeq107=Trp	-0.0147586
HlaPreSeq150=Ala	-0.0017237
HlaPreSeq158=Ala	0.00104165
HlaPreSeq166=Glu	0.00461829
aliphatic(HlaPreSeq62)	-0.0139598
hydrophobic(HlaPreSeq62)	-0.0143554
small(HlaPreSeq62)	-0.012905
medium(HlaPreSeq76)	0.00805418
negative(HlaPreSeq77)	0.0152067
charged(HlaPreSeq77)	0.0131376
cyclic(HlaPreSeq107)	-0.0118225
small(HlaPreSeq150)	0.00184264
HlaPreSeq76=Val && E1=Ala	0.0133098

HlaPreSeq97=Arg && E1=Ala	-0.0229906
HlaPreSeq166=Glu && E1=Ala	0.00960042
HlaPreSeq167=Trp && E1=Ala	0.00764292
large(HlaPreSeq74) && aliphatic(E	-0.0100959
medium(HlaPreSeq76) && aliphati	0.00088417
negative(HlaPreSeq77) && aliphatic	0.0101746
charged(HlaPreSeq77) && aliphatic	0.0109199
aliphatic(HlaPreSeq90) && aliphatic	-0.0060533
buried(HlaPreSeq90) && aliphatic(	-0.004029
hydrophobic(HlaPreSeq90) && aliq	-0.0022391
small(HlaPreSeq90) && aliphatic(E	-0.000729
small(HlaPreSeq150) && aliphatic(	0.00067153
small(HlaPreSeq158) && aliphatic(	0.00313001
large(HlaPreSeq166) && aliphatic(	0.0121832
cyclic(HlaPreSeq167) && aliphatic(	0.00935786
aromatic(HlaPreSeq167) && aliphatic	0.00919849
aliphatic(HlaPreSeq62) && buried(	0.00942313
hydrophobic(HlaPreSeq62) && buried	0.00878209
aliphatic(HlaPreSeq156) && buried	0.0133354
aliphatic(HlaPreSeq90) && hydroph	0.00012417
buried(HlaPreSeq90) && hydrophobic	-0.0012081
medium(HlaPreSeq163) && hydrophobic	-0.0203908
large(HlaPreSeq66) && small(E1)	0.00681923
medium(HlaPreSeq76) && small(E1)	0.0233174
negative(HlaPreSeq77) && small(E1)	0.0163028
charged(HlaPreSeq77) && small(E1)	0.0158102
positive(HlaPreSeq97) && small(E1)	-0.01978
charged(HlaPreSeq97) && small(E1)	-0.0201419
medium(HlaPreSeq152) && small(E1)	-0.0147577
aliphatic(HlaPreSeq156) && small(E1)	-0.0299419
buried(HlaPreSeq156) && small(E1)	-0.0272319
hydrophobic(HlaPreSeq156) && small(E1)	-0.027928
large(HlaPreSeq166) && small(E1)	0.00974725
HlaPreSeq67=Val && E2=Ala	-0.0173943
HlaPreSeq74=His && E2=Ala	-0.0089271
HlaPreSeq77=Asp && E2=Ala	-0.0105413
HlaPreSeq90=Ala && E2=Ala	0.0230534
HlaPreSeq95=Val && E2=Ala	-0.0094456
HlaPreSeq105=Ser && E2=Ala	-0.0080721
HlaPreSeq114=His && E2=Ala	-0.0114083
HlaPreSeq150=Ala && E2=Ala	0.0155041
HlaPreSeq158=Ala && E2=Ala	0.0169566
HlaPreSeq166=Glu && E2=Ala	0.0184608
HlaPreSeq167=Trp && E2=Ala	0.0200201
aliphatic(HlaPreSeq62) && aliphatic	-0.0310211
hydrophobic(HlaPreSeq62) && aliphatic	-0.0305219
small(HlaPreSeq62) && aliphatic(E	-0.0196994

large(HlaPreSeq66) && aliphatic(E	-0.0217605
cyclic(HlaPreSeq74) && aliphatic(E	-0.0210975
aromatic(HlaPreSeq74) && aliphatic	-0.0197685
large(HlaPreSeq74) && aliphatic(E	-0.0183484
medium(HlaPreSeq76) && aliphatic	0.0292847
negative(HlaPreSeq77) && aliphatic	0.0195899
charged(HlaPreSeq77) && aliphatic	0.0199184
aliphatic(HlaPreSeq90) && aliphatic	-0.0111761
buried(HlaPreSeq90) && aliphatic(E	-0.0118847
hydrophobic(HlaPreSeq90) && aliphatic	-0.0121138
small(HlaPreSeq90) && aliphatic(E	-0.0119334
positive(HlaPreSeq97) && aliphatic	-0.0152431
cyclic(HlaPreSeq114) && aliphatic(E	-0.0199757
aromatic(HlaPreSeq114) && aliphatic	-0.0190226
small(HlaPreSeq150) && aliphatic(E	0.00959903
medium(HlaPreSeq152) && aliphatic	-0.0279524
buried(HlaPreSeq156) && aliphatic	0.013229
hydrophobic(HlaPreSeq156) && aliphatic	0.0138386
small(HlaPreSeq158) && aliphatic(E	0.0152104
large(HlaPreSeq166) && aliphatic(E	0.0212663
cyclic(HlaPreSeq167) && aliphatic(E	0.0230552
aromatic(HlaPreSeq167) && aliphatic	0.0211038
buried(HlaPreSeq167) && aliphatic	0.0189565
large(HlaPreSeq167) && aliphatic(E	0.0167491
aliphatic(HlaPreSeq62) && buried(E	0.0075262
hydrophobic(HlaPreSeq62) && buried	0.00863175
small(HlaPreSeq62) && buried(E2)	0.0149166
positive(HlaPreSeq66) && buried(E	0.009286
charged(HlaPreSeq66) && buried(E	0.00896156
aliphatic(HlaPreSeq67) && buried(E	0.0175631
positive(HlaPreSeq74) && buried(E	0.0142453
medium(HlaPreSeq76) && buried(E	0.0392441
negative(HlaPreSeq77) && buried(E	0.0361216
charged(HlaPreSeq77) && buried(E	0.0335318
aliphatic(HlaPreSeq90) && buried(E	-0.0062535
buried(HlaPreSeq90) && buried(E2)	-0.0102093
hydrophobic(HlaPreSeq90) && buried	-0.0125516
small(HlaPreSeq90) && buried(E2)	-0.0136103
medium(HlaPreSeq95) && buried(E	0.0051123
positive(HlaPreSeq97) && buried(E	-0.0180079
charged(HlaPreSeq97) && buried(E	-0.0166007
cyclic(HlaPreSeq107) && buried(E	0.0072107
aromatic(HlaPreSeq107) && buried	0.00825757
buried(HlaPreSeq107) && buried(E	0.0091072
large(HlaPreSeq107) && buried(E2)	0.00971664
cyclic(HlaPreSeq116) && buried(E	-0.0067422
aromatic(HlaPreSeq116) && buried	-0.0069148

hydrophobic(HlaPreSeq116) && buried(E2)	-0.0127203
large(HlaPreSeq116) && buried(E2)	-0.0116188
medium(HlaPreSeq142) && buried(E2)	0.0088195
polar(HlaPreSeq142) && buried(E2)	0.00950802
cyclic(HlaPreSeq145) && buried(E2)	0.00998176
aromatic(HlaPreSeq145) && buried(E2)	0.0102254
medium(HlaPreSeq152) && buried(E2)	-0.016016
aliphatic(HlaPreSeq156) && buried(E2)	-0.0108741
cyclic(HlaPreSeq167) && buried(E2)	0.0194254
aromatic(HlaPreSeq167) && buried(E2)	0.0172097
aliphatic(HlaPreSeq62) && hydrophobic	-0.0136916
hydrophobic(HlaPreSeq62) && hydrophobic	-0.0134275
small(HlaPreSeq62) && hydrophobic	-0.0101497
medium(HlaPreSeq67) && hydrophobic	-0.0096627
medium(HlaPreSeq95) && hydrophobic	0.00945104
small(HlaPreSeq105) && hydrophobic	0.0165022
polar(HlaPreSeq105) && hydrophobic	0.0155302
large(HlaPreSeq127) && hydrophobic	0.00975717
positive(HlaPreSeq127) && hydrophobic	0.00978399
charged(HlaPreSeq127) && hydrophobic	0.00953865
medium(HlaPreSeq152) && hydrophobic	-0.0136953
aliphatic(HlaPreSeq156) && hydrophobic	-0.0202503
buried(HlaPreSeq156) && hydrophobic	-0.0078891
medium(HlaPreSeq163) && hydrophobic	-0.0127825
large(HlaPreSeq66) && small(E2)	-0.026047
positive(HlaPreSeq66) && small(E2)	-0.0078962
charged(HlaPreSeq66) && small(E2)	-0.0080355
aliphatic(HlaPreSeq67) && small(E2)	-0.0092618
medium(HlaPreSeq67) && small(E2)	-0.0140325
positive(HlaPreSeq74) && small(E2)	-0.0143014
negative(HlaPreSeq77) && small(E2)	-0.0113304
charged(HlaPreSeq77) && small(E2)	-0.0114126
aliphatic(HlaPreSeq90) && small(E2)	-0.0146945
medium(HlaPreSeq95) && small(E2)	-0.0180105
polar(HlaPreSeq97) && small(E2)	-0.0161555
small(HlaPreSeq105) && small(E2)	-0.0177609
polar(HlaPreSeq105) && small(E2)	-0.0179114
cyclic(HlaPreSeq107) && small(E2)	-0.0146694
aromatic(HlaPreSeq107) && small(E2)	-0.0146737
buried(HlaPreSeq107) && small(E2)	-0.014678
large(HlaPreSeq107) && small(E2)	-0.0146824
cyclic(HlaPreSeq114) && small(E2)	-0.0216822
aromatic(HlaPreSeq114) && small(E2)	-0.0217261
medium(HlaPreSeq142) && small(E2)	-0.0093923
polar(HlaPreSeq142) && small(E2)	-0.0093878
cyclic(HlaPreSeq145) && small(E2)	-0.009383
aromatic(HlaPreSeq145) && small(E2)	-0.0093776

medium(HlaPreSeq152) && small(	-0.0171622
aliphatic(HlaPreSeq156) && small(	-0.0223814
medium(HlaPreSeq163) && small(	-0.0183023
HlaPreSeq127=Lys && E3=Val	0.00816832
HlaPreSeq142=Thr && E3=Val	0.0093653
HlaPreSeq145=His && E3=Val	0.00933818
large(HlaPreSeq66) && aliphatic(E	0.00863806
cyclic(HlaPreSeq116) && aliphatic(	-0.0155946
aromatic(HlaPreSeq116) && aliphatic	-0.0152836
large(HlaPreSeq116) && aliphatic(	-0.012707
medium(HlaPreSeq163) && aliphatic	-0.0220584
cyclic(HlaPreSeq167) && aliphatic(	-0.0188305
aromatic(HlaPreSeq167) && aliphatic	-0.0173553
buried(HlaPreSeq167) && aliphatic	-0.0158345
large(HlaPreSeq167) && aliphatic(	-0.014312
aliphatic(HlaPreSeq67) && buried(	0.0177837
medium(HlaPreSeq67) && buried(	0.0230775
medium(HlaPreSeq76) && buried(	0.00617105
negative(HlaPreSeq77) && buried(	0.0257227
charged(HlaPreSeq77) && buried(l	0.0253724
aliphatic(HlaPreSeq156) && buried	0.0362681
medium(HlaPreSeq163) && buried	-0.0142454
medium(HlaPreSeq76) && hydroph	0.021055
negative(HlaPreSeq77) && hydroph	0.0279354
charged(HlaPreSeq77) && hydroph	0.0255911
positive(HlaPreSeq97) && hydroph	-0.0115525
charged(HlaPreSeq97) && hydroph	-0.0113602
large(HlaPreSeq116) && hydrophobic	-0.0173882
small(HlaPreSeq158) && hydrophobic	0.0202472
medium(HlaPreSeq163) && hydrophobic	-0.0117745
small(HlaPreSeq62) && medium(E	-0.0124688
large(HlaPreSeq66) && medium(E	-0.0106189
aliphatic(HlaPreSeq67) && medium	-0.0196335
medium(HlaPreSeq67) && medium	-0.0282621
positive(HlaPreSeq74) && medium	-0.0153735
medium(HlaPreSeq76) && medium	-0.0099065
negative(HlaPreSeq77) && medium	-0.0221755
charged(HlaPreSeq77) && medium	-0.0224832
aromatic(HlaPreSeq107) && medium	-0.0175195
buried(HlaPreSeq107) && medium	-0.0176654
large(HlaPreSeq107) && medium(l	-0.0177701
large(HlaPreSeq116) && medium(l	0.00932353
aliphatic(HlaPreSeq156) && medium	-0.0173603
buried(HlaPreSeq156) && medium	-0.0189397
hydrophobic(HlaPreSeq156) && medium	-0.0172359
cyclic(HlaPreSeq167) && medium(	-0.0086304
aromatic(HlaPreSeq167) && medium	-0.0062761

buried(HlaPreSeq167) && medium	-0.0041467
HlaPreSeq66=Lys && E4=Asp	0.0193375
HlaPreSeq156=Leu && E4=Asp	-0.0130373
small(HlaPreSeq62) && medium(E	-0.0098259
medium(HlaPreSeq67) && mediun	-0.0081627
cyclic(HlaPreSeq74) && medium(E	-0.0153379
aromatic(HlaPreSeq74) && mediun	-0.0145887
large(HlaPreSeq74) && medium(E	-0.0138623
medium(HlaPreSeq76) && mediun	-0.0079545
negative(HlaPreSeq77) && mediur	-0.0160322
charged(HlaPreSeq77) && mediun	-0.0163529
medium(HlaPreSeq152) && mediu	0.00755236
medium(HlaPreSeq163) && mediu	-0.0075786
large(HlaPreSeq66) && negative(E	0.0225385
positive(HlaPreSeq66) && negativ	0.023108
charged(HlaPreSeq66) && negativ	0.0232545
cyclic(HlaPreSeq74) && negative(E	0.0236892
aromatic(HlaPreSeq74) && negativ	0.023963
large(HlaPreSeq74) && negative(E	0.024223
positive(HlaPreSeq74) && negativ	0.0195571
medium(HlaPreSeq95) && negativ	0.021043
positive(HlaPreSeq97) && negativ	0.0257359
charged(HlaPreSeq97) && negativ	0.0258496
aliphatic(HlaPreSeq67) && charge	-0.0108002
medium(HlaPreSeq67) && charge	-0.0237141
cyclic(HlaPreSeq74) && charged(E	0.0188314
aromatic(HlaPreSeq74) && charge	0.0188499
large(HlaPreSeq74) && charged(E	0.0187765
medium(HlaPreSeq152) && charge	-0.01909
aliphatic(HlaPreSeq156) && charge	-0.0157434
medium(HlaPreSeq67) && polar(E	-0.0178529
medium(HlaPreSeq76) && polar(E	-0.0197816
HlaPreSeq66=Lys && E5=Leu	0.0173949
HlaPreSeq90=Ala && E5=Leu	-0.0221095
HlaPreSeq152=Val && E5=Leu	0.00824737
HlaPreSeq156=Leu && E5=Leu	-0.0258748
HlaPreSeq163=Thr && E5=Leu	0.0137805
large(HlaPreSeq66) && aliphatic(E	0.0152646
aliphatic(HlaPreSeq67) && aliphati	-0.0173836
medium(HlaPreSeq67) && aliphati	-0.018798
polar(HlaPreSeq97) && aliphatic(E	0.0179824
small(HlaPreSeq150) && aliphatic(	-0.0095482
aliphatic(HlaPreSeq156) && alipha	-0.0078367
small(HlaPreSeq158) && aliphatic(	-0.0098598
aliphatic(HlaPreSeq62) && buried(	-0.0226625
hydrophobic(HlaPreSeq62) && bui	-0.0229709
small(HlaPreSeq62) && buried(E5)	-0.0292315

cyclic(HlaPreSeq74) && buried(E5)	-0.0228196
positive(HlaPreSeq74) && buried(E5)	-0.0191205
aliphatic(HlaPreSeq90) && buried(E5)	0.0116457
buried(HlaPreSeq90) && buried(E5)	0.0129722
hydrophobic(HlaPreSeq90) && buried(E5)	0.0137361
small(HlaPreSeq90) && buried(E5)	0.0139867
buried(HlaPreSeq156) && buried(E5)	0.0170835
hydrophobic(HlaPreSeq156) && buried(E5)	0.0165625
aliphatic(HlaPreSeq67) && hydrophobic(E5)	-0.0011882
medium(HlaPreSeq67) && hydrophobic(E5)	-0.0071876
medium(HlaPreSeq163) && hydrophobic(E5)	-0.0164439
aliphatic(HlaPreSeq90) && large(E5)	0.0204784
buried(HlaPreSeq90) && large(E5)	0.0202206
hydrophobic(HlaPreSeq90) && large(E5)	0.0192525
small(HlaPreSeq90) && large(E5)	0.0178182
medium(HlaPreSeq152) && large(E5)	0.0165101
aliphatic(HlaPreSeq156) && large(E5)	0.0118912
buried(HlaPreSeq156) && large(E5)	0.0129323
hydrophobic(HlaPreSeq156) && large(E5)	0.0112957
medium(HlaPreSeq163) && large(E5)	0.022577
HlaPreSeq67=Val && E6=Ser	0.0138209
HlaPreSeq76=Val && E6=Ser	0.0203186
HlaPreSeq77=Asp && E6=Ser	0.0152699
HlaPreSeq105=Ser && E6=Ser	0.015084
aliphatic(HlaPreSeq62) && small(E6)	-0.0220993
hydrophobic(HlaPreSeq62) && small(E6)	-0.0220669
small(HlaPreSeq62) && small(E6)	-0.0197859
negative(HlaPreSeq77) && small(E6)	0.0164841
charged(HlaPreSeq77) && small(E6)	0.016368
small(HlaPreSeq105) && small(E6)	0.0104346
polar(HlaPreSeq105) && small(E6)	0.010364
medium(HlaPreSeq152) && small(E6)	-0.0224128
buried(HlaPreSeq156) && small(E6)	-0.0109157
hydrophobic(HlaPreSeq156) && small(E6)	-0.0108728
medium(HlaPreSeq95) && polar(E6)	0.0208151
positive(HlaPreSeq97) && polar(E6)	-0.0067136
charged(HlaPreSeq97) && polar(E6)	-0.0062868
polar(HlaPreSeq97) && polar(E6)	-0.0092315
cyclic(HlaPreSeq116) && polar(E6)	0.012981
aromatic(HlaPreSeq116) && polar(E6)	0.0126125
hydrophobic(HlaPreSeq116) && polar(E6)	0.0169612
large(HlaPreSeq116) && polar(E6)	0.0133718
buried(HlaPreSeq156) && polar(E6)	-0.0052578
hydrophobic(HlaPreSeq156) && polar(E6)	-0.0055803
HlaPreSeq66=Lys && E7=His	0.0109819
HlaPreSeq95=Val && E7=His	0.0130187
HlaPreSeq97=Arg && E7=His	0.0110429

HlaPreSeq116=Tyr && E7=His	0.0108066
aliphatic(HlaPreSeq156) && cyclic(E7)	0.00907461
buried(HlaPreSeq156) && cyclic(E7)	0.00244151
hydrophobic(HlaPreSeq156) && cyclic(E7)	0.00173889
large(HlaPreSeq66) && aromatic(E7)	0.0297162
positive(HlaPreSeq66) && aromatic(E7)	0.0272738
charged(HlaPreSeq66) && aromatic(E7)	0.0271363
medium(HlaPreSeq67) && aromatic(E7)	-0.0012641
polar(HlaPreSeq97) && aromatic(E7)	0.027381
buried(HlaPreSeq156) && aromatic(E7)	0.00160168
hydrophobic(HlaPreSeq156) && aromatic(E7)	0.00128728
medium(HlaPreSeq67) && large(E7)	0.0233599
medium(HlaPreSeq95) && large(E7)	0.00178935
buried(HlaPreSeq156) && large(E7)	0.0173698
hydrophobic(HlaPreSeq156) && large(E7)	0.0163112
aliphatic(HlaPreSeq62) && positive(E7)	-0.0172759
hydrophobic(HlaPreSeq62) && positive(E7)	-0.017372
negative(HlaPreSeq77) && positive(E7)	-0.0172343
charged(HlaPreSeq77) && positive(E7)	-0.0173383
positive(HlaPreSeq97) && positive(E7)	-0.0187647
charged(HlaPreSeq97) && positive(E7)	-0.018721
cyclic(HlaPreSeq114) && positive(E7)	-0.0200728
aromatic(HlaPreSeq114) && positive(E7)	-0.0201452
aliphatic(HlaPreSeq156) && positive(E7)	-0.0167777
aliphatic(HlaPreSeq62) && charged(E7)	-0.0191833
hydrophobic(HlaPreSeq62) && charged(E7)	-0.0193137
small(HlaPreSeq62) && charged(E7)	-0.01344
aliphatic(HlaPreSeq67) && charged(E7)	-0.0204815
medium(HlaPreSeq67) && charged(E7)	-0.0276462
positive(HlaPreSeq74) && charged(E7)	-0.0132825
medium(HlaPreSeq76) && charged(E7)	-0.0181654
negative(HlaPreSeq77) && charged(E7)	-0.0250457
charged(HlaPreSeq77) && charged(E7)	-0.0247734
cyclic(HlaPreSeq116) && charged(E7)	0.0155188
aromatic(HlaPreSeq116) && charged(E7)	0.016147
hydrophobic(HlaPreSeq116) && charged(E7)	0.00683499
large(HlaPreSeq116) && charged(E7)	0.0154542
aliphatic(HlaPreSeq156) && charged(E7)	-0.0291696
small(HlaPreSeq158) && charged(E7)	0.00802353
cyclic(HlaPreSeq116) && polar(E7)	0.0038029
aromatic(HlaPreSeq116) && polar(E7)	0.00427109
buried(HlaPreSeq156) && polar(E7)	0.0142493
hydrophobic(HlaPreSeq156) && polar(E7)	0.0144515
medium(HlaPreSeq163) && polar(E7)	-0.0197349
large(HlaPreSeq66) && cyclic(E8)	-0.0154909
medium(HlaPreSeq67) && cyclic(E8)	-0.0118994
negative(HlaPreSeq77) && cyclic(E8)	0.0101631

charged(HlaPreSeq77) && cyclic(E	0.0100456
cyclic(HlaPreSeq116) && cyclic(E8)	-0.0171667
aromatic(HlaPreSeq116) && cyclic	-0.0173786
hydrophobic(HlaPreSeq116) && cy	-0.0181629
large(HlaPreSeq116) && cyclic(E8)	-0.0186658
medium(HlaPreSeq67) && aromat	-0.020076
cyclic(HlaPreSeq74) && aromatic(f	0.0170822
aromatic(HlaPreSeq74) && aroma	0.017013
large(HlaPreSeq74) && aromatic(E	0.016948
positive(HlaPreSeq97) && aromati	0.0116432
charged(HlaPreSeq97) && aromati	0.0116149
medium(HlaPreSeq76) && buried(	-0.0105502
negative(HlaPreSeq77) && buried(	-0.0220144
charged(HlaPreSeq77) && buried(l	-0.0226479
small(HlaPreSeq105) && buried(E8	-0.0155449
polar(HlaPreSeq105) && buried(E8	-0.0161329
cyclic(HlaPreSeq116) && buried(E8	0.0180663
aromatic(HlaPreSeq116) && burie	0.0174164
hydrophobic(HlaPreSeq116) && bi	0.0194305
medium(HlaPreSeq95) && hydrop	0.00573068
cyclic(HlaPreSeq116) && hydrophc	0.0118312
buried(HlaPreSeq156) && hydropt	-0.0157401
hydrophobic(HlaPreSeq156) && h	-0.0150069
aliphatic(HlaPreSeq67) && large(E	-0.0147387
cyclic(HlaPreSeq74) && large(E8)	-0.0194203
aromatic(HlaPreSeq74) && large(E	-0.0189608
medium(HlaPreSeq76) && large(E	-0.0158452
negative(HlaPreSeq77) && large(E	-0.016439
charged(HlaPreSeq77) && large(E8	-0.0160305
medium(HlaPreSeq152) && large(l	0.00567717
buried(HlaPreSeq156) && large(E8	0.00486394
hydrophobic(HlaPreSeq156) && la	0.00518934
medium(HlaPreSeq163) && large(l	0.0190344
HlaPreSeq44=Arg && E9=Leu	0.0116319
HlaPreSeq66=Lys && E9=Leu	0.0160849
HlaPreSeq90=Ala && E9=Leu	0.0164742
HlaPreSeq97=Arg && E9=Leu	0.0166599
HlaPreSeq114=His && E9=Leu	0.0321056
HlaPreSeq116=Tyr && E9=Leu	0.0183949
HlaPreSeq127=Lys && E9=Leu	0.0200199
HlaPreSeq142=Thr && E9=Leu	0.0105251
HlaPreSeq145=His && E9=Leu	0.0102854
HlaPreSeq150=Ala && E9=Leu	0.0130218
HlaPreSeq152=Val && E9=Leu	0.0196228
HlaPreSeq158=Ala && E9=Leu	0.00875748
HlaPreSeq163=Thr && E9=Leu	0.016128
aliphatic(HlaPreSeq62) && aliphati	0.004739

hydrophobic(HlaPreSeq62) && aliq	0.00365242
large(HlaPreSeq66) && aliphatic(E	0.0209099
positive(HlaPreSeq66) && aliphatic	0.0111952
charged(HlaPreSeq66) && aliphatic	0.0105567
medium(HlaPreSeq67) && aliphatic	0.0167789
positive(HlaPreSeq74) && aliphatic	0.00939013
medium(HlaPreSeq95) && aliphatic	0.00975916
positive(HlaPreSeq97) && aliphatic	-0.0156781
charged(HlaPreSeq97) && aliphatic	-0.0143866
small(HlaPreSeq105) && aliphatic(	-0.0135983
polar(HlaPreSeq105) && aliphatic(	-0.0138341
cyclic(HlaPreSeq107) && aliphatic(	0.0131308
aromatic(HlaPreSeq107) && aliphatic	0.0129119
buried(HlaPreSeq107) && aliphatic	0.0126231
large(HlaPreSeq107) && aliphatic(	0.01224
cyclic(HlaPreSeq114) && aliphatic(	0.0253868
aromatic(HlaPreSeq114) && aliphatic	0.0242935
cyclic(HlaPreSeq116) && aliphatic(	0.0228387
aromatic(HlaPreSeq116) && aliphatic	0.0213504
hydrophobic(HlaPreSeq116) && al	0.0314316
large(HlaPreSeq116) && aliphatic(	0.0216635
large(HlaPreSeq127) && aliphatic(	0.0132917
positive(HlaPreSeq127) && aliphatic	0.0114708
charged(HlaPreSeq127) && aliphatic	0.00981549
small(HlaPreSeq150) && aliphatic(	-0.0236258
medium(HlaPreSeq152) && aliphatic	-0.0160571
aliphatic(HlaPreSeq156) && aliphatic	-0.02583
buried(HlaPreSeq156) && aliphatic	-0.0100264
hydrophobic(HlaPreSeq156) && al	-0.0090825
small(HlaPreSeq158) && aliphatic(	-0.0215076
medium(HlaPreSeq163) && aliphatic	-0.0084468
large(HlaPreSeq166) && aliphatic(	-0.0136964
large(HlaPreSeq66) && buried(E9)	0.0296457
positive(HlaPreSeq66) && buried(I	0.0237583
charged(HlaPreSeq66) && buried(I	0.020864
aliphatic(HlaPreSeq67) && buried(	-0.0358377
medium(HlaPreSeq67) && buried(	-0.0234368
positive(HlaPreSeq74) && buried(I	-0.0100955
medium(HlaPreSeq76) && buried(	-0.0121747
negative(HlaPreSeq77) && buried(	-0.0311779
charged(HlaPreSeq77) && buried(I	-0.0303662
small(HlaPreSeq105) && buried(E9)	-0.0310186
polar(HlaPreSeq105) && buried(E9)	-0.0286263
cyclic(HlaPreSeq114) && buried(E9)	0.0142814
aromatic(HlaPreSeq114) && buried	0.0157143
cyclic(HlaPreSeq116) && buried(E9)	0.0364381
aromatic(HlaPreSeq116) && buried	0.0342796

hydrophobic(HlaPreSeq116) && buried(E9)	0.042699
large(HlaPreSeq116) && buried(E9)	0.0290849
small(HlaPreSeq150) && buried(E9)	-0.0029376
aliphatic(HlaPreSeq156) && buried(E9)	-0.0285543
buried(HlaPreSeq156) && buried(E9)	-0.0172343
hydrophobic(HlaPreSeq156) && buried(E9)	-0.0149424
large(HlaPreSeq166) && buried(E9)	-0.0027524
cyclic(HlaPreSeq167) && buried(E9)	-0.0056181
aromatic(HlaPreSeq167) && buried(E9)	-0.0053296
aliphatic(HlaPreSeq62) && hydrophobic(HlaPreSeq62)	-0.0202554
hydrophobic(HlaPreSeq62) && hydrophobic(HlaPreSeq62)	-0.0186664
small(HlaPreSeq62) && hydrophobic(HlaPreSeq62)	-0.0246288
large(HlaPreSeq66) && hydrophobic(HlaPreSeq66)	-0.0152018
positive(HlaPreSeq66) && hydrophobic(HlaPreSeq66)	-0.0196683
charged(HlaPreSeq66) && hydrophobic(HlaPreSeq66)	-0.0166729
aliphatic(HlaPreSeq67) && hydrophobic(HlaPreSeq67)	-0.032298
medium(HlaPreSeq67) && hydrophobic(HlaPreSeq67)	-0.0319305
positive(HlaPreSeq74) && hydrophobic(HlaPreSeq74)	-0.014758
medium(HlaPreSeq76) && hydrophobic(HlaPreSeq76)	-0.0426415
negative(HlaPreSeq77) && hydrophobic(HlaPreSeq77)	-0.0399593
charged(HlaPreSeq77) && hydrophobic(HlaPreSeq77)	-0.0367926
aliphatic(HlaPreSeq90) && hydrophobic(HlaPreSeq90)	0.0119591
buried(HlaPreSeq90) && hydrophobic(HlaPreSeq90)	0.0116499
positive(HlaPreSeq97) && hydrophobic(HlaPreSeq97)	0.027404
charged(HlaPreSeq97) && hydrophobic(HlaPreSeq97)	0.0264874
small(HlaPreSeq150) && hydrophobic(HlaPreSeq150)	-0.006615
medium(HlaPreSeq152) && hydrophobic(HlaPreSeq152)	0.017131
small(HlaPreSeq158) && hydrophobic(HlaPreSeq158)	-0.0096129
large(HlaPreSeq166) && hydrophobic(HlaPreSeq166)	-0.0105249
cyclic(HlaPreSeq167) && hydrophobic(HlaPreSeq167)	-0.0103689
aromatic(HlaPreSeq167) && hydrophobic(HlaPreSeq167)	-0.0089386
buried(HlaPreSeq167) && hydrophobic(HlaPreSeq167)	-0.0074771
aliphatic(HlaPreSeq62) && large(E9)	-0.0220291
hydrophobic(HlaPreSeq62) && large(E9)	-0.0210856
small(HlaPreSeq62) && large(E9)	-0.0215068
aliphatic(HlaPreSeq67) && large(E9)	0.0159449
medium(HlaPreSeq67) && large(E9)	0.0132269
positive(HlaPreSeq74) && large(E9)	-0.0203198
aliphatic(HlaPreSeq90) && large(E9)	0.0110657
medium(HlaPreSeq95) && large(E9)	-0.0179043
cyclic(HlaPreSeq107) && large(E9)	-0.0230682
aromatic(HlaPreSeq107) && large(E9)	-0.0227135
buried(HlaPreSeq107) && large(E9)	-0.0222955
large(HlaPreSeq107) && large(E9)	-0.0218039
cyclic(HlaPreSeq116) && large(E9)	-0.0136222
aromatic(HlaPreSeq116) && large(E9)	-0.0133773
hydrophobic(HlaPreSeq116) && large(E9)	-0.0216209

large(HlaPreSeq116) && large(E9)	-0.0175022
medium(HlaPreSeq142) && large(l	-0.0205227
polar(HlaPreSeq142) && large(E9)	-0.0193659
cyclic(HlaPreSeq145) && large(E9)	-0.0181532
aromatic(HlaPreSeq145) && large(l	-0.0169095
small(HlaPreSeq150) && large(E9)	0.0355911
medium(HlaPreSeq152) && large(l	0.0107144
buried(HlaPreSeq156) && large(E9)	0.00905218
hydrophobic(HlaPreSeq156) && la	0.00937503
small(HlaPreSeq158) && large(E9)	0.0294171
large(HlaPreSeq166) && large(E9)	0.0157872
cyclic(HlaPreSeq167) && large(E9)	0.0177818
aromatic(HlaPreSeq167) && large(l	0.014486
AA in Epitope[@1-2]	0.0234201
VD in Epitope[@3-4]	-0.0108113
SH in Epitope[@6-7]	0.00908701
HF in Epitope[@7-8]	0.0125965
cyclic,aromatic in Epitope[@7-8]	0.016043
aromatic,aromatic in Epitope[@7-8]	0.0141141
HlaPreSeq62=Gly && E1=Leu	0.0101151
HlaPreSeq95=Val && E1=Leu	0.0107094
HlaPreSeq156=Leu && E1=Leu	0.0103358
HlaPreSeq163=Thr && E1=Leu	-0.020045
aliphatic(HlaPreSeq62) && large(E	0.0119599
hydrophobic(HlaPreSeq62) && lar	0.0130502
small(HlaPreSeq62) && large(E1)	0.0141073
large(HlaPreSeq66) && large(E1)	-0.0080854
cyclic(HlaPreSeq74) && large(E1)	0.0194815
aromatic(HlaPreSeq74) && large(E	0.0190833
large(HlaPreSeq74) && large(E1)	0.0183438
aliphatic(HlaPreSeq156) && large(l	0.0207534
buried(HlaPreSeq156) && large(E1)	0.0278579
hydrophobic(HlaPreSeq156) && la	0.0243287
HlaPreSeq62=Gly && E2=Leu	0.025983
HlaPreSeq66=Lys && E2=Leu	0.0227711
HlaPreSeq67=Val && E2=Leu	0.0130347
HlaPreSeq74=His && E2=Leu	0.0310048
HlaPreSeq76=Val && E2=Leu	0.0284116
HlaPreSeq77=Asp && E2=Leu	0.0264203
HlaPreSeq95=Val && E2=Leu	0.0412971
HlaPreSeq105=Ser && E2=Leu	0.0170167
HlaPreSeq107=Trp && E2=Leu	0.0329943
HlaPreSeq114=His && E2=Leu	0.0157805
HlaPreSeq116=Tyr && E2=Leu	0.0294941
HlaPreSeq127=Lys && E2=Leu	0.0136031
HlaPreSeq142=Thr && E2=Leu	0.0196947
HlaPreSeq145=His && E2=Leu	0.0193882

HlaPreSeq163=Thr && E2=Leu	0.0199106
aliphatic(HlaPreSeq62) && large(E	0.0118989
hydrophobic(HlaPreSeq62) && lar	0.010395
large(HlaPreSeq66) && large(E2)	0.0305513
positive(HlaPreSeq66) && large(E2	0.0232286
charged(HlaPreSeq66) && large(E2	0.021214
medium(HlaPreSeq67) && large(E	0.0206685
medium(HlaPreSeq76) && large(E	-0.0113231
aliphatic(HlaPreSeq90) && large(E	-0.0129467
buried(HlaPreSeq90) && large(E2)	-0.0142129
hydrophobic(HlaPreSeq90) && lar	-0.0143704
small(HlaPreSeq90) && large(E2)	-0.0137844
positive(HlaPreSeq97) && large(E2	-0.010418
polar(HlaPreSeq97) && large(E2)	-0.0138654
small(HlaPreSeq105) && large(E2)	0.00985947
polar(HlaPreSeq105) && large(E2)	0.0100545
cyclic(HlaPreSeq114) && large(E2)	0.0171217
aromatic(HlaPreSeq114) && large(	0.0164898
small(HlaPreSeq150) && large(E2)	-0.0186511
aliphatic(HlaPreSeq156) && large(	0.0117368
small(HlaPreSeq158) && large(E2)	-0.0211178
medium(HlaPreSeq163) && large(l	0.0147603
large(HlaPreSeq166) && large(E2)	-0.0233277
cyclic(HlaPreSeq167) && large(E2)	-0.021343
aromatic(HlaPreSeq167) && large(	-0.0193112
buried(HlaPreSeq167) && large(E2	-0.0171125
large(HlaPreSeq167) && large(E2)	-0.0148989
HlaPreSeq66=Lys && E3=Asp	0.0136886
HlaPreSeq90=Ala && E3=Asp	0.0190635
HlaPreSeq97=Arg && E3=Asp	0.0229793
HlaPreSeq156=Leu && E3=Asp	0.028427
HlaPreSeq163=Thr && E3=Asp	0.0199878
large(HlaPreSeq66) && negative(E	0.0119159
positive(HlaPreSeq66) && negativ	0.0162255
charged(HlaPreSeq66) && negativ	0.0163459
aliphatic(HlaPreSeq67) && negativ	-0.0183422
cyclic(HlaPreSeq74) && negative(E	0.0155842
aromatic(HlaPreSeq74) && negativ	0.0157857
large(HlaPreSeq74) && negative(E	0.0159892
negative(HlaPreSeq77) && negativ	-0.0116631
charged(HlaPreSeq77) && negativ	-0.0114922
positive(HlaPreSeq97) && negativ	0.0209885
charged(HlaPreSeq97) && negativ	0.0211458
small(HlaPreSeq150) && negative(	-0.0175774
aliphatic(HlaPreSeq156) && negat	0.0307096
buried(HlaPreSeq156) && negativ	0.0229888
hydrophobic(HlaPreSeq156) && n	0.023208

small(HlaPreSeq158) && negative(	-0.019685
medium(HlaPreSeq163) && negati	0.0264053
large(HlaPreSeq166) && negative(	-0.0091346
cyclic(HlaPreSeq167) && negative(	-0.0076235
aromatic(HlaPreSeq167) && negat	-0.0074982
buried(HlaPreSeq167) && negativ	-0.0073924
large(HlaPreSeq167) && negative(	-0.0073022
large(HlaPreSeq66) && charged(E:	0.0207973
aliphatic(HlaPreSeq67) && charge	-0.023665
medium(HlaPreSeq67) && charge	-0.0163765
negative(HlaPreSeq77) && charge	-0.0043744
charged(HlaPreSeq77) && charge	-0.0043284
cyclic(HlaPreSeq116) && charged(	0.0213888
aromatic(HlaPreSeq116) && charg	0.0208912
hydrophobic(HlaPreSeq116) && cl	0.0193192
large(HlaPreSeq116) && charged(f	0.0213775
small(HlaPreSeq150) && charged(l	-0.0115114
small(HlaPreSeq158) && charged(l	-0.013483
medium(HlaPreSeq163) && charge	0.0287571
large(HlaPreSeq166) && charged(f	-0.0033738
aliphatic(HlaPreSeq62) && polar(E	-0.021786
hydrophobic(HlaPreSeq62) && pol	-0.0219744
small(HlaPreSeq62) && polar(E3)	-0.0216697
large(HlaPreSeq66) && polar(E3)	-0.0246196
positive(HlaPreSeq66) && polar(E:	-0.0219728
charged(HlaPreSeq66) && polar(E:	-0.0222689
aliphatic(HlaPreSeq67) && polar(E	-0.0215991
positive(HlaPreSeq74) && polar(E:	-0.0108222
medium(HlaPreSeq76) && polar(E	-0.0172283
negative(HlaPreSeq77) && polar(E	-0.0159861
charged(HlaPreSeq77) && polar(E:	-0.0152271
medium(HlaPreSeq95) && polar(E	-0.0123379
small(HlaPreSeq105) && polar(E3)	-0.0192685
polar(HlaPreSeq105) && polar(E3)	-0.0189072
large(HlaPreSeq127) && polar(E3)	-0.0207128
HlaPreSeq11=Ser && E4=Ile	0.0196134
HlaPreSeq12=Val && E4=Ile	0.0156989
HlaPreSeq63=Glu && E4=Ile	0.0150314
HlaPreSeq69=Ala && E4=Ile	0.0208388
HlaPreSeq171=Tyr && E4=Ile	0.0166783
aliphatic(HlaPreSeq67) && aliphati	-0.0162072
medium(HlaPreSeq67) && aliphati	-0.0110053
cyclic(HlaPreSeq74) && aliphatic(E	0.0111659
aromatic(HlaPreSeq74) && aliphatic	0.0116759
large(HlaPreSeq74) && aliphatic(E	0.0120923
cyclic(HlaPreSeq114) && aliphatic(	-0.0135308
aromatic(HlaPreSeq114) && aliphatic	-0.0133037

cyclic(HlaPreSeq116) && aliphatic(	-0.0282822
aromatic(HlaPreSeq116) && aliphatic(	-0.0279529
hydrophobic(HlaPreSeq116) && aliphatic(	-0.0190112
large(HlaPreSeq116) && aliphatic(	-0.0257927
medium(HlaPreSeq152) && aliphatic(	0.0137907
medium(HlaPreSeq76) && buried(	0.00789902
negative(HlaPreSeq77) && buried(	0.0216943
charged(HlaPreSeq77) && buried(	0.0225199
aliphatic(HlaPreSeq90) && buried(	0.00762809
buried(HlaPreSeq90) && buried(E4)	0.00845875
hydrophobic(HlaPreSeq90) && buried(E4)	0.00894292
small(HlaPreSeq90) && buried(E4)	0.00912475
positive(HlaPreSeq97) && buried(	-0.0269513
charged(HlaPreSeq97) && buried(	-0.0262194
medium(HlaPreSeq67) && hydrophobic(	0.0228352
medium(HlaPreSeq76) && hydrophobic(	0.0286965
negative(HlaPreSeq77) && hydrophobic(	0.0281989
charged(HlaPreSeq77) && hydrophobic(	0.0269293
aliphatic(HlaPreSeq62) && large(E4)	-0.0137392
hydrophobic(HlaPreSeq62) && large(E4)	-0.0134456
large(HlaPreSeq66) && large(E4)	-0.0208967
positive(HlaPreSeq66) && large(E4)	-0.0103708
medium(HlaPreSeq76) && large(E4)	0.00462167
negative(HlaPreSeq77) && large(E4)	0.0118935
charged(HlaPreSeq77) && large(E4)	0.0122869
medium(HlaPreSeq95) && large(E4)	-0.0152708
positive(HlaPreSeq97) && large(E4)	-0.018069
charged(HlaPreSeq97) && large(E4)	-0.0175659
polar(HlaPreSeq97) && large(E4)	-0.0181874
HlaPreSeq77=Asp && E5=Glu	-0.019338
HlaPreSeq116=Tyr && E5=Glu	-0.0189989
medium(HlaPreSeq67) && negative(	-0.0204921
medium(HlaPreSeq95) && negative(	0.00711219
positive(HlaPreSeq97) && negative(	0.0154886
charged(HlaPreSeq97) && negative(	0.0155119
cyclic(HlaPreSeq116) && negative(	-0.0104702
aromatic(HlaPreSeq116) && negative(	-0.0104582
hydrophobic(HlaPreSeq116) && negative(	-0.0139885
large(HlaPreSeq116) && negative(	-0.0133077
aliphatic(HlaPreSeq156) && negative(	0.0115376
buried(HlaPreSeq156) && negative(	0.0161964
hydrophobic(HlaPreSeq156) && negative(	0.0161785
medium(HlaPreSeq95) && charged(E4)	0.00825301
large(HlaPreSeq127) && charged(E4)	-0.0193626
positive(HlaPreSeq127) && charged(E4)	-0.0193285
charged(HlaPreSeq127) && charged(E4)	-0.0192971
aliphatic(HlaPreSeq156) && charged(E4)	0.01879

cyclic(HlaPreSeq167) && charged(	0.0236246
aromatic(HlaPreSeq167) && charg	0.0228817
medium(HlaPreSeq67) && polar(E	0.0100304
medium(HlaPreSeq163) && polar(	0.0181144
HlaPreSeq66=Lys && E6=Asn	0.0119957
HlaPreSeq90=Ala && E6=Asn	-0.0238585
HlaPreSeq95=Val && E6=Asn	0.00972856
aliphatic(HlaPreSeq62) && mediur	0.0148487
hydrophobic(HlaPreSeq62) && me	0.0147557
small(HlaPreSeq62) && medium(E	0.0112032
aliphatic(HlaPreSeq67) && mediur	-0.0157881
medium(HlaPreSeq67) && mediun	-0.0115205
negative(HlaPreSeq77) && mediur	-0.0178953
charged(HlaPreSeq77) && mediun	-0.0178065
medium(HlaPreSeq95) && mediun	0.0167365
positive(HlaPreSeq97) && mediun	0.0165456
charged(HlaPreSeq97) && mediun	0.0167177
small(HlaPreSeq105) && medium(	-0.0098677
polar(HlaPreSeq105) && medium(	-0.0099719
small(HlaPreSeq150) && medium(	-0.0106056
small(HlaPreSeq158) && medium(	-0.0107662
HlaPreSeq90=Ala && E7=Arg	0.0181097
HlaPreSeq116=Tyr && E7=Arg	0.0125973
HlaPreSeq66=Lys && E8=Ala	0.0144767
HlaPreSeq156=Leu && E8=Ala	-0.0093957
polar(HlaPreSeq97) && aliphatic(E	0.0205504
small(HlaPreSeq105) && aliphatic(	-0.0133265
polar(HlaPreSeq105) && aliphatic(	-0.0130173
cyclic(HlaPreSeq116) && aliphatic(	0.0233476
aromatic(HlaPreSeq116) && aliphatic(	0.0232152
hydrophobic(HlaPreSeq116) && al	0.0166649
small(HlaPreSeq62) && small(E8)	0.0121066
cyclic(HlaPreSeq74) && small(E8)	0.0140783
aromatic(HlaPreSeq74) && small(E	0.0145405
large(HlaPreSeq74) && small(E8)	0.014994
positive(HlaPreSeq74) && small(E8)	0.0128589
medium(HlaPreSeq76) && small(E	0.00639947
medium(HlaPreSeq95) && small(E	0.0169709
polar(HlaPreSeq97) && small(E8)	0.0138521
cyclic(HlaPreSeq107) && small(E8)	0.0140416
aromatic(HlaPreSeq107) && small	0.0141551
buried(HlaPreSeq107) && small(E8)	0.014268
large(HlaPreSeq107) && small(E8)	0.0143773
cyclic(HlaPreSeq116) && small(E8)	0.00892098
aromatic(HlaPreSeq116) && small	0.00897685
medium(HlaPreSeq142) && small(	0.0139464
polar(HlaPreSeq142) && small(E8)	0.0140041

cyclic(HlaPreSeq145) && small(E8)	0.0140488
aromatic(HlaPreSeq145) && small	0.0140788
HlaPreSeq44=Arg && E9=Lys	0.0207078
HlaPreSeq67=Val && E9=Lys	0.0251739
HlaPreSeq76=Val && E9=Lys	0.031269
HlaPreSeq77=Asp && E9=Lys	0.0455212
HlaPreSeq97=Arg && E9=Lys	-0.0207216
HlaPreSeq150=Ala && E9=Lys	0.0217029
HlaPreSeq152=Val && E9=Lys	-0.0137565
HlaPreSeq158=Ala && E9=Lys	0.0225702
HlaPreSeq166=Glu && E9=Lys	0.0223667
HlaPreSeq167=Trp && E9=Lys	0.0256028
aliphatic(HlaPreSeq62) && positive	-0.0260534
hydrophobic(HlaPreSeq62) && positive	-0.0259985
small(HlaPreSeq62) && positive(E9)	-0.0172946
large(HlaPreSeq66) && positive(E9)	-0.0268234
positive(HlaPreSeq66) && positive	-0.0260561
charged(HlaPreSeq66) && positive	-0.0259969
aliphatic(HlaPreSeq67) && positive	0.0447722
medium(HlaPreSeq67) && positive	0.0462466
cyclic(HlaPreSeq74) && positive(E9)	-0.0230896
aromatic(HlaPreSeq74) && positive	-0.0229232
large(HlaPreSeq74) && positive(E9)	-0.0227567
positive(HlaPreSeq74) && positive	-0.0159599
medium(HlaPreSeq76) && positive	0.0578868
negative(HlaPreSeq77) && positive	0.0754549
charged(HlaPreSeq77) && positive	0.0766149
aliphatic(HlaPreSeq90) && positive	0.0141439
buried(HlaPreSeq90) && positive(I)	0.014949
hydrophobic(HlaPreSeq90) && positive	0.0156421
small(HlaPreSeq90) && positive(E9)	0.0162247
medium(HlaPreSeq95) && positive	-0.0115096
positive(HlaPreSeq97) && positive	-0.0329324
charged(HlaPreSeq97) && positive	-0.0328029
polar(HlaPreSeq97) && positive(E9)	-0.0125824
small(HlaPreSeq105) && positive(I)	0.0229565
polar(HlaPreSeq105) && positive(I)	0.0231303
cyclic(HlaPreSeq107) && positive(I)	-0.014012
aromatic(HlaPreSeq107) && positive	-0.0139812
buried(HlaPreSeq107) && positive	-0.0139504
large(HlaPreSeq107) && positive(E9)	-0.0139198
cyclic(HlaPreSeq116) && positive(I)	-0.0221612
aromatic(HlaPreSeq116) && positive	-0.022085
hydrophobic(HlaPreSeq116) && positive	-0.021557
large(HlaPreSeq116) && positive(E9)	-0.02456
large(HlaPreSeq127) && positive(E9)	-0.0109163
positive(HlaPreSeq127) && positive	-0.0108908

charged(HlaPreSeq127) && positiv	-0.010866
small(HlaPreSeq150) && positive(f	0.0447872
aliphatic(HlaPreSeq156) && positiv	0.0150548
small(HlaPreSeq158) && positive(f	0.045335
large(HlaPreSeq166) && positive(E	0.0460392
cyclic(HlaPreSeq167) && positive(l	0.0481251
aromatic(HlaPreSeq167) && positi	0.0474832
buried(HlaPreSeq167) && positive	0.0466199
large(HlaPreSeq167) && positive(E	0.0455573
aliphatic(HlaPreSeq62) && charge	-0.0246981
hydrophobic(HlaPreSeq62) && cha	-0.0246908
small(HlaPreSeq62) && charged(E	-0.0157449
large(HlaPreSeq66) && charged(E	-0.0290321
positive(HlaPreSeq66) && charged	-0.0281047
charged(HlaPreSeq66) && chargec	-0.0281142
aliphatic(HlaPreSeq67) && charge	0.0454408
medium(HlaPreSeq67) && chargec	0.0423306
cyclic(HlaPreSeq74) && charged(E	-0.0236915
aromatic(HlaPreSeq74) && charge	-0.0236637
large(HlaPreSeq74) && charged(E	-0.0236362
positive(HlaPreSeq74) && charged	-0.0113622
medium(HlaPreSeq76) && chargec	0.0487343
negative(HlaPreSeq77) && charge	0.0643065
charged(HlaPreSeq77) && chargec	0.0631117
medium(HlaPreSeq95) && chargec	-0.0118668
positive(HlaPreSeq97) && charged	-0.029506
charged(HlaPreSeq97) && chargec	-0.0294995
polar(HlaPreSeq97) && charged(E	-0.0086678
cyclic(HlaPreSeq107) && charged(	-0.0150325
aromatic(HlaPreSeq107) && charg	-0.0150274
buried(HlaPreSeq107) && charged	-0.0150219
large(HlaPreSeq107) && charged(f	-0.015016
cyclic(HlaPreSeq114) && charged(	-0.015552
aromatic(HlaPreSeq114) && charg	-0.0155825
cyclic(HlaPreSeq116) && charged(	-0.024299
aromatic(HlaPreSeq116) && charg	-0.0244147
hydrophobic(HlaPreSeq116) && cl	-0.0234642
large(HlaPreSeq116) && charged(f	-0.0276444
large(HlaPreSeq127) && charged(f	-0.0152941
positive(HlaPreSeq127) && charge	-0.0153189
charged(HlaPreSeq127) && charge	-0.0153429
medium(HlaPreSeq142) && charg	-0.0122473
polar(HlaPreSeq142) && charged(l	-0.0122476
cyclic(HlaPreSeq145) && charged(	-0.0122471
aromatic(HlaPreSeq145) && charg	-0.0122459
small(HlaPreSeq150) && charged(l	0.0225785
medium(HlaPreSeq152) && charg	-0.0183202

buried(HlaPreSeq156) && charged	-0.0106233
hydrophobic(HlaPreSeq156) && cl	-0.011526
small(HlaPreSeq158) && charged(l	0.0188347
medium(HlaPreSeq163) && chargε	-0.0184855
large(HlaPreSeq166) && charged(E	0.0190311
cyclic(HlaPreSeq167) && charged(	0.021499
aromatic(HlaPreSeq167) && charg	0.0197206
buried(HlaPreSeq167) && charged	0.0180319
large(HlaPreSeq167) && charged(E	0.016438
aliphatic(HlaPreSeq62) && polar(E	-0.0135063
hydrophobic(HlaPreSeq62) && pol	-0.0135163
large(HlaPreSeq66) && polar(E9)	-0.0179169
cyclic(HlaPreSeq74) && polar(E9)	-0.0151503
aromatic(HlaPreSeq74) && polar(E	-0.0150292
large(HlaPreSeq74) && polar(E9)	-0.0148989
medium(HlaPreSeq76) && polar(E	0.0317
negative(HlaPreSeq77) && polar(E	0.0372179
charged(HlaPreSeq77) && polar(E	0.0354444
aliphatic(HlaPreSeq90) && polar(E	-0.0192855
buried(HlaPreSeq90) && polar(E9)	-0.0206447
hydrophobic(HlaPreSeq90) && pol	-0.0217131
small(HlaPreSeq90) && polar(E9)	-0.0224902
positive(HlaPreSeq97) && polar(E	-0.0278261
charged(HlaPreSeq97) && polar(E	-0.0275373
polar(HlaPreSeq97) && polar(E9)	-0.0147186
cyclic(HlaPreSeq114) && polar(E9)	-0.0166412
aromatic(HlaPreSeq114) && polar	-0.0165003
cyclic(HlaPreSeq116) && polar(E9)	-0.016392
aromatic(HlaPreSeq116) && polar	-0.0162366
hydrophobic(HlaPreSeq116) && pα	-0.0112205
large(HlaPreSeq116) && polar(E9)	-0.0178645
large(HlaPreSeq127) && polar(E9)	-0.0177295
positive(HlaPreSeq127) && polar(E	-0.0175639
charged(HlaPreSeq127) && polar(l	-0.0173963
medium(HlaPreSeq152) && polar(	-0.0289635
buried(HlaPreSeq156) && polar(E	-0.0152067
hydrophobic(HlaPreSeq156) && pα	-0.0153557
medium(HlaPreSeq163) && polar(	-0.0272687
IE in Epitope	-0.0087098
positive,aliphatic in Epitope[@7-8]	-0.011906
HlaPreSeq95=Val && E1=Phe	0.0131597
HlaPreSeq114=His && E1=Phe	0.0122673
HlaPreSeq116=Tyr && E1=Phe	0.0180779
HlaPreSeq152=Val && E1=Phe	0.0101332
large(HlaPreSeq66) && cyclic(E1)	-0.0058153
aliphatic(HlaPreSeq67) && cyclic(E	-0.0196222
medium(HlaPreSeq67) && cyclic(E	-0.014534

medium(HlaPreSeq76) && cyclic(E	-0.0100689
negative(HlaPreSeq77) && cyclic(E	-0.0128788
charged(HlaPreSeq77) && cyclic(E	-0.0130625
aliphatic(HlaPreSeq90) && cyclic(E	-0.0134646
buried(HlaPreSeq90) && cyclic(E1)	-0.0137641
hydrophobic(HlaPreSeq90) && cyc	-0.0138665
small(HlaPreSeq90) && cyclic(E1)	-0.0137945
polar(HlaPreSeq97) && cyclic(E1)	-0.0136978
small(HlaPreSeq150) && cyclic(E1)	-0.0199805
aliphatic(HlaPreSeq156) && cyclic(	0.0125597
small(HlaPreSeq158) && cyclic(E1)	-0.0237922
large(HlaPreSeq166) && cyclic(E1)	-0.0131616
aliphatic(HlaPreSeq62) && arom	0.0148146
hydrophobic(HlaPreSeq62) && arc	0.0149538
small(HlaPreSeq62) && aromatic(E	0.00743017
large(HlaPreSeq66) && aromatic(E	0.0152662
positive(HlaPreSeq66) && aromati	0.00629656
charged(HlaPreSeq66) && aromati	0.0066929
cyclic(HlaPreSeq74) && aromatic(E	0.0185221
aromatic(HlaPreSeq74) && aroma	0.0188603
large(HlaPreSeq74) && aromatic(E	0.0191852
positive(HlaPreSeq74) && aromati	0.00816575
aliphatic(HlaPreSeq90) && arom	0.0109752
buried(HlaPreSeq90) && aromatic	0.0112345
hydrophobic(HlaPreSeq90) && arc	0.0113971
small(HlaPreSeq90) && aromatic(E	0.0114659
medium(HlaPreSeq95) && arom	0.0123282
small(HlaPreSeq105) && aromatic	0.00365499
polar(HlaPreSeq105) && aromatic	0.00382884
cyclic(HlaPreSeq107) && aromatic	0.00873168
aromatic(HlaPreSeq107) && arom	0.00888604
buried(HlaPreSeq107) && aromati	0.00903378
large(HlaPreSeq107) && aromatic(	0.00917391
cyclic(HlaPreSeq116) && aromatic	0.0148292
aromatic(HlaPreSeq116) && arom	0.0148878
hydrophobic(HlaPreSeq116) && ar	0.016953
large(HlaPreSeq116) && aromatic(	0.0134719
medium(HlaPreSeq142) && arom	0.00861468
polar(HlaPreSeq142) && aromatic	0.00869942
cyclic(HlaPreSeq145) && aromatic	0.0087724
medium(HlaPreSeq152) && arom	0.0166003
aliphatic(HlaPreSeq156) && arom	0.0247604
HlaPreSeq44=Arg && E2=Gly	-0.0202897
HlaPreSeq66=Lys && E2=Gly	-0.0123802
HlaPreSeq76=Val && E2=Gly	-0.0122157
HlaPreSeq90=Ala && E2=Gly	-0.0215069
HlaPreSeq150=Ala && E2=Gly	-0.0204083

HlaPreSeq152=Val && E2=Gly	-0.0138922
HlaPreSeq156=Leu && E2=Gly	-0.0175609
HlaPreSeq158=Ala && E2=Gly	-0.0200843
HlaPreSeq163=Thr && E2=Gly	-0.0163826
HlaPreSeq166=Glu && E2=Gly	-0.018531
HlaPreSeq167=Trp && E2=Gly	-0.0218733
HlaPreSeq44=Arg && E3=Tyr	0.0149788
HlaPreSeq67=Val && E3=Tyr	0.0171387
HlaPreSeq76=Val && E3=Tyr	0.0192431
HlaPreSeq150=Ala && E3=Tyr	0.0149975
HlaPreSeq158=Ala && E3=Tyr	0.0187904
HlaPreSeq166=Glu && E3=Tyr	0.0144083
HlaPreSeq167=Trp && E3=Tyr	0.0157422
positive(HlaPreSeq97) && cyclic(E:	-0.0240754
charged(HlaPreSeq97) && cyclic(E:	-0.024082
medium(HlaPreSeq152) && cyclic(E:	-0.0218812
medium(HlaPreSeq67) && aromat	0.0274147
medium(HlaPreSeq76) && aromat	0.0254875
negative(HlaPreSeq77) && aromat	0.0298288
charged(HlaPreSeq77) && aromati	0.0295392
aliphatic(HlaPreSeq90) && aromat	0.0145097
buried(HlaPreSeq90) && aromatic	0.0141316
hydrophobic(HlaPreSeq90) && arc	0.0137443
small(HlaPreSeq90) && aromatic(E	0.0133455
aliphatic(HlaPreSeq156) && aromã	0.0347711
buried(HlaPreSeq156) && aromati	0.0259311
hydrophobic(HlaPreSeq156) && ar	0.0255657
aliphatic(HlaPreSeq62) && large(E:	-0.011464
hydrophobic(HlaPreSeq62) && larç	-0.0117465
large(HlaPreSeq66) && large(E3)	-0.0099476
aliphatic(HlaPreSeq67) && large(E:	-0.0049042
cyclic(HlaPreSeq74) && large(E3)	-0.0091607
aromatic(HlaPreSeq74) && large(E	-0.0089677
large(HlaPreSeq74) && large(E3)	-0.0086712
aliphatic(HlaPreSeq90) && large(E:	-0.0185163
buried(HlaPreSeq90) && large(E3)	-0.0179188
hydrophobic(HlaPreSeq90) && larç	-0.0167801
small(HlaPreSeq90) && large(E3)	-0.015325
cyclic(HlaPreSeq116) && large(E3)	-0.0217004
aromatic(HlaPreSeq116) && large(	-0.0198282
hydrophobic(HlaPreSeq116) && la	-0.0196978
large(HlaPreSeq116) && large(E3)	-0.0209063
HlaPreSeq62=Gly && E4=Phe	-0.0155433
HlaPreSeq66=Lys && E4=Phe	-0.0141517
HlaPreSeq74=His && E4=Phe	-0.0173053
HlaPreSeq95=Val && E4=Phe	-0.0219308
HlaPreSeq97=Arg && E4=Phe	-0.0308093

HlaPreSeq107=Trp && E4=Phe	-0.0174144
HlaPreSeq116=Tyr && E4=Phe	-0.0168559
HlaPreSeq127=Lys && E4=Phe	-0.0181936
HlaPreSeq142=Thr && E4=Phe	-0.0174069
HlaPreSeq145=His && E4=Phe	-0.017404
HlaPreSeq152=Val && E4=Phe	-0.022915
cyclic(HlaPreSeq74) && cyclic(E4)	-0.0167506
aromatic(HlaPreSeq74) && cyclic(E4)	-0.0165244
large(HlaPreSeq74) && cyclic(E4)	-0.0162864
cyclic(HlaPreSeq116) && cyclic(E4)	0.0200638
aromatic(HlaPreSeq116) && cyclic(E4)	0.0202865
hydrophobic(HlaPreSeq116) && cyclic(E4)	0.018409
large(HlaPreSeq116) && cyclic(E4)	0.0196266
cyclic(HlaPreSeq74) && aromatic(E4)	-0.0277899
aromatic(HlaPreSeq74) && aromatic(E4)	-0.0276882
large(HlaPreSeq74) && aromatic(E4)	-0.0275818
medium(HlaPreSeq95) && aromatic(E4)	-0.0190384
HlaPreSeq44=Arg && E5=Ile	-0.016726
HlaPreSeq62=Gly && E5=Ile	-0.0166663
HlaPreSeq66=Lys && E5=Ile	-0.0219171
HlaPreSeq116=Tyr && E5=Ile	-0.0182622
HlaPreSeq152=Val && E5=Ile	0.00656737
HlaPreSeq158=Ala && E5=Ile	-0.0200684
HlaPreSeq62=Gly && E6=Leu	0.0146313
HlaPreSeq66=Lys && E6=Leu	0.0220133
HlaPreSeq74=His && E6=Leu	0.00964014
HlaPreSeq76=Val && E6=Leu	0.0148095
HlaPreSeq90=Ala && E6=Leu	-0.0169207
HlaPreSeq107=Trp && E6=Leu	0.00961933
HlaPreSeq163=Thr && E6=Leu	0.017521
negative(HlaPreSeq77) && aliphatic(E4)	0.02331
charged(HlaPreSeq77) && aliphatic(E4)	0.0225951
small(HlaPreSeq150) && aliphatic(E4)	-0.0089563
small(HlaPreSeq158) && aliphatic(E4)	-0.0136798
large(HlaPreSeq166) && aliphatic(E4)	-0.0027292
cyclic(HlaPreSeq74) && buried(E6)	0.0102506
medium(HlaPreSeq95) && buried(E6)	-0.0019785
buried(HlaPreSeq156) && buried(E6)	0.0164611
hydrophobic(HlaPreSeq156) && buried(E6)	0.0157867
medium(HlaPreSeq163) && buried(E6)	-0.0088959
aliphatic(HlaPreSeq62) && hydrophobic(E6)	-0.0093961
hydrophobic(HlaPreSeq62) && hydrophobic(E6)	-0.0096774
large(HlaPreSeq66) && hydrophobic(E6)	-0.0200964
positive(HlaPreSeq66) && hydrophobic(E6)	-0.0192113
charged(HlaPreSeq66) && hydrophobic(E6)	-0.0186901
aliphatic(HlaPreSeq67) && hydrophobic(E6)	-0.0079204
medium(HlaPreSeq67) && hydrophobic(E6)	-0.007195

medium(HlaPreSeq76) && hydrop	-0.019814
medium(HlaPreSeq95) && hydrop	-0.0184994
positive(HlaPreSeq97) && hydroph	0.0122302
charged(HlaPreSeq97) && hydroph	0.012919
polar(HlaPreSeq97) && hydrophob	0.0145244
buried(HlaPreSeq156) && hydroph	0.00230883
hydrophobic(HlaPreSeq156) && hy	0.0022171
positive(HlaPreSeq97) && large(E	-0.0241866
charged(HlaPreSeq97) && large(E	-0.0230869
buried(HlaPreSeq156) && large(E	0.0127434
hydrophobic(HlaPreSeq156) && la	0.0123004
HlaPreSeq62=Gly && E7=Gly	-0.0165778
HlaPreSeq66=Lys && E7=Gly	-0.0154898
HlaPreSeq74=His && E7=Gly	-0.0173004
HlaPreSeq95=Val && E7=Gly	-0.0154341
HlaPreSeq97=Arg && E7=Gly	-0.0211573
HlaPreSeq107=Trp && E7=Gly	-0.0173083
HlaPreSeq116=Tyr && E7=Gly	-0.0132485
HlaPreSeq127=Lys && E7=Gly	-0.0128418
HlaPreSeq142=Thr && E7=Gly	-0.0177932
HlaPreSeq145=His && E7=Gly	-0.0177924
aliphatic(HlaPreSeq67) && aliphati	-0.0130668
medium(HlaPreSeq76) && aliphati	-0.0238814
negative(HlaPreSeq77) && aliphati	-0.0109998
charged(HlaPreSeq77) && aliphati	-0.0114374
aliphatic(HlaPreSeq156) && aliphatic	0.00217675
aliphatic(HlaPreSeq90) && hydroph	0.0147871
buried(HlaPreSeq90) && hydrophob	0.0133147
hydrophobic(HlaPreSeq90) && hydro	0.0118703
buried(HlaPreSeq156) && hydroph	-0.021842
hydrophobic(HlaPreSeq156) && hydro	-0.0205333
medium(HlaPreSeq163) && hydroph	0.0137188
medium(HlaPreSeq95) && small(E	0.0105749
medium(HlaPreSeq163) && small(E	-0.0172661
HlaPreSeq77=Asp && E8=His	-0.0164082
negative(HlaPreSeq77) && positive	-0.0131478
charged(HlaPreSeq77) && positive	-0.0132899
aliphatic(HlaPreSeq90) && positive	-0.020741
buried(HlaPreSeq90) && positive(H	-0.0207765
hydrophobic(HlaPreSeq90) && positive	-0.0207235
small(HlaPreSeq90) && positive(E	-0.0205825
buried(HlaPreSeq156) && positive	0.00463794
hydrophobic(HlaPreSeq156) && positive	0.00485453
aliphatic(HlaPreSeq67) && charged	-0.0190583
negative(HlaPreSeq77) && charged	-0.0187577
charged(HlaPreSeq77) && charged	-0.0183775
large(HlaPreSeq66) && polar(E8)	0.00812365

aliphatic(HlaPreSeq67) && polar(E	-0.018454
cyclic(HlaPreSeq74) && polar(E8)	0.0114442
aromatic(HlaPreSeq74) && polar(E	0.0123117
large(HlaPreSeq74) && polar(E8)	0.0128227
buried(HlaPreSeq156) && polar(E8	0.0144899
hydrophobic(HlaPreSeq156) && p	0.0138504
small(HlaPreSeq158) && polar(E8)	-0.0144997
HlaPreSeq44=Arg && E9=Pro	-0.0155049
HlaPreSeq90=Ala && E9=Pro	-0.0111301
HlaPreSeq150=Ala && E9=Pro	-0.0155465
HlaPreSeq158=Ala && E9=Pro	-0.0153807
HlaPreSeq166=Glu && E9=Pro	-0.0149101
HlaPreSeq167=Trp && E9=Pro	-0.013971
large(HlaPreSeq66) && cyclic(E9)	-0.0493176
positive(HlaPreSeq66) && cyclic(E	-0.0243524
charged(HlaPreSeq66) && cyclic(E	-0.0243149
aliphatic(HlaPreSeq67) && cyclic(E	-0.02948
medium(HlaPreSeq67) && cyclic(E	-0.0498543
positive(HlaPreSeq74) && cyclic(E	-0.022881
medium(HlaPreSeq76) && cyclic(E	-0.0479762
negative(HlaPreSeq77) && cyclic(E	-0.0503973
charged(HlaPreSeq77) && cyclic(E	-0.0504961
aliphatic(HlaPreSeq90) && cyclic(E	-0.0264827
buried(HlaPreSeq90) && cyclic(E9)	-0.0273345
hydrophobic(HlaPreSeq90) && cyc	-0.0279176
small(HlaPreSeq90) && cyclic(E9)	-0.02823
medium(HlaPreSeq95) && cyclic(E	-0.0213618
polar(HlaPreSeq97) && cyclic(E9)	-0.0255951
cyclic(HlaPreSeq107) && cyclic(E9)	-0.0237688
aromatic(HlaPreSeq107) && cyclic	-0.0237849
buried(HlaPreSeq107) && cyclic(E	-0.0238008
large(HlaPreSeq107) && cyclic(E9)	-0.0238164
cyclic(HlaPreSeq114) && cyclic(E9)	-0.0365381
aromatic(HlaPreSeq114) && cyclic	-0.036502
cyclic(HlaPreSeq116) && cyclic(E9)	-0.0396412
aromatic(HlaPreSeq116) && cyclic	-0.0396089
hydrophobic(HlaPreSeq116) && cy	-0.0531188
large(HlaPreSeq116) && cyclic(E9)	-0.0405429
large(HlaPreSeq127) && cyclic(E9)	-0.0313296
positive(HlaPreSeq127) && cyclic(I	-0.0312682
charged(HlaPreSeq127) && cyclic(	-0.0312015
medium(HlaPreSeq142) && cyclic(	-0.0280821
polar(HlaPreSeq142) && cyclic(E9)	-0.0280847
cyclic(HlaPreSeq145) && cyclic(E9)	-0.0280869
aromatic(HlaPreSeq145) && cyclic	-0.0280887
small(HlaPreSeq150) && cyclic(E9)	-0.0375115
medium(HlaPreSeq152) && cyclic(	-0.0165382

buried(HlaPreSeq156) && cyclic(E	-0.0177615
hydrophobic(HlaPreSeq156) && cy	-0.017194
small(HlaPreSeq158) && cyclic(E9)	-0.0326017
large(HlaPreSeq166) && cyclic(E9)	-0.0305129
cyclic(HlaPreSeq167) && cyclic(E9)	-0.0340027
aromatic(HlaPreSeq167) && cyclic	-0.0325298
buried(HlaPreSeq167) && cyclic(E	-0.0309545
large(HlaPreSeq167) && cyclic(E9)	-0.0293064
aliphatic(HlaPreSeq62) && mediur	0.0138663
hydrophobic(HlaPreSeq62) && me	0.0145139
small(HlaPreSeq62) && medium(E	0.0166252
positive(HlaPreSeq66) && mediur	0.00780448
charged(HlaPreSeq66) && mediur	0.00823521
positive(HlaPreSeq74) && mediur	0.0181791
medium(HlaPreSeq76) && mediun	0.0119304
negative(HlaPreSeq77) && mediur	0.0124555
charged(HlaPreSeq77) && mediun	0.0125176
medium(HlaPreSeq95) && mediun	0.0228647
cyclic(HlaPreSeq107) && medium(	0.020812
aromatic(HlaPreSeq107) && medi	0.0206684
buried(HlaPreSeq107) && mediun	0.0204241
large(HlaPreSeq107) && medium(l	0.020087
cyclic(HlaPreSeq114) && medium(	0.0105282
cyclic(HlaPreSeq116) && medium(	0.0302276
aromatic(HlaPreSeq116) && medi	0.0295869
hydrophobic(HlaPreSeq116) && m	0.0333631
large(HlaPreSeq116) && medium(l	0.0295006
medium(HlaPreSeq142) && mediu	0.0176127
polar(HlaPreSeq142) && medium(	0.0168139
cyclic(HlaPreSeq145) && medium(	0.015971
aromatic(HlaPreSeq145) && medi	0.0150968
small(HlaPreSeq150) && medium(	-0.0158502
small(HlaPreSeq158) && medium(	-0.0146734
large(HlaPreSeq166) && medium(l	-0.0060202
Fl in Epitope	-0.0359767
GH in Epitope	-0.0055403
HP in Epitope	-0.0130707
aromatic,aliphatic in Epitope[@4-5	0.0109821
aromatic,buried in Epitope[@4-5]	0.00819722
positive,medium in Epitope[@8-9]	-0.01698
large(HlaPreSeq66) && medium(E:	-0.0293099
positive(HlaPreSeq66) && mediun	-0.0332375
charged(HlaPreSeq66) && mediun	-0.033441
medium(HlaPreSeq67) && mediun	-0.0259627
cyclic(HlaPreSeq74) && medium(E	-0.0121576
aromatic(HlaPreSeq74) && mediun	-0.0122699
large(HlaPreSeq74) && medium(E:	-0.012344

polar(HlaPreSeq97) && medium(E	0.00769583
small(HlaPreSeq105) && medium(	-0.0161254
polar(HlaPreSeq105) && medium(	-0.0164869
cyclic(HlaPreSeq114) && medium(	-0.0210662
aromatic(HlaPreSeq114) && medi	-0.0211299
cyclic(HlaPreSeq116) && medium(	-0.0184735
aromatic(HlaPreSeq116) && medi	-0.018274
hydrophobic(HlaPreSeq116) && m	-0.0221781
large(HlaPreSeq116) && medium(l	-0.0161358
medium(HlaPreSeq163) && mediu	-0.0187581
large(HlaPreSeq166) && medium(l	0.0105257
cyclic(HlaPreSeq167) && medium(	0.00997033
aromatic(HlaPreSeq167) && medi	0.0104027
buried(HlaPreSeq167) && mediumr	0.0106303
large(HlaPreSeq167) && medium(l	0.0106589
large(HlaPreSeq66) && polar(E2)	-0.027292
positive(HlaPreSeq66) && polar(E2	-0.01963
charged(HlaPreSeq66) && polar(E2	-0.01973
aliphatic(HlaPreSeq67) && polar(E	-0.0190781
positive(HlaPreSeq74) && polar(E2	-0.0132984
medium(HlaPreSeq95) && polar(E	-0.0119463
polar(HlaPreSeq97) && polar(E2)	-0.0156147
small(HlaPreSeq105) && polar(E2)	-0.0262382
polar(HlaPreSeq105) && polar(E2)	-0.026497
cyclic(HlaPreSeq107) && polar(E2)	-0.013589
aromatic(HlaPreSeq107) && polar	-0.013714
buried(HlaPreSeq107) && polar(E2	-0.0138351
large(HlaPreSeq107) && polar(E2)	-0.0139513
cyclic(HlaPreSeq114) && polar(E2)	-0.0169827
aromatic(HlaPreSeq114) && polar	-0.0171104
large(HlaPreSeq127) && polar(E2)	-0.0207965
positive(HlaPreSeq127) && polar(E	-0.0208702
charged(HlaPreSeq127) && polar(l	-0.0209198
aliphatic(HlaPreSeq156) && polar(	0.0117862
buried(HlaPreSeq156) && polar(E2	0.00793788
hydrophobic(HlaPreSeq156) && p	0.00929328
medium(HlaPreSeq163) && polar(	0.0149009
large(HlaPreSeq166) && polar(E2)	0.00918409
HlaPreSeq76=Val && E4=Thr	-0.0186438
HlaPreSeq77=Asp && E4=Thr	-0.0169923
HlaPreSeq116=Tyr && E4=Thr	-0.0255361
HlaPreSeq76=Val && E6=Phe	-0.0217496
HlaPreSeq77=Asp && E6=Phe	-0.0275514
HlaPreSeq95=Val && E6=Phe	-0.021159
HlaPreSeq107=Trp && E6=Phe	-0.0212003
HlaPreSeq114=His && E6=Phe	-0.022002
HlaPreSeq152=Val && E6=Phe	-0.0347229

cyclic(HlaPreSeq114) && cyclic(E6)	-0.0150447
aromatic(HlaPreSeq114) && cyclic	-0.014979
hydrophobic(HlaPreSeq116) && cy	-0.0224632
large(HlaPreSeq116) && cyclic(E6)	-0.0265166
polar(HlaPreSeq97) && aromatic(E	-0.0016069
medium(HlaPreSeq163) && aromæ	-0.0201521
HlaPreSeq67=Val && E8=Leu	0.014973
HlaPreSeq152=Val && E8=Leu	0.0115063
HlaPreSeq156=Leu && E8=Leu	0.0158232
LF in Epitope	-0.0517941
LF in Epitope[@5-6]	-0.0152139
RL in Epitope[@7-8]	-0.0115139
buried,aromatic in Epitope[@5-6]	0.00855058
L in Epitope[@9] && Q in CFlank[ç	-0.0202654
HlaPreSeq114=His && E1=Arg	0.0160476
HlaPreSeq167=Trp && E1=Arg	0.015228
negative(HlaPreSeq77) && positiv	0.011376
charged(HlaPreSeq77) && positive	0.0114568
aliphatic(HlaPreSeq90) && positiv	0.0081561
buried(HlaPreSeq90) && positive(I	0.00891189
hydrophobic(HlaPreSeq90) && po	0.00964811
small(HlaPreSeq90) && positive(E:	0.0103368
positive(HlaPreSeq97) && positive	-0.0114205
charged(HlaPreSeq97) && positive	-0.0109932
small(HlaPreSeq105) && positive(I	0.0112802
polar(HlaPreSeq105) && positive(I	0.011391
cyclic(HlaPreSeq114) && positive(I	0.0120085
aromatic(HlaPreSeq114) && positi	0.0121897
aliphatic(HlaPreSeq156) && positi	0.0179996
buried(HlaPreSeq156) && positive	0.0272651
hydrophobic(HlaPreSeq156) && p	0.0275689
medium(HlaPreSeq163) && positi	0.0149341
cyclic(HlaPreSeq167) && positive(I	0.0187507
aromatic(HlaPreSeq167) && positi	0.0185473
buried(HlaPreSeq167) && positive	0.0181977
large(HlaPreSeq167) && positive(E	0.0177185
medium(HlaPreSeq76) && charge	-0.0127612
negative(HlaPreSeq77) && charge	-0.0103451
charged(HlaPreSeq77) && charge	-0.0105487
cyclic(HlaPreSeq107) && charged(	-0.0109218
aromatic(HlaPreSeq107) && charg	-0.0108542
buried(HlaPreSeq107) && charged	-0.0107926
large(HlaPreSeq107) && charged(I	-0.0107365
medium(HlaPreSeq152) && charge	0.015259
buried(HlaPreSeq156) && charged	0.0269977
hydrophobic(HlaPreSeq156) && c	0.0266552
medium(HlaPreSeq163) && charge	0.0238998

aliphatic(HlaPreSeq62) && polar(E	-0.0207471
hydrophobic(HlaPreSeq62) && pol	-0.0206937
small(HlaPreSeq62) && polar(E1)	-0.0171228
negative(HlaPreSeq77) && polar(E	-0.0136901
charged(HlaPreSeq77) && polar(E:	-0.0143704
aliphatic(HlaPreSeq90) && polar(E	0.00712625
buried(HlaPreSeq90) && polar(E1)	0.00765158
medium(HlaPreSeq95) && polar(E	-0.0115707
medium(HlaPreSeq152) && polar(	0.0104795
medium(HlaPreSeq163) && polar(	0.0227621
HlaPreSeq66=Lys && E2=Val	-0.0082367
HlaPreSeq90=Ala && E2=Val	-0.0058497
HlaPreSeq116=Tyr && E2=Val	-0.0119884
HlaPreSeq152=Val && E2=Val	-0.0158969
HlaPreSeq66=Lys && E5=Pro	-0.0157979
large(HlaPreSeq66) && cyclic(E5)	-0.0287429
cyclic(HlaPreSeq74) && cyclic(E5)	0.0157382
aromatic(HlaPreSeq74) && cyclic(f	0.0157306
large(HlaPreSeq74) && cyclic(E5)	0.0157243
aliphatic(HlaPreSeq156) && cyclic(	0.0095201
medium(HlaPreSeq163) && cyclic(	-0.034069
medium(HlaPreSeq76) && mediun	0.016826
negative(HlaPreSeq77) && mediur	0.0126778
charged(HlaPreSeq77) && mediun	0.0125383
HlaPreSeq105=Ser && E7=Leu	0.0130638
HlaPreSeq156=Leu && E7=Leu	0.00968703
HlaPreSeq163=Thr && E7=Leu	0.0149638
aliphatic(HlaPreSeq62) && buried(	0.0250763
hydrophobic(HlaPreSeq62) && bui	0.0254216
small(HlaPreSeq62) && buried(E7)	0.0145592
large(HlaPreSeq66) && buried(E7)	0.0182299
positive(HlaPreSeq66) && buried(f	0.0169039
charged(HlaPreSeq66) && buried(l	0.0171805
cyclic(HlaPreSeq74) && buried(E7)	0.0198931
aromatic(HlaPreSeq74) && buried	0.0197901
large(HlaPreSeq74) && buried(E7)	0.019392
positive(HlaPreSeq74) && buried(f	0.0153031
medium(HlaPreSeq95) && buried(	0.0212257
positive(HlaPreSeq97) && buried(f	0.0221416
charged(HlaPreSeq97) && buried(l	0.0211073
hydrophobic(HlaPreSeq116) && bi	0.0209977
small(HlaPreSeq158) && buried(E7	0.00101233
HlaPreSeq62=Gly && E8=Arg	0.0201303
HlaPreSeq66=Lys && E8=Arg	0.020102
HlaPreSeq74=His && E8=Arg	0.0203468
HlaPreSeq90=Ala && E8=Arg	-0.0172098
HlaPreSeq95=Val && E8=Arg	0.0156062

HlaPreSeq97=Arg && E8=Arg	0.0103293
HlaPreSeq105=Ser && E8=Arg	0.0122894
HlaPreSeq107=Trp && E8=Arg	0.0203517
HlaPreSeq114=His && E8=Arg	0.013176
HlaPreSeq127=Lys && E8=Arg	0.0138344
HlaPreSeq142=Thr && E8=Arg	0.0162223
HlaPreSeq145=His && E8=Arg	0.0162229
HlaPreSeq44=Arg && E9=Gln	-0.01739
HlaPreSeq90=Ala && E9=Gln	-0.013627
HlaPreSeq150=Ala && E9=Gln	-0.0173987
HlaPreSeq158=Ala && E9=Gln	-0.0173594
HlaPreSeq166=Glu && E9=Gln	-0.0151549
HlaPreSeq167=Trp && E9=Gln	-0.012842
RQ in Epitope	0.0183685
ML in Epitope[@6-7]	-0.0113892
HlaPreSeq66=Lys && E2=Phe	-0.0141143
HlaPreSeq95=Val && E2=Phe	-0.0105155
HlaPreSeq114=His && E2=Phe	-0.014647
HlaPreSeq127=Lys && E2=Phe	-0.0129427
HlaPreSeq156=Leu && E2=Phe	-0.008141
HlaPreSeq163=Thr && E2=Phe	-0.008682
aliphatic(HlaPreSeq62) && cyclic(E	-0.0140467
hydrophobic(HlaPreSeq62) && cyc	-0.0139382
small(HlaPreSeq62) && cyclic(E2)	-0.0240923
large(HlaPreSeq66) && cyclic(E2)	0.0306428
positive(HlaPreSeq74) && cyclic(E:	-0.017113
medium(HlaPreSeq76) && cyclic(E	-0.0419189
negative(HlaPreSeq77) && cyclic(E	-0.0330084
charged(HlaPreSeq77) && cyclic(E:	-0.0328535
aliphatic(HlaPreSeq90) && cyclic(E	0.0181292
buried(HlaPreSeq90) && cyclic(E2)	0.0197205
hydrophobic(HlaPreSeq90) && cyc	0.0210817
small(HlaPreSeq90) && cyclic(E2)	0.0221926
medium(HlaPreSeq95) && cyclic(E	-0.0164322
polar(HlaPreSeq97) && cyclic(E2)	0.0167422
cyclic(HlaPreSeq107) && cyclic(E2)	-0.0160738
aromatic(HlaPreSeq107) && cyclic	-0.016016
buried(HlaPreSeq107) && cyclic(E:	-0.0159585
large(HlaPreSeq107) && cyclic(E2)	-0.0159014
cyclic(HlaPreSeq116) && cyclic(E2)	0.0193424
aromatic(HlaPreSeq116) && cyclic	0.0199706
hydrophobic(HlaPreSeq116) && cy	0.0247442
large(HlaPreSeq116) && cyclic(E2)	0.01984
medium(HlaPreSeq142) && cyclic(	-0.019283
polar(HlaPreSeq142) && cyclic(E2)	-0.0192272
cyclic(HlaPreSeq145) && cyclic(E2)	-0.0191726
aromatic(HlaPreSeq145) && cyclic	-0.0191191

small(HlaPreSeq150) && cyclic(E2)	0.0183489
medium(HlaPreSeq152) && cyclic(E2)	0.0114104
medium(HlaPreSeq163) && cyclic(E2)	-0.017434
large(HlaPreSeq166) && cyclic(E2)	-0.0040252
cyclic(HlaPreSeq167) && cyclic(E2)	0.00018549
aromatic(HlaPreSeq167) && cyclic(E2)	-0.0005375
buried(HlaPreSeq167) && cyclic(E2)	-0.0012691
large(HlaPreSeq167) && cyclic(E2)	-0.0019808
small(HlaPreSeq62) && aromatic(E2)	-0.0146989
positive(HlaPreSeq66) && aromatic(E2)	0.0133321
charged(HlaPreSeq66) && aromatic(E2)	0.0135343
aliphatic(HlaPreSeq67) && aromatic(E2)	0.0112954
medium(HlaPreSeq67) && aromatic(E2)	0.0244814
positive(HlaPreSeq74) && aromatic(E2)	-0.0131094
medium(HlaPreSeq76) && aromatic(E2)	-0.01874
negative(HlaPreSeq77) && aromatic(E2)	-0.0172973
charged(HlaPreSeq77) && aromatic(E2)	-0.0172786
medium(HlaPreSeq95) && aromatic(E2)	-0.0160607
polar(HlaPreSeq97) && aromatic(E2)	-0.0209528
small(HlaPreSeq105) && aromatic(E2)	0.0216886
polar(HlaPreSeq105) && aromatic(E2)	0.0218687
cyclic(HlaPreSeq107) && aromatic(E2)	-0.0129126
aromatic(HlaPreSeq107) && aromatic(E2)	-0.0128988
buried(HlaPreSeq107) && aromatic(E2)	-0.0128852
large(HlaPreSeq107) && aromatic(E2)	-0.0128718
cyclic(HlaPreSeq114) && aromatic(E2)	0.0109415
aromatic(HlaPreSeq114) && aromatic(E2)	0.0111358
cyclic(HlaPreSeq116) && aromatic(E2)	0.0133922
aromatic(HlaPreSeq116) && aromatic(E2)	0.0135666
hydrophobic(HlaPreSeq116) && aromatic(E2)	0.0117872
large(HlaPreSeq127) && aromatic(E2)	0.0130878
positive(HlaPreSeq127) && aromatic(E2)	0.0132598
charged(HlaPreSeq127) && aromatic(E2)	0.0134324
medium(HlaPreSeq142) && aromatic(E2)	-0.0139717
polar(HlaPreSeq142) && aromatic(E2)	-0.0139559
cyclic(HlaPreSeq145) && aromatic(E2)	-0.0139404
aromatic(HlaPreSeq145) && aromatic(E2)	-0.0139254
buried(HlaPreSeq156) && aromatic(E2)	-0.0080452
hydrophobic(HlaPreSeq156) && aromatic(E2)	-0.0080569
medium(HlaPreSeq163) && aromatic(E2)	0.0163377
large(HlaPreSeq166) && aromatic(E2)	-0.025548
cyclic(HlaPreSeq167) && aromatic(E2)	-0.0227847
aromatic(HlaPreSeq167) && aromatic(E2)	-0.0229922
buried(HlaPreSeq167) && aromatic(E2)	-0.0232066
large(HlaPreSeq167) && aromatic(E2)	-0.0234223
HlaPreSeq44=Arg && E3=Asn	0.0249444
HlaPreSeq114=His && E3=Asn	-0.0107909

HlaPreSeq116=Tyr && E3=Asn	-0.0087603
HlaPreSeq127=Lys && E3=Asn	-0.0097019
HlaPreSeq150=Ala && E3=Asn	0.0249508
HlaPreSeq152=Val && E3=Asn	-0.0091636
HlaPreSeq158=Ala && E3=Asn	0.0259235
HlaPreSeq166=Glu && E3=Asn	0.0283914
HlaPreSeq116=Tyr && E5=Gly	0.0287798
negative(HlaPreSeq77) && small(E	-0.0100326
charged(HlaPreSeq77) && small(E!	-0.0102556
cyclic(HlaPreSeq116) && small(E5)	0.0198226
aromatic(HlaPreSeq116) && small	0.0198718
hydrophobic(HlaPreSeq116) && sr	0.0250107
large(HlaPreSeq116) && small(E5)	0.0221711
medium(HlaPreSeq152) && small(	-0.0048647
medium(HlaPreSeq163) && small(	-0.0081214
positive(HlaPreSeq97) && positive	-0.0188031
charged(HlaPreSeq97) && positive	-0.0188385
aliphatic(HlaPreSeq156) && positi	-0.0069428
buried(HlaPreSeq156) && positive	-0.0073968
hydrophobic(HlaPreSeq156) && pr	-0.0075556
positive(HlaPreSeq97) && charged	-0.0113777
charged(HlaPreSeq97) && chargec	-0.0116043
aliphatic(HlaPreSeq156) && charg	-0.0200859
buried(HlaPreSeq156) && charged	-0.0168464
hydrophobic(HlaPreSeq156) && ct	-0.0170899
HlaPreSeq76=Val && E7=Thr	0.0175303
HlaPreSeq156=Leu && E7=Thr	0.00482987
medium(HlaPreSeq67) && mediun	-0.0261624
positive(HlaPreSeq97) && mediunr	0.0031587
charged(HlaPreSeq97) && mediun	0.00295785
buried(HlaPreSeq156) && mediunr	-0.0173191
HlaPreSeq62=Gly && E8=Asp	-0.020056
HlaPreSeq74=His && E8=Asp	-0.0186438
HlaPreSeq142=Thr && E8=Asp	-0.0178242
HlaPreSeq145=His && E8=Asp	-0.0178219
HlaPreSeq166=Glu && E8=Asp	-0.0262575
HlaPreSeq167=Trp && E8=Asp	-0.0287305
aliphatic(HlaPreSeq62) && mediunr	-0.0145454
hydrophobic(HlaPreSeq62) && me	-0.0149643
small(HlaPreSeq62) && medium(E	-0.01181
positive(HlaPreSeq66) && mediunr	-0.0176064
charged(HlaPreSeq66) && mediun	-0.0178148
medium(HlaPreSeq67) && mediun	-0.0054037
positive(HlaPreSeq74) && mediunr	-0.0073521
medium(HlaPreSeq163) && mediu	-0.02317
aliphatic(HlaPreSeq156) && negat	-0.0258809
buried(HlaPreSeq156) && negativ	-0.0241069

hydrophobic(HlaPreSeq156) && neg	-0.02387
medium(HlaPreSeq163) && negati	0.00510278
aliphatic(HlaPreSeq90) && negativ	-0.0148651
buried(HlaPreSeq90) && negative(	-0.0148551
hydrophobic(HlaPreSeq90) && ne	-0.0148453
small(HlaPreSeq90) && negative(E	-0.0148358
aliphatic(HlaPreSeq156) && negat	-0.0156573
medium(HlaPreSeq163) && negati	-0.0160811
HlaPreSeq44=Arg && E2=Glu	0.0146648
HlaPreSeq76=Val && E2=Glu	-0.0126579
HlaPreSeq90=Ala && E2=Glu	0.0259552
HlaPreSeq97=Arg && E2=Glu	0.0354203
HlaPreSeq150=Ala && E2=Glu	0.0157774
HlaPreSeq152=Val && E2=Glu	0.0417048
HlaPreSeq158=Ala && E2=Glu	0.0180435
HlaPreSeq166=Glu && E2=Glu	0.018627
large(HlaPreSeq66) && negative(E	0.0163403
medium(HlaPreSeq67) && negativ	-0.0201407
cyclic(HlaPreSeq74) && negative(E	0.035379
aromatic(HlaPreSeq74) && negati	0.0357648
large(HlaPreSeq74) && negative(E	0.0361411
medium(HlaPreSeq76) && negativ	-0.0097352
aliphatic(HlaPreSeq90) && negativ	0.0202654
buried(HlaPreSeq90) && negative(	0.0207261
hydrophobic(HlaPreSeq90) && ne	0.0211466
small(HlaPreSeq90) && negative(E	0.021525
positive(HlaPreSeq97) && negativ	0.0328914
charged(HlaPreSeq97) && negativ	0.0330942
polar(HlaPreSeq97) && negative(E	0.0235284
medium(HlaPreSeq152) && negati	0.038673
cyclic(HlaPreSeq167) && negative(	-0.0119954
aromatic(HlaPreSeq167) && negat	-0.0118177
buried(HlaPreSeq167) && negativ	-0.0116637
large(HlaPreSeq167) && negative(	-0.0115328
small(HlaPreSeq62) && charged(E:	-0.0104597
large(HlaPreSeq66) && charged(E:	0.0284874
aliphatic(HlaPreSeq67) && charge	-0.0237731
cyclic(HlaPreSeq74) && charged(E:	0.0167923
aromatic(HlaPreSeq74) && charge	0.0167811
large(HlaPreSeq74) && charged(E:	0.0167253
medium(HlaPreSeq76) && charge	-0.0132593
positive(HlaPreSeq97) && charged	0.0286864
charged(HlaPreSeq97) && charge	0.0285018
polar(HlaPreSeq97) && charged(E:	0.0326089
small(HlaPreSeq105) && charged(I	-0.0164371
polar(HlaPreSeq105) && charged(I	-0.0164396
large(HlaPreSeq127) && charged(I	-0.0130165

positive(HlaPreSeq127) && charge	-0.0130198
charged(HlaPreSeq127) && charge	-0.0130231
aliphatic(HlaPreSeq156) && charge	0.03047
small(HlaPreSeq158) && charged(l	-0.0063074
cyclic(HlaPreSeq167) && charged(	-0.0012566
aromatic(HlaPreSeq167) && charg	-0.0020896
buried(HlaPreSeq167) && charged	-0.0028857
large(HlaPreSeq167) && charged(t	-0.0036319
HlaPreSeq44=Arg && E3=Glu	-0.0242248
HlaPreSeq67=Val && E3=Glu	-0.0162957
HlaPreSeq77=Asp && E3=Glu	-0.0141802
HlaPreSeq150=Ala && E3=Glu	-0.0242421
HlaPreSeq158=Ala && E3=Glu	-0.0229458
HlaPreSeq66=Lys && E4=Val	-0.0202281
HlaPreSeq114=His && E4=Val	-0.0245859
HlaPreSeq127=Lys && E4=Val	-0.0202638
HlaPreSeq163=Thr && E4=Val	-0.0209074
HlaPreSeq62=Gly && E5=Lys	-0.013288
HlaPreSeq66=Lys && E5=Lys	-0.0234802
HlaPreSeq97=Arg && E5=Lys	-0.0189595
HlaPreSeq105=Ser && E5=Lys	-0.0105465
HlaPreSeq107=Trp && E5=Lys	-0.0101696
HlaPreSeq114=His && E5=Lys	-0.0209152
HlaPreSeq127=Lys && E5=Lys	-0.0241674
HlaPreSeq142=Thr && E5=Lys	-0.0169805
HlaPreSeq145=His && E5=Lys	-0.0169829
HlaPreSeq167=Trp && E5=Lys	0.0208394
large(HlaPreSeq66) && positive(E5	0.0191597
positive(HlaPreSeq97) && positive	-0.0124141
charged(HlaPreSeq97) && positive	-0.0124417
cyclic(HlaPreSeq116) && positive(l	0.0148292
aromatic(HlaPreSeq116) && positi	0.0147849
hydrophobic(HlaPreSeq116) && p	0.0159257
large(HlaPreSeq116) && positive(E	0.0129333
large(HlaPreSeq127) && positive(E	-0.0154096
positive(HlaPreSeq127) && positiv	-0.0153813
charged(HlaPreSeq127) && positiv	-0.015352
buried(HlaPreSeq156) && positive	-0.0086145
hydrophobic(HlaPreSeq156) && p	-0.0086081
HlaPreSeq152=Val && E6=Gln	0.017357
HlaPreSeq156=Leu && E6=Gln	0.0200749
HlaPreSeq163=Thr && E6=Gln	-0.0069061
HlaPreSeq161=Glu && E7=Tyr	-0.0121268
VK in Epitope	0.0210043
RE in Epitope[@1-2]	-0.0130172
HlaPreSeq67=Val && E3=Pro	-0.0235289
HlaPreSeq76=Val && E3=Pro	-0.0183993

HlaPreSeq77=Asp && E3=Pro	-0.0226611
HlaPreSeq97=Arg && E3=Pro	-0.0189139
HlaPreSeq156=Leu && E3=Pro	-0.0269074
HlaPreSeq166=Glu && E3=Pro	-0.0135593
HlaPreSeq167=Trp && E3=Pro	-0.0139634
HlaPreSeq90=Ala && E7=Gln	0.0131121
HlaPreSeq44=Arg && E1=Pro	-0.0177375
HlaPreSeq62=Gly && E1=Pro	-0.0105574
HlaPreSeq90=Ala && E1=Pro	-0.0194843
HlaPreSeq97=Arg && E1=Pro	-0.0132416
HlaPreSeq116=Tyr && E1=Pro	-0.0191266
HlaPreSeq142=Thr && E1=Pro	-0.0102499
HlaPreSeq145=His && E1=Pro	-0.0102492
HlaPreSeq150=Ala && E1=Pro	-0.0177263
HlaPreSeq152=Val && E1=Pro	-0.0223727
HlaPreSeq158=Ala && E1=Pro	-0.0175157
HlaPreSeq166=Glu && E1=Pro	-0.0184406
HlaPreSeq167=Trp && E1=Pro	-0.0156496
aliphatic(HlaPreSeq62) && mediur	-0.0207319
hydrophobic(HlaPreSeq62) && me	-0.0205854
small(HlaPreSeq62) && medium(E	-0.0200839
medium(HlaPreSeq67) && mediun	0.0103396
positive(HlaPreSeq74) && mediur	-0.0166589
aliphatic(HlaPreSeq90) && mediur	0.00540694
buried(HlaPreSeq90) && medium(	0.00645734
hydrophobic(HlaPreSeq90) && me	0.00736475
small(HlaPreSeq90) && medium(E	0.00811141
positive(HlaPreSeq97) && mediur	0.0189864
charged(HlaPreSeq97) && mediur	0.0190853
cyclic(HlaPreSeq107) && medium(	-0.0152898
aromatic(HlaPreSeq107) && medi	-0.0151591
buried(HlaPreSeq107) && mediur	-0.0150258
large(HlaPreSeq107) && medium(l	-0.0148892
medium(HlaPreSeq152) && mediu	0.0136918
aliphatic(HlaPreSeq156) && mediu	0.0137936
medium(HlaPreSeq163) && mediu	0.0212493
HlaPreSeq44=Arg && E2=Asp	-0.0103648
HlaPreSeq90=Ala && E2=Asp	-0.00975
HlaPreSeq150=Ala && E2=Asp	-0.0103931
HlaPreSeq158=Ala && E2=Asp	-0.0099121
HlaPreSeq166=Glu && E2=Asp	-0.0101894
HlaPreSeq167=Trp && E2=Asp	-0.0151123
HlaPreSeq62=Gly && E3=Phe	-0.0140896
HlaPreSeq66=Lys && E3=Phe	-0.0220997
HlaPreSeq74=His && E3=Phe	-0.0158454
HlaPreSeq95=Val && E3=Phe	-0.0152633
HlaPreSeq107=Trp && E3=Phe	-0.0155103

HlaPreSeq114=His && E3=Phe	-0.0137054
HlaPreSeq116=Tyr && E3=Phe	-0.0283284
HlaPreSeq127=Lys && E3=Phe	-0.0194718
HlaPreSeq142=Thr && E3=Phe	-0.0183478
HlaPreSeq145=His && E3=Phe	-0.0183592
HlaPreSeq152=Val && E3=Phe	-0.02099
HlaPreSeq62=Gly && E5=Arg	0.00966427
HlaPreSeq66=Lys && E5=Arg	0.0209345
HlaPreSeq74=His && E5=Arg	0.0122815
HlaPreSeq90=Ala && E5=Arg	0.025475
HlaPreSeq95=Val && E5=Arg	0.0162192
HlaPreSeq105=Ser && E5=Arg	0.0178288
HlaPreSeq107=Trp && E5=Arg	0.0124802
HlaPreSeq114=His && E5=Arg	0.0207056
HlaPreSeq116=Tyr && E5=Arg	0.0164265
HlaPreSeq127=Lys && E5=Arg	0.0168218
HlaPreSeq142=Thr && E5=Arg	0.00931237
HlaPreSeq145=His && E5=Arg	0.00931599
HlaPreSeq152=Val && E5=Arg	0.0178197
HlaPreSeq163=Thr && E5=Arg	0.0221327
HlaPreSeq67=Val && E6=Thr	-0.0169708
HlaPreSeq105=Ser && E6=Thr	-0.0167514
HlaPreSeq116=Tyr && E6=Thr	-0.0232303
HlaPreSeq152=Val && E6=Thr	-0.0157152
HlaPreSeq95=Val && E7=Ala	0.0120649
HlaPreSeq116=Tyr && E7=Ala	0.0132031
HlaPreSeq76=Val && E8=Pro	0.0113246
HlaPreSeq77=Asp && E8=Pro	0.0145866
FL in Epitope[@3-4]	-0.0090423
HlaPreSeq97=Arg && E2=His	0.0134617
HlaPreSeq158=Ala && E2=His	-0.0136242
aliphatic(HlaPreSeq62) && positive	-0.0132731
hydrophobic(HlaPreSeq62) && positive	-0.0132734
small(HlaPreSeq62) && positive(E2)	-0.0112017
aliphatic(HlaPreSeq67) && positive	-0.0234444
medium(HlaPreSeq67) && positive	0.0261269
cyclic(HlaPreSeq74) && positive(E2)	-0.0230714
aromatic(HlaPreSeq74) && positive	-0.0231087
large(HlaPreSeq74) && positive(E2)	-0.0231449
aliphatic(HlaPreSeq90) && positive	-0.0082074
buried(HlaPreSeq90) && positive(E2)	-0.0084526
hydrophobic(HlaPreSeq90) && positive	-0.0086905
small(HlaPreSeq90) && positive(E2)	-0.0089194
small(HlaPreSeq105) && positive(E2)	-0.0235305
polar(HlaPreSeq105) && positive(E2)	-0.0235324
large(HlaPreSeq127) && positive(E2)	-0.015967
positive(HlaPreSeq127) && positive	-0.0159673

charged(HlaPreSeq127) && positiv	-0.0159677
medium(HlaPreSeq152) && positiv	-0.0278365
aliphatic(HlaPreSeq156) && positiv	0.0205335
buried(HlaPreSeq156) && positive	0.0112536
hydrophobic(HlaPreSeq156) && p	0.0110918
small(HlaPreSeq158) && positive(I	-0.0208598
medium(HlaPreSeq163) && positiv	-0.011452
cyclic(HlaPreSeq167) && positive(I	0.0092949
aromatic(HlaPreSeq167) && positi	0.009087
buried(HlaPreSeq167) && positive	0.00889505
large(HlaPreSeq167) && positive(E	0.00871825
HlaPreSeq62=Gly && E8=Lys	-0.0109626
HlaPreSeq74=His && E8=Lys	-0.0111905
HlaPreSeq95=Val && E8=Lys	-0.0126974
HlaPreSeq97=Arg && E8=Lys	-0.0228124
HlaPreSeq107=Trp && E8=Lys	-0.010876
IG in Epitope	0.0254198
HY in Epitope	0.0241394
IG in Epitope[@4-5]	0.0374604
small,cyclic in Epitope[@1-2]	0.00968656
small,aromatic in Epitope[@1-2]	0.00806988
L in NFlank[1@] && A in Epitope[€	0.0135602
HlaPreSeq62=Gly && E3=Trp	0.0199023
HlaPreSeq66=Lys && E3=Trp	0.0138074
HlaPreSeq74=His && E3=Trp	0.0203145
HlaPreSeq95=Val && E3=Trp	0.0204639
HlaPreSeq97=Arg && E3=Trp	0.0171227
HlaPreSeq107=Trp && E3=Trp	0.0203082
HlaPreSeq114=His && E3=Trp	0.0191721
HlaPreSeq116=Tyr && E3=Trp	0.0183274
HlaPreSeq127=Lys && E3=Trp	0.0159158
HlaPreSeq142=Thr && E3=Trp	0.0203027
HlaPreSeq145=His && E3=Trp	0.0203017
HlaPreSeq152=Val && E3=Trp	0.0178225
HlaPreSeq156=Leu && E3=Trp	0.020231
HlaPreSeq76=Val && E9=Val	0.0219196
HlaPreSeq77=Asp && E9=Val	0.0220587
HlaPreSeq95=Val && E9=Val	0.0160851
HlaPreSeq107=Trp && E9=Val	0.0162995
HlaPreSeq116=Tyr && E9=Val	0.0194337
HlaPreSeq127=Lys && E9=Val	0.0120912
HlaPreSeq142=Thr && E9=Val	0.0200808
HlaPreSeq145=His && E9=Val	0.0196491
HlaPreSeq166=Glu && E9=Val	0.0166666
HlaPreSeq167=Trp && E9=Val	0.0170165
DR in Epitope[@4-5]	0.0128569
V in Epitope[@9] && H in CFlank[€	0.0173948

HlaPreSeq116=Tyr && E1=Val	-0.0145707
HlaPreSeq156=Leu && E1=Val	0.00902722
HlaPreSeq163=Thr && E1=Val	0.0135713
HlaPreSeq105=Ser && E3=Thr	-0.0177441
HlaPreSeq156=Leu && E3=Thr	-0.0259083
HlaPreSeq163=Thr && E3=Thr	-0.0232173
HlaPreSeq97=Arg && E6=Val	0.0112433
VM in Epitope	-0.0268424
VA in Epitope[@1-2]	-0.0153479
V in Epitope[@9] && G in CFlank[€	0.033557
HlaPreSeq62=Gly && E2=Ile	-0.0242874
HlaPreSeq66=Lys && E2=Ile	-0.0205946
HlaPreSeq74=His && E2=Ile	-0.0203691
HlaPreSeq95=Val && E2=Ile	-0.0248988
HlaPreSeq97=Arg && E2=Ile	-0.023429
HlaPreSeq107=Trp && E2=Ile	-0.0208834
HlaPreSeq114=His && E2=Ile	-0.0138207
HlaPreSeq116=Tyr && E2=Ile	-0.0248339
HlaPreSeq127=Lys && E2=Ile	-0.016065
HlaPreSeq142=Thr && E2=Ile	-0.0189317
HlaPreSeq145=His && E2=Ile	-0.0189211
HlaPreSeq116=Tyr && E4=Lys	0.0161549
medium(HlaPreSeq67) && positive€	-0.0238872
medium(HlaPreSeq163) && positiv	-0.0289712
HlaPreSeq97=Arg && E5=Val	0.0257462
HlaPreSeq152=Val && E5=Val	-0.0017015
HlaPreSeq163=Thr && E5=Val	0.00167421
HlaPreSeq77=Asp && E7=Val	-0.0163751
HlaPreSeq97=Arg && E7=Val	0.0110267
YK in Epitope[@3-4]	0.0119522
HlaPreSeq152=Val && E1=Ser	-0.0115038
HlaPreSeq156=Leu && E1=Ser	-0.0137057
HlaPreSeq95=Val && E3=Arg	-0.0191374
HlaPreSeq97=Arg && E3=Arg	-0.0255638
HlaPreSeq156=Leu && E3=Arg	-0.0178339
positive(HlaPreSeq97) && positive	-0.0203698
charged(HlaPreSeq97) && positive	-0.0202235
cyclic(HlaPreSeq116) && positive(l	0.0185264
aromatic(HlaPreSeq116) && positi	0.0185911
hydrophobic(HlaPreSeq116) && p€	0.0211553
large(HlaPreSeq116) && positive(E	0.0195436
aliphatic(HlaPreSeq156) && positi	-0.0235042
HlaPreSeq114=His && E6=Lys	-0.013181
HlaPreSeq44=Arg && E9=Gly	-0.0211764
HlaPreSeq62=Gly && E9=Gly	-0.0114314
HlaPreSeq66=Lys && E9=Gly	-0.0133435
HlaPreSeq67=Val && E9=Gly	-0.014394

HlaPreSeq74=His && E9=Gly	-0.0112183
HlaPreSeq76=Val && E9=Gly	-0.0144585
HlaPreSeq77=Asp && E9=Gly	-0.013571
HlaPreSeq90=Ala && E9=Gly	-0.0198584
HlaPreSeq97=Arg && E9=Gly	-0.0149072
HlaPreSeq105=Ser && E9=Gly	-0.0136678
HlaPreSeq107=Trp && E9=Gly	-0.0112845
HlaPreSeq114=His && E9=Gly	-0.0127494
HlaPreSeq116=Tyr && E9=Gly	-0.0150567
HlaPreSeq127=Lys && E9=Gly	-0.0125749
HlaPreSeq142=Thr && E9=Gly	-0.0117065
HlaPreSeq145=His && E9=Gly	-0.0117021
HlaPreSeq150=Ala && E9=Gly	-0.0210946
HlaPreSeq152=Val && E9=Gly	-0.0165683
HlaPreSeq156=Leu && E9=Gly	-0.0159486
HlaPreSeq158=Ala && E9=Gly	-0.0210421
HlaPreSeq163=Thr && E9=Gly	-0.0168293
HlaPreSeq166=Glu && E9=Gly	-0.0201964
HlaPreSeq167=Trp && E9=Gly	-0.0196729
cyclic(HlaPreSeq116) && small(E9)	-0.0132114
aromatic(HlaPreSeq116) && small	-0.0129942
RD in Epitope	0.0122492
positive,negative in Epitope[@3-4]	-0.0224169
HlaPreSeq97=Arg && E4=Glu	0.0219711
HlaPreSeq156=Leu && E4=Glu	0.0184339
HlaPreSeq76=Val && E9=Ala	0.015775
HlaPreSeq77=Asp && E9=Ala	0.0158319
HlaPreSeq90=Ala && E9=Ala	0.0106967
HlaPreSeq105=Ser && E9=Ala	0.0159022
HlaPreSeq142=Thr && E9=Ala	0.0133509
HlaPreSeq145=His && E9=Ala	0.0133903
HlaPreSeq152=Val && E9=Ala	0.00886713
HlaPreSeq156=Leu && E9=Ala	0.0124076
HlaPreSeq166=Glu && E9=Ala	0.0114549
HlaPreSeq167=Trp && E9=Ala	0.00935151
HlaPreSeq82=Arg && E4=Ser	-0.0181114
HlaPreSeq83=Gly && E4=Ser	-0.0181065
HlaPreSeq167=Trp && E4=Ser	-0.0163935
large(HlaPreSeq74) && small(E4)	0.0204225
aliphatic(HlaPreSeq90) && small(E	-0.0104344
buried(HlaPreSeq90) && small(E4)	-0.0108688
hydrophobic(HlaPreSeq90) && sm	-0.0111763
small(HlaPreSeq90) && small(E4)	-0.0113535
medium(HlaPreSeq95) && small(E	0.0188023
HlaPreSeq97=Arg && E5=Ser	0.0135132
HlaPreSeq76=Val && E8=Met	-0.0145262
HlaPreSeq77=Asp && E8=Met	-0.012582

SQ in Epitope	0.029435
ME in Epitope	-0.0182462
cyclic,aliphatic in Epitope[@2-3]	0.0166977
HlaPreSeq62=Gly && E1=Gln	-0.016553
HlaPreSeq67=Val && E1=Gln	-0.019535
HlaPreSeq74=His && E1=Gln	-0.0188767
HlaPreSeq90=Ala && E1=Gln	-0.0180579
HlaPreSeq95=Val && E1=Gln	-0.0190882
HlaPreSeq97=Arg && E1=Gln	-0.0148362
HlaPreSeq105=Ser && E1=Gln	-0.0170526
HlaPreSeq107=Trp && E1=Gln	-0.0188616
HlaPreSeq114=His && E1=Gln	-0.0191179
HlaPreSeq116=Tyr && E1=Gln	-0.0249388
HlaPreSeq127=Lys && E1=Gln	-0.0180373
HlaPreSeq142=Thr && E1=Gln	-0.0165737
HlaPreSeq145=His && E1=Gln	-0.0165698
HlaPreSeq156=Leu && E1=Gln	-0.0215017
HlaPreSeq163=Thr && E5=Asn	0.00849564
HlaPreSeq67=Val && E8=Ile	-0.0183579
HlaPreSeq76=Val && E8=Ile	-0.0172557
HlaPreSeq97=Arg && E8=Ile	-0.0160248
HlaPreSeq105=Ser && E8=Ile	-0.0207918
HlaPreSeq156=Leu && E8=Ile	-0.0252455
NS in Epitope[@3-4]	-0.0106192
HlaPreSeq90=Ala && E4=Trp	0.018425
HlaPreSeq95=Val && E4=Trp	0.0108602
HlaPreSeq114=His && E4=Trp	0.0112562
HlaPreSeq116=Tyr && E4=Trp	0.0232002
HlaPreSeq127=Lys && E4=Trp	0.0144522
HlaPreSeq142=Thr && E4=Trp	0.0116048
HlaPreSeq145=His && E4=Trp	0.0116034
HlaPreSeq152=Val && E4=Trp	0.0153706
HlaPreSeq158=Ala && E4=Trp	0.0162663
HlaPreSeq163=Thr && E5=His	-0.0172943
aliphatic(HlaPreSeq62) && aromat	0.016435
hydrophobic(HlaPreSeq62) && arc	0.0164323
cyclic(HlaPreSeq74) && aromatic(f	0.0158301
aromatic(HlaPreSeq74) && aroma	0.0157275
large(HlaPreSeq74) && aromatic(E	0.0156162
medium(HlaPreSeq152) && aromæ	-0.0169229
aliphatic(HlaPreSeq156) && aromæ	0.0138507
medium(HlaPreSeq163) && aromæ	-0.0220532
HlaPreSeq97=Arg && E6=Trp	0.0167764
HlaPreSeq156=Leu && E6=Trp	0.0162713
HlaPreSeq163=Thr && E7=Ile	-0.0171423
FW in Epitope	-0.0134888
cyclic,cyclic in Epitope[@4-5]	0.0151092

cyclic,aromatic in Epitope[@5-6]	-0.0244813
aromatic,aromatic in Epitope[@5-	-0.0174006
HlaPreSeq62=Gly && E1=Ile	-0.0110099
HlaPreSeq74=His && E1=Ile	-0.0142579
HlaPreSeq95=Val && E1=Ile	-0.0147809
HlaPreSeq97=Arg && E1=Ile	-0.0094259
HlaPreSeq107=Trp && E1=Ile	-0.0145028
HlaPreSeq145=His && E1=Ile	-0.010314
HlaPreSeq152=Val && E1=Ile	-0.0077413
HlaPreSeq156=Leu && E1=Ile	-0.0077912
HlaPreSeq116=Tyr && E6=Pro	-0.0109809
HlaPreSeq97=Arg && E1=His	-0.010568
HlaPreSeq67=Val && E3=Ala	-0.018162
HlaPreSeq76=Val && E3=Ala	-0.0172738
HlaPreSeq77=Asp && E3=Ala	-0.0153527
HlaPreSeq95=Val && E3=Ala	-0.0118961
HlaPreSeq97=Arg && E3=Ala	-0.0290522
HlaPreSeq105=Ser && E3=Ala	-0.0178357
HlaPreSeq116=Tyr && E3=Ala	0.0132737
HlaPreSeq152=Val && E3=Ala	-0.01646
HlaPreSeq163=Thr && E3=Ala	-0.0300551
medium(HlaPreSeq76) && small(E	-0.0137518
positive(HlaPreSeq97) && small(E:	-0.0162665
charged(HlaPreSeq97) && small(E:	-0.0164413
polar(HlaPreSeq97) && small(E3)	-0.0178609
medium(HlaPreSeq163) && small(	-0.0303608
HlaPreSeq97=Arg && E4=Arg	-0.0193444
HlaPreSeq156=Leu && E4=Arg	-0.0202753
HlaPreSeq156=Leu && E7=Asp	-0.0193767
HlaPreSeq167=Trp && E7=Asp	-0.0113863
medium(HlaPreSeq67) && negativ	-0.0196964
positive(HlaPreSeq97) && negativ	0.0142193
charged(HlaPreSeq97) && negativ	0.0144163
cyclic(HlaPreSeq116) && negativ	0.011826
aromatic(HlaPreSeq116) && negat	0.0119444
large(HlaPreSeq116) && negativ	0.0140928
medium(HlaPreSeq152) && negati	0.0128921
HlaPreSeq166=Glu && E8=Glu	0.017472
HlaPreSeq167=Trp && E8=Glu	0.0188427
HlaPreSeq44=Arg && E9=Arg	0.0159155
HlaPreSeq66=Lys && E9=Arg	-0.0161372
HlaPreSeq67=Val && E9=Arg	0.0170089
HlaPreSeq74=His && E9=Arg	-0.010279
HlaPreSeq76=Val && E9=Arg	0.0201915
HlaPreSeq77=Asp && E9=Arg	0.0227471
HlaPreSeq97=Arg && E9=Arg	-0.0109315
HlaPreSeq105=Ser && E9=Arg	0.0131066

HlaPreSeq114=His && E9=Arg	-0.0144125
HlaPreSeq116=Tyr && E9=Arg	-0.0114346
HlaPreSeq150=Ala && E9=Arg	0.0154772
HlaPreSeq156=Leu && E9=Arg	0.0144955
HlaPreSeq158=Ala && E9=Arg	0.0154742
HlaPreSeq166=Glu && E9=Arg	0.0171337
HlaPreSeq167=Trp && E9=Arg	0.0157301
HV in Epitope	0.015892
AR in Epitope[@3-4]	-0.0105549
buried,positive in Epitope[@3-4]	-0.0203953
HlaPreSeq152=Val && E3=His	-0.0099091
HlaPreSeq66=Lys && E6=Ala	-0.0167659
HH in Epitope	0.0280266
HH in Epitope[@3-4]	0.017694
HV in Epitope[@4-5]	0.0169066
VA in Epitope[@5-6]	0.0340674
positive,aromatic in Epitope[@3-4	0.0141849
L in Epitope[@9] && H in CFlank[@	0.0115085
HlaPreSeq62=Gly && E3=Ile	-0.020206
HlaPreSeq74=His && E3=Ile	-0.0147407
HlaPreSeq77=Asp && E3=Ile	-0.0133486
HlaPreSeq90=Ala && E3=Ile	-0.0140387
HlaPreSeq95=Val && E3=Ile	-0.0141857
HlaPreSeq107=Trp && E3=Ile	-0.0171916
HlaPreSeq142=Thr && E3=Ile	-0.0175431
HlaPreSeq145=His && E3=Ile	-0.0175554
HlaPreSeq156=Leu && E3=Ile	-0.0135171
HlaPreSeq152=Val && E6=Asp	0.0172731
QE in Epitope	0.0230739
VP in Epitope[@7-8]	0.00983229
A in Epitope[@9] && T in CFlank[@	-0.0127002
HlaPreSeq44=Arg && E2=Pro	0.0158419
HlaPreSeq66=Lys && E2=Pro	-0.0167098
HlaPreSeq67=Val && E2=Pro	-0.021405
HlaPreSeq76=Val && E2=Pro	-0.0206895
HlaPreSeq77=Asp && E2=Pro	-0.0134646
HlaPreSeq90=Ala && E2=Pro	0.0248485
HlaPreSeq105=Ser && E2=Pro	-0.0151634
HlaPreSeq114=His && E2=Pro	-0.0106769
HlaPreSeq116=Tyr && E2=Pro	0.0111362
HlaPreSeq150=Ala && E2=Pro	0.0155112
HlaPreSeq152=Val && E2=Pro	0.00854957
HlaPreSeq156=Leu && E2=Pro	0.0103621
HlaPreSeq158=Ala && E2=Pro	0.0131773
HlaPreSeq163=Thr && E2=Pro	-0.0331856
HlaPreSeq166=Glu && E2=Pro	0.0195341
HlaPreSeq167=Trp && E2=Pro	0.0212719

HlaPreSeq76=Val && E3=Leu	-0.0074523
HlaPreSeq97=Arg && E3=Leu	0.0345025
HlaPreSeq152=Val && E3=Leu	0.0302315
HlaPreSeq156=Leu && E3=Leu	0.0291023
HlaPreSeq163=Thr && E3=Leu	-0.0133609
HlaPreSeq62=Gly && E7=Lys	-0.0123665
HlaPreSeq66=Lys && E7=Lys	-0.0160074
HlaPreSeq95=Val && E7=Lys	-0.0127628
HlaPreSeq97=Arg && E7=Lys	-0.0128688
HlaPreSeq107=Trp && E7=Lys	-0.0135556
HlaPreSeq114=His && E7=Lys	-0.0155716
HlaPreSeq127=Lys && E7=Lys	-0.0136668
HlaPreSeq142=Thr && E7=Lys	-0.0150922
HlaPreSeq145=His && E7=Lys	-0.0150864
HlaPreSeq152=Val && E7=Lys	-0.0205464
HlaPreSeq114=His && E8=Ser	-0.0221509
S in CFlank	-0.0164313
S in CFlank[@1]	-0.0166643
HD in Epitope	-0.0153927
PL in Epitope[@2-3]	0.0139122
charged,positive in Epitope[@6-7]	-0.0149543
HlaPreSeq44=Arg && E2=Lys	-0.0172749
HlaPreSeq77=Asp && E2=Lys	-0.0108867
HlaPreSeq150=Ala && E2=Lys	-0.0172763
HlaPreSeq152=Val && E2=Lys	-0.0250216
HlaPreSeq158=Ala && E2=Lys	-0.0161224
HlaPreSeq163=Thr && E2=Lys	-0.021947
HlaPreSeq166=Glu && E2=Lys	-0.0160484
HlaPreSeq167=Trp && E2=Lys	-0.0128968
HlaPreSeq97=Arg && E7=Glu	0.018914
HlaPreSeq167=Trp && E7=Glu	0.00810065
HlaPreSeq66=Lys && E9=Phe	0.00943143
HlaPreSeq156=Leu && E9=Phe	-0.0203779
large(HlaPreSeq66) && aromatic(E	-0.0279757
positive(HlaPreSeq66) && aromati	-0.0134578
charged(HlaPreSeq66) && aromati	-0.0132812
aliphatic(HlaPreSeq67) && aromati	-0.0191253
medium(HlaPreSeq67) && aromati	-0.0361613
positive(HlaPreSeq74) && aromati	-0.0190563
medium(HlaPreSeq76) && aromati	-0.0373268
negative(HlaPreSeq77) && aromati	-0.0436247
charged(HlaPreSeq77) && aromati	-0.043573
medium(HlaPreSeq95) && aromati	-0.0172016
positive(HlaPreSeq97) && aromati	0.026266
charged(HlaPreSeq97) && aromati	0.0259571
polar(HlaPreSeq97) && aromatic(E	-0.0062399
cyclic(HlaPreSeq107) && aromatic	-0.0194003

aromatic(HlaPreSeq107) && arom	-0.0193974
buried(HlaPreSeq107) && aromati	-0.0193945
large(HlaPreSeq107) && aromatic(	-0.0193917
cyclic(HlaPreSeq114) && aromatic	-0.0281095
aromatic(HlaPreSeq114) && arom	-0.0280153
cyclic(HlaPreSeq116) && aromatic	-0.0224409
aromatic(HlaPreSeq116) && arom	-0.022195
hydrophobic(HlaPreSeq116) && ar	-0.0364607
large(HlaPreSeq116) && aromatic(	-0.0225124
large(HlaPreSeq127) && aromatic(	-0.0235936
positive(HlaPreSeq127) && aroma	-0.0235075
charged(HlaPreSeq127) && aroma	-0.0234195
medium(HlaPreSeq142) && aromæ	-0.0230453
polar(HlaPreSeq142) && aromatici	-0.0230378
cyclic(HlaPreSeq145) && aromatic	-0.0230304
aromatic(HlaPreSeq145) && arom	-0.023023
medium(HlaPreSeq163) && aromæ	0.0153766
LT in Epitope[@5-6]	0.00854704
F in NFlank[1@] && L in Epitope[@	-0.0111112
HlaPreSeq97=Arg && E3=Ser	0.00503801
HlaPreSeq107=Trp && E3=Ser	-0.0143585
HlaPreSeq116=Tyr && E3=Ser	-0.0204257
HlaPreSeq35=Arg && E7=Trp	0.0282923
HlaPreSeq66=Lys && E7=Trp	0.0223854
HlaPreSeq94=Thr && E7=Trp	0.0292226
HlaPreSeq116=Tyr && E7=Trp	0.0239462
HlaPreSeq152=Val && E7=Trp	0.0247274
HlaPreSeq161=Glu && E7=Trp	0.0311823
HlaPreSeq163=Thr && E7=Trp	0.0270579
HlaPreSeq62=Gly && E9=Thr	0.0193132
HlaPreSeq66=Lys && E9=Thr	0.0166199
HlaPreSeq74=His && E9=Thr	0.0152598
HlaPreSeq90=Ala && E9=Thr	0.0152776
HlaPreSeq95=Val && E9=Thr	0.0170108
HlaPreSeq105=Ser && E9=Thr	0.0146712
HlaPreSeq107=Trp && E9=Thr	0.0151045
HlaPreSeq114=His && E9=Thr	0.0133968
HlaPreSeq116=Tyr && E9=Thr	0.0157479
HlaPreSeq127=Lys && E9=Thr	0.0134587
HlaPreSeq142=Thr && E9=Thr	0.0121324
HlaPreSeq145=His && E9=Thr	0.0121464
HlaPreSeq152=Val && E9=Thr	0.0138844
HlaPreSeq156=Leu && E9=Thr	0.0137354
HlaPreSeq163=Thr && E9=Thr	0.0138481
SR in Epitope[@3-4]	0.00950562
HlaPreSeq62=Gly && E3=Lys	0.00865381
HlaPreSeq76=Val && E3=Lys	-0.0105782

HlaPreSeq116=Tyr && E3=Lys	0.0258748
HlaPreSeq152=Val && E3=Lys	0.0301574
HlaPreSeq156=Leu && E3=Lys	-0.009448
KM in Epitope	-0.0176467
MF in Epitope	0.0149448
RA in Epitope[@5-6]	0.00859484
HlaPreSeq77=Asp && E4=Ala	0.00862107
HlaPreSeq152=Val && E4=Ala	-0.01588
EA in Epitope[@2-3]	-0.0179391
N in NFlank[1@] && A in Epitope[	0.0101241
L in Epitope[@9] && E in CFlank[	0.0147554
HlaPreSeq62=Gly && E1=Lys	0.0134993
HlaPreSeq114=His && E5=Phe	-0.0110845
HlaPreSeq76=Val && E6=Gly	-0.0113846
HlaPreSeq97=Arg && E6=Gly	0.0250407
HlaPreSeq80=Thr && E7=Cys	0.0104358
HlaPreSeq74=His && E8=Thr	0.022661
HlaPreSeq116=Tyr && E8=Thr	0.0286136
HlaPreSeq142=Thr && E8=Thr	0.0217808
HlaPreSeq145=His && E8=Thr	0.0217518
CT in Epitope	0.0183995
HlaPreSeq62=Gly && E1=Asp	-0.0137563
HlaPreSeq74=His && E1=Asp	-0.0128026
HlaPreSeq105=Ser && E1=Asp	-0.010483
HlaPreSeq107=Trp && E1=Asp	-0.0128146
HlaPreSeq163=Thr && E1=Asp	0.0165039
aliphatic(HlaPreSeq62) && negativ	-0.021905
hydrophobic(HlaPreSeq62) && ne	-0.0218915
small(HlaPreSeq62) && negative(E	-0.0182808
medium(HlaPreSeq67) && negativ	-0.0135074
positive(HlaPreSeq74) && negativ	-0.0177043
medium(HlaPreSeq76) && negativ	-0.0193367
negative(HlaPreSeq77) && negativ	-0.0243305
charged(HlaPreSeq77) && negativ	-0.0243286
medium(HlaPreSeq95) && negativ	-0.0175562
small(HlaPreSeq105) && negative(	-0.0193499
polar(HlaPreSeq105) && negative(	-0.019327
cyclic(HlaPreSeq107) && negative(	-0.0194307
aromatic(HlaPreSeq107) && negat	-0.0194182
buried(HlaPreSeq107) && negativ	-0.0194057
large(HlaPreSeq107) && negative(	-0.0193931
aliphatic(HlaPreSeq156) && negat	-0.015604
medium(HlaPreSeq163) && negati	0.0115802
cyclic(HlaPreSeq167) && negative(	-0.0214203
aromatic(HlaPreSeq167) && negat	-0.0215419
buried(HlaPreSeq167) && negativ	-0.0216598
large(HlaPreSeq167) && negative(	-0.0217687

EH in Epitope	-0.0125039
DL in Epitope[@8-9]	0.017267
negative,positive in Epitope[@5-6]	0.0112184
E9=His	-0.0161459
HlaPreSeq1=Gly && E9=His	-0.0160197
HlaPreSeq6=Arg && E9=His	-0.0161165
HlaPreSeq12=Val && E9=His	-0.012117
HlaPreSeq14=Arg && E9=His	-0.0159125
HlaPreSeq16=Gly && E9=His	-0.0160762
HlaPreSeq17=Arg && E9=His	-0.0152922
HlaPreSeq21=Arg && E9=His	-0.015972
HlaPreSeq30=Asp && E9=His	-0.015685
HlaPreSeq32=Gln && E9=His	-0.0128889
HlaPreSeq35=Arg && E9=His	-0.0159454
HlaPreSeq41=Ala && E9=His	-0.0144387
HlaPreSeq44=Arg && E9=His	-0.0143059
HlaPreSeq46=Glu && E9=His	-0.0148539
HlaPreSeq49=Ala && E9=His	-0.0157766
HlaPreSeq52=Ile && E9=His	-0.0153122
HlaPreSeq56=Gly && E9=His	-0.0150238
HlaPreSeq63=Glu && E9=His	-0.0122334
HlaPreSeq73=Thr && E9=His	-0.015325
HlaPreSeq81=Leu && E9=His	-0.0133116
HlaPreSeq91=Gly && E9=His	-0.0158766
HlaPreSeq94=Thr && E9=His	-0.0133024
HlaPreSeq99=Tyr && E9=His	-0.0154736
HlaPreSeq103=Val && E9=His	-0.0140414
HlaPreSeq113=Tyr && E9=His	-0.0125423
HlaPreSeq143=Thr && E9=His	-0.0157548
HlaPreSeq147=Trp && E9=His	-0.0157406
HlaPreSeq149=Ala && E9=His	-0.0148776
HlaPreSeq150=Ala && E9=His	-0.0141149
HlaPreSeq158=Ala && E9=His	-0.0140858
HlaPreSeq161=Glu && E9=His	-0.016986
HlaPreSeq166=Glu && E9=His	-0.0140133
HlaPreSeq167=Trp && E9=His	-0.0126021
HlaPreSeq171=Tyr && E9=His	-0.0145783
HlaPreSeq173=Glu && E9=His	-0.015629
AD in Epitope[@2-3]	-0.0112541
DL in Epitope[@3-4]	0.0199837
IP in Epitope[@5-6]	-0.0094674
cyclic,small in Epitope[@6-7]	0.0185726
HlaPreSeq116=Tyr && E8=Gln	-0.0119503
HlaPreSeq163=Thr && E8=Gln	0.0167588
E in NFlank[1@] && A in Epitope[④	0.0216515
HlaPreSeq62=Gly && E2=Thr	0.0211364
HlaPreSeq67=Val && E2=Thr	0.0264739

HlaPreSeq76=Val && E2=Thr	0.0301469
HlaPreSeq77=Asp && E2=Thr	0.0284379
HlaPreSeq127=Lys && E2=Thr	0.0147684
HlaPreSeq142=Thr && E2=Thr	0.0197286
HlaPreSeq145=His && E2=Thr	0.0195894
HlaPreSeq166=Glu && E2=Thr	0.014932
HlaPreSeq167=Trp && E2=Thr	0.0165582
HlaPreSeq77=Asp && E6=Ile	0.0219338
HlaPreSeq90=Ala && E6=Ile	0.0275171
HlaPreSeq156=Leu && E6=Ile	0.0275423
HlaPreSeq167=Trp && E6=Ile	0.0200691
HlaPreSeq66=Lys && E7=Pro	-0.0109912
TK in Epitope	-0.0317188
IP in Epitope[@6-7]	0.0197253
HlaPreSeq90=Ala && E1=Asn	0.0116966
HlaPreSeq114=His && E1=Asn	0.0153194
HlaPreSeq116=Tyr && E1=Asn	0.0179077
HlaPreSeq127=Lys && E1=Asn	0.0117442
HlaPreSeq152=Val && E1=Asn	0.0214891
KT in Epitope	0.0259397
KT in Epitope[@7-8]	0.0164613
HlaPreSeq62=Gly && E7=Ser	0.014632
HlaPreSeq74=His && E7=Ser	0.0168425
HlaPreSeq76=Val && E7=Ser	0.0143672
HlaPreSeq77=Asp && E7=Ser	0.0141598
HlaPreSeq95=Val && E7=Ser	0.0149489
HlaPreSeq107=Trp && E7=Ser	0.0146338
HlaPreSeq142=Thr && E7=Ser	0.0143091
HlaPreSeq145=His && E7=Ser	0.0143106
HlaPreSeq163=Thr && E7=Ser	-0.0134918
HlaPreSeq77=Asp && E8=Asn	0.020482
HlaPreSeq156=Leu && E8=Asn	0.0212392
HlaPreSeq158=Ala && E8=Asn	0.0217037
HlaPreSeq163=Thr && E8=Asn	-0.0079681
C in NFlank	0.0153058
C in NFlank[1@]	0.0152983
cyclic,small in Epitope[@2-3]	-0.0239662
HlaPreSeq76=Val && E1=Glu	-0.0176445
HlaPreSeq77=Asp && E1=Glu	-0.0171417
HlaPreSeq152=Val && E1=Glu	0.00830321
FD in Epitope	0.00836014
FL in Epitope[@5-6]	0.011299
HlaPreSeq44=Arg && E2=Arg	0.0107035
HlaPreSeq77=Asp && E2=Arg	0.0186513
HlaPreSeq97=Arg && E2=Arg	-0.0147872
HlaPreSeq105=Ser && E2=Arg	-0.0111563
HlaPreSeq114=His && E2=Arg	0.0185091

HlaPreSeq116=Tyr && E2=Arg	-0.016349
HlaPreSeq150=Ala && E2=Arg	0.0105145
HlaPreSeq156=Leu && E2=Arg	0.0170283
HlaPreSeq166=Glu && E2=Arg	0.0150561
HlaPreSeq167=Trp && E2=Arg	0.0189308
DE in Epitope[@3-4]	-0.0173124
medium,aromatic in Epitope[@6-7	0.0174902
HlaPreSeq116=Tyr && E8=Val	0.00618699
IS in Epitope[@4-5]	0.011603
RW in Epitope	-0.0064529
WV in Epitope	0.0185208
HlaPreSeq62=Gly && E3=Gly	0.0153329
HlaPreSeq66=Lys && E3=Gly	0.014024
HlaPreSeq74=His && E3=Gly	0.0191041
HlaPreSeq76=Val && E3=Gly	0.0125689
HlaPreSeq77=Asp && E3=Gly	0.0129258
HlaPreSeq95=Val && E3=Gly	0.0217507
HlaPreSeq105=Ser && E3=Gly	0.0221581
HlaPreSeq107=Trp && E3=Gly	0.0217827
HlaPreSeq142=Thr && E3=Gly	0.0157572
HlaPreSeq145=His && E3=Gly	0.0157504
HlaPreSeq163=Thr && E3=Gly	0.0114389
HlaPreSeq44=Arg && E4=Pro	0.0274013
HlaPreSeq90=Ala && E4=Pro	0.0276536
HlaPreSeq114=His && E4=Pro	0.020108
HlaPreSeq116=Tyr && E4=Pro	0.0233082
HlaPreSeq127=Lys && E4=Pro	0.0199383
HlaPreSeq150=Ala && E4=Pro	0.0273166
HlaPreSeq152=Val && E4=Pro	0.0264602
HlaPreSeq156=Leu && E4=Pro	0.0268366
HlaPreSeq158=Ala && E4=Pro	0.0275311
HlaPreSeq167=Trp && E4=Pro	0.0289531
AG in Epitope	0.0229615
AG in Epitope[@2-3]	0.0231045
DV in Epitope[@8-9]	-0.0239092
HlaPreSeq62=Gly && E2=Met	0.032421
HlaPreSeq66=Lys && E2=Met	0.0261618
HlaPreSeq67=Val && E2=Met	0.0194504
HlaPreSeq74=His && E2=Met	0.0326151
HlaPreSeq76=Val && E2=Met	0.0222513
HlaPreSeq77=Asp && E2=Met	0.0249875
HlaPreSeq90=Ala && E2=Met	0.0119476
HlaPreSeq95=Val && E2=Met	0.0334305
HlaPreSeq97=Arg && E2=Met	0.0294019
HlaPreSeq105=Ser && E2=Met	0.0252464
HlaPreSeq107=Trp && E2=Met	0.0330273
HlaPreSeq114=His && E2=Met	0.0290276

HlaPreSeq116=Tyr && E2=Met	0.0245819
HlaPreSeq127=Lys && E2=Met	0.0296473
HlaPreSeq142=Thr && E2=Met	0.0326218
HlaPreSeq145=His && E2=Met	0.0326911
HlaPreSeq152=Val && E2=Met	0.0182164
HlaPreSeq156=Leu && E2=Met	0.016229
HlaPreSeq163=Thr && E2=Met	0.0178613
HlaPreSeq166=Glu && E2=Met	0.00927428
HlaPreSeq167=Trp && E2=Met	0.00963983
HlaPreSeq97=Arg && E3=Gln	0.0122278
HlaPreSeq103=Val && E3=Gln	-0.0164244
HlaPreSeq62=Gly && E9=Ile	0.0064905
HlaPreSeq66=Lys && E9=Ile	0.00710575
HlaPreSeq74=His && E9=Ile	0.0071125
HlaPreSeq97=Arg && E9=Ile	-0.0169435
HlaPreSeq107=Trp && E9=Ile	0.00737399
HlaPreSeq116=Tyr && E9=Ile	0.0202364
HlaPreSeq152=Val && E4=Gln	0.0182642
HlaPreSeq167=Trp && E4=Gln	0.0237321
HlaPreSeq156=Leu && E5=Thr	-0.0277268
HlaPreSeq163=Thr && E5=Thr	-0.0233468
SL in Epitope[@1-2]	-0.0090651
YT in Epitope[@7-8]	-0.0124123
HlaPreSeq152=Val && E5=Asp	0.0241955
HlaPreSeq95=Val && E8=Gly	0.0219944
HlaPreSeq35=Arg && E9=Asn	-0.0135747
HlaPreSeq45=Met && E9=Asn	-0.0131607
HlaPreSeq95=Val && E4=Gly	0.0164133
HlaPreSeq97=Arg && E4=Gly	0.0285075
HlaPreSeq62=Gly && E5=Trp	0.0186088
HlaPreSeq90=Ala && E5=Trp	0.0211946
HlaPreSeq105=Ser && E5=Trp	0.0150084
HlaPreSeq114=His && E5=Trp	0.0147703
HlaPreSeq116=Tyr && E5=Trp	0.0183896
HlaPreSeq127=Lys && E5=Trp	0.0130579
HlaPreSeq152=Val && E5=Trp	0.0220963
HlaPreSeq156=Leu && E5=Trp	0.0215176
AN in Epitope	0.014945
FA in Epitope	-0.0293186
HlaPreSeq90=Ala && E9=Met	0.0215273
HlaPreSeq152=Val && E9=Met	0.0187578
Q in NFlank[1@] && L in Epitope[ⓒ	-0.0141262
YS in Epitope	-0.0207826
FF in Epitope[@8-9]	0.0128125
HlaPreSeq62=Gly && E9=Trp	0.0216
HlaPreSeq152=Val && E9=Trp	0.0293933
IA in Epitope[@4-5]	-0.0198495

NA in Epitope[@1-2]	0.0121544
HlaPreSeq67=Val && E2=Gln	-0.0119544
HlaPreSeq74=His && E2=Gln	-0.0079934
HlaPreSeq77=Asp && E2=Gln	-0.0078466
HlaPreSeq105=Ser && E2=Gln	-0.0093167
HlaPreSeq107=Trp && E2=Gln	-0.0079727
HlaPreSeq114=His && E2=Gln	-0.0128314
HlaPreSeq116=Tyr && E2=Gln	-0.013043
HlaPreSeq127=Lys && E2=Gln	-0.0113848
HlaPreSeq142=Thr && E2=Gln	-0.0087348
HlaPreSeq145=His && E2=Gln	-0.0087317
HlaPreSeq152=Val && E2=Gln	-0.0091905
DH in Epitope	-0.0126104
FK in Epitope	0.0156928
HlaPreSeq95=Val && E1=Gly	0.0136636
HlaPreSeq97=Arg && E1=Gly	0.0101894
HlaPreSeq116=Tyr && E1=Gly	0.00993855
HlaPreSeq152=Val && E1=Gly	0.00938045
MR in Epitope	-0.022927
AL in Epitope[@8-9]	-0.0051414
HlaPreSeq77=Asp && E1=Met	0.0179131
HlaPreSeq114=His && E1=Met	0.0146025
LA in Epitope[@2-3]	0.0129397
AF in Epitope[@3-4]	0.0135432
NT in Epitope[@7-8]	0.0129742
GA in Epitope[@4-5]	-0.0127301
VP in Epitope[@6-7]	-0.0130592
HlaPreSeq67=Val && E8=Tyr	-0.0131092
HlaPreSeq156=Leu && E8=Tyr	-0.0130907
S in NFlank[1@] && S in Epitope[@	-0.0112404
SF in Epitope	0.0153849
SF in Epitope[@1-2]	0.0126651
TA in Epitope[@3-4]	-0.0106595
AL in Epitope[@4-5]	0.00959631
HlaPreSeq62=Gly && E9=Tyr	-0.019937
HlaPreSeq66=Lys && E9=Tyr	-0.0277817
HlaPreSeq74=His && E9=Tyr	-0.0147585
HlaPreSeq76=Val && E9=Tyr	-0.0334402
HlaPreSeq77=Asp && E9=Tyr	-0.0233563
HlaPreSeq90=Ala && E9=Tyr	0.0122779
HlaPreSeq95=Val && E9=Tyr	-0.0143102
HlaPreSeq97=Arg && E9=Tyr	0.0241146
HlaPreSeq107=Trp && E9=Tyr	-0.0148262
HlaPreSeq114=His && E9=Tyr	-0.0245859
HlaPreSeq116=Tyr && E9=Tyr	-0.038515
HlaPreSeq127=Lys && E9=Tyr	-0.0210101
HlaPreSeq142=Thr && E9=Tyr	-0.0160426

HlaPreSeq145=His && E9=Tyr	-0.0160414
HlaPreSeq156=Leu && E9=Tyr	0.0195437
FQ in Epitope	-0.0149733
HlaPreSeq90=Ala && E6=Cys	0.0195977
HlaPreSeq116=Tyr && E6=Cys	0.0192939
HlaPreSeq44=Arg && E8=Trp	0.0199153
HlaPreSeq62=Gly && E8=Trp	0.0155749
HlaPreSeq67=Val && E8=Trp	0.0160041
HlaPreSeq77=Asp && E8=Trp	0.0161694
HlaPreSeq95=Val && E8=Trp	0.0150245
HlaPreSeq97=Arg && E8=Trp	0.0162975
HlaPreSeq114=His && E8=Trp	0.0171247
HlaPreSeq127=Lys && E8=Trp	0.0157376
HlaPreSeq150=Ala && E8=Trp	0.0198915
HlaPreSeq152=Val && E8=Trp	0.0253383
HlaPreSeq156=Leu && E8=Trp	0.0225614
HlaPreSeq158=Ala && E8=Trp	0.0199534
DC in Epitope	0.0200595
KD in Epitope	-0.0160486
DG in Epitope[@4-5]	-0.0091256
LI in Epitope[@3-4]	-0.016286
WA in Epitope	0.0363866
positive,cyclic in Epitope[@1-2]	-0.0230933
positive,aromatic in Epitope[@1-2]	-0.0317355
HlaPreSeq97=Arg && E9=Ser	0.0121164
LG in Epitope[@3-4]	0.0136263
HlaPreSeq90=Ala && E5=Gln	0.0299005
HlaPreSeq152=Val && E5=Gln	0.0323872
GI in Epitope	0.019911
QG in Epitope[@5-6]	0.0128674
KA in Epitope	0.022381
ER in Epitope[@7-8]	0.0135889
negative,positive in Epitope[@7-8]	0.0124544
A in NFlank[1@] && K in Epitope[ⓒ	-0.011076
K in Epitope[@9] && A in CFlank[ⓒ	0.0131344
PR in Epitope	0.0389715
HlaPreSeq11=Ser && E2=Tyr	0.0221362
HlaPreSeq12=Val && E2=Tyr	0.0215477
HlaPreSeq24=Ala && E2=Tyr	0.0207828
HlaPreSeq43=Gln && E2=Tyr	0.0234139
HlaPreSeq45=Met && E2=Tyr	0.0221315
HlaPreSeq63=Glu && E2=Tyr	0.0171596
HlaPreSeq66=Lys && E2=Tyr	0.0312622
HlaPreSeq67=Val && E2=Tyr	0.0237921
HlaPreSeq69=Ala && E2=Tyr	0.0169541
HlaPreSeq70=His && E2=Tyr	0.0235397
HlaPreSeq71=Ser && E2=Tyr	0.0229846

HlaPreSeq77=Asp && E2=Tyr	-0.0120563
HlaPreSeq81=Leu && E2=Tyr	-0.0170531
HlaPreSeq82=Arg && E2=Tyr	-0.0145717
HlaPreSeq83=Gly && E2=Tyr	-0.0146023
HlaPreSeq99=Tyr && E2=Tyr	-0.0268981
HlaPreSeq105=Ser && E2=Tyr	0.030766
HlaPreSeq109=Phe && E2=Tyr	0.0239175
HlaPreSeq113=Tyr && E2=Tyr	0.028345
HlaPreSeq114=His && E2=Tyr	0.0234342
HlaPreSeq127=Lys && E2=Tyr	0.0246101
HlaPreSeq131=Arg && E2=Tyr	0.0174037
HlaPreSeq138=Met && E2=Tyr	0.0230556
HlaPreSeq144=Lys && E2=Tyr	0.015543
HlaPreSeq151=His && E2=Tyr	0.0151379
HlaPreSeq152=Val && E2=Tyr	0.0179366
HlaPreSeq163=Thr && E2=Tyr	0.0263798
HlaPreSeq166=Glu && E2=Tyr	-0.0201044
HlaPreSeq167=Trp && E2=Tyr	-0.0220297
HlaPreSeq171=Tyr && E5=Met	-0.026114
IE in Epitope[@3-4]	0.0232963
VA in Epitope[@7-8]	0.0106191
IA in Epitope[@7-8]	-0.0110462
DG in Epitope[@5-6]	-0.0108043
R in Epitope[@9] && S in CFlank[@	0.013291
HlaPreSeq66=Lys && E7=Phe	-0.012549
HlaPreSeq97=Arg && E7=Phe	-0.009909
HlaPreSeq114=His && E7=Phe	-0.0089002
HlaPreSeq116=Tyr && E7=Phe	-0.0080193
HlaPreSeq127=Lys && E7=Phe	-0.0093612
SV in Epitope[@1-2]	-0.0100027
HlaPreSeq44=Arg && E3=Met	0.0152217
HlaPreSeq67=Val && E3=Met	0.0224095
HlaPreSeq76=Val && E3=Met	0.0239902
HlaPreSeq77=Asp && E3=Met	0.0215736
HlaPreSeq150=Ala && E3=Met	0.0151898
HlaPreSeq158=Ala && E3=Met	0.01598
HlaPreSeq166=Glu && E3=Met	0.0129559
HlaPreSeq167=Trp && E3=Met	0.0132329
IV in Epitope[@4-5]	-0.0088258
GG in Epitope[@6-7]	0.0132291
TM in Epitope	0.0179441
HlaPreSeq97=Arg && E1=Thr	0.0160319
HlaPreSeq163=Thr && E1=Thr	-0.0104895
LT in Epitope[@3-4]	0.0226636
HlaPreSeq67=Val && E9=Cys	-0.0120558
FC in Epitope	-0.0151145
AF in Epitope[@7-8]	0.00880105

PF in Epitope	-0.0196995
LE in Epitope[@6-7]	0.0101358
positive,aromatic in Epitope[@4-5	0.0213755
PR in Epitope[@2-3]	0.0115843
HG in Epitope[@7-8]	0.0133205
PH in Epitope	-0.0109897
PI in Epitope[@7-8]	0.013241
CH in Epitope	-0.0124368
EG in Epitope[@2-3]	0.0119777
PG in Epitope[@6-7]	0.0104639
LD in Epitope[@5-6]	0.0123679
ML in Epitope[@7-8]	0.0142722
HlaPreSeq166=Glu && E2=Trp	-0.0150923
HlaPreSeq167=Trp && E2=Trp	-0.0142002
EA in Epitope[@4-5]	0.0203116
II in Epitope[@1-2]	-0.0110371
LV in Epitope[@6-7]	-0.0127683
I in NFlank[1@] && H in Epitope[@	0.010835
Y in Epitope[@9] && T in CFlank[@	0.00929696
CL in Epitope	-0.0337417
GT in Epitope[@5-6]	-0.0236179
PK in Epitope	-0.0123334
SP in Epitope[@1-2]	0.0120655
IL in Epitope[@3-4]	-0.0072967
SL in Epitope[@8-9]	-0.016888
EL in Epitope[@3-4]	0.0105414
LI in Epitope[@1-2]	-0.0098603
QA in Epitope[@7-8]	-0.0115919
AA in Epitope[@8-9]	0.0163119
WY in Epitope	0.0118819
LT in Epitope[@6-7]	-0.0152048
IL in Epitope[@1-2]	0.0100008
V in Epitope[@9] && Y in CFlank[@	-0.0143273
PC in Epitope	-0.0149907
EA in Epitope[@3-4]	-0.0143543
AT in Epitope[@4-5]	0.013985
N in NFlank[1@] && G in Epitope[	-0.0109774
QK in Epitope	-0.0423248
IN in Epitope[@3-4]	0.00995837
GI in Epitope[@5-6]	0.0222339
KW in Epitope	-0.0162695
WF in Epitope	-0.0147827
AS in Epitope[@2-3]	0.0132167
KK in Epitope	-0.0185022
LL in Epitope[@7-8]	0.0160847
LR in Epitope[@8-9]	0.0111287
SV in Epitope[@8-9]	0.00883598

SK in Epitope[@4-5]	0.0119453
A in Epitope[@9] && R in CFlank[ⓒ	0.0105292
VL in Epitope[@8-9]	0.0153017
Q in NFlank[1@] && I in Epitope[ⓒ	0.0137796
KK in Epitope[@5-6]	-0.0166979
DY in Epitope[@3-4]	0.00794765
L in Epitope[@9] && Y in CFlank[ⓒ	0.0101577
PR in Epitope[@8-9]	0.0166984
YE in Epitope	0.0139507
aromatic,negative in Epitope[@1-2]	0.00902177
NC in Epitope	0.0133011
QH in Epitope[@7-8]	0.0105214
T in NFlank[1@] && K in Epitope[ⓒ	0.0138135
TA in Epitope[@2-3]	0.0175427
IT in Epitope[@3-4]	-0.0117357
KA in Epitope[@4-5]	0.0104965
P in NFlank[1@] && R in Epitope[ⓒ	0.0109277
I in Epitope[@9] && L in CFlank[ⓒ	0.0157318
S in NFlank[1@] && V in Epitope[ⓒ	-0.0101057
VS in Epitope[@7-8]	0.0119545
I in NFlank[1@] && T in Epitope[ⓒ	-0.0116225
DG in Epitope[@3-4]	-0.0129086
QL in Epitope[@6-7]	0.0109631
LS in Epitope[@8-9]	0.0124386
I in Epitope[@9] && A in CFlank[ⓒ	-0.0135529
CY in Epitope	0.0219222
TI in Epitope[@3-4]	0.00981285
RF in Epitope[@4-5]	0.0146023
GP in Epitope[@4-5]	0.00987964
V in Epitope[@9] && L in CFlank[ⓒ	-0.0278688
WS in Epitope	-0.0124067
N in NFlank[1@] && L in Epitope[ⓒ	0.0193705
TS in Epitope[@3-4]	0.012604
NK in Epitope[@2-3]	0.0122301
LY in Epitope[@2-3]	-0.0079248
LN in Epitope[@8-9]	0.0126034
NL in Epitope[@8-9]	0.0159259
PP in Epitope[@4-5]	0.0142331
IE in Epitope[@6-7]	-0.0118589
VL in Epitope[@1-2]	0.0159434
LR in Epitope[@3-4]	0.0127238
I in Epitope[@9] && I in CFlank[ⓒ	0.0209442
HS in Epitope[@1-2]	0.0154236
WC in Epitope	0.0203322
FG in Epitope[@3-4]	0.0128046
I in Epitope[@9] && K in CFlank[ⓒ	-0.0093744
K in NFlank[1@] && G in Epitope[ⓒ	0.0118178

AY in Epitope	-0.0166699
MT in Epitope[@1-2]	0.0151378
SK in Epitope[@7-8]	0.0133218
GI in Epitope[@3-4]	0.0262016
AA in Epitope[@6-7]	-0.0174056
IW in Epitope	-0.0101882
SI in Epitope[@1-2]	-0.0124054
YT in Epitope[@1-2]	0.01151
E in NFlank[1@] && M in Epitope[	-0.0089643
KK in Epitope[@3-4]	0.00946581
II in Epitope[@3-4]	0.00982841
I in Epitope[@9] && S in CFlank[	-0.0181326
FS in Epitope[@6-7]	0.0103888
MA in Epitope	-0.0200288
VR in Epitope[@2-3]	0.0147687
EA in Epitope[@1-2]	0.0136865
TL in Epitope[@6-7]	0.0148709
TM in Epitope[@7-8]	0.00934022
MW in Epitope	0.0412714
YE in Epitope[@7-8]	0.0103959
H in NFlank[1@] && S in Epitope[	0.0167892
HH in Epitope[@5-6]	0.0101713
V in Epitope[@9] && S in CFlank[	-0.009744
VK in Epitope[@6-7]	0.0239061
DA in Epitope[@4-5]	-0.0138086
AM in Epitope[@8-9]	0.0201527
QE in Epitope[@3-4]	0.0122372
IG in Epitope[@6-7]	-0.0108358
M in Epitope[@9] && T in CFlank[	0.0311232
AS in Epitope[@5-6]	0.0107619
I in NFlank[1@] && V in Epitope[	0.0187094
LW in Epitope[@7-8]	0.0141717
GK in Epitope[@5-6]	0.0121742
FA in Epitope[@1-2]	-0.0116239
DV in Epitope[@5-6]	0.0154472
KI in Epitope[@6-7]	0.0101656
EE in Epitope[@7-8]	-0.0102183
WV in Epitope[@4-5]	0.0108855
VP in Epitope[@5-6]	0.0154103
RL in Epitope[@3-4]	0.0183158
LY in Epitope[@4-5]	-0.0175667
WC in Epitope[@7-8]	0.0146919
KA in Epitope[@3-4]	0.0112522
IK in Epitope[@4-5]	-0.009475
FH in Epitope	0.0146697
FH in Epitope[@2-3]	0.0149405
AF in Epitope[@5-6]	0.0122505

VN in Epitope[@5-6]	-0.0122799
SK in Epitope[@3-4]	-0.0117249
VL in Epitope[@3-4]	0.0109176
VG in Epitope[@6-7]	-0.0155818
TK in Epitope[@8-9]	-0.0122287
TT in Epitope[@3-4]	-0.0147348
IS in Epitope[@6-7]	0.00993212
WK in Epitope[@3-4]	0.00991529
EG in Epitope[@6-7]	0.0115285
PQ in Epitope[@2-3]	0.0104624
AV in Epitope[@4-5]	-0.0112787
TW in Epitope[@7-8]	0.0123982
FI in Epitope[@2-3]	-0.0115807
TP in Epitope[@1-2]	0.0160756
RP in Epitope[@1-2]	0.0129599
KF in Epitope[@5-6]	-0.0109049
CG in Epitope[@3-4]	0.0107408
D in NFlank[1@] && F in Epitope[③	-0.0119973
Y in Epitope[@9] && D in CFlank[③	-0.0113829
RQ in Epitope[@1-2]	0.014394
K in NFlank[1@] && R in Epitope[③	0.0146283
LY in Epitope[@7-8]	-0.013678
SQ in Epitope[@3-4]	0.0147267
AD in Epitope[@7-8]	0.00943242
TF in Epitope[@3-4]	0.00894629
cyclic(HlaPreSeq156) && buried(E:	-0.0141532
aromatic(HlaPreSeq156) && burie	-0.0141772
cyclic(HlaPreSeq156) && hydrophc	-0.0159386
aromatic(HlaPreSeq156) && hydrc	-0.0159909
cyclic(HlaPreSeq156) && cyclic(E2)	-0.0105895
aromatic(HlaPreSeq156) && cyclic	-0.0105852
cyclic(HlaPreSeq156) && buried(E:	0.0182429
aromatic(HlaPreSeq156) && burie	0.0182114
cyclic(HlaPreSeq156) && large(E2)	-0.0182127
aromatic(HlaPreSeq156) && large(	-0.018216
cyclic(HlaPreSeq156) && positive(I	0.0162801
aromatic(HlaPreSeq156) && positi	0.0162818
cyclic(HlaPreSeq156) && polar(E3)	0.0166458
aromatic(HlaPreSeq156) && polar	0.0166124
cyclic(HlaPreSeq156) && charged(	0.0141486
aromatic(HlaPreSeq156) && charg	0.014141
cyclic(HlaPreSeq156) && aliphatic(	0.0184337
aromatic(HlaPreSeq156) && aliphc	0.0184457
cyclic(HlaPreSeq156) && buried(E!	0.013274
aromatic(HlaPreSeq156) && burie	0.0132603
cyclic(HlaPreSeq156) && hydrophc	0.0140835
aromatic(HlaPreSeq156) && hydrc	0.0140663

HlaPreSeq95=Leu && E6=Ala	-0.0209687
cyclic(HlaPreSeq156) && buried(E6)	0.0101523
aromatic(HlaPreSeq156) && buried(E6)	0.0101561
cyclic(HlaPreSeq156) && hydrophobic(E6)	0.0140525
aromatic(HlaPreSeq156) && hydrophobic(E6)	0.0140262
HlaPreSeq95=Leu && E7=Arg	0.0288858
cyclic(HlaPreSeq156) && large(E7)	0.013534
aromatic(HlaPreSeq156) && large(E7)	0.0135367
cyclic(HlaPreSeq156) && charged(E7)	0.0275544
aromatic(HlaPreSeq156) && charged(E7)	0.0275699
cyclic(HlaPreSeq156) && polar(E7)	0.0207862
aromatic(HlaPreSeq156) && polar(E7)	0.0207947
cyclic(HlaPreSeq156) && large(E8)	0.0153863
aromatic(HlaPreSeq156) && large(E8)	0.0153849
cyclic(HlaPreSeq156) && charged(E8)	0.0141096
aromatic(HlaPreSeq156) && charged(E8)	0.014113
cyclic(HlaPreSeq156) && polar(E8)	0.0151471
aromatic(HlaPreSeq156) && polar(E8)	0.0151115
HlaPreSeq95=Leu && E9=Leu	0.0422629
HlaPreSeq156=Trp && E9=Leu	0.0299133
cyclic(HlaPreSeq156) && aliphatic(E9)	0.0155609
aromatic(HlaPreSeq156) && aliphatic(E9)	0.0156127
cyclic(HlaPreSeq156) && buried(E9)	0.0102463
aromatic(HlaPreSeq156) && buried(E9)	0.01041
cyclic(HlaPreSeq156) && hydrophobic(E9)	0.0112601
aromatic(HlaPreSeq156) && hydrophobic(E9)	0.0114535
cyclic(HlaPreSeq156) && large(E9)	0.0112623
aromatic(HlaPreSeq156) && large(E9)	0.0113503
cyclic(HlaPreSeq156) && cyclic(E1)	-0.0151057
aromatic(HlaPreSeq156) && cyclic(E1)	-0.0150963
cyclic(HlaPreSeq156) && large(E1)	0.0109932
aromatic(HlaPreSeq156) && large(E1)	0.0110299
cyclic(HlaPreSeq156) && charged(E1)	0.0253119
aromatic(HlaPreSeq156) && charged(E1)	0.0253222
cyclic(HlaPreSeq156) && polar(E1)	0.0210101
aromatic(HlaPreSeq156) && polar(E1)	0.0210584
HlaPreSeq95=Leu && E3=Ser	-0.0150659
cyclic(HlaPreSeq156) && small(E3)	0.0153951
aromatic(HlaPreSeq156) && small(E3)	0.015398
cyclic(HlaPreSeq156) && positive(E3)	-0.0155284
aromatic(HlaPreSeq156) && positive(E3)	-0.0155231
cyclic(HlaPreSeq156) && charged(E3)	-0.0108449
aromatic(HlaPreSeq156) && charged(E3)	-0.0108335
cyclic(HlaPreSeq156) && large(E6)	0.0190218
aromatic(HlaPreSeq156) && large(E6)	0.0190905
cyclic(HlaPreSeq156) && medium(E6)	-0.0149635
aromatic(HlaPreSeq156) && medium(E6)	-0.0149582

HlaPreSeq95=Leu && E9=Arg	-0.0109544
cyclic(HlaPreSeq156) && positive(l	-0.0118321
aromatic(HlaPreSeq156) && positi	-0.0118359
cyclic(HlaPreSeq156) && aliphatic(	0.0197757
aromatic(HlaPreSeq156) && aliphatic	0.0198247
cyclic(HlaPreSeq156) && buried(E3	-0.0215376
aromatic(HlaPreSeq156) && buried	-0.0215254
HlaPreSeq95=Leu && E6=Pro	0.0208599
HlaPreSeq156=Trp && E2=Ile	0.00915136
HlaPreSeq95=Leu && E6=Ser	-0.0163127
HlaPreSeq95=Leu && E7=Ser	-0.0231103
cyclic(HlaPreSeq156) && positive(l	0.0127572
aromatic(HlaPreSeq156) && positi	0.0127612
HlaPreSeq95=Leu && E2=His	0.0122098
HlaPreSeq95=Leu && E4=Phe	0.00989634
HlaPreSeq95=Leu && E6=Gly	0.0294903
HlaPreSeq156=Trp && E2=Ala	0.00902383
HlaPreSeq95=Leu && E7=Pro	-0.0120523
cyclic(HlaPreSeq156) && hydrophobic	-0.015737
aromatic(HlaPreSeq156) && hydrophobic	-0.0157315
HlaPreSeq95=Leu && E6=Val	-0.0183009
HlaPreSeq95=Leu && E8=Ala	0.0160779
HlaPreSeq95=Leu && E1=Arg	0.0148259
HlaPreSeq95=Leu && E6=Leu	0.0156477
cyclic(HlaPreSeq156) && aliphatic(	-0.0144144
aromatic(HlaPreSeq156) && aliphatic	-0.0144094
HlaPreSeq95=Leu && E8=Lys	0.0110276
HlaPreSeq156=Trp && E8=Lys	0.0106215
HlaPreSeq95=Leu && E3=Leu	-0.0085419
HlaPreSeq156=Trp && E3=Leu	-0.0129773
HlaPreSeq95=Leu && E5=Gly	0.0145715
HlaPreSeq95=Leu && E6=Glu	0.00994013
HlaPreSeq95=Leu && E7=Ala	0.0134423
HlaPreSeq95=Leu && E4=Val	-0.0156717
HlaPreSeq95=Leu && E8=Gly	-0.0113569
HlaPreSeq95=Leu && E1=Leu	-0.0268338
HlaPreSeq95=Leu && E2=Thr	-0.0158784
HlaPreSeq156=Trp && E2=Thr	0.0153008
HlaPreSeq156=Trp && E9=Ile	-0.0132426
HlaPreSeq95=Leu && E3=Arg	0.0182755
HlaPreSeq95=Leu && E7=Leu	-0.0174317
cyclic(HlaPreSeq156) && negative(l	0.0166404
aromatic(HlaPreSeq156) && negative	0.0166409
HlaPreSeq43=Arg && E5=Glu	-0.0105241
HlaPreSeq95=Leu && E5=Glu	-0.0170331
HlaPreSeq156=Trp && E7=Val	-0.0128064
HlaPreSeq156=Trp && E7=Glu	0.0107455

cyclic(HlaPreSeq156) && negative(	0.0192615
aromatic(HlaPreSeq156) && negat	0.0192706
HlaPreSeq95=Leu && E2=Arg	0.0194101
HlaPreSeq156=Trp && E5=Leu	0.0200774
HlaPreSeq95=Leu && E4=Ile	0.0157772
HlaPreSeq95=Leu && E2=Asp	-0.0105808
SF in Epitope[@5-6]	0.00936326
HlaPreSeq43=Arg && E4=Gly	-0.0095461
HlaPreSeq95=Leu && E2=Gly	-0.0128314
HlaPreSeq156=Trp && E6=Met	0.0129294
HlaPreSeq95=Leu && E1=Ile	0.0137133
HlaPreSeq95=Leu && E6=Gln	-0.0062882
HlaPreSeq95=Leu && E2=Tyr	0.0168542
HlaPreSeq95=Leu && E3=Asp	0.0120326
HlaPreSeq95=Leu && E6=Asp	-0.0197774
QD in Epitope[@2-3]	0.0188157
HlaPreSeq9=Tyr	0.015849
HlaPreSeq9=Tyr && E2=Ala	0.0348078
HlaPreSeq9=Tyr && E5=Leu	-0.0281536
HlaPreSeq9=Tyr && E9=Leu	0.00833475
HlaPreSeq9=Tyr && E2=Glu	-0.0140626
HlaPreSeq9=Tyr && E7=Val	0.0248896
PA in Epitope[@5-6]	0.00901625
HlaPreSeq9=Tyr && E2=Pro	0.0494343
HlaPreSeq9=Tyr && E8=Thr	0.0204086
HlaPreSeq9=Tyr && E9=Thr	-0.007212
HlaPreSeq9=Tyr && E1=Val	-0.0229226
HlaPreSeq9=Tyr && E2=Asp	-0.0132208
HlaPreSeq9=Tyr && E3=Asn	0.0229507
HlaPreSeq9=Tyr && E8=Asn	0.0180822
HlaPreSeq9=Tyr && E1=Thr	0.0190527
HlaPreSeq9=Tyr && E2=Tyr	-0.0204949
HlaPreSeq9=Tyr && E5=Lys	-0.0101488
HlaPreSeq9=Tyr && E8=Ile	0.0125677
HlaPreSeq9=Tyr && E2=Val	0.0212023
HlaPreSeq9=Tyr && E3=Ala	0.0212489
HlaPreSeq9=Tyr && E6=Leu	-0.0216235
HlaPreSeq9=Tyr && E2=Leu	-0.0348726
HlaPreSeq9=Tyr && E8=Tyr	-0.0099612
HlaPreSeq9=Tyr && E1=Phe	-0.0165137
HlaPreSeq9=Tyr && E3=Gly	-0.0114649
HlaPreSeq9=Tyr && E5=Ala	0.00657449
HlaPreSeq9=Tyr && E3=Ser	0.00795728
HlaPreSeq9=Tyr && E2=Gln	0.0164095
HlaPreSeq9=Tyr && E9=Val	0.0138627
HlaPreSeq9=Tyr && E7=Leu	-0.0230928
HlaPreSeq9=Tyr && E4=Asn	-0.0192946

HlaPreSeq9=Tyr && E6=Thr	0.0154969
HlaPreSeq95=Leu && E6=Thr	0.0130287
HlaPreSeq9=Tyr && E7=Pro	0.0156906
HlaPreSeq9=Tyr && E9=Pro	-0.0099272
HlaPreSeq9=Tyr && E1=Leu	0.0105793
HlaPreSeq9=Tyr && E4=Gln	0.0190826
HlaPreSeq9=Tyr && E5=Thr	0.00543414
HlaPreSeq9=Tyr && E6=Met	0.0170674
HlaPreSeq9=Tyr && E7=Gln	0.0254117
HlaPreSeq9=Tyr && E4=Pro	0.0272928
HlaPreSeq9=Tyr && E5=Ser	0.019806
HlaPreSeq9=Tyr && E2=Arg	-0.0144664
HlaPreSeq9=Tyr && E3=Glu	-0.0204752
HlaPreSeq9=Tyr && E2=Met	-0.0128426
HlaPreSeq95=Leu && E2=Met	-0.0134828
HlaPreSeq9=Tyr && E5=Val	0.0188794
HlaPreSeq9=Tyr && E9=Lys	0.0238668
HlaPreSeq9=Tyr && E2=Thr	0.0227074
TT in Epitope[@2-3]	-0.0102908
HlaPreSeq9=Tyr && E1=Lys	-0.0179296
HlaPreSeq9=Tyr && E6=Arg	-0.0224896
HlaPreSeq9=Tyr && E5=Phe	0.0161614
IR in Epitope[@2-3]	0.0100358
HlaPreSeq9=Tyr && E7=Asn	-0.0065605
HlaPreSeq95=Leu && E7=Asn	0.0160554
HlaPreSeq9=Tyr && E2=Asn	-0.0200808
HlaPreSeq9=Tyr && E6=Tyr	-0.0149287
HlaPreSeq9=Tyr && E7=Trp	-0.0082814
HlaPreSeq95=Leu && E7=Trp	0.0232914
HlaPreSeq9=Tyr && E8=Gln	-0.0106954
QI in Epitope[@8-9]	0.0131582
buried(HlaPreSeq99) && aliphatic(	-0.0179372
buried(HlaPreSeq99) && buried(E2	-0.0159399
buried(HlaPreSeq99) && hydrophic	0.0117689
buried(HlaPreSeq99) && medium(	-0.0191473
buried(HlaPreSeq99) && charged(I	0.00898413
buried(HlaPreSeq99) && medium(	0.00922842
buried(HlaPreSeq99) && buried(E9	0.0132409
buried(HlaPreSeq99) && large(E9)	0.016215
buried(HlaPreSeq99) && polar(E2)	-0.0169197
buried(HlaPreSeq99) && medium(	0.0145256
buried(HlaPreSeq99) && cyclic(E2)	0.031078
buried(HlaPreSeq99) && aromatic	0.0367379
buried(HlaPreSeq99) && large(E2)	0.00998747
buried(HlaPreSeq99) && medium(	-0.01438
QP in Epitope[@1-2]	-0.0129011
HlaPreSeq70=Gln && E1=Ala	0.0137627

medium(HlaPreSeq161) && hydro	-0.0134575
large(HlaPreSeq152) && aliphatic(	0.0204598
negative(HlaPreSeq152) && alipha	0.017622
charged(HlaPreSeq152) && alipha	0.0199559
polar(HlaPreSeq152) && aliphatic(	0.0200892
negative(HlaPreSeq152) && hydro	0.0177992
charged(HlaPreSeq152) && alipha	-0.0184514
polar(HlaPreSeq152) && aliphatic(	-0.0225326
large(HlaPreSeq152) && charged(f	0.0217165
charged(HlaPreSeq152) && charge	0.0216134
negative(HlaPreSeq152) && buriec	0.0149683
charged(HlaPreSeq152) && buried	0.0123977
polar(HlaPreSeq152) && buried(E	0.013982
medium(HlaPreSeq161) && hydro	-0.0112778
HlaPreSeq152=Glu && E6=Cys	0.0145445
large(HlaPreSeq152) && medium(l	-0.0141736
negative(HlaPreSeq152) && mediu	-0.0155407
charged(HlaPreSeq152) && mediu	-0.014333
medium(HlaPreSeq161) && mediu	-0.0178008
HlaPreSeq70=Gln && E7=Thr	0.0122874
large(HlaPreSeq152) && medium(l	-0.0131297
negative(HlaPreSeq152) && mediu	-0.0159488
charged(HlaPreSeq152) && mediu	-0.0133549
polar(HlaPreSeq152) && medium(	-0.0112912
medium(HlaPreSeq161) && polar(	-0.0194029
negative(HlaPreSeq152) && large(	-0.0128606
medium(HlaPreSeq161) && buriec	-0.0180566
negative(HlaPreSeq152) && hydro	-0.0110711
polar(HlaPreSeq152) && hydrophc	-0.0141037
medium(HlaPreSeq161) && hydro	-0.0106255
large(HlaPreSeq152) && medium(l	-0.0148298
charged(HlaPreSeq152) && mediu	-0.0148427
HlaPreSeq152=Glu && E2=Lys	0.0109803
large(HlaPreSeq152) && positive(E	0.0190202
negative(HlaPreSeq152) && positi	0.0217827
charged(HlaPreSeq152) && positiv	0.0189886
polar(HlaPreSeq152) && positive(f	0.0170245
large(HlaPreSeq152) && polar(E2)	-0.0148194
negative(HlaPreSeq152) && polar(	-0.0164275
charged(HlaPreSeq152) && polar(l	-0.0148582
HlaPreSeq70=Gln && E3=Lys	-0.030731
HlaPreSeq152=Glu && E3=Lys	-0.0129091
polar(HlaPreSeq152) && large(E3)	-0.0149924
medium(HlaPreSeq161) && large(l	-0.0099826
medium(HlaPreSeq161) && polar(	-0.0117484
large(HlaPreSeq152) && positive(E	0.0178061
charged(HlaPreSeq152) && positiv	0.0177677

large(HlaPreSeq152) && small(E5)	0.0118682
negative(HlaPreSeq152) && small(	0.0145297
charged(HlaPreSeq152) && small(l	0.01186
polar(HlaPreSeq152) && small(E5)	0.0146368
HlaPreSeq70=Gln && E6=Arg	-0.0173111
large(HlaPreSeq152) && cyclic(E7)	-0.0210795
negative(HlaPreSeq152) && cyclic(	-0.0192558
charged(HlaPreSeq152) && cyclic(	-0.0211734
polar(HlaPreSeq152) && cyclic(E7)	-0.0255726
HlaPreSeq70=Gln && E8=Arg	-0.0140903
HlaPreSeq70=Gln && E9=Thr	-0.0062622
HlaPreSeq70=Gln && E2=Val	0.019345
HlaPreSeq70=Gln && E3=Arg	0.0155647
HlaPreSeq152=Glu && E3=Arg	0.0153665
HlaPreSeq152=Glu && E5=Asn	-0.0158823
large(HlaPreSeq152) && medium(l	-0.0115218
negative(HlaPreSeq152) && mediu	-0.0152913
charged(HlaPreSeq152) && mediu	-0.0116479
polar(HlaPreSeq152) && medium(	-0.0104283
negative(HlaPreSeq152) && alpha	-0.0216787
HlaPreSeq152=Glu && E7=Arg	0.0169402
large(HlaPreSeq152) && large(E7)	0.0112583
negative(HlaPreSeq152) && large(	0.0109073
charged(HlaPreSeq152) && large(f	0.0107499
polar(HlaPreSeq152) && large(E7)	0.0102086
large(HlaPreSeq152) && positive(E	0.0204431
negative(HlaPreSeq152) && positi	0.0213535
charged(HlaPreSeq152) && positiv	0.0203347
polar(HlaPreSeq152) && positive(f	0.0190163
medium(HlaPreSeq161) && chargε	-0.0164511
HlaPreSeq70=Gln && E9=Ala	0.013025
polar(HlaPreSeq152) && aliphatic(	-0.0180644
medium(HlaPreSeq161) && alpha	-0.0162109
HlaPreSeq161=Asp && E9=Leu	-0.0124686
HlaPreSeq70=Gln && E1=Glu	-0.0196266
HlaPreSeq152=Glu && E2=Asn	-0.0109074
HlaPreSeq152=Glu && E3=Thr	-0.011881
HlaPreSeq152=Glu && E4=Val	-0.0146579
negative(HlaPreSeq152) && mediu	-0.0078682
polar(HlaPreSeq152) && medium(	-0.0045751
medium(HlaPreSeq161) && mediu	-0.0132357
large(HlaPreSeq152) && aromatic(	-0.0134837
charged(HlaPreSeq152) && aroma	-0.0135175
polar(HlaPreSeq152) && aromatic(	-0.0174447
HlaPreSeq70=Gln && E2=Pro	0.0191003
negative(HlaPreSeq152) && cyclic(	0.0129634
HlaPreSeq70=Gln && E5=Met	-0.0137392

HlaPreSeq152=Glu && E7=Asp	-0.0118175
large(HlaPreSeq152) && negative(	-0.0130367
negative(HlaPreSeq152) && negat	-0.0219693
charged(HlaPreSeq152) && negati	-0.0129876
polar(HlaPreSeq152) && negative(	-0.0132121
medium(HlaPreSeq161) && negati	-0.0130215
HlaPreSeq70=Gln && E3=Leu	-0.0201013
HlaPreSeq152=Glu && E6=Phe	0.00790737
negative(HlaPreSeq152) && mediu	0.0131632
HlaPreSeq70=Gln && E1=Asn	-0.0176423
HlaPreSeq70=Gln && E8=Thr	-0.0172939
HlaPreSeq161=Asp && E8=Thr	-0.0106592
HlaPreSeq70=Gln && E9=Lys	0.0294628
HlaPreSeq161=Asp && E9=Lys	0.0108389
medium(HlaPreSeq161) && positiv	0.0117447
medium(HlaPreSeq161) && charg	0.00679048
HlaPreSeq152=Glu && E2=Ala	0.0174016
HlaPreSeq70=Gln && E5=Phe	0.022412
large(HlaPreSeq152) && aliphatic(	0.0101863
negative(HlaPreSeq152) && alipha	0.0158528
charged(HlaPreSeq152) && alipha	0.00984025
HlaPreSeq152=Glu && E2=Ser	-0.012192
large(HlaPreSeq152) && small(E3)	0.00586621
negative(HlaPreSeq152) && small(	0.00898559
charged(HlaPreSeq152) && small(l	0.0057832
HlaPreSeq70=Gln && E9=Ile	-0.0198698
large(HlaPreSeq152) && positive(E	0.0146389
negative(HlaPreSeq152) && positiv	0.0174888
charged(HlaPreSeq152) && positiv	0.0144687
polar(HlaPreSeq152) && positive(f	0.0133514
medium(HlaPreSeq161) && positiv	0.0113124
HlaPreSeq152=Glu && E3=Phe	0.0129567
HlaPreSeq161=Asp && E3=Phe	0.017876
large(HlaPreSeq152) && cyclic(E3)	0.0199019
negative(HlaPreSeq152) && cyclic(	0.0251264
charged(HlaPreSeq152) && cyclic(	0.0198172
polar(HlaPreSeq152) && cyclic(E3)	0.017384
medium(HlaPreSeq161) && cyclic(	0.0138232
large(HlaPreSeq152) && aromatic(	0.0176873
negative(HlaPreSeq152) && arom:	0.0194393
charged(HlaPreSeq152) && aroma	0.0176694
polar(HlaPreSeq152) && aromatic	0.0154521
medium(HlaPreSeq161) && arom:	0.0154799
HlaPreSeq70=Gln && E7=Gly	0.0097192
HlaPreSeq161=Asp && E7=Gly	0.00982518
negative(HlaPreSeq152) && cyclic(	-0.0104891
HlaPreSeq66=Asn && E7=Trp	-0.0091242

HlaPreSeq95=Ile && E7=Trp	-0.0068117
HL in Epitope[@1-2]	-0.0191847
HlaPreSeq70=Gln && E2=Gly	-0.0176135
HlaPreSeq152=Glu && E5=Leu	-0.0149798
HlaPreSeq161=Asp && E5=Leu	-0.0144454
HlaPreSeq70=Gln && E1=Gly	-0.0155211
HlaPreSeq70=Gln && E4=Lys	-0.0164092
HlaPreSeq152=Glu && E5=Lys	0.0151876
HlaPreSeq161=Asp && E5=Lys	0.0129011
large(HlaPreSeq152) && positive(E	0.0186311
negative(HlaPreSeq152) && positiv	0.0215536
charged(HlaPreSeq152) && positiv	0.0186218
HlaPreSeq152=Glu && E7=Lys	0.0125856
HlaPreSeq152=Glu && E1=Arg	0.0135286
HlaPreSeq152=Glu && E4=Ala	0.00627314
HlaPreSeq70=Gln && E6=Asp	-0.0151946
HlaPreSeq152=Glu && E6=Asp	-0.0174551
HlaPreSeq70=Gln && E8=Lys	0.0110248
Y in Epitope[@9] && C in CFlank[@	0.0189177
large(HlaPreSeq152) && negative(	-0.0202369
negative(HlaPreSeq152) && negat	-0.0189471
charged(HlaPreSeq152) && negati	-0.0202259
polar(HlaPreSeq152) && negative(	-0.0204164
HlaPreSeq70=Gln && E2=Glu	-0.011053
HlaPreSeq152=Glu && E2=Glu	-0.0197665
M in Epitope[@9] && A in CFlank[	0.0131487
HlaPreSeq152=Glu && E3=Asn	0.0153061
HlaPreSeq62=Gln && E2=Tyr	-0.0118038
HlaPreSeq74=Asp && E2=Tyr	0.0183598
HlaPreSeq127=Asn && E2=Tyr	-0.0179721
HlaPreSeq70=Gln && E6=Lys	0.0121697
HlaPreSeq152=Glu && E6=Lys	0.0140613
HlaPreSeq114=Arg && E7=Cys	0.0101709
HlaPreSeq116=Asp && E7=Cys	0.0111031
HlaPreSeq70=Gln && E3=Met	0.0185545
HlaPreSeq70=Gln && E3=Trp	-0.0150238
HlaPreSeq70=Gln && E6=Pro	0.017791
HlaPreSeq70=Gln && E2=Thr	0.0130707
WA in Epitope[@8-9]	0.0109918
HlaPreSeq107=Gly && E9=His	-0.0149188
HlaPreSeq127=Asn && E9=His	-0.0144231
HlaPreSeq142=Ile && E9=His	-0.014479
HlaPreSeq145=Arg && E9=His	-0.0144669
WY in Epitope[@8-9]	-0.0104602
HlaPreSeq107=Gly && E3=Gln	-0.0184405
HlaPreSeq114=Arg && E3=Gln	-0.0116294
HlaPreSeq116=Asp && E3=Gln	-0.0124915

HlaPreSeq142=Ile && E3=Gln	-0.0183598
HlaPreSeq145=Arg && E3=Gln	-0.0174685
HlaPreSeq152=Glu && E3=Gln	-0.0138543
K in NFlank[1@] && T in Epitope[Ĉ	0.0141543
EK in Epitope[@3-4]	0.0105544
HlaPreSeq70=Gln && E2=Met	-0.0168828
HY in Epitope[@8-9]	0.0135258
TV in Epitope[@8-9]	0.0275215
WI in Epitope[@7-8]	0.0120142
SK in Epitope[@2-3]	0.0166171
HlaPreSeq156=Gln && E5=Phe	0.0139421
HlaPreSeq156=Gln && E9=Lys	0.0289374
HlaPreSeq156=Gln && E3=Thr	0.0116319
HlaPreSeq156=Gln && E6=Ile	-0.0111396
HlaPreSeq156=Gln && E7=Leu	-0.0114803
HlaPreSeq156=Gln && E1=Ser	0.0181937
HlaPreSeq9=Tyr && E6=Phe	0.00465359
HlaPreSeq156=Gln && E1=Ile	0.0120708
HlaPreSeq156=Gln && E8=Leu	0.0133667
HlaPreSeq156=Gln && E3=Glu	-0.0161386
R in Epitope[@9] && K in CFlank[Ĉ	0.0101193
HlaPreSeq156=Gln && E2=Ser	0.0192739
HlaPreSeq90=Asp && E6=Met	0.0132573
HlaPreSeq105=Pro && E2=Tyr	-0.0241257
HlaPreSeq156=Gln && E2=Tyr	0.0229458
F in Epitope[@9] && Y in CFlank[Ĉ	0.0114727
HlaPreSeq156=Gln && E9=Tyr	-0.0161567
CP in Epitope[@7-8]	0.0100095
HlaPreSeq151=Arg && E2=Leu	-0.0232199
HlaPreSeq151=Arg && E7=Gln	0.0228625
HlaPreSeq151=Arg && E8=Lys	0.00723528
HlaPreSeq151=Arg && E4=Arg	0.0153615
HlaPreSeq151=Arg && E6=Pro	0.0196756
HlaPreSeq151=Arg && E7=Asn	0.0208786
HlaPreSeq151=Arg && E9=Leu	0.0139046
HlaPreSeq151=Arg && E2=Thr	-0.0180497
HlaPreSeq151=Arg && E4=Leu	-0.0100482
HlaPreSeq151=Arg && E9=Gln	-0.0139031
HlaPreSeq151=Arg && E2=Pro	0.0323136
HlaPreSeq151=Arg && E6=Asn	-0.0125634
HlaPreSeq151=Arg && E9=Arg	0.0141367
HlaPreSeq151=Arg && E4=Ser	-0.0178483
HlaPreSeq151=Arg && E4=Gln	0.0211278
HlaPreSeq151=Arg && E8=Arg	-0.0217445
polar(HlaPreSeq9)	-0.0088164
large(HlaPreSeq76)	-0.0058489
negative(HlaPreSeq76)	-0.0087655

HlaPreSeq76=Glu && E1=Lys	-0.0206125
charged(HlaPreSeq62) && charged(E1)	0.0267907
aliphatic(HlaPreSeq80) && charged(E1)	0.0170778
buried(HlaPreSeq80) && charged(E1)	0.017069
hydrophobic(HlaPreSeq80) && charged(E1)	0.017061
large(HlaPreSeq80) && charged(E1)	0.0139453
small(HlaPreSeq81) && charged(E1)	0.0206847
aliphatic(HlaPreSeq82) && charged(E1)	0.0252889
buried(HlaPreSeq82) && charged(E1)	0.0252494
hydrophobic(HlaPreSeq82) && charged(E1)	0.0252058
large(HlaPreSeq83) && charged(E1)	0.0251576
positive(HlaPreSeq83) && charged(E1)	0.0251039
charged(HlaPreSeq83) && charged(E1)	0.0250438
polar(HlaPreSeq83) && charged(E1)	0.0249762
charged(HlaPreSeq62) && polar(E1)	0.0194175
HlaPreSeq9=Ser && E2=Tyr	0.0328738
HlaPreSeq62=Glu && E2=Tyr	0.0277664
HlaPreSeq65=Gly && E2=Tyr	0.0277882
HlaPreSeq77=Asn && E2=Tyr	0.0357614
HlaPreSeq80=Ile && E2=Tyr	0.0222312
HlaPreSeq81=Ala && E2=Tyr	0.0238628
HlaPreSeq82=Leu && E2=Tyr	0.0213599
HlaPreSeq83=Arg && E2=Tyr	0.0213933
HlaPreSeq97=Met && E2=Tyr	0.036799
HlaPreSeq99=Phe && E2=Tyr	0.0344473
HlaPreSeq144=Gln && E2=Tyr	-0.009154
HlaPreSeq166=Asp && E2=Tyr	0.0271062
HlaPreSeq167=Gly && E2=Tyr	0.0271312
small(HlaPreSeq9) && cyclic(E2)	0.026072
negative(HlaPreSeq62) && cyclic(E2)	0.02341
charged(HlaPreSeq62) && cyclic(E2)	0.039286
aliphatic(HlaPreSeq65) && cyclic(E2)	0.0234042
hydrophobic(HlaPreSeq65) && cyclic(E2)	0.0235066
small(HlaPreSeq65) && cyclic(E2)	0.0236096
large(HlaPreSeq76) && cyclic(E2)	0.0419524
negative(HlaPreSeq76) && cyclic(E2)	0.0412198
charged(HlaPreSeq76) && cyclic(E2)	0.0403845
polar(HlaPreSeq76) && cyclic(E2)	0.0394482
large(HlaPreSeq79) && cyclic(E2)	0.0329012
positive(HlaPreSeq79) && cyclic(E2)	0.0316777
charged(HlaPreSeq79) && cyclic(E2)	0.030381
polar(HlaPreSeq79) && cyclic(E2)	0.0290265
aliphatic(HlaPreSeq80) && cyclic(E2)	0.0263725
buried(HlaPreSeq80) && cyclic(E2)	0.026473
hydrophobic(HlaPreSeq80) && cyclic(E2)	0.0265718
large(HlaPreSeq80) && cyclic(E2)	0.0286751
small(HlaPreSeq81) && cyclic(E2)	0.013489

aliphatic(HlaPreSeq82) && cyclic(E	0.0114111
buried(HlaPreSeq82) && cyclic(E2)	0.0114532
hydrophobic(HlaPreSeq82) && cyc	0.011475
large(HlaPreSeq83) && cyclic(E2)	0.0114753
positive(HlaPreSeq83) && cyclic(E:	0.0114532
charged(HlaPreSeq83) && cyclic(E:	0.011408
polar(HlaPreSeq83) && cyclic(E2)	0.0113394
small(HlaPreSeq9) && aromatic(E2	0.0316765
polar(HlaPreSeq9) && aromatic(E2	0.0265542
negative(HlaPreSeq62) && aromat	0.0271079
aliphatic(HlaPreSeq65) && aromat	0.0271403
hydrophobic(HlaPreSeq65) && arc	0.0271694
small(HlaPreSeq65) && aromatic(E	0.0271948
aliphatic(HlaPreSeq80) && aromat	0.0199053
buried(HlaPreSeq80) && aromatic	0.019861
hydrophobic(HlaPreSeq80) && arc	0.0198052
large(HlaPreSeq80) && aromatic(E	0.0260286
small(HlaPreSeq81) && aromatic(E	0.0120063
aliphatic(HlaPreSeq82) && aromat	0.0130472
buried(HlaPreSeq82) && aromatic	0.0128851
hydrophobic(HlaPreSeq82) && arc	0.0127068
large(HlaPreSeq83) && aromatic(E	0.012513
positive(HlaPreSeq83) && aromati	0.0123045
charged(HlaPreSeq83) && aromati	0.0120823
polar(HlaPreSeq83) && aromatic(E	0.0118472
polar(HlaPreSeq9) && hydrophobi	-0.0187393
large(HlaPreSeq76) && hydrophok	-0.0131689
negative(HlaPreSeq76) && hydroph	-0.0162624
charged(HlaPreSeq76) && hydropl	-0.0186663
polar(HlaPreSeq76) && hydrophok	-0.0204185
large(HlaPreSeq79) && hydrophok	-0.024684
positive(HlaPreSeq79) && hydropl	-0.0248924
charged(HlaPreSeq79) && hydropl	-0.0245648
polar(HlaPreSeq79) && hydrophok	-0.0238139
hydrophobic(HlaPreSeq82) && hyc	-0.0133032
large(HlaPreSeq83) && hydrophok	-0.0134197
positive(HlaPreSeq83) && hydropl	-0.0135116
charged(HlaPreSeq83) && hydropl	-0.0135764
polar(HlaPreSeq83) && hydrophok	-0.0136118
polar(HlaPreSeq9) && large(E2)	0.0262168
charged(HlaPreSeq62) && large(E2	-0.0200752
large(HlaPreSeq76) && large(E2)	-0.0183018
negative(HlaPreSeq76) && large(E	-0.0190732
charged(HlaPreSeq76) && large(E2	-0.0194049
polar(HlaPreSeq76) && large(E2)	-0.0193589
aliphatic(HlaPreSeq80) && large(E	-0.0240823
buried(HlaPreSeq80) && large(E2)	-0.0241639

hydrophobic(HlaPreSeq80) && lar	-0.024234
large(HlaPreSeq80) && large(E2)	-0.0269231
small(HlaPreSeq81) && large(E2)	-0.0147077
HlaPreSeq76=Glu && E3=Lys	0.0188601
small(HlaPreSeq9) && large(E3)	-0.0142613
charged(HlaPreSeq62) && large(E3)	-0.0167955
large(HlaPreSeq76) && large(E3)	-0.0206071
negative(HlaPreSeq76) && large(E3)	-0.0200149
charged(HlaPreSeq76) && large(E3)	-0.0192234
polar(HlaPreSeq76) && large(E3)	-0.0182839
small(HlaPreSeq81) && large(E3)	-0.0153966
polar(HlaPreSeq9) && positive(E3)	0.0148469
charged(HlaPreSeq62) && positive(E3)	0.0149966
large(HlaPreSeq76) && positive(E3)	0.0155221
negative(HlaPreSeq76) && positive(E3)	0.0157468
charged(HlaPreSeq76) && positive(E3)	0.0159936
polar(HlaPreSeq76) && positive(E3)	0.0162581
polar(HlaPreSeq9) && charged(E3)	0.0121659
charged(HlaPreSeq62) && charged(E3)	0.00747921
small(HlaPreSeq81) && polar(E3)	-0.0340631
small(HlaPreSeq9) && aliphatic(E4)	-0.0147348
polar(HlaPreSeq9) && aliphatic(E4)	-0.022416
large(HlaPreSeq80) && buried(E4)	-0.0287022
small(HlaPreSeq9) && hydrophobic(E4)	-0.0169525
polar(HlaPreSeq9) && hydrophobic(E4)	-0.0279997
charged(HlaPreSeq62) && hydrophobic(E4)	-0.0087263
polar(HlaPreSeq9) && large(E5)	0.0163417
large(HlaPreSeq80) && large(E5)	-0.0175448
large(HlaPreSeq80) && positive(E5)	-0.0139745
polar(HlaPreSeq9) && large(E6)	0.00474124
charged(HlaPreSeq62) && positive(E6)	-0.0225052
polar(HlaPreSeq9) && polar(E6)	-0.0238071
large(HlaPreSeq76) && polar(E6)	-0.0234044
negative(HlaPreSeq76) && polar(E6)	-0.0228391
charged(HlaPreSeq76) && polar(E6)	-0.0221825
polar(HlaPreSeq76) && polar(E6)	-0.0214427
HlaPreSeq144=Gln && E7=Ile	-0.0176338
HlaPreSeq151=Arg && E7=Ile	-0.0162476
polar(HlaPreSeq9) && aliphatic(E7)	-0.0090855
polar(HlaPreSeq9) && hydrophobic(E7)	-0.0159533
large(HlaPreSeq79) && buried(E8)	0.0131345
positive(HlaPreSeq79) && buried(E8)	0.0140302
charged(HlaPreSeq79) && buried(E8)	0.0147858
polar(HlaPreSeq79) && buried(E8)	0.0153708
aliphatic(HlaPreSeq80) && buried(E8)	0.012484
buried(HlaPreSeq80) && buried(E8)	0.0125745
hydrophobic(HlaPreSeq80) && buried(E8)	0.0126679

small(HIaPreSeq81) && buried(E8)	0.0150839
charged(HIaPreSeq62) && hydropl	-0.0264447
charged(HIaPreSeq62) && mediurn	0.00467172
HIaPreSeq76=Glu && E9=Trp	0.0151639
HIaPreSeq79=Arg && E9=Trp	0.0212841
HIaPreSeq80=Ile && E9=Trp	0.0309319
HIaPreSeq81=Ala && E9=Trp	0.0363691
HIaPreSeq82=Leu && E9=Trp	0.0368228
HIaPreSeq83=Arg && E9=Trp	0.0368548
HIaPreSeq144=Gln && E9=Trp	0.0188781
HIaPreSeq151=Arg && E9=Trp	0.0155742
small(HIaPreSeq9) && cyclic(E9)	0.0194398
polar(HIaPreSeq9) && cyclic(E9)	0.0246962
charged(HIaPreSeq62) && cyclic(E:	-0.025664
large(HIaPreSeq76) && cyclic(E9)	0.00569121
negative(HIaPreSeq76) && cyclic(E	0.00626731
charged(HIaPreSeq76) && cyclic(E:	0.00676929
polar(HIaPreSeq76) && cyclic(E9)	0.00718811
small(HIaPreSeq9) && aromatic(E9	0.0213224
polar(HIaPreSeq9) && aromatic(E9	0.0304297
large(HIaPreSeq76) && aromatic(E	0.0140444
negative(HIaPreSeq76) && aromati	0.0144166
charged(HIaPreSeq76) && aromati	0.0146832
polar(HIaPreSeq76) && aromatic(E	0.01484
large(HIaPreSeq79) && aromatic(E	0.00884829
large(HIaPreSeq80) && aromatic(E	0.016036
small(HIaPreSeq81) && aromatic(E	0.0140917
charged(HIaPreSeq62) && buried(I	0.0179363
large(HIaPreSeq79) && buried(E9)	0.0348387
positive(HIaPreSeq79) && buried(I	0.0340953
charged(HIaPreSeq79) && buried(I	0.0323774
polar(HIaPreSeq79) && buried(E9)	0.0300079
aliphatic(HIaPreSeq80) && buried(	0.0137626
buried(HIaPreSeq80) && buried(E9	0.0138852
hydrophobic(HIaPreSeq80) && bui	0.0140042
large(HIaPreSeq80) && buried(E9)	0.0286611
small(HIaPreSeq81) && buried(E9)	0.0210579
aliphatic(HIaPreSeq82) && buried(	0.0230404
buried(HIaPreSeq82) && buried(E9	0.0227962
hydrophobic(HIaPreSeq82) && bui	0.0224374
large(HIaPreSeq83) && buried(E9)	0.0219699
positive(HIaPreSeq83) && buried(I	0.0214022
charged(HIaPreSeq83) && buried(I	0.0207448
polar(HIaPreSeq83) && buried(E9)	0.0200092
charged(HIaPreSeq62) && hydropl	-0.0161114
large(HIaPreSeq76) && hydrophok	-0.0080929
negative(HIaPreSeq76) && hydrop	-0.0103078

charged(HIaPreSeq76) && hydropl	-0.0116052
polar(HIaPreSeq76) && hydrophok	-0.0121708
large(HIaPreSeq79) && hydrophok	-0.0185461
positive(HIaPreSeq79) && hydropl	-0.0173125
charged(HIaPreSeq79) && hydropl	-0.0157913
polar(HIaPreSeq79) && hydrophok	-0.0141331
aliphatic(HIaPreSeq80) && hydrop	-0.0171964
buried(HIaPreSeq80) && hydrophc	-0.0169447
hydrophobic(HIaPreSeq80) && hyc	-0.0166567
aliphatic(HIaPreSeq82) && hydrop	-0.0122663
buried(HIaPreSeq82) && hydrophc	-0.0119398
hydrophobic(HIaPreSeq82) && hyc	-0.0115866
large(HIaPreSeq83) && hydrophok	-0.011207
positive(HIaPreSeq83) && hydropl	-0.0108029
charged(HIaPreSeq83) && hydropl	-0.0103764
polar(HIaPreSeq83) && hydrophok	-0.0099308
aliphatic(HIaPreSeq80) && large(E	0.0111461
buried(HIaPreSeq80) && large(E9)	0.0113252
hydrophobic(HIaPreSeq80) && lar	0.0115189
large(HIaPreSeq80) && large(E9)	0.0116529
HIaPreSeq79=Arg && E2=Ala	0.02706
HIaPreSeq80=Ile && E2=Ala	0.0139978
HIaPreSeq81=Ala && E2=Ala	0.0121981
HIaPreSeq82=Leu && E2=Ala	0.010827
HIaPreSeq83=Arg && E2=Ala	0.0108327
HIaPreSeq144=Gln && E2=Ala	0.0274824
HIaPreSeq151=Arg && E2=Ala	0.02922
small(HIaPreSeq9) && aliphatic(E2	-0.0121694
polar(HIaPreSeq9) && aliphatic(E2	-0.0127514
negative(HIaPreSeq62) && aliphatic	-0.0125461
aliphatic(HIaPreSeq65) && aliphatic	-0.0125528
hydrophobic(HIaPreSeq65) && aliq	-0.0125596
small(HIaPreSeq65) && aliphatic(E	-0.0125664
large(HIaPreSeq76) && aliphatic(E	-0.0243026
negative(HIaPreSeq76) && aliphatic	-0.0234618
charged(HIaPreSeq76) && aliphatic	-0.0226283
polar(HIaPreSeq76) && aliphatic(E	-0.0218073
large(HIaPreSeq79) && aliphatic(E	-0.0167385
positive(HIaPreSeq79) && aliphatic	-0.0155999
charged(HIaPreSeq79) && aliphatic	-0.0145185
polar(HIaPreSeq79) && aliphatic(E	-0.0134976
aliphatic(HIaPreSeq80) && aliphatic	-0.013669
buried(HIaPreSeq80) && aliphatic(	-0.0136171
hydrophobic(HIaPreSeq80) && aliq	-0.0135673
large(HIaPreSeq80) && aliphatic(E	-0.0165427
small(HIaPreSeq81) && aliphatic(E	-0.0108047
aliphatic(HIaPreSeq82) && aliphatic	-0.0140708

buried(HlaPreSeq82) && aliphatic(	-0.0140029
hydrophobic(HlaPreSeq82) && aliq	-0.0139389
large(HlaPreSeq83) && aliphatic(E	-0.0138787
positive(HlaPreSeq83) && aliphatic	-0.0138218
charged(HlaPreSeq83) && aliphati	-0.0137678
polar(HlaPreSeq83) && aliphatic(E	-0.0137167
small(HlaPreSeq9) && buried(E2)	-0.0122016
negative(HlaPreSeq62) && buried(	-0.0135223
charged(HlaPreSeq62) && buried(l	-0.0185822
aliphatic(HlaPreSeq65) && buried(	-0.0134784
hydrophobic(HlaPreSeq65) && bu	-0.0134942
small(HlaPreSeq65) && buried(E2)	-0.0135115
large(HlaPreSeq76) && buried(E2)	-0.0224329
negative(HlaPreSeq76) && buried(	-0.0222078
charged(HlaPreSeq76) && buried(l	-0.0219684
polar(HlaPreSeq76) && buried(E2)	-0.0217005
large(HlaPreSeq79) && buried(E2)	-0.0172462
positive(HlaPreSeq79) && buried(l	-0.0167252
charged(HlaPreSeq79) && buried(l	-0.0161429
polar(HlaPreSeq79) && buried(E2)	-0.0155034
aliphatic(HlaPreSeq80) && buried(	-0.0189562
buried(HlaPreSeq80) && buried(E2	-0.0189625
hydrophobic(HlaPreSeq80) && bu	-0.0189622
large(HlaPreSeq80) && buried(E2)	-0.016667
small(HlaPreSeq81) && buried(E2)	-0.023456
aliphatic(HlaPreSeq82) && buried(	-0.0210888
buried(HlaPreSeq82) && buried(E2	-0.0210111
hydrophobic(HlaPreSeq82) && bu	-0.0209194
large(HlaPreSeq83) && buried(E2)	-0.0208132
positive(HlaPreSeq83) && buried(l	-0.0206919
charged(HlaPreSeq83) && buried(l	-0.0205551
polar(HlaPreSeq83) && buried(E2)	-0.0204025
large(HlaPreSeq79) && small(E2)	0.00707655
positive(HlaPreSeq79) && small(E2	0.00743976
charged(HlaPreSeq79) && small(E:	0.00782007
polar(HlaPreSeq79) && small(E2)	0.00821203
aliphatic(HlaPreSeq80) && small(E	0.0176192
buried(HlaPreSeq80) && small(E2)	0.017649
hydrophobic(HlaPreSeq80) && sm	0.0176809
large(HlaPreSeq80) && small(E2)	0.0199026
small(HlaPreSeq81) && small(E2)	0.0126692
aliphatic(HlaPreSeq82) && small(E	0.0112232
buried(HlaPreSeq82) && small(E2)	0.0112782
hydrophobic(HlaPreSeq82) && sm	0.0113361
large(HlaPreSeq83) && small(E2)	0.0113966
positive(HlaPreSeq83) && small(E2	0.0114596
charged(HlaPreSeq83) && small(E:	0.011525

polar(HlaPreSeq83) && small(E2)	0.0115927
polar(HlaPreSeq9) && medium(E3)	-0.0116874
large(HlaPreSeq80) && medium(E4)	-0.0137579
large(HlaPreSeq80) && medium(E4)	-0.0185666
HlaPreSeq76=Glu && E7=Ser	-0.0192151
HlaPreSeq79=Arg && E7=Ser	-0.0217966
HlaPreSeq144=Gln && E7=Ser	-0.0201925
HlaPreSeq151=Arg && E7=Ser	-0.0188693
polar(HlaPreSeq9) && small(E7)	-0.0209455
aliphatic(HlaPreSeq82) && small(E7)	-0.0148139
buried(HlaPreSeq82) && small(E8)	-0.0147609
hydrophobic(HlaPreSeq82) && small(E8)	-0.0147108
large(HlaPreSeq83) && small(E8)	-0.0146639
positive(HlaPreSeq83) && small(E8)	-0.01462
charged(HlaPreSeq83) && small(E8)	-0.0145793
polar(HlaPreSeq83) && small(E8)	-0.0145417
HlaPreSeq9=Ser && E9=Val	-0.0113613
HlaPreSeq76=Glu && E9=Val	-0.0111462
HlaPreSeq79=Arg && E9=Val	-0.0147168
HlaPreSeq99=Phe && E9=Val	-0.0110183
small(HlaPreSeq9) && aliphatic(E9)	-0.017229
polar(HlaPreSeq9) && aliphatic(E9)	-0.0244794
large(HlaPreSeq76) && aliphatic(E9)	-0.0245442
negative(HlaPreSeq76) && aliphatic(E9)	-0.0235927
charged(HlaPreSeq76) && aliphatic(E9)	-0.0224808
polar(HlaPreSeq76) && aliphatic(E9)	-0.0212484
small(HlaPreSeq9) && medium(E9)	-0.0163592
polar(HlaPreSeq9) && medium(E9)	-0.0226204
charged(HlaPreSeq62) && medium(E9)	-0.0175031
large(HlaPreSeq76) && medium(E9)	-0.0190494
negative(HlaPreSeq76) && medium(E9)	-0.0189306
charged(HlaPreSeq76) && medium(E9)	-0.0188015
polar(HlaPreSeq76) && medium(E9)	-0.018662
large(HlaPreSeq79) && medium(E9)	-0.0155157
positive(HlaPreSeq79) && medium(E9)	-0.0153456
charged(HlaPreSeq79) && medium(E9)	-0.0151567
polar(HlaPreSeq79) && medium(E9)	-0.0149502
aliphatic(HlaPreSeq80) && medium(E9)	-0.0137216
buried(HlaPreSeq80) && medium(E9)	-0.0137179
hydrophobic(HlaPreSeq80) && medium(E9)	-0.0137142
large(HlaPreSeq80) && medium(E9)	-0.0198376
small(HlaPreSeq81) && medium(E9)	-0.0149281
hydrophobic(HlaPreSeq82) && medium(E9)	-0.0126838
large(HlaPreSeq83) && medium(E9)	-0.0126689
positive(HlaPreSeq83) && medium(E9)	-0.0126535
charged(HlaPreSeq83) && medium(E9)	-0.0126376
small(HlaPreSeq9) && hydrophobic(E9)	-0.0222259

large(HlaPreSeq80) && hydrophob	-0.0311144
small(HlaPreSeq81) && hydrophob	-0.0318639
HlaPreSeq76=Glu && E2=Ile	0.011656
HlaPreSeq151=Arg && E2=Ile	0.011117
HlaPreSeq76=Glu && E5=Leu	-0.0227088
HlaPreSeq80=Ile && E5=Leu	-0.0142287
charged(HlaPreSeq62) && aliphatic	0.00980927
small(HlaPreSeq81) && aliphatic(E	-0.0255258
charged(HlaPreSeq62) && buried(I	0.0246688
large(HlaPreSeq79) && buried(E5)	0.006097
positive(HlaPreSeq79) && buried(I	0.00715634
charged(HlaPreSeq79) && buried(I	0.0080846
polar(HlaPreSeq79) && buried(E5)	0.00885518
small(HlaPreSeq9) && hydrophobi	-0.0211472
HlaPreSeq76=Glu && E7=Leu	-0.0146324
HlaPreSeq79=Arg && E7=Leu	-0.0142686
small(HlaPreSeq9) && polar(E9)	-0.0157384
polar(HlaPreSeq9) && polar(E9)	-0.0233605
charged(HlaPreSeq62) && polar(E9	-0.0120066
large(HlaPreSeq76) && polar(E9)	-0.025682
negative(HlaPreSeq76) && polar(E	-0.0254894
charged(HlaPreSeq76) && polar(E9	-0.0252752
polar(HlaPreSeq76) && polar(E9)	-0.0250396
large(HlaPreSeq79) && polar(E9)	-0.0171332
positive(HlaPreSeq79) && polar(E9	-0.0169317
charged(HlaPreSeq79) && polar(E9	-0.0167113
polar(HlaPreSeq79) && polar(E9)	-0.016473
aliphatic(HlaPreSeq80) && small(E	-0.0187479
buried(HlaPreSeq80) && small(E1)	-0.0187391
hydrophobic(HlaPreSeq80) && sm	-0.0187307
small(HlaPreSeq81) && small(E1)	-0.0148399
aliphatic(HlaPreSeq82) && small(E	-0.0210605
buried(HlaPreSeq82) && small(E1)	-0.0210508
hydrophobic(HlaPreSeq82) && sm	-0.0210407
large(HlaPreSeq83) && small(E1)	-0.0210301
positive(HlaPreSeq83) && small(E1	-0.021019
charged(HlaPreSeq83) && small(E1	-0.0210071
polar(HlaPreSeq83) && small(E1)	-0.0209943
HlaPreSeq79=Arg && E2=Gln	0.0108489
HlaPreSeq144=Gln && E2=Gln	0.0113624
HlaPreSeq151=Arg && E2=Gln	0.0115317
small(HlaPreSeq9) && polar(E2)	-0.0177954
polar(HlaPreSeq9) && polar(E2)	0.00297966
negative(HlaPreSeq62) && polar(E	-0.0139428
charged(HlaPreSeq62) && polar(E1	-0.0174043
aliphatic(HlaPreSeq65) && polar(E	-0.0139169
hydrophobic(HlaPreSeq65) && pol	-0.0139147

small(HlaPreSeq65) && polar(E2)	-0.0139125
aliphatic(HlaPreSeq80) && polar(E	-0.0129006
buried(HlaPreSeq80) && polar(E2)	-0.0128569
hydrophobic(HlaPreSeq80) && pol	-0.0128126
large(HlaPreSeq80) && polar(E2)	-0.0170147
small(HlaPreSeq81) && polar(E2)	-0.0078748
HlaPreSeq76=Glu && E3=Gly	-0.0087596
HlaPreSeq79=Arg && E3=Gly	-0.0085012
HlaPreSeq80=Ile && E3=Gly	-0.0140887
HlaPreSeq144=Gln && E3=Gly	-0.0112822
polar(HlaPreSeq9) && aliphatic(E3	-0.0140463
small(HlaPreSeq9) && hydrophobi	-0.0130384
polar(HlaPreSeq9) && hydrophobi	-0.0134556
polar(HlaPreSeq9) && small(E3)	-0.0231341
HlaPreSeq79=Arg && E4=Gln	0.0208693
HlaPreSeq144=Gln && E4=Gln	0.0204636
HlaPreSeq82=Leu && E5=Gln	0.0180307
HlaPreSeq83=Arg && E5=Gln	0.0180314
HlaPreSeq76=Glu && E6=Gly	0.0279797
HlaPreSeq79=Arg && E6=Gly	0.0255924
HlaPreSeq99=Phe && E6=Gly	0.0124305
polar(HlaPreSeq9) && small(E6)	-0.0135329
HlaPreSeq77=Asn && E7=Tyr	-0.0153443
HlaPreSeq144=Gln && E7=Tyr	-0.0196015
HlaPreSeq151=Arg && E7=Tyr	-0.0185507
polar(HlaPreSeq9) && aromatic(E7	0.011453
HlaPreSeq97=Met && E9=Arg	0.0200329
HlaPreSeq144=Gln && E9=Arg	0.0161841
large(HlaPreSeq79) && positive(E9	-0.0165877
positive(HlaPreSeq79) && positive	-0.0165183
charged(HlaPreSeq79) && positive	-0.016443
polar(HlaPreSeq79) && positive(E9	-0.0163618
polar(HlaPreSeq9) && charged(E9)	-0.0185842
large(HlaPreSeq76) && charged(E9	-0.0170211
negative(HlaPreSeq76) && charge	-0.0168946
charged(HlaPreSeq76) && chargec	-0.0167613
polar(HlaPreSeq76) && charged(E9	-0.0166219
large(HlaPreSeq79) && charged(E9	-0.0236997
positive(HlaPreSeq79) && charged	-0.0235512
charged(HlaPreSeq79) && chargec	-0.0233972
polar(HlaPreSeq79) && charged(E9	-0.0232378
large(HlaPreSeq80) && charged(E9	-0.0136052
HlaPreSeq76=Glu && E2=Gly	-0.0148152
HlaPreSeq79=Arg && E2=Gly	-0.019596
HlaPreSeq151=Arg && E2=Gly	-0.0193651
HlaPreSeq81=Ala && E3=Val	-0.0146817
HlaPreSeq82=Leu && E3=Val	-0.0167176

HlaPreSeq83=Arg && E3=Val	-0.0167121
polar(HlaPreSeq9) && buried(E3)	-0.0153818
charged(HlaPreSeq62) && medium	-0.0112183
HlaPreSeq80=Ile && E9=Ile	0.0195696
HlaPreSeq81=Ala && E9=Ile	0.0224972
HlaPreSeq82=Leu && E9=Ile	0.0217429
HlaPreSeq83=Arg && E9=Ile	0.0217557
HlaPreSeq76=Glu && E1=Asn	0.0152522
charged(HlaPreSeq62) && medium	0.0181265
aliphatic(HlaPreSeq82) && medium	0.0136146
buried(HlaPreSeq82) && medium	0.0137768
hydrophobic(HlaPreSeq82) && medium	0.0139358
large(HlaPreSeq83) && medium(E1)	0.0140916
positive(HlaPreSeq83) && medium	0.0142435
charged(HlaPreSeq83) && medium	0.0143912
polar(HlaPreSeq83) && medium(E1)	0.0145342
HlaPreSeq9=Ser && E2=Leu	-0.0138162
HlaPreSeq76=Glu && E2=Leu	-0.0191648
HlaPreSeq79=Arg && E2=Leu	-0.0200021
HlaPreSeq80=Ile && E2=Leu	-0.0118781
HlaPreSeq82=Leu && E2=Leu	-0.0116587
HlaPreSeq83=Arg && E2=Leu	-0.0116586
HlaPreSeq97=Met && E2=Leu	-0.0204542
HlaPreSeq99=Phe && E2=Leu	-0.0141284
HlaPreSeq144=Gln && E2=Leu	-0.0300409
large(HlaPreSeq80) && negative(E1)	0.0208019
HlaPreSeq79=Arg && E6=Ala	-0.0224104
HlaPreSeq76=Glu && E7=Thr	-0.0324083
HlaPreSeq80=Ile && E7=Thr	-0.016371
HlaPreSeq81=Ala && E7=Thr	-0.0186435
HlaPreSeq82=Leu && E7=Thr	-0.0232733
HlaPreSeq83=Arg && E7=Thr	-0.0232741
HlaPreSeq76=Glu && E8=Arg	-0.0249929
HlaPreSeq79=Arg && E8=Arg	-0.0238587
HlaPreSeq82=Leu && E8=Arg	-0.0138057
HlaPreSeq83=Arg && E8=Arg	-0.0138044
HlaPreSeq144=Gln && E8=Arg	-0.0227082
large(HlaPreSeq76) && large(E8)	0.00889
negative(HlaPreSeq76) && large(E8)	0.0105636
charged(HlaPreSeq76) && large(E8)	0.0120196
polar(HlaPreSeq76) && large(E8)	0.013216
large(HlaPreSeq79) && large(E8)	0.0279533
positive(HlaPreSeq79) && large(E8)	0.0282726
charged(HlaPreSeq79) && large(E8)	0.0280975
polar(HlaPreSeq79) && large(E8)	0.027494
large(HlaPreSeq80) && large(E8)	0.0261115
small(HlaPreSeq81) && large(E8)	0.0188997

aliphatic(HlaPreSeq82) && large(E	0.0304487
buried(HlaPreSeq82) && large(E8)	0.0305749
hydrophobic(HlaPreSeq82) && lar	0.030661
large(HlaPreSeq83) && large(E8)	0.0306988
positive(HlaPreSeq83) && large(E8)	0.0306811
charged(HlaPreSeq83) && large(E8)	0.030602
polar(HlaPreSeq83) && large(E8)	0.0304572
large(HlaPreSeq80) && charged(E8)	0.0144669
aliphatic(HlaPreSeq80) && small(E	-0.0134696
buried(HlaPreSeq80) && small(E9)	-0.0134664
hydrophobic(HlaPreSeq80) && sm	-0.0134632
large(HlaPreSeq80) && small(E9)	-0.0136173
aliphatic(HlaPreSeq82) && small(E	-0.0135672
buried(HlaPreSeq82) && small(E9)	-0.0135609
hydrophobic(HlaPreSeq82) && sm	-0.0135546
large(HlaPreSeq83) && small(E9)	-0.0135484
positive(HlaPreSeq83) && small(E9)	-0.0135422
charged(HlaPreSeq83) && small(E9)	-0.0135361
polar(HlaPreSeq83) && small(E9)	-0.0135301
polar(HlaPreSeq9) && negative(E1)	0.0177328
charged(HlaPreSeq62) && negativ	0.0357898
large(HlaPreSeq79) && negative(E	0.0168744
positive(HlaPreSeq79) && negativ	0.0170187
charged(HlaPreSeq79) && negativ	0.0171378
polar(HlaPreSeq79) && negative(E	0.01723
aliphatic(HlaPreSeq80) && negativ	0.015107
buried(HlaPreSeq80) && negative(	0.0151168
hydrophobic(HlaPreSeq80) && ne	0.0151265
small(HlaPreSeq81) && negative(E	0.024407
HlaPreSeq76=Glu && E2=Glu	0.0262703
HlaPreSeq79=Arg && E2=Glu	0.017856
HlaPreSeq80=Ile && E2=Glu	-0.0123524
HlaPreSeq144=Gln && E2=Glu	0.0232023
HlaPreSeq151=Arg && E2=Glu	0.023358
polar(HlaPreSeq9) && negative(E2)	0.0292801
aliphatic(HlaPreSeq80) && negativ	-0.0151119
buried(HlaPreSeq80) && negative(	-0.0151118
hydrophobic(HlaPreSeq80) && ne	-0.0151117
large(HlaPreSeq80) && negative(E	-0.0182122
small(HlaPreSeq9) && charged(E2)	-0.018548
polar(HlaPreSeq9) && charged(E2)	0.01826
charged(HlaPreSeq62) && chargec	0.0189343
aliphatic(HlaPreSeq80) && chargec	-0.0159581
buried(HlaPreSeq80) && charged(l	-0.0159678
hydrophobic(HlaPreSeq80) && cha	-0.0159775
large(HlaPreSeq80) && charged(E2)	-0.0175341
small(HlaPreSeq81) && charged(E	-0.0112228

charged(HlaPreSeq62) && positive	0.0279541
small(HlaPreSeq9) && charged(E7)	0.0154449
polar(HlaPreSeq9) && charged(E7)	0.0240519
charged(HlaPreSeq62) && charged(E7)	0.0329411
large(HlaPreSeq80) && charged(E7)	0.0164071
aliphatic(HlaPreSeq82) && charged(E7)	-0.0105188
buried(HlaPreSeq82) && charged(E7)	-0.0104231
hydrophobic(HlaPreSeq82) && charged(E7)	-0.0103311
large(HlaPreSeq83) && charged(E7)	-0.0102434
positive(HlaPreSeq83) && charged(E7)	-0.0101605
charged(HlaPreSeq83) && charged(E7)	-0.0100829
polar(HlaPreSeq83) && charged(E7)	-0.0100109
HlaPreSeq97=Met && E2=Val	-0.0110748
small(HlaPreSeq9) && medium(E2)	-0.0148932
polar(HlaPreSeq9) && medium(E2)	-0.0416008
negative(HlaPreSeq62) && medium(E2)	-0.014494
charged(HlaPreSeq62) && medium(E2)	-0.0041775
aliphatic(HlaPreSeq65) && medium(E2)	-0.0145038
hydrophobic(HlaPreSeq65) && medium(E2)	-0.014501
small(HlaPreSeq65) && medium(E2)	-0.0144981
charged(HlaPreSeq76) && medium(E2)	-0.0027865
polar(HlaPreSeq76) && medium(E2)	-0.0033496
large(HlaPreSeq79) && medium(E2)	-0.0205035
positive(HlaPreSeq79) && medium(E2)	-0.0211899
charged(HlaPreSeq79) && medium(E2)	-0.0217843
polar(HlaPreSeq79) && medium(E2)	-0.0222636
large(HlaPreSeq80) && medium(E2)	-0.0145788
small(HlaPreSeq81) && medium(E2)	-0.0145586
aliphatic(HlaPreSeq82) && medium(E2)	-0.0247382
buried(HlaPreSeq82) && medium(E2)	-0.0247623
hydrophobic(HlaPreSeq82) && medium(E2)	-0.0247879
large(HlaPreSeq83) && medium(E2)	-0.0248144
positive(HlaPreSeq83) && medium(E2)	-0.0248414
charged(HlaPreSeq83) && medium(E2)	-0.0248682
polar(HlaPreSeq83) && medium(E2)	-0.0248944
charged(HlaPreSeq62) && cyclic(E7)	-0.0107263
aliphatic(HlaPreSeq80) && cyclic(E7)	0.0155682
buried(HlaPreSeq80) && cyclic(E7)	0.0155657
hydrophobic(HlaPreSeq80) && cyclic(E7)	0.0155633
charged(HlaPreSeq62) && aromatic(E7)	-0.0143641
large(HlaPreSeq76) && aromatic(E7)	-0.0124194
negative(HlaPreSeq76) && aromatic(E7)	-0.0124008
charged(HlaPreSeq76) && aromatic(E7)	-0.0123914
polar(HlaPreSeq76) && aromatic(E7)	-0.0123915
small(HlaPreSeq9) && negative(E7)	0.0114332
polar(HlaPreSeq9) && negative(E7)	0.0151964
small(HlaPreSeq81) && negative(E7)	-0.0173999

aliphatic(HlaPreSeq82) && negativ	-0.0145186
buried(HlaPreSeq82) && negative(	-0.0145067
hydrophobic(HlaPreSeq82) && neğ	-0.0144948
large(HlaPreSeq83) && negative(E	-0.0144831
positive(HlaPreSeq83) && negativ	-0.0144714
charged(HlaPreSeq83) && negativ	-0.0144598
polar(HlaPreSeq83) && negative(E	-0.0144482
polar(HlaPreSeq9) && medium(E6	-0.0107794
HlaPreSeq79=Arg && E1=Leu	-0.0225537
HlaPreSeq80=Ile && E1=Leu	-0.0140854
HlaPreSeq82=Leu && E1=Leu	-0.0229264
HlaPreSeq83=Arg && E1=Leu	-0.0229331
HlaPreSeq144=Gln && E4=Gly	0.0226961
large(HlaPreSeq76) && small(E4)	-0.0125364
negative(HlaPreSeq76) && small(E	-0.0124537
charged(HlaPreSeq76) && small(E	-0.0123423
polar(HlaPreSeq76) && small(E4)	-0.0122013
HlaPreSeq80=Ile && E5=Ala	0.0155891
HlaPreSeq81=Ala && E5=Ala	0.0119622
HlaPreSeq82=Leu && E5=Ala	0.00959883
HlaPreSeq83=Arg && E5=Ala	0.00960456
polar(HlaPreSeq9) && small(E5)	-0.0248229
aliphatic(HlaPreSeq80) && small(E	0.0104344
buried(HlaPreSeq80) && small(E5)	0.010457
hydrophobic(HlaPreSeq80) && sm	0.0104795
small(HlaPreSeq81) && small(E5)	0.0133569
HlaPreSeq76=Glu && E6=Ser	-0.0156054
HlaPreSeq79=Arg && E6=Ser	-0.0128226
HlaPreSeq144=Gln && E6=Ser	-0.0133746
HlaPreSeq151=Arg && E6=Ser	-0.0106943
HlaPreSeq97=Met && E1=His	0.0119212
HlaPreSeq76=Glu && E3=Met	-0.0087202
HlaPreSeq76=Glu && E2=Met	-0.0163873
HlaPreSeq79=Arg && E2=Met	-0.0191343
HlaPreSeq144=Gln && E2=Met	-0.0211789
HlaPreSeq151=Arg && E2=Met	-0.0239188
HlaPreSeq76=Glu && E3=Glu	-0.0190602
HlaPreSeq82=Leu && E3=Glu	-0.0206354
HlaPreSeq83=Arg && E3=Glu	-0.0206321
large(HlaPreSeq80) && charged(E	0.026324
HlaPreSeq79=Arg && E9=Leu	0.0205799
HlaPreSeq81=Ala && E9=Leu	-0.0162835
HlaPreSeq97=Met && E9=Leu	0.0143214
HlaPreSeq82=Leu && E8=Asn	0.0177084
HlaPreSeq83=Arg && E8=Asn	0.0177153
HlaPreSeq144=Gln && E4=Lys	-0.0162975
large(HlaPreSeq76) && positive(E4	0.0217263

negative(HlaPreSeq76) && positive	0.0217568
charged(HlaPreSeq76) && positive	0.0217878
polar(HlaPreSeq76) && positive(E4	0.0218178
HlaPreSeq80=Ile && E3=Pro	0.0121416
HlaPreSeq144=Gln && E4=Ser	-0.018414
charged(HlaPreSeq62) && cyclic(E1	-0.0346953
HlaPreSeq76=Glu && E2=Asp	-0.011842
HlaPreSeq79=Arg && E2=Asp	-0.009809
HlaPreSeq144=Gln && E2=Asp	-0.0109462
HlaPreSeq151=Arg && E2=Asp	-0.0108304
HlaPreSeq144=Gln && E6=Pro	0.0190813
HlaPreSeq76=Glu && E2=Thr	-0.0183028
HlaPreSeq79=Arg && E2=Thr	-0.019032
HlaPreSeq144=Gln && E2=Thr	-0.01413
HlaPreSeq76=Glu && E6=Leu	-0.0108592
HlaPreSeq76=Glu && E4=Arg	0.0146335
HlaPreSeq144=Gln && E3=Asn	0.0242886
HlaPreSeq151=Arg && E3=Asn	0.0247462
HlaPreSeq76=Glu && E2=Pro	0.0305765
HlaPreSeq79=Arg && E2=Pro	0.0203998
HlaPreSeq144=Gln && E2=Pro	0.0195963
HlaPreSeq9=Ser && E1=Ile	0.0109057
HlaPreSeq76=Glu && E1=Ile	0.0165874
HlaPreSeq80=Ile && E1=Ile	0.0133665
HlaPreSeq81=Ala && E1=Ile	0.00930339
HlaPreSeq82=Leu && E1=Ile	0.0135692
HlaPreSeq83=Arg && E1=Ile	0.0135727
FK in Epitope[@6-7]	0.0108479
HlaPreSeq79=Arg && E3=Ala	0.00504956
HlaPreSeq80=Ile && E3=Ala	0.015342
HlaPreSeq79=Arg && E9=Pro	-0.0100409
HlaPreSeq144=Gln && E9=Pro	-0.0122982
HlaPreSeq151=Arg && E9=Pro	-0.0118314
HlaPreSeq79=Arg && E1=Ser	-0.015417
HlaPreSeq80=Ile && E1=Ser	-0.0084053
HlaPreSeq82=Leu && E1=Ser	-0.0128745
HlaPreSeq83=Arg && E1=Ser	-0.0128801
HlaPreSeq144=Gln && E1=Ser	-0.0200532
HlaPreSeq151=Arg && E1=Ser	-0.014932
HlaPreSeq97=Met && E3=Ile	0.0137237
HlaPreSeq144=Gln && E3=Ile	0.015063
HlaPreSeq9=Ser && E2=Ser	0.0140997
HlaPreSeq80=Ile && E2=Ser	0.00951963
HlaPreSeq76=Glu && E6=Asn	-0.0135343
HlaPreSeq81=Ala && E8=Trp	0.0191141
HlaPreSeq82=Leu && E8=Trp	0.0228467
HlaPreSeq83=Arg && E8=Trp	0.022847

HlaPreSeq95=Leu && E8=Trp	-0.0118158
charged(HlaPreSeq62) && cyclic(E	-0.0152965
HlaPreSeq97=Met && E9=Lys	-0.0105337
HlaPreSeq144=Gln && E9=Lys	-0.0215844
HlaPreSeq151=Arg && E9=Lys	-0.0187576
small(HlaPreSeq9) && positive(E2)	-0.0136929
large(HlaPreSeq79) && positive(E2)	0.0101502
positive(HlaPreSeq79) && positive	0.0100457
charged(HlaPreSeq79) && positive	0.00994323
polar(HlaPreSeq79) && positive(E2)	0.00984174
small(HlaPreSeq81) && positive(E2)	-0.0136021
charged(HlaPreSeq62) && aromati	-0.0281868
HlaPreSeq76=Glu && E3=Leu	0.0226616
HlaPreSeq82=Leu && E3=Leu	0.0176417
HlaPreSeq83=Arg && E3=Leu	0.0176272
HlaPreSeq80=Ile && E6=Gln	0.0167634
HlaPreSeq82=Leu && E6=Gln	0.0233878
HlaPreSeq83=Arg && E6=Gln	0.0233833
HlaPreSeq76=Glu && E7=Gln	0.0223212
HlaPreSeq79=Arg && E7=Gln	0.0188402
HlaPreSeq80=Ile && E7=Gln	0.0106643
HlaPreSeq81=Ala && E7=Gln	0.0127556
HlaPreSeq82=Leu && E7=Gln	0.0147781
HlaPreSeq83=Arg && E7=Gln	0.0147758
HlaPreSeq144=Gln && E7=Gln	0.0167385
HlaPreSeq76=Glu && E9=Tyr	0.0188927
HlaPreSeq80=Ile && E9=Tyr	-0.0218192
HlaPreSeq81=Ala && E9=Tyr	-0.0206278
HlaPreSeq82=Leu && E9=Tyr	-0.0206655
HlaPreSeq83=Arg && E9=Tyr	-0.020688
HlaPreSeq144=Gln && E9=Tyr	0.0270035
HlaPreSeq151=Arg && E9=Tyr	0.0213192
HlaPreSeq76=Glu && E9=Gln	-0.0120874
HlaPreSeq79=Arg && E9=Gln	-0.0128845
HlaPreSeq144=Gln && E9=Gln	-0.0143705
TM in Epitope[@6-7]	0.0117834
HlaPreSeq76=Glu && E1=Pro	-0.0149831
HlaPreSeq79=Arg && E2=Arg	0.0200724
HlaPreSeq82=Leu && E2=Arg	0.0208477
HlaPreSeq83=Arg && E2=Arg	0.0208348
HlaPreSeq76=Glu && E7=Trp	0.0198631
HlaPreSeq79=Arg && E7=Trp	0.0253267
HlaPreSeq76=Glu && E9=Met	0.0149332
HlaPreSeq79=Arg && E9=Met	0.0130116
HlaPreSeq156=Gln && E3=Met	0.0156018
HlaPreSeq82=Leu && E8=Lys	0.012916
HlaPreSeq83=Arg && E8=Lys	0.0129129

HlaPreSeq76=Glu && E4=Tyr	-0.0189472
HlaPreSeq76=Glu && E7=Asn	0.0189025
HlaPreSeq79=Arg && E7=Asn	0.0217957
HlaPreSeq82=Leu && E7=Asn	0.0212778
HlaPreSeq83=Arg && E7=Asn	0.0212817
DK in Epitope[@7-8]	0.0103702
HlaPreSeq76=Glu && E8=Pro	-0.0195031
HlaPreSeq79=Arg && E8=Pro	-0.0215243
HlaPreSeq80=Ile && E5=Trp	0.0129098
HlaPreSeq82=Leu && E5=Trp	0.0163451
HlaPreSeq83=Arg && E5=Trp	0.0163422
HlaPreSeq82=Leu && E5=Phe	-0.0095826
HlaPreSeq83=Arg && E5=Phe	-0.0095856
HlaPreSeq76=Glu && E8=Met	0.0162401
I in Epitope[@9] && R in CFlank[@	-0.0126829
HlaPreSeq77=Asn && E6=Met	0.012624
G in NFlank[1@] && F in Epitope[③	0.0188921
medium(HlaPreSeq63) && hydrop	-0.0229486
positive(HlaPreSeq62) && aliphatic	0.0193316
medium(HlaPreSeq63) && aliphatic	0.0229144
medium(HlaPreSeq149) && aliphatic	0.0137162
polar(HlaPreSeq149) && aliphatic	0.0137162
medium(HlaPreSeq63) && hydrop	0.0264051
medium(HlaPreSeq63) && medium	0.0363501
medium(HlaPreSeq63) && medium	-0.0165564
medium(HlaPreSeq149) && medium	-0.0128462
polar(HlaPreSeq149) && medium	-0.0128457
positive(HlaPreSeq62) && charged	0.0273976
medium(HlaPreSeq63) && charged	0.0180749
positive(HlaPreSeq62) && polar(E=	0.0198725
medium(HlaPreSeq63) && polar(E=	0.0147222
positive(HlaPreSeq62) && polar(E=	-0.0029996
medium(HlaPreSeq63) && polar(E=	-0.0165534
positive(HlaPreSeq62) && cyclic(E!	-0.0273203
medium(HlaPreSeq63) && cyclic(E!	-0.0244896
positive(HlaPreSeq62) && aromatic	-0.0263703
medium(HlaPreSeq63) && aromatic	-0.0244896
positive(HlaPreSeq62) && buried(I	0.0305367
medium(HlaPreSeq63) && buried(I	0.012522
medium(HlaPreSeq63) && large(E!	-0.011525
medium(HlaPreSeq63) && cyclic(E!	-0.0139329
medium(HlaPreSeq63) && large(E!	-0.0095209
medium(HlaPreSeq63) && positive	0.0304097
positive(HlaPreSeq62) && charged	0.0311776
medium(HlaPreSeq63) && charged	0.023156
medium(HlaPreSeq63) && polar(E!	-0.0110984
HlaPreSeq62=Arg && E8=Thr	0.0239217

HlaPreSeq63=Asn && E8=Thr	0.023928
positive(HlaPreSeq62) && polar(E8)	0.0166241
medium(HlaPreSeq63) && polar(E8)	0.0110546
HlaPreSeq62=Arg && E9=Leu	0.0271957
HlaPreSeq63=Asn && E9=Leu	0.0130722
medium(HlaPreSeq63) && aliphatic	0.00811309
positive(HlaPreSeq62) && buried(I9)	0.0180557
HlaPreSeq62=Arg && E1=Ser	-0.0221287
HlaPreSeq63=Asn && E1=Ser	-0.0174384
medium(HlaPreSeq63) && small(E1)	-0.0187401
positive(HlaPreSeq62) && polar(E1)	-0.0061918
medium(HlaPreSeq63) && polar(E1)	-0.0349741
medium(HlaPreSeq63) && aliphatic	-0.0074402
positive(HlaPreSeq62) && buried(I1)	-0.0143059
positive(HlaPreSeq62) && hydrophobic	-0.017728
medium(HlaPreSeq63) && hydrophobic	-0.0252611
positive(HlaPreSeq62) && aliphatic	0.0216208
HlaPreSeq63=Asn && E7=Arg	0.021203
medium(HlaPreSeq63) && polar(E7)	-0.0134003
medium(HlaPreSeq63) && aliphatic	-0.0296369
medium(HlaPreSeq63) && buried(I7)	-0.0188624
HlaPreSeq62=Arg && E2=Met	-0.0126633
positive(HlaPreSeq62) && large(E2)	-0.012882
medium(HlaPreSeq63) && large(E2)	-0.0597096
positive(HlaPreSeq62) && aliphatic	0.0216214
positive(HlaPreSeq62) && hydrophobic	0.00501715
medium(HlaPreSeq63) && aliphatic	-0.0135169
medium(HlaPreSeq63) && medium	-0.0242693
medium(HlaPreSeq63) && buried(I2)	-0.0062211
positive(HlaPreSeq62) && hydrophobic	-0.0165778
medium(HlaPreSeq63) && hydrophobic	-0.0231414
HlaPreSeq62=Arg && E1=Lys	-0.0176777
HlaPreSeq63=Asn && E1=Lys	-0.0141709
medium(HlaPreSeq63) && positive	-0.0160856
positive(HlaPreSeq62) && charged	0.0202741
medium(HlaPreSeq63) && charged	0.0107838
medium(HlaPreSeq149) && charged	0.014499
polar(HlaPreSeq149) && charged(I1)	0.0144974
HlaPreSeq63=Asn && E2=Ile	0.0100243
medium(HlaPreSeq63) && charged	0.0099964
HlaPreSeq63=Asn && E1=Val	-0.0171336
HlaPreSeq63=Asn && E3=Gly	-0.0202849
HlaPreSeq63=Asn && E4=Phe	-0.0143296
medium(HlaPreSeq63) && aromatic	-0.0143787
medium(HlaPreSeq63) && small(E4)	0.00815932
HlaPreSeq62=Arg && E8=Arg	-0.0259853
positive(HlaPreSeq62) && large(E8)	-0.0161364

medium(HlaPreSeq63) && large(E	-0.0306611
HlaPreSeq62=Arg && E1=Arg	0.0151884
HlaPreSeq62=Arg && E2=Leu	-0.027888
HlaPreSeq63=Asn && E2=Leu	-0.0187607
medium(HlaPreSeq63) && small(E	0.0119356
HlaPreSeq114=Gln && E3=Ile	0.0121593
HlaPreSeq62=Arg && E5=Tyr	-0.0234891
HlaPreSeq62=Arg && E1=Leu	-0.0245222
HlaPreSeq63=Asn && E1=Leu	-0.0164861
positive(HlaPreSeq62) && small(E	0.00861272
HlaPreSeq62=Arg && E5=Thr	-0.020606
HlaPreSeq62=Arg && E6=Leu	-0.0198372
HlaPreSeq63=Asn && E6=Leu	-0.0246476
HlaPreSeq62=Arg && E2=Pro	0.0230629
HlaPreSeq63=Asn && E2=Pro	0.0418178
medium(HlaPreSeq63) && cyclic(E	0.023827
positive(HlaPreSeq62) && positive	0.0226561
medium(HlaPreSeq63) && positive	0.022681
HlaPreSeq62=Arg && E7=Ser	-0.0184392
HlaPreSeq62=Arg && E8=Ala	0.017472
HlaPreSeq62=Arg && E2=Thr	-0.0148893
HlaPreSeq63=Asn && E9=Glu	0.0136298
HlaPreSeq62=Arg && E1=Glu	0.0100948
HlaPreSeq63=Asn && E1=Glu	0.0185795
HlaPreSeq114=Gln && E1=Glu	0.0171792
positive(HlaPreSeq62) && negativ	0.0246785
medium(HlaPreSeq63) && negativ	0.0272326
medium(HlaPreSeq149) && negati	0.0126889
polar(HlaPreSeq149) && negative(	0.0126881
HlaPreSeq62=Arg && E3=Lys	0.0195593
HlaPreSeq63=Asn && E3=Lys	0.0261439
medium(HlaPreSeq63) && small(E	0.0113321
HlaPreSeq63=Asn && E6=Lys	0.00816123
HlaPreSeq63=Asn && E7=Ala	0.0149262
medium(HlaPreSeq63) && buried(	-0.0172925
positive(HlaPreSeq62) && cyclic(E	-0.0202755
medium(HlaPreSeq63) && cyclic(E	-0.023541
positive(HlaPreSeq62) && aromati	-0.0116853
medium(HlaPreSeq63) && aromati	-0.0228795
HlaPreSeq62=Arg && E9=Ile	-0.0182469
HlaPreSeq62=Arg && E2=Arg	0.0184715
HlaPreSeq63=Asn && E2=Arg	-0.0111536
HlaPreSeq144=Gln && E2=Arg	0.02002
positive(HlaPreSeq62) && positive	0.0120711
positive(HlaPreSeq62) && charged	0.0222437
medium(HlaPreSeq63) && charged	-0.0128287
medium(HlaPreSeq63) && cyclic(E	-0.0202632

HlaPreSeq63=Asn && E7=Leu	-0.0121692
positive(HlaPreSeq62) && cyclic(E	-0.0223541
medium(HlaPreSeq63) && cyclic(E	-0.030398
medium(HlaPreSeq63) && aromat	-0.0186448
HlaPreSeq62=Arg && E1=Asp	0.0145018
HlaPreSeq62=Arg && E9=Pro	-0.0088915
HlaPreSeq62=Arg && E2=Glu	0.0201072
medium(HlaPreSeq63) && negativ	-0.009521
HlaPreSeq62=Arg && E4=Gln	0.0184839
HlaPreSeq63=Asn && E4=Gln	0.0205221
HlaPreSeq63=Asn && E4=Pro	0.0200457
HlaPreSeq62=Arg && E4=Gly	0.0229186
HlaPreSeq63=Asn && E2=His	0.0167816
positive(HlaPreSeq62) && aromati	-0.0200854
medium(HlaPreSeq63) && aromat	-0.0177512
HlaPreSeq63=Asn && E5=Lys	0.0261672
HlaPreSeq114=Gln && E5=Lys	0.01363
HlaPreSeq62=Arg && E2=Ala	0.0356232
HlaPreSeq63=Asn && E2=Ala	0.0256368
HlaPreSeq63=Asn && E5=Ala	0.00980962
HlaPreSeq63=Asn && E8=Phe	-0.0149816
HlaPreSeq62=Arg && E2=Ser	-0.0231886
HlaPreSeq63=Asn && E2=Ser	-0.0139955
HlaPreSeq63=Asn && E5=Arg	-0.0078768
HlaPreSeq63=Asn && E9=Arg	0.010919
HlaPreSeq114=Gln && E9=Arg	0.0164754
HlaPreSeq62=Arg && E2=Tyr	-0.0165393
HlaPreSeq63=Asn && E2=Tyr	-0.0203107
HlaPreSeq62=Arg && E4=Asn	-0.0228279
HlaPreSeq63=Asn && E4=Asn	-0.0190549
HlaPreSeq62=Arg && E2=Asp	-0.0094281
HlaPreSeq63=Asn && E2=Asp	-0.0104263
medium(HlaPreSeq9) && aromatic	0.0173212
medium(HlaPreSeq9) && polar(E2	0.0054771
medium(HlaPreSeq9) && small(E5	-0.0167502
medium(HlaPreSeq9) && large(E6)	0.0269118
medium(HlaPreSeq9) && charged(	0.0104246
medium(HlaPreSeq9) && buried(E	0.0113767
buried(HlaPreSeq62) && buried(E7	0.0112312
medium(HlaPreSeq9) && large(E9)	0.0116047
medium(HlaPreSeq9) && large(E2)	0.0151349
medium(HlaPreSeq9) && large(E3)	0.0132775
medium(HlaPreSeq9) && positive(	0.0192889
medium(HlaPreSeq9) && large(E4)	-0.0171297
buried(HlaPreSeq62) && large(E4)	-0.0162254
buried(HlaPreSeq62) && buried(E6	-0.0128773
HlaPreSeq144=Gln && E7=Trp	0.017854

HlaPreSeq151=Arg && E7=Trp	0.0180876
medium(HlaPreSeq9) && medium	-0.0120205
medium(HlaPreSeq9) && negative	0.00931207
medium(HlaPreSeq9) && hydroph	-0.0095902
buried(HlaPreSeq62) && medium(	0.0164802
medium(HlaPreSeq9) && large(E5)	0.022974
medium(HlaPreSeq9) && charged(	0.0196381
HlaPreSeq9=Thr && E9=Lys	-0.0107716
medium(HlaPreSeq9) && small(E6	-0.0141736
medium(HlaPreSeq9) && aliphatic	0.00876998
medium(HlaPreSeq9) && buried(E	0.0110436
medium(HlaPreSeq9) && aromatic	-0.0116588
medium(HlaPreSeq9) && positive(	0.0157793
medium(HlaPreSeq9) && positive(	0.011145
medium(HlaPreSeq9) && medium	0.0163761
medium(HlaPreSeq9) && cyclic(E2	-0.0121152
buried(HlaPreSeq62) && aromatic	0.0127047
medium(HlaPreSeq9) && medium	-0.0167186
medium(HlaPreSeq9) && aliphatic	-0.0200996
HlaPreSeq9=Thr && E9=Arg	0.0182645
HlaPreSeq151=Arg && E2=Arg	0.0210305
HlaPreSeq151=Arg && E8=Pro	-0.021761
WA in Epitope[@4-5]	0.0195449
negative(HlaPreSeq114) && alipha	0.011824
negative(HlaPreSeq114) && hydro	0.00929434
negative(HlaPreSeq114) && mediu	0.0284516
negative(HlaPreSeq114) && cyclic(	-0.0137404
negative(HlaPreSeq114) && arom:	-0.017696
negative(HlaPreSeq114) && charg	0.0302732
negative(HlaPreSeq114) && polar(	0.019194
negative(HlaPreSeq114) && large(	-0.0204846
negative(HlaPreSeq114) && negat	0.0301852
negative(HlaPreSeq114) && alipha	-0.0240332
negative(HlaPreSeq114) && large(	-0.0331948
negative(HlaPreSeq114) && polar(	-0.0218093
small(HlaPreSeq17) && cyclic(E9)	0.0122191
large(HlaPreSeq56) && cyclic(E9)	0.0105759
positive(HlaPreSeq56) && cyclic(E	0.0105774
charged(HlaPreSeq56) && cyclic(E	0.0105789
polar(HlaPreSeq56) && cyclic(E9)	0.0105805
negative(HlaPreSeq114) && cyclic(	0.033725
positive(HlaPreSeq116) && cyclic(I	0.0127724
positive(HlaPreSeq152) && cyclic(I	0.012216
small(HlaPreSeq17) && aromatic(E	0.0127253
large(HlaPreSeq56) && aromatic(E	0.011159
positive(HlaPreSeq56) && aromati	0.0111603
charged(HlaPreSeq56) && aromati	0.0111616

polar(HlaPreSeq56) && aromatic(E	0.011163
negative(HlaPreSeq114) && arom:	0.0368113
positive(HlaPreSeq116) && aroma	0.0132815
positive(HlaPreSeq152) && aroma	0.0127248
large(HlaPreSeq56) && buried(E9)	-0.0120471
positive(HlaPreSeq56) && buried(I	-0.0120459
charged(HlaPreSeq56) && buried(I	-0.0120447
polar(HlaPreSeq56) && buried(E9)	-0.0120435
negative(HlaPreSeq114) && buried	-0.0106512
negative(HlaPreSeq114) && hydro	0.0213424
negative(HlaPreSeq114) && large(	0.0305829
negative(HlaPreSeq114) && small(	-0.020305
negative(HlaPreSeq114) && hydro	-0.0156589
negative(HlaPreSeq114) && alpha	0.0249913
negative(HlaPreSeq114) && alpha	-0.033921
negative(HlaPreSeq114) && medi	-0.0138217
negative(HlaPreSeq114) && large(	-0.0294018
negative(HlaPreSeq114) && polar(	-0.0168797
negative(HlaPreSeq114) && buried	-0.0236975
negative(HlaPreSeq114) && hydro	-0.0262839
negative(HlaPreSeq114) && medi	0.0109664
negative(HlaPreSeq114) && polar(	-0.0145567
negative(HlaPreSeq114) && positi	-0.0115719
negative(HlaPreSeq114) && charg	-0.007036
negative(HlaPreSeq114) && cyclic(	-0.0127428
negative(HlaPreSeq114) && arom:	-0.0136887
negative(HlaPreSeq114) && buried	-0.0206352
negative(HlaPreSeq114) && cyclic(	-0.0115547
negative(HlaPreSeq114) && cyclic(	0.023417
negative(HlaPreSeq114) && negat	0.0159195
negative(HlaPreSeq114) && positi	-0.0170021
negative(HlaPreSeq114) && alpha	0.0208181
negative(HlaPreSeq114) && small(	-0.0237086
negative(HlaPreSeq114) && small(	0.0121132
negative(HlaPreSeq114) && medi	0.020139
negative(HlaPreSeq114) && negat	-0.0121005
negative(HlaPreSeq114) && medi	-0.0337604
negative(HlaPreSeq114) && positi	-0.0195028
negative(HlaPreSeq114) && charg	-0.017194
negative(HlaPreSeq114) && positi	-0.0203079
negative(HlaPreSeq114) && charg	-0.0185043
negative(HlaPreSeq114) && polar(	-0.0280297
negative(HlaPreSeq114) && small(	0.0108177
HlaPreSeq17=Ser && E9=Tyr	0.0156959
HlaPreSeq56=Arg && E9=Tyr	0.0142653
HlaPreSeq114=Glu && E9=Tyr	0.0156939
HlaPreSeq116=His && E9=Tyr	0.0163382

HlaPreSeq152=Arg && E9=Tyr	0.015692
N in Epitope[@9] && T in CFlank[€	0.013557
HlaPreSeq77=Ser && E1=Glu	0.00921767
HlaPreSeq109=Leu && E2=Arg	0.0233579
aliphatic(HlaPreSeq109) && positi	0.0154657
small(HlaPreSeq77) && charged(E:	0.0184349
aliphatic(HlaPreSeq109) && charg	0.0217812
aliphatic(HlaPreSeq109) && alipha	0.00754208
small(HlaPreSeq77) && hydrophok	0.00904824
HlaPreSeq77=Ser && E5=Lys	0.0140728
small(HlaPreSeq77) && positive(E!	0.016457
small(HlaPreSeq77) && charged(E!	0.0205335
small(HlaPreSeq77) && medium(E	0.0271444
HlaPreSeq109=Leu && E7=Gln	0.0153337
HlaPreSeq77=Ser && E9=Leu	0.0178993
aliphatic(HlaPreSeq109) && buriec	0.0308182
small(HlaPreSeq77) && large(E9)	-0.0079635
HlaPreSeq109=Leu && E2=Gly	-0.0170969
aliphatic(HlaPreSeq109) && hydro	-0.0117905
aliphatic(HlaPreSeq109) && small(	0.00903573
HlaPreSeq109=Leu && E6=Gly	0.0227286
small(HlaPreSeq77) && small(E6)	-0.0132064
small(HlaPreSeq77) && aliphatic(E	0.0278563
small(HlaPreSeq77) && buried(E8)	0.0256963
aliphatic(HlaPreSeq109) && mediu	-0.0185887
HlaPreSeq77=Ser && E9=Ile	-0.0192425
HlaPreSeq109=Leu && E1=Arg	0.0173718
HlaPreSeq109=Leu && E2=Leu	-0.0152453
small(HlaPreSeq77) && polar(E4)	-0.0088949
HlaPreSeq77=Ser && E5=Leu	-0.0201269
HlaPreSeq77=Ser && E6=Thr	0.0135653
HlaPreSeq109=Leu && E1=Ser	-0.0159056
aliphatic(HlaPreSeq109) && mediu	-0.0105752
small(HlaPreSeq77) && charged(E:	0.0198562
aliphatic(HlaPreSeq109) && charg	0.0185552
aliphatic(HlaPreSeq109) && charg	-0.0206931
HlaPreSeq77=Ser && E1=Gln	-0.0140281
small(HlaPreSeq77) && cyclic(E4)	0.0214222
HlaPreSeq77=Ser && E5=Thr	-0.0186245
small(HlaPreSeq77) && cyclic(E8)	-0.0186566
small(HlaPreSeq77) && aromatic(E	-0.0130945
HlaPreSeq109=Leu && E6=Ser	-0.0129391
HlaPreSeq77=Ser && E2=Thr	-0.0161682
HlaPreSeq109=Leu && E2=Thr	-0.0124319
HlaPreSeq109=Leu && E4=Gly	0.0184058
HlaPreSeq77=Ser && E7=Leu	-0.0179618
small(HlaPreSeq77) && medium(E	0.0191923

HlaPreSeq77=Ser && E7=Val	0.0184764
HlaPreSeq77=Ser && E2=Tyr	-0.018321
HlaPreSeq109=Leu && E2=Tyr	-0.018968
small(HlaPreSeq77) && aromatic(E	-0.0190706
aliphatic(HlaPreSeq109) && arom	-0.02011
HlaPreSeq77=Ser && E3=Lys	0.0205757
HlaPreSeq109=Leu && E8=Pro	-0.0203553
HlaPreSeq77=Ser && E5=Phe	0.0101986
HlaPreSeq109=Leu && E7=Asn	0.0228844
HlaPreSeq77=Ser && E9=Trp	-0.0153985
HlaPreSeq109=Leu && E4=Asn	-0.0173761
HlaPreSeq77=Ser && E2=Met	-0.0116332
HlaPreSeq109=Leu && E2=Met	-0.0162766
HlaPreSeq77=Ser && E2=Glu	0.0261196
HlaPreSeq109=Leu && E2=Glu	0.0173941
HlaPreSeq77=Ser && E2=Asp	-0.0131997
HlaPreSeq109=Leu && E2=Asp	-0.0101933
HlaPreSeq77=Ser && E8=Ala	0.0167945
HlaPreSeq77=Ser && E7=Cys	-0.012707
HlaPreSeq109=Leu && E7=Cys	-0.0138008
HlaPreSeq109=Leu && E8=Arg	-0.0213743
HlaPreSeq77=Ser && E2=Ala	0.0129658
HlaPreSeq109=Leu && E2=Ala	0.033455
HlaPreSeq109=Leu && E3=Ala	0.0030806
aliphatic(HlaPreSeq73) && aliphatic	0.00982507
buried(HlaPreSeq73) && aliphatic(	0.00980253
hydrophobic(HlaPreSeq73) && aliq	0.00978007
positive(HlaPreSeq171) && aliphatic	0.0158074
charged(HlaPreSeq171) && aliphatic	0.0158386
polar(HlaPreSeq171) && aliphatic(	0.0158695
positive(HlaPreSeq171) && buried	0.0114005
charged(HlaPreSeq171) && buried	0.0114271
polar(HlaPreSeq171) && buried(E2	0.0114536
aliphatic(HlaPreSeq73) && large(E	0.0103071
buried(HlaPreSeq73) && large(E2)	0.010288
hydrophobic(HlaPreSeq73) && lar	0.0102681
HlaPreSeq171=His && E3=Phe	0.0112059
positive(HlaPreSeq171) && cyclic(I	0.0190686
charged(HlaPreSeq171) && cyclic(	0.0190706
polar(HlaPreSeq171) && cyclic(E3)	0.0190725
positive(HlaPreSeq171) && aroma	0.0241357
charged(HlaPreSeq171) && aroma	0.0241365
polar(HlaPreSeq171) && aromatic	0.0241373
aliphatic(HlaPreSeq73) && large(E	0.0149168
buried(HlaPreSeq73) && large(E3)	0.0148857
hydrophobic(HlaPreSeq73) && lar	0.0148545
large(HlaPreSeq73) && large(E3)	0.0158795

positive(HlaPreSeq171) && large(E	0.0132753
charged(HlaPreSeq171) && large(E	0.0132739
polar(HlaPreSeq171) && large(E3)	0.0132695
positive(HlaPreSeq171) && large(E	0.0188406
charged(HlaPreSeq171) && large(E	0.0188611
polar(HlaPreSeq171) && large(E4)	0.0188825
positive(HlaPreSeq171) && large(E	0.0114582
charged(HlaPreSeq171) && large(E	0.0114642
polar(HlaPreSeq171) && large(E7)	0.0114693
large(HlaPreSeq73) && medium(E	0.0115738
positive(HlaPreSeq171) && polar(f	0.00958018
charged(HlaPreSeq171) && polar(l	0.00959001
polar(HlaPreSeq171) && polar(E8)	0.00960126
large(HlaPreSeq73) && positive(E	0.0162218
large(HlaPreSeq73) && charged(E	0.0154103
large(HlaPreSeq73) && polar(E9)	0.0126798
positive(HlaPreSeq171) && polar(f	0.00911959
charged(HlaPreSeq171) && polar(l	0.00914305
polar(HlaPreSeq171) && polar(E9)	0.00916686
positive(HlaPreSeq171) && large(E	-0.0163215
charged(HlaPreSeq171) && large(E	-0.0163411
polar(HlaPreSeq171) && large(E1)	-0.0163604
positive(HlaPreSeq171) && aliphatic	-0.0134883
charged(HlaPreSeq171) && aliphatic	-0.0134842
polar(HlaPreSeq171) && aliphatic(	-0.0134796
aliphatic(HlaPreSeq73) && medium	-0.0122973
buried(HlaPreSeq73) && medium(	-0.0123118
hydrophobic(HlaPreSeq73) && me	-0.0123268
positive(HlaPreSeq171) && hydroph	0.00947168
charged(HlaPreSeq171) && hydroph	0.00952217
polar(HlaPreSeq171) && hydrophobic	0.00957296
aliphatic(HlaPreSeq73) && large(E	0.0128474
buried(HlaPreSeq73) && large(E6)	0.0128261
hydrophobic(HlaPreSeq73) && large	0.0128041
polar(HlaPreSeq171) && hydrophobic	-0.014542
HlaPreSeq171=His && E9=Leu	-0.0235525
aliphatic(HlaPreSeq73) && buried(	0.0105901
buried(HlaPreSeq73) && buried(E	0.0106182
hydrophobic(HlaPreSeq73) && buried	0.010643
positive(HlaPreSeq171) && polar(f	0.0148475
charged(HlaPreSeq171) && polar(l	0.014917
polar(HlaPreSeq171) && polar(E1)	0.0149861
positive(HlaPreSeq171) && small(f	0.0115743
charged(HlaPreSeq171) && small(l	0.0115956
polar(HlaPreSeq171) && small(E2)	0.0116167
positive(HlaPreSeq171) && cyclic(l	0.0142971
charged(HlaPreSeq171) && cyclic(	0.0143021

polar(HlaPreSeq171) && cyclic(E4)	0.014307
positive(HlaPreSeq171) && buried	0.0123664
charged(HlaPreSeq171) && buried	0.012353
polar(HlaPreSeq171) && buried(E5)	0.0123384
polar(HlaPreSeq171) && large(E5)	-0.0137625
positive(HlaPreSeq171) && cyclic(I)	-0.0214169
charged(HlaPreSeq171) && cyclic(I)	-0.0214227
polar(HlaPreSeq171) && cyclic(E2)	-0.0214281
aliphatic(HlaPreSeq73) && charged(I)	0.0165638
buried(HlaPreSeq73) && charged(I)	0.0165608
hydrophobic(HlaPreSeq73) && charged(I)	0.0165576
positive(HlaPreSeq171) && charged(I)	-0.0142479
charged(HlaPreSeq171) && charged(I)	-0.0142706
polar(HlaPreSeq171) && charged(I)	-0.0142934
positive(HlaPreSeq171) && cyclic(I)	-0.0194966
charged(HlaPreSeq171) && cyclic(I)	-0.019501
polar(HlaPreSeq171) && cyclic(E8)	-0.0195054
positive(HlaPreSeq171) && aromatic(I)	-0.012586
charged(HlaPreSeq171) && aromatic(I)	-0.0125899
polar(HlaPreSeq171) && aromatic(I)	-0.0125938
HlaPreSeq62=Arg && E9=Gln	-0.0128067
positive(HlaPreSeq171) && medium(I)	0.0193406
charged(HlaPreSeq171) && medium(I)	0.019376
polar(HlaPreSeq171) && medium(I)	0.019411
positive(HlaPreSeq171) && medium(I)	-0.0180505
charged(HlaPreSeq171) && medium(I)	-0.0180686
polar(HlaPreSeq171) && medium(I)	-0.0180872
positive(HlaPreSeq171) && small(I)	-0.0137484
charged(HlaPreSeq171) && small(I)	-0.0137385
polar(HlaPreSeq171) && small(E4)	-0.0137285
positive(HlaPreSeq171) && medium(I)	0.0140556
charged(HlaPreSeq171) && medium(I)	0.0140641
polar(HlaPreSeq171) && medium(I)	0.0140724
HlaPreSeq171=His && E1=Asp	0.014883
positive(HlaPreSeq171) && negative(I)	0.0213066
charged(HlaPreSeq171) && negative(I)	0.0213157
polar(HlaPreSeq171) && negative(I)	0.0213249
positive(HlaPreSeq171) && charged(I)	0.0182845
charged(HlaPreSeq171) && charged(I)	0.018294
polar(HlaPreSeq171) && charged(I)	0.0183035
HlaPreSeq171=His && E4=Glu	0.012078
positive(HlaPreSeq171) && medium(I)	0.0125544
charged(HlaPreSeq171) && medium(I)	0.0125692
polar(HlaPreSeq171) && medium(I)	0.0125842
HlaPreSeq171=His && E8=Leu	0.0152426
positive(HlaPreSeq171) && aliphatic(I)	0.013941
charged(HlaPreSeq171) && aliphatic(I)	0.0139675

polar(HlaPreSeq171) && aliphatic(	0.0139929
HlaPreSeq171=His && E3=Glu	0.0150017
positive(HlaPreSeq171) && negati	0.0258216
charged(HlaPreSeq171) && negati	0.025825
polar(HlaPreSeq171) && negative(	0.0258283
positive(HlaPreSeq171) && charge	0.0153412
charged(HlaPreSeq171) && charge	0.0153614
polar(HlaPreSeq171) && charged(l	0.0153812
HlaPreSeq171=His && E6=Thr	0.0172068
positive(HlaPreSeq171) && negati	-0.0188899
charged(HlaPreSeq171) && negati	-0.0188902
polar(HlaPreSeq171) && negative(	-0.0188904
HlaPreSeq171=His && E9=Ile	0.0117575
HlaPreSeq62=Arg && E7=Trp	0.0181162
HlaPreSeq63=Asn && E9=Trp	-0.0085709
HlaPreSeq171=His && E3=Ser	-0.0121776
positive(HlaPreSeq171) && cyclic(l	0.0114937
charged(HlaPreSeq171) && cyclic(	0.0114955
polar(HlaPreSeq171) && cyclic(E6)	0.0114973
HlaPreSeq171=His && E5=Met	0.0175322
HlaPreSeq63=Asn && E9=Phe	-0.0193177
aliphatic(HlaPreSeq73) && negativ	0.0154299
buried(HlaPreSeq73) && negative(	0.015427
hydrophobic(HlaPreSeq73) && neğ	0.0154241
HlaPreSeq171=His && E4=Asp	-0.0155866
HlaPreSeq73=Ile && E9=Arg	0.019495
HlaPreSeq171=His && E9=Arg	0.0126591
HlaPreSeq62=Arg && E2=Gln	0.00958519
positive(HlaPreSeq171) && positiv	-0.0104998
charged(HlaPreSeq171) && positiv	-0.0104931
polar(HlaPreSeq171) && positive(f	-0.0104864
HlaPreSeq63=Asn && E9=Met	0.0128667
HlaPreSeq171=His && E2=Thr	-0.0090406
HlaPreSeq62=Arg && E7=Cys	-0.0154859
HlaPreSeq63=Asn && E7=Cys	-0.0162924
large(HlaPreSeq12) && medium(E:	-0.009164
large(HlaPreSeq12) && negative(E	0.0167202
large(HlaPreSeq12) && medium(E:	0.012655
large(HlaPreSeq12) && aliphatic(E:	0.0190547
large(HlaPreSeq12) && buried(E4)	0.00843211
large(HlaPreSeq12) && large(E5)	0.0121701
large(HlaPreSeq12) && medium(Ef	-0.0228019
large(HlaPreSeq12) && negative(E	0.0117934
large(HlaPreSeq12) && charged(Ef	0.0082498
HlaPreSeq12=Met && E8=Asn	0.024234
large(HlaPreSeq12) && medium(Ef	0.00884716
HlaPreSeq12=Met && E9=Leu	0.00515944

large(HIaPreSeq12) && buried(E9)	0.0187214
large(HIaPreSeq12) && large(E9)	0.0197339
HIaPreSeq12=Met && E1=Val	-0.0156072
large(HIaPreSeq12) && small(E2)	0.0121058
HIaPreSeq12=Met && E3=Lys	0.0456022
large(HIaPreSeq12) && large(E3)	-0.0094368
large(HIaPreSeq12) && positive(E3)	0.026502
HIaPreSeq12=Met && E5=Asn	-0.0226185
large(HIaPreSeq12) && medium(E4)	-0.0205753
large(HIaPreSeq12) && large(E6)	0.0165946
large(HIaPreSeq12) && large(E1)	0.0133287
large(HIaPreSeq12) && aromatic(E2)	-0.0107446
large(HIaPreSeq12) && large(E2)	-0.0245428
HIaPreSeq12=Met && E6=Thr	-0.0160685
HIaPreSeq12=Met && E7=Leu	-0.0132019
large(HIaPreSeq12) && small(E9)	-0.0129131
HIaPreSeq12=Met && E1=Lys	-0.0175064
large(HIaPreSeq12) && positive(E1)	-0.0191269
large(HIaPreSeq12) && charged(E2)	-0.0135871
large(HIaPreSeq12) && positive(E2)	-0.0176448
HIaPreSeq12=Met && E8=Ile	0.0137684
HIaPreSeq12=Met && E9=Ala	-0.0173147
HIaPreSeq12=Met && E3=Glu	-0.0180007
large(HIaPreSeq12) && negative(E2)	-0.0266184
HIaPreSeq12=Met && E2=Leu	-0.01007
HIaPreSeq12=Met && E3=Arg	-0.0121031
HIaPreSeq12=Met && E8=Arg	-0.0145253
HIaPreSeq12=Met && E1=Ser	-0.0126029
large(HIaPreSeq12) && positive(E4)	0.0183042
HIaPreSeq12=Met && E4=Thr	-0.0153082
HIaPreSeq12=Met && E6=Leu	-0.0170997
HIaPreSeq12=Met && E6=Lys	0.00924203
HIaPreSeq12=Met && E3=Ala	0.0111847
HIaPreSeq12=Met && E2=Pro	0.0106385
large(HIaPreSeq12) && aromatic(E2)	-0.0134569
HIaPreSeq12=Met && E5=Arg	-0.010028
HIaPreSeq12=Met && E5=Ile	0.0106169
HIaPreSeq12=Met && E7=Thr	-0.0158877
HIaPreSeq12=Met && E2=Gln	0.0131786
HIaPreSeq12=Met && E3=Asp	-0.008664
HIaPreSeq12=Met && E1=Glu	0.0107591
HIaPreSeq12=Met && E5=Lys	0.0125253
HIaPreSeq12=Met && E7=Val	0.0124687
HIaPreSeq12=Met && E8=Gln	-0.0172728
HIaPreSeq12=Met && E2=Ala	0.0188003
V in Epitope[@9] && F in CF flank[@9]	-0.0117308
HIaPreSeq12=Met && E3=Phe	-0.0117328

HlaPreSeq12=Met && E2=Arg	-0.0253661
HlaPreSeq109=Leu && E9=Gln	-0.0107163
HlaPreSeq109=Leu && E9=Pro	-0.0095235
HlaPreSeq43=Pro	-0.0082229
HlaPreSeq65=Gln	-0.0149776
HlaPreSeq66=Ile	-0.0143475
polar(HlaPreSeq24)	-0.0113466
HlaPreSeq43=Pro && E1=Ala	0.0103755
HlaPreSeq67=Tyr && E1=Ala	0.0112268
HlaPreSeq71=Ala && E1=Ala	0.0132655
HlaPreSeq109=Leu && E1=Ala	0.00951651
HlaPreSeq138=Thr && E1=Ala	0.0102766
polar(HlaPreSeq24) && aliphatic(E	0.0103047
aliphatic(HlaPreSeq71) && aliphati	0.00709947
buried(HlaPreSeq71) && aliphatic(	0.00716149
hydrophobic(HlaPreSeq71) && aliq	0.00723136
cyclic(HlaPreSeq67) && small(E1)	0.00618359
aromatic(HlaPreSeq67) && small(E	0.00622936
HlaPreSeq24=Ser && E2=Asn	0.00928054
polar(HlaPreSeq24) && medium(E	-0.0165538
cyclic(HlaPreSeq43) && medium(E	-0.0148333
hydrophobic(HlaPreSeq43) && me	-0.0150245
medium(HlaPreSeq43) && mediun	-0.0151033
cyclic(HlaPreSeq67) && medium(E	0.0183295
aromatic(HlaPreSeq67) && mediu	0.0183148
aliphatic(HlaPreSeq71) && mediur	0.0113993
buried(HlaPreSeq71) && medium(	0.0114284
hydrophobic(HlaPreSeq71) && me	0.0114728
small(HlaPreSeq97) && medium(E	0.0196452
positive(HlaPreSeq113) && mediu	0.0122759
charged(HlaPreSeq113) && mediu	0.0122974
polar(HlaPreSeq113) && medium(	0.0123061
medium(HlaPreSeq138) && mediu	-0.0191961
polar(HlaPreSeq138) && medium(	-0.014717
polar(HlaPreSeq24) && polar(E2)	0.0264076
charged(HlaPreSeq45) && polar(E:	0.00863022
polar(HlaPreSeq45) && polar(E2)	-0.0166606
aliphatic(HlaPreSeq66) && polar(E	-0.0167466
buried(HlaPreSeq66) && polar(E2)	-0.0171826
hydrophobic(HlaPreSeq66) && pol	-0.0174796
cyclic(HlaPreSeq67) && polar(E2)	-0.0526704
aromatic(HlaPreSeq67) && polar(E	-0.0527771
small(HlaPreSeq97) && polar(E2)	-0.021255
positive(HlaPreSeq113) && polar(E	-0.0236261
charged(HlaPreSeq113) && polar(I	-0.0235986
polar(HlaPreSeq113) && polar(E2)	-0.0234555
negative(HlaPreSeq163) && polar(	-0.0131096

HlaPreSeq97=Ser && E3=Pro	0.0105682
charged(HlaPreSeq45) && cyclic(E	-0.0139514
medium(HlaPreSeq114) && mediu	0.0180272
HlaPreSeq65=Gln && E4=Asp	0.0169284
HlaPreSeq67=Tyr && E4=Asp	0.0193677
polar(HlaPreSeq24) && medium(E	-0.0249884
cyclic(HlaPreSeq67) && medium(E	0.0125869
aromatic(HlaPreSeq67) && mediu	0.0126134
cyclic(HlaPreSeq67) && charged(E	0.0194729
aromatic(HlaPreSeq67) && charge	0.0195241
small(HlaPreSeq97) && buried(E5)	-0.0136423
negative(HlaPreSeq45) && mediur	-0.0156288
aliphatic(HlaPreSeq71) && mediur	0.0166087
buried(HlaPreSeq71) && medium(	0.016616
hydrophobic(HlaPreSeq71) && me	0.0166271
negative(HlaPreSeq163) && mediu	0.0129127
HlaPreSeq113=His && E6=Lys	0.0089643
polar(HlaPreSeq24) && large(E6)	0.0104351
negative(HlaPreSeq45) && large(E	0.00623183
charged(HlaPreSeq45) && large(E6)	0.00656638
small(HlaPreSeq97) && large(E6)	0.013053
positive(HlaPreSeq113) && large(E	0.00592972
charged(HlaPreSeq113) && large(E	0.00618091
polar(HlaPreSeq113) && large(E6)	0.00638961
aliphatic(HlaPreSeq71) && charge	-0.0206501
buried(HlaPreSeq71) && charged(I	-0.0206524
hydrophobic(HlaPreSeq71) && cha	-0.0206546
polar(HlaPreSeq24) && polar(E6)	-0.0146194
negative(HlaPreSeq45) && polar(E	-0.0154144
charged(HlaPreSeq45) && polar(E6)	-0.0220491
polar(HlaPreSeq45) && polar(E6)	-0.0173027
cyclic(HlaPreSeq67) && polar(E6)	0.0113928
aromatic(HlaPreSeq67) && polar(E	0.0113876
positive(HlaPreSeq113) && polar(E	-0.0182329
charged(HlaPreSeq113) && polar(I	-0.0181963
polar(HlaPreSeq113) && polar(E6)	-0.0181313
HlaPreSeq114=Asp && E7=Thr	0.00799988
negative(HlaPreSeq45) && mediur	-0.0148514
positive(HlaPreSeq113) && mediu	-0.0172085
charged(HlaPreSeq113) && mediu	-0.0170871
polar(HlaPreSeq113) && medium(	-0.0169426
negative(HlaPreSeq163) && polar(	-0.0150469
HlaPreSeq24=Ser && E8=Ile	0.0166089
HlaPreSeq45=Glu && E8=Ile	0.013245
HlaPreSeq113=His && E8=Ile	0.0134551
polar(HlaPreSeq45) && aliphatic(E	0.0157891
small(HlaPreSeq97) && aliphatic(E	0.0203806

cyclic(HlaPreSeq67) && buried(E8)	-0.0043835
aromatic(HlaPreSeq67) && buried	-0.0043878
negative(HlaPreSeq163) && buried	-0.0077013
aliphatic(HlaPreSeq66) && hydrophobic	-0.0177711
buried(HlaPreSeq66) && hydrophobic	-0.0174483
hydrophobic(HlaPreSeq66) && hydrophobic	-0.017085
cyclic(HlaPreSeq67) && hydrophobic	-0.0122083
aromatic(HlaPreSeq67) && hydrophobic	-0.0119803
charged(HlaPreSeq45) && large(E8)	-0.0209557
polar(HlaPreSeq45) && large(E8)	-0.0242045
small(HlaPreSeq97) && large(E8)	-0.0170684
HlaPreSeq24=Ser && E9=Leu	0.0131903
HlaPreSeq45=Glu && E9=Leu	0.0183799
HlaPreSeq80=Asn && E9=Leu	0.0175339
HlaPreSeq114=Asp && E9=Leu	0.0223733
polar(HlaPreSeq24) && aliphatic(E8)	0.00680768
negative(HlaPreSeq45) && aliphatic(E8)	0.014061
charged(HlaPreSeq45) && aliphatic(E8)	0.00481076
medium(HlaPreSeq114) && aliphatic(E8)	-0.0202967
medium(HlaPreSeq138) && aliphatic(E8)	-0.026549
negative(HlaPreSeq163) && aliphatic(E8)	0.0141473
cyclic(HlaPreSeq43) && buried(E9)	0.0260975
hydrophobic(HlaPreSeq43) && buried(E9)	0.0262396
medium(HlaPreSeq43) && buried(E9)	0.0257119
cyclic(HlaPreSeq67) && buried(E9)	0.0181415
aromatic(HlaPreSeq67) && buried(E9)	0.0179936
aliphatic(HlaPreSeq71) && buried(E9)	0.0309139
buried(HlaPreSeq71) && buried(E9)	0.0307527
hydrophobic(HlaPreSeq71) && buried(E9)	0.0304943
medium(HlaPreSeq114) && buried(E9)	0.0214088
polar(HlaPreSeq138) && buried(E9)	0.0204036
cyclic(HlaPreSeq43) && hydrophobic	-0.0096347
hydrophobic(HlaPreSeq43) && hydrophobic	-0.0108341
medium(HlaPreSeq43) && hydrophobic	-0.011346
charged(HlaPreSeq45) && hydrophobic	-0.0174806
polar(HlaPreSeq45) && hydrophobic	-0.0206455
cyclic(HlaPreSeq67) && hydrophobic	-0.0171488
aromatic(HlaPreSeq67) && hydrophobic	-0.0167264
aliphatic(HlaPreSeq71) && hydrophobic	-0.0103339
buried(HlaPreSeq71) && hydrophobic	-0.0102807
hydrophobic(HlaPreSeq71) && hydrophobic	-0.0101864
polar(HlaPreSeq24) && large(E9)	-0.0189947
charged(HlaPreSeq45) && large(E9)	-0.0250163
positive(HlaPreSeq113) && large(E9)	0.0152349
charged(HlaPreSeq113) && large(E9)	0.0163206
polar(HlaPreSeq113) && large(E9)	0.0171948
negative(HlaPreSeq163) && large(E9)	-0.0157791

cyclic(HlaPreSeq67) && medium(E	-0.0230687
aromatic(HlaPreSeq67) && mediu	-0.0229866
small(HlaPreSeq97) && medium(E	-0.0171057
positive(HlaPreSeq113) && mediu	-0.0125691
charged(HlaPreSeq113) && mediu	-0.0124682
polar(HlaPreSeq113) && medium(	-0.0123785
negative(HlaPreSeq163) && mediu	-0.0133527
charged(HlaPreSeq45) && polar(E:	-0.0239278
cyclic(HlaPreSeq67) && aliphatic(E	0.0117996
aromatic(HlaPreSeq67) && aliphat	0.0121479
polar(HlaPreSeq24) && buried(E2)	-0.0162659
charged(HlaPreSeq45) && buried(l	-0.0205457
negative(HlaPreSeq163) && buriec	-0.0124045
polar(HlaPreSeq24) && hydrophok	-0.0371681
negative(HlaPreSeq45) && hydrop	-0.0119397
charged(HlaPreSeq45) && hydropl	-0.0203354
cyclic(HlaPreSeq67) && hydrophol	0.0343323
aromatic(HlaPreSeq67) && hydroç	0.0344689
small(HlaPreSeq97) && hydrophok	0.0136574
positive(HlaPreSeq113) && hydroç	0.0116855
charged(HlaPreSeq113) && hydroç	0.0118788
polar(HlaPreSeq113) && hydrophc	0.0119379
polar(HlaPreSeq24) && large(E2)	0.0320881
negative(HlaPreSeq45) && large(E	0.00922943
charged(HlaPreSeq45) && large(Ez	0.0155811
aliphatic(HlaPreSeq66) && large(E.	0.00439101
buried(HlaPreSeq66) && large(E2)	0.00485658
hydrophobic(HlaPreSeq66) && larç	0.00530471
cyclic(HlaPreSeq67) && large(E2)	-0.047348
aromatic(HlaPreSeq67) && large(E	-0.0472694
aliphatic(HlaPreSeq71) && large(E.	-0.021278
buried(HlaPreSeq71) && large(E2)	-0.0212196
hydrophobic(HlaPreSeq71) && larç	-0.021144
small(HlaPreSeq97) && large(E2)	-0.0153825
positive(HlaPreSeq113) && large(E	-0.0293761
charged(HlaPreSeq113) && large(E	-0.0289518
polar(HlaPreSeq113) && large(E2)	-0.0284426
medium(HlaPreSeq114) && large(l	-0.0176081
negative(HlaPreSeq163) && large(	0.00990874
HlaPreSeq45=Glu && E3=Lys	0.0200994
HlaPreSeq66=Ile && E3=Lys	0.0221134
HlaPreSeq67=Tyr && E3=Lys	-0.0195011
HlaPreSeq71=Ala && E3=Lys	-0.0191547
HlaPreSeq80=Asn && E3=Lys	0.0205246
HlaPreSeq97=Ser && E3=Lys	0.0236511
HlaPreSeq113=His && E3=Lys	0.0295742
HlaPreSeq138=Thr && E3=Lys	0.0178795

medium(HlaPreSeq114) && large(l	-0.0106002
negative(HlaPreSeq163) && large(	-0.0145639
negative(HlaPreSeq45) && positiv	0.0291903
charged(HlaPreSeq45) && positive	0.0265798
aliphatic(HlaPreSeq66) && positiv	0.0232515
buried(HlaPreSeq66) && positive(f	0.0233774
hydrophobic(HlaPreSeq66) && po	0.0234879
cyclic(HlaPreSeq67) && positive(E:	0.0236842
aromatic(HlaPreSeq67) && positiv	0.0237465
small(HlaPreSeq97) && positive(E:	0.0301211
positive(HlaPreSeq113) && positiv	0.0250713
charged(HlaPreSeq113) && positiv	0.0251738
polar(HlaPreSeq113) && positive(f	0.0252626
polar(HlaPreSeq24) && charged(E:	0.0184033
negative(HlaPreSeq45) && charge	0.0158085
polar(HlaPreSeq24) && polar(E3)	-0.0131345
HlaPreSeq43=Pro && E4=Asn	-0.0174121
HlaPreSeq65=Gln && E4=Asn	-0.016273
HlaPreSeq138=Thr && E4=Asn	-0.0170491
cyclic(HlaPreSeq67) && cyclic(E5)	-0.0274065
aromatic(HlaPreSeq67) && cyclic(f	-0.0274127
HlaPreSeq71=Ala && E6=Pro	0.0198421
HlaPreSeq114=Asp && E6=Pro	0.0168657
negative(HlaPreSeq45) && cyclic(E	-0.0167476
cyclic(HlaPreSeq67) && cyclic(E6)	-0.0277488
aromatic(HlaPreSeq67) && cyclic(f	-0.0277435
charged(HlaPreSeq45) && hydropl	0.0113742
cyclic(HlaPreSeq67) && hydrophol	-0.0278754
aromatic(HlaPreSeq67) && hydro	-0.02766
positive(HlaPreSeq113) && hydro	0.0099431
charged(HlaPreSeq113) && hydro	0.010396
polar(HlaPreSeq113) && hydrophc	0.0107485
aliphatic(HlaPreSeq71) && mediur	0.0195601
buried(HlaPreSeq71) && medium(	0.0195525
hydrophobic(HlaPreSeq71) && me	0.0195414
small(HlaPreSeq97) && medium(E	-0.0080333
medium(HlaPreSeq114) && mediu	0.00773696
HlaPreSeq24=Ser && E7=Asn	0.0143922
HlaPreSeq43=Pro && E7=Asn	0.0176795
HlaPreSeq138=Thr && E7=Asn	0.0196236
HlaPreSeq67=Tyr && E8=Val	0.0122077
HlaPreSeq113=His && E8=Val	0.0120172
HlaPreSeq114=Asp && E8=Val	0.0126275
polar(HlaPreSeq24) && medium(E:	-0.019928
positive(HlaPreSeq113) && mediu	0.00467307
charged(HlaPreSeq113) && mediu	0.00481339
polar(HlaPreSeq113) && medium(	0.00494516

positive(HlaPreSeq113) && mediu	-0.0160873
charged(HlaPreSeq113) && mediu	-0.0160461
polar(HlaPreSeq113) && medium(	-0.0160034
polar(HlaPreSeq24) && polar(E9)	-0.0160328
HlaPreSeq43=Pro && E2=Gly	-0.0167208
HlaPreSeq65=Gln && E2=Gly	-0.0128539
HlaPreSeq67=Tyr && E2=Gly	-0.0111181
HlaPreSeq71=Ala && E2=Gly	-0.0155752
HlaPreSeq113=His && E2=Gly	-0.0118531
HlaPreSeq114=Asp && E2=Gly	-0.0155119
HlaPreSeq138=Thr && E2=Gly	-0.0159647
polar(HlaPreSeq24) && small(E2)	-0.0270798
cyclic(HlaPreSeq43) && small(E2)	0.014542
hydrophobic(HlaPreSeq43) && sm	0.0144776
medium(HlaPreSeq43) && small(E	0.0143645
negative(HlaPreSeq45) && small(E	-0.018676
charged(HlaPreSeq45) && small(E:	-0.0238318
small(HlaPreSeq97) && small(E2)	-0.0113897
medium(HlaPreSeq114) && small(	0.0186187
negative(HlaPreSeq163) && small(	-0.0163246
cyclic(HlaPreSeq43) && aliphatic(E	0.0108874
hydrophobic(HlaPreSeq43) && aliq	0.0111596
medium(HlaPreSeq43) && aliphati	0.0114152
polar(HlaPreSeq45) && aliphatic(E	0.0119318
aliphatic(HlaPreSeq66) && aliphati	0.0122732
buried(HlaPreSeq66) && aliphatic(	0.0125368
hydrophobic(HlaPreSeq66) && aliq	0.0127792
positive(HlaPreSeq113) && aliphatic	0.0144882
charged(HlaPreSeq113) && aliphatic	0.0146331
polar(HlaPreSeq113) && aliphatic(	0.0147542
medium(HlaPreSeq114) && aliphatic	0.00989508
medium(HlaPreSeq138) && aliphatic	0.0154694
polar(HlaPreSeq138) && aliphatic(	0.0125045
negative(HlaPreSeq45) && buried(	0.00915925
charged(HlaPreSeq45) && buried(l	0.00999578
cyclic(HlaPreSeq67) && buried(E4)	-0.0161915
aromatic(HlaPreSeq67) && buried	-0.0162009
cyclic(HlaPreSeq67) && hydrophobic	-0.0153582
aromatic(HlaPreSeq67) && hydrophobic	-0.0155904
aliphatic(HlaPreSeq66) && large(E	-0.0111452
buried(HlaPreSeq66) && large(E4)	-0.0118029
cyclic(HlaPreSeq67) && large(E4)	-0.0215419
aromatic(HlaPreSeq67) && large(E	-0.0217895
HlaPreSeq113=His && E6=Gln	0.0213267
HlaPreSeq138=Thr && E6=Gln	0.0292491
HlaPreSeq80=Asn && E7=Leu	-0.0232709
HlaPreSeq97=Ser && E7=Leu	-0.0125753

HlaPreSeq113=His && E7=Leu	-0.0196926
HlaPreSeq114=Asp && E7=Leu	-0.0261471
cyclic(HlaPreSeq67) && aliphatic(E	-0.0151421
aromatic(HlaPreSeq67) && aliphatic	-0.0151911
small(HlaPreSeq97) && aliphatic(E	-0.0153388
negative(HlaPreSeq163) && aliphatic	0.0140443
small(HlaPreSeq97) && buried(E7)	-0.0114117
cyclic(HlaPreSeq67) && large(E7)	-0.0269984
aromatic(HlaPreSeq67) && large(E	-0.0272262
aliphatic(HlaPreSeq71) && large(E	-0.0195915
buried(HlaPreSeq71) && large(E7)	-0.0197534
hydrophobic(HlaPreSeq71) && large	-0.0199004
small(HlaPreSeq97) && large(E7)	-0.0142914
negative(HlaPreSeq163) && large(E	-0.0149028
aliphatic(HlaPreSeq71) && negative	-0.0150443
buried(HlaPreSeq71) && negative(E	-0.0150566
hydrophobic(HlaPreSeq71) && negative	-0.0150692
negative(HlaPreSeq163) && negative	-0.0163534
HlaPreSeq24=Ser && E2=Thr	-0.0162397
HlaPreSeq43=Pro && E2=Thr	-0.0164862
HlaPreSeq45=Glu && E2=Thr	-0.0124851
HlaPreSeq65=Gln && E2=Thr	-0.0290956
HlaPreSeq66=Ile && E2=Thr	-0.0280746
HlaPreSeq80=Asn && E2=Thr	-0.0176054
HlaPreSeq113=His && E2=Thr	-0.0122926
HlaPreSeq138=Thr && E2=Thr	-0.0191767
charged(HlaPreSeq45) && aliphatic	0.0113153
aliphatic(HlaPreSeq66) && aliphatic	0.0100616
buried(HlaPreSeq66) && aliphatic(E	0.0101689
hydrophobic(HlaPreSeq66) && aliphatic	0.0102859
positive(HlaPreSeq113) && small(E	0.00354821
charged(HlaPreSeq113) && small(E	0.00365828
polar(HlaPreSeq113) && small(E3)	0.00377861
negative(HlaPreSeq163) && small(E	0.0105284
HlaPreSeq66=Ile && E5=Leu	-0.0168645
HlaPreSeq67=Tyr && E5=Leu	0.0146811
HlaPreSeq71=Ala && E5=Leu	0.0141985
HlaPreSeq80=Asn && E5=Leu	-0.0165944
HlaPreSeq113=His && E5=Leu	-0.0194427
cyclic(HlaPreSeq67) && aliphatic(E	0.0183739
aromatic(HlaPreSeq67) && aliphatic	0.0182496
negative(HlaPreSeq45) && large(E	0.0154505
cyclic(HlaPreSeq67) && large(E5)	-0.0207466
aromatic(HlaPreSeq67) && large(E	-0.0208185
negative(HlaPreSeq163) && large(E	-0.0126413
HlaPreSeq24=Ser && E6=Ser	-0.0141474
HlaPreSeq43=Pro && E6=Ser	-0.0126748

HlaPreSeq45=Glu && E6=Ser	-0.015193
HlaPreSeq97=Ser && E6=Ser	-0.0116634
HlaPreSeq113=His && E6=Ser	-0.0234623
HlaPreSeq138=Thr && E6=Ser	-0.0201096
polar(HlaPreSeq24) && small(E6)	-0.0139295
aliphatic(HlaPreSeq71) && small(E	-0.0214802
buried(HlaPreSeq71) && small(E6)	-0.021483
hydrophobic(HlaPreSeq71) && sm	-0.0214852
medium(HlaPreSeq138) && small(	-0.0144258
negative(HlaPreSeq163) && small(	-0.013954
HlaPreSeq114=Asp && E7=Lys	-0.0220292
HlaPreSeq163=Glu && E7=Lys	-0.0158905
negative(HlaPreSeq45) && positiv	0.017364
charged(HlaPreSeq45) && positive	0.0169931
positive(HlaPreSeq113) && positiv	0.0198485
charged(HlaPreSeq113) && positiv	0.0198467
polar(HlaPreSeq113) && positive(f	0.019843
negative(HlaPreSeq163) && positi	-0.0100911
positive(HlaPreSeq113) && charge	0.0167003
charged(HlaPreSeq113) && charge	0.016777
polar(HlaPreSeq113) && charged(l	0.0168177
aliphatic(HlaPreSeq66) && polar(E	0.00558097
buried(HlaPreSeq66) && polar(E8)	0.00578885
polar(HlaPreSeq24) && charged(E	-0.0202313
small(HlaPreSeq97) && charged(E	0.008547
positive(HlaPreSeq113) && charge	0.00601561
charged(HlaPreSeq113) && charge	0.00607779
polar(HlaPreSeq113) && charged(l	0.00614063
medium(HlaPreSeq114) && charge	-0.0203475
HlaPreSeq43=Pro && E1=Ser	-0.0142254
HlaPreSeq138=Thr && E1=Ser	-0.0160598
HlaPreSeq77=Ser && E4=Ser	-0.0166993
HlaPreSeq80=Asn && E4=Ser	-0.016153
HlaPreSeq113=His && E4=Ser	-0.0146809
polar(HlaPreSeq24) && small(E4)	0.0117664
charged(HlaPreSeq45) && small(E	0.0147263
aliphatic(HlaPreSeq71) && small(E	-0.0183326
buried(HlaPreSeq71) && small(E4)	-0.018338
hydrophobic(HlaPreSeq71) && sm	-0.0183433
HlaPreSeq67=Tyr && E6=Ala	-0.0144013
HlaPreSeq71=Ala && E6=Ala	-0.0186848
HlaPreSeq114=Asp && E6=Ala	-0.0227392
negative(HlaPreSeq45) && aliphatic	0.0119301
polar(HlaPreSeq45) && buried(E6)	0.0122409
HlaPreSeq24=Ser && E7=Ala	0.0216239
HlaPreSeq45=Glu && E7=Ala	0.0165398
HlaPreSeq67=Tyr && E7=Ala	0.00984154

HlaPreSeq71=Ala && E7=Ala	0.0107588
HlaPreSeq97=Ser && E7=Ala	0.0122057
HlaPreSeq113=His && E7=Ala	0.0156836
HlaPreSeq114=Asp && E7=Ala	0.0128318
polar(HlaPreSeq24) && small(E7)	0.00868417
aliphatic(HlaPreSeq71) && small(E	0.0134693
buried(HlaPreSeq71) && small(E7)	0.013475
hydrophobic(HlaPreSeq71) && sm	0.0134818
small(HlaPreSeq97) && small(E7)	0.0111002
positive(HlaPreSeq113) && small(f	0.0152967
charged(HlaPreSeq113) && small(l	0.0153086
polar(HlaPreSeq113) && small(E7)	0.0153233
negative(HlaPreSeq163) && small(	0.0162754
polar(HlaPreSeq24) && cyclic(E8)	-0.0185301
negative(HlaPreSeq45) && cyclic(E	-0.0229061
charged(HlaPreSeq45) && cyclic(E:	-0.0209127
polar(HlaPreSeq45) && cyclic(E8)	-0.0222609
HlaPreSeq105=Pro && E9=His	-0.0144886
negative(HlaPreSeq45) && cyclic(E	-0.024541
charged(HlaPreSeq45) && cyclic(E:	-0.0266547
polar(HlaPreSeq45) && cyclic(E9)	-0.0146811
aliphatic(HlaPreSeq66) && cyclic(E	-0.0232361
buried(HlaPreSeq66) && cyclic(E9)	-0.023838
hydrophobic(HlaPreSeq66) && cyc	-0.0244275
cyclic(HlaPreSeq67) && cyclic(E9)	-0.0327109
aromatic(HlaPreSeq67) && cyclic(f	-0.0326994
small(HlaPreSeq97) && cyclic(E9)	-0.0116058
negative(HlaPreSeq163) && cyclic(	-0.0221471
negative(HlaPreSeq45) && aromati	-0.023143
charged(HlaPreSeq45) && aromati	-0.0240872
polar(HlaPreSeq45) && aromatic(E	-0.0139577
aliphatic(HlaPreSeq66) && aromati	-0.0222532
buried(HlaPreSeq66) && aromatic	-0.0226988
hydrophobic(HlaPreSeq66) && arc	-0.0231029
cyclic(HlaPreSeq67) && aromatic(f	-0.0275849
aromatic(HlaPreSeq67) && aroma	-0.0275249
small(HlaPreSeq97) && aromatic(E	-0.0124541
medium(HlaPreSeq114) && aromati	0.0111076
medium(HlaPreSeq138) && aromati	0.0098412
negative(HlaPreSeq163) && aromati	-0.0224123
polar(HlaPreSeq24) && positive(E9	-0.0190135
medium(HlaPreSeq114) && positiv	-0.0177861
HlaPreSeq24=Ser && E2=Tyr	-0.0141065
HlaPreSeq43=Pro && E2=Tyr	-0.0178758
HlaPreSeq45=Glu && E2=Tyr	-0.017372
HlaPreSeq65=Gln && E2=Tyr	-0.0171382
HlaPreSeq66=Ile && E2=Tyr	-0.022986

HlaPreSeq80=Asn && E2=Tyr	-0.0169764
HlaPreSeq97=Ser && E2=Tyr	-0.0118385
HlaPreSeq113=His && E2=Tyr	-0.0226329
HlaPreSeq138=Thr && E2=Tyr	-0.0166002
cyclic(HlaPreSeq43) && cyclic(E2)	0.00539062
hydrophobic(HlaPreSeq43) && cyc	0.00556548
medium(HlaPreSeq43) && cyclic(E	0.00580829
negative(HlaPreSeq45) && cyclic(E	0.0164823
charged(HlaPreSeq45) && cyclic(E.	0.00979893
polar(HlaPreSeq45) && cyclic(E2)	0.0188746
aliphatic(HlaPreSeq66) && cyclic(E	0.0221194
buried(HlaPreSeq66) && cyclic(E2)	0.0223047
hydrophobic(HlaPreSeq66) && cyc	0.0224751
cyclic(HlaPreSeq67) && cyclic(E2)	0.0269078
aromatic(HlaPreSeq67) && cyclic(f	0.0269756
aliphatic(HlaPreSeq71) && cyclic(E	0.0121607
buried(HlaPreSeq71) && cyclic(E2)	0.0122068
hydrophobic(HlaPreSeq71) && cyc	0.0122574
positive(HlaPreSeq113) && cyclic(l	0.0284482
charged(HlaPreSeq113) && cyclic(	0.0285131
polar(HlaPreSeq113) && cyclic(E2)	0.0285383
medium(HlaPreSeq114) && cyclic(	0.0129691
medium(HlaPreSeq138) && cyclic(	0.0102555
negative(HlaPreSeq163) && cyclic(	0.0125463
polar(HlaPreSeq24) && aromatic(E	-0.0152166
cyclic(HlaPreSeq43) && aromatic(f	-0.0177788
hydrophobic(HlaPreSeq43) && arc	-0.0178134
medium(HlaPreSeq43) && aromat	-0.0178447
polar(HlaPreSeq45) && aromatic(E	-0.0211835
aliphatic(HlaPreSeq66) && aromat	-0.0183116
buried(HlaPreSeq66) && aromatic	-0.0183321
hydrophobic(HlaPreSeq66) && arc	-0.0183516
cyclic(HlaPreSeq67) && aromatic(f	-0.0244187
aromatic(HlaPreSeq67) && aroma	-0.0244274
aliphatic(HlaPreSeq71) && aromat	-0.0080173
buried(HlaPreSeq71) && aromatic	-0.0080185
hydrophobic(HlaPreSeq71) && arc	-0.0080195
small(HlaPreSeq97) && aromatic(E	-0.0161329
positive(HlaPreSeq113) && aroma	-0.0110891
charged(HlaPreSeq113) && aroma	-0.0111181
polar(HlaPreSeq113) && aromatic	-0.0111453
medium(HlaPreSeq114) && aromæ	-0.0150556
medium(HlaPreSeq138) && aromæ	-0.0154893
polar(HlaPreSeq138) && aromatic	-0.0180366
negative(HlaPreSeq163) && aromæ	-0.0132275
polar(HlaPreSeq45) && buried(E3)	0.0112274
small(HlaPreSeq97) && cyclic(E7)	0.0136917

cyclic(HlaPreSeq67) && aromatic(E	0.00648903
aromatic(HlaPreSeq67) && aroma	0.00648465
negative(HlaPreSeq45) && aromat	-0.0142417
medium(HlaPreSeq114) && aromac	0.0108621
medium(HlaPreSeq138) && aromac	0.0134828
HlaPreSeq45=Glu && E9=Lys	0.00927006
HlaPreSeq43=Pro && E2=Ala	0.037875
HlaPreSeq65=Gln && E2=Ala	0.029049
HlaPreSeq66=Ile && E2=Ala	0.0119228
HlaPreSeq71=Ala && E2=Ala	0.0208614
HlaPreSeq80=Asn && E2=Ala	0.0133122
HlaPreSeq113=His && E2=Ala	0.0197336
HlaPreSeq114=Asp && E2=Ala	0.0106998
HlaPreSeq138=Thr && E2=Ala	0.0326048
HlaPreSeq80=Asn && E3=Val	0.0106995
HlaPreSeq97=Ser && E5=Gly	0.0133743
HlaPreSeq45=Glu && E6=Gly	0.0175811
HlaPreSeq66=Ile && E6=Gly	0.0206269
HlaPreSeq113=His && E6=Gly	0.0237855
polar(HlaPreSeq24) && cyclic(E1)	-0.011239
negative(HlaPreSeq163) && cyclic(E	-0.0146531
medium(HlaPreSeq138) && aromac	0.0137407
HlaPreSeq24=Ser && E2=Leu	0.0164001
HlaPreSeq43=Pro && E2=Leu	-0.0140463
HlaPreSeq97=Ser && E2=Leu	0.0155307
HlaPreSeq114=Asp && E2=Leu	-0.0142717
cyclic(HlaPreSeq67) && aromatic(E	-0.0152215
aromatic(HlaPreSeq67) && aroma	-0.0152138
small(HlaPreSeq97) && aromatic(E	-0.0178157
positive(HlaPreSeq113) && aroma	-0.0158986
charged(HlaPreSeq113) && aroma	-0.0158774
polar(HlaPreSeq113) && aromatic(E	-0.0158571
medium(HlaPreSeq114) && aromac	-0.0186479
HlaPreSeq114=Asp && E4=Phe	-0.0139585
polar(HlaPreSeq24) && aromatic(E	0.0115189
HlaPreSeq45=Glu && E6=Ile	0.0150089
HlaPreSeq114=Asp && E6=Ile	-0.0120749
HlaPreSeq24=Ser && E3=Ser	-0.0153807
HlaPreSeq97=Ser && E3=Ser	-0.0132486
HlaPreSeq80=Asn && E7=Cys	-0.0125152
HlaPreSeq80=Asn && E8=His	0.0124675
HlaPreSeq113=His && E8=His	0.0133794
HlaPreSeq114=Asp && E8=His	0.0149411
charged(HlaPreSeq45) && positive	-0.0184688
aliphatic(HlaPreSeq71) && positiv	0.0145868
buried(HlaPreSeq71) && positive(E	0.0145784
hydrophobic(HlaPreSeq71) && po	0.0145705

charged(HlaPreSeq45) && charged	-0.0186534
polar(HlaPreSeq45) && charged(E	-0.0223941
HlaPreSeq80=Asn && E1=Gln	-0.0136553
HlaPreSeq43=Pro && E3=Ala	0.00408546
HlaPreSeq45=Glu && E3=Ala	0.0116018
HlaPreSeq71=Ala && E3=Ala	0.01099
HlaPreSeq113=His && E3=Ala	0.0217807
HlaPreSeq138=Thr && E3=Ala	0.00476306
HlaPreSeq163=Glu && E3=Ala	0.0108746
HlaPreSeq67=Tyr && E7=Asp	0.0134009
negative(HlaPreSeq45) && negativ	-0.0164977
HlaPreSeq114=Asp && E9=Val	-0.0211892
HlaPreSeq43=Pro && E4=Gln	0.0196741
HlaPreSeq113=His && E4=Gln	0.017
HlaPreSeq24=Ser && E5=Asp	0.0171298
polar(HlaPreSeq24) && negative(E	-0.007389
negative(HlaPreSeq45) && negativ	-0.013191
charged(HlaPreSeq45) && negativ	-0.021337
small(HlaPreSeq97) && negative(E	-0.0109631
cyclic(HlaPreSeq67) && charged(E!	0.0259744
aromatic(HlaPreSeq67) && charge	0.0260733
HlaPreSeq24=Ser && E6=Leu	0.0188705
HlaPreSeq65=Gln && E6=Leu	-0.0096339
HlaPreSeq66=Ile && E6=Leu	-0.02037
HlaPreSeq67=Tyr && E6=Leu	0.0101295
HlaPreSeq71=Ala && E6=Leu	0.0145961
HlaPreSeq113=His && E6=Leu	-0.0100724
HlaPreSeq45=Glu && E8=Thr	0.0133469
HlaPreSeq66=Ile && E8=Thr	0.020125
HlaPreSeq77=Ser && E8=Thr	0.0185111
HlaPreSeq80=Asn && E8=Thr	0.0178784
HlaPreSeq65=Gln && E9=Met	0.0139153
HlaPreSeq66=Ile && E9=Met	0.0162323
HlaPreSeq77=Ser && E9=Met	0.019909
HlaPreSeq80=Asn && E9=Met	0.0206487
HlaPreSeq97=Ser && E9=Met	0.0108255
HlaPreSeq114=Asp && E9=Met	0.0180995
HlaPreSeq43=Pro && E2=Asp	-0.0107076
HlaPreSeq65=Gln && E2=Asp	-0.0092617
HlaPreSeq66=Ile && E2=Asp	-0.0110656
HlaPreSeq80=Asn && E2=Asp	-0.0133748
HlaPreSeq113=His && E2=Asp	-0.0147747
HlaPreSeq138=Thr && E2=Asp	-0.0103196
HlaPreSeq163=Glu && E2=Asp	-0.0101883
polar(HlaPreSeq24) && negative(E	0.0266901
negative(HlaPreSeq45) && negativ	-0.0268844
charged(HlaPreSeq45) && negativ	0.0132156

polar(HlaPreSeq45) && negative(E	0.0181718
aliphatic(HlaPreSeq66) && negativ	0.0190444
buried(HlaPreSeq66) && negative(	0.0190704
hydrophobic(HlaPreSeq66) && neξ	0.0191012
cyclic(HlaPreSeq67) && negative(E	-0.0232954
aromatic(HlaPreSeq67) && negativ	-0.0232952
aliphatic(HlaPreSeq71) && negativ	-0.0253884
buried(HlaPreSeq71) && negative(	-0.025388
hydrophobic(HlaPreSeq71) && neξ	-0.0253876
medium(HlaPreSeq114) && negati	0.015445
polar(HlaPreSeq24) && charged(E:	0.0516377
cyclic(HlaPreSeq43) && charged(E:	0.0155799
hydrophobic(HlaPreSeq43) && cha	0.0158478
medium(HlaPreSeq43) && chargec	0.0160551
negative(HlaPreSeq45) && charge	0.0215415
charged(HlaPreSeq45) && chargec	0.044397
polar(HlaPreSeq45) && charged(E:	0.0286313
aliphatic(HlaPreSeq66) && charge	0.0227444
buried(HlaPreSeq66) && charged(l	0.0225665
hydrophobic(HlaPreSeq66) && cha	0.0223046
cyclic(HlaPreSeq67) && charged(E:	-0.0285079
aromatic(HlaPreSeq67) && charge	-0.0284951
positive(HlaPreSeq113) && charge	-0.0141377
charged(HlaPreSeq113) && charge	-0.0141185
polar(HlaPreSeq113) && charged(l	-0.0140967
medium(HlaPreSeq138) && charge	0.0131643
polar(HlaPreSeq138) && charged(l	0.0149384
negative(HlaPreSeq163) && charg	0.00880893
HlaPreSeq43=Pro && E4=Gly	0.0188515
HlaPreSeq113=His && E4=Gly	0.0153862
HlaPreSeq138=Thr && E4=Gly	0.0206888
HlaPreSeq24=Ser && E1=Val	0.0108257
HlaPreSeq43=Pro && E2=Gln	0.0145669
HlaPreSeq65=Gln && E2=Gln	0.014456
HlaPreSeq109=Leu && E2=Gln	0.0136097
HlaPreSeq138=Thr && E2=Gln	0.0132579
HlaPreSeq113=His && E5=Asn	-0.0190528
HlaPreSeq114=Asp && E5=Asn	-0.0148294
HlaPreSeq24=Ser && E7=Glu	-0.0186523
HlaPreSeq45=Glu && E7=Glu	-0.0181321
HlaPreSeq24=Ser && E8=Trp	-0.0108483
HlaPreSeq77=Ser && E8=Trp	-0.0143808
HlaPreSeq80=Asn && E8=Trp	-0.0143806
HlaPreSeq114=Asp && E3=Leu	0.0233217
HlaPreSeq45=Glu && E5=Ile	0.0172294
HlaPreSeq66=Ile && E5=Ile	0.0126272
HlaPreSeq67=Tyr && E5=Ile	-0.0106349

HlaPreSeq71=Ala && E5=Ile	-0.0110575
HlaPreSeq24=Ser && E1=Leu	-0.0172035
HlaPreSeq45=Glu && E1=Leu	-0.0149709
HlaPreSeq65=Gln && E1=Leu	-0.0180739
HlaPreSeq138=Thr && E1=Leu	-0.0163356
HlaPreSeq45=Glu && E2=Val	-0.0090966
HlaPreSeq67=Tyr && E3=Arg	0.014978
HlaPreSeq71=Ala && E3=Arg	0.0196154
HlaPreSeq97=Ser && E3=Arg	0.0132033
HlaPreSeq163=Glu && E3=Arg	0.0135289
HlaPreSeq163=Glu && E8=Gly	0.0108944
HlaPreSeq66=Ile && E9=Phe	-0.01889
HlaPreSeq163=Glu && E9=Phe	-0.0122828
cyclic(HlaPreSeq67) && aromatic(f	-0.0242776
aromatic(HlaPreSeq67) && aroma	-0.0242631
HlaPreSeq71=Ala && E8=Lys	0.0168758
HlaPreSeq163=Glu && E8=Lys	0.00920012
HlaPreSeq65=Gln && E1=Lys	-0.0191756
HlaPreSeq66=Ile && E1=Lys	-0.0206512
polar(HlaPreSeq45) && positive(E1	-0.0132383
aliphatic(HlaPreSeq71) && positiv	0.0144526
buried(HlaPreSeq71) && positive(f	0.0144004
hydrophobic(HlaPreSeq71) && po	0.0143474
medium(HlaPreSeq114) && positiv	-0.0133915
negative(HlaPreSeq163) && positi	0.0137745
HlaPreSeq43=Pro && E2=Glu	0.0172519
HlaPreSeq45=Glu && E2=Glu	-0.0198267
HlaPreSeq65=Gln && E2=Glu	0.0205978
HlaPreSeq66=Ile && E2=Glu	0.0303563
HlaPreSeq71=Ala && E2=Glu	-0.0180826
HlaPreSeq80=Asn && E2=Glu	0.0277421
HlaPreSeq114=Asp && E2=Glu	0.0169604
HlaPreSeq138=Thr && E2=Glu	0.0185581
HlaPreSeq114=Asp && E4=Ala	-0.0138248
HlaPreSeq24=Ser && E5=Glu	-0.0153863
HlaPreSeq66=Ile && E5=Glu	-0.015863
HlaPreSeq114=Asp && E5=Glu	0.0145544
HlaPreSeq71=Ala && E6=Thr	0.0117277
HlaPreSeq80=Asn && E6=Thr	0.0138211
HlaPreSeq97=Ser && E6=Thr	-0.0117584
HlaPreSeq45=Glu && E1=Arg	0.018114
HlaPreSeq65=Gln && E1=Arg	0.0199912
HlaPreSeq66=Ile && E1=Arg	0.0172315
HlaPreSeq71=Ala && E1=Arg	0.013016
HlaPreSeq97=Ser && E3=Asp	-0.0125439
negative(HlaPreSeq45) && negativ	-0.0139306
charged(HlaPreSeq45) && negativ	-0.0167936

cyclic(HlaPreSeq67) && negative(E	-0.0130555
aromatic(HlaPreSeq67) && negativ	-0.0130453
small(HlaPreSeq97) && negative(E	-0.0210856
positive(HlaPreSeq113) && negati	-0.0133488
charged(HlaPreSeq113) && negati	-0.0133374
polar(HlaPreSeq113) && negative(	-0.0133268
HlaPreSeq71=Ala && E4=Glu	-0.0164187
HlaPreSeq114=Asp && E4=Glu	0.0114086
HlaPreSeq163=Glu && E4=Glu	-0.015086
HlaPreSeq24=Ser && E7=Ser	-0.0154424
HlaPreSeq114=Asp && E8=Glu	-0.0084965
HlaPreSeq80=Asn && E8=Ala	0.017761
HlaPreSeq114=Asp && E8=Ala	-0.0048677
HlaPreSeq113=His && E5=Arg	-0.0079139
negative(HlaPreSeq45) && positiv	0.0255129
charged(HlaPreSeq45) && positive	0.0244012
polar(HlaPreSeq45) && positive(E!	0.0181164
aliphatic(HlaPreSeq66) && positiv	0.0242998
buried(HlaPreSeq66) && positive(I	0.0243421
hydrophobic(HlaPreSeq66) && po:	0.024375
aliphatic(HlaPreSeq71) && positiv	-0.0099759
buried(HlaPreSeq71) && positive(I	-0.0099588
hydrophobic(HlaPreSeq71) && po:	-0.0099419
small(HlaPreSeq97) && positive(E!	0.0181337
HlaPreSeq24=Ser && E2=Pro	0.00920716
HlaPreSeq43=Pro && E2=Pro	0.0250426
HlaPreSeq45=Glu && E2=Pro	0.0213897
HlaPreSeq65=Gln && E2=Pro	0.0304691
HlaPreSeq66=Ile && E2=Pro	0.0414527
HlaPreSeq67=Tyr && E2=Pro	0.0323016
HlaPreSeq71=Ala && E2=Pro	0.0204665
HlaPreSeq77=Ser && E2=Pro	0.0274156
HlaPreSeq80=Asn && E2=Pro	0.027494
HlaPreSeq97=Ser && E2=Pro	0.0245828
HlaPreSeq109=Leu && E2=Pro	0.0253794
HlaPreSeq113=His && E2=Pro	0.0397281
HlaPreSeq114=Asp && E2=Pro	0.0340344
HlaPreSeq138=Thr && E2=Pro	0.0253322
HlaPreSeq163=Glu && E2=Pro	0.0257799
HlaPreSeq43=Pro && E2=Met	-0.0146411
HlaPreSeq65=Gln && E2=Met	-0.0146093
HlaPreSeq66=Ile && E2=Met	-0.0112
HlaPreSeq138=Thr && E2=Met	-0.0145759
HlaPreSeq113=His && E1=Pro	-0.0138928
HlaPreSeq24=Ser && E2=Arg	0.0115128
HlaPreSeq43=Pro && E2=Arg	0.016667
HlaPreSeq45=Glu && E2=Arg	0.0251801

HlaPreSeq65=Gln && E2=Arg	0.0181685
HlaPreSeq67=Tyr && E2=Arg	0.0120222
HlaPreSeq71=Ala && E2=Arg	0.0364522
HlaPreSeq113=His && E2=Arg	-0.0265778
HlaPreSeq138=Thr && E2=Arg	0.0169194
HlaPreSeq163=Glu && E2=Arg	0.0207901
polar(HlaPreSeq24) && positive(E2)	0.0244732
cyclic(HlaPreSeq43) && positive(E2)	0.0082112
hydrophobic(HlaPreSeq43) && positive(E2)	0.00810196
medium(HlaPreSeq43) && positive(E2)	0.00798735
negative(HlaPreSeq45) && positive(E2)	0.0477233
charged(HlaPreSeq45) && positive(E2)	0.029854
polar(HlaPreSeq45) && positive(E2)	0.00865072
aliphatic(HlaPreSeq71) && positive(E2)	0.0208818
buried(HlaPreSeq71) && positive(E2)	0.0208094
hydrophobic(HlaPreSeq71) && positive(E2)	0.020734
polar(HlaPreSeq138) && positive(E2)	0.00735322
HlaPreSeq113=His && E1=Thr	0.0135288
HlaPreSeq24=Ser && E8=Asn	-0.0210896
HlaPreSeq163=Glu && E7=Gly	0.0141889
HlaPreSeq43=Pro && E8=Arg	-0.0213111
HlaPreSeq65=Gln && E8=Arg	-0.021012
HlaPreSeq66=Ile && E8=Arg	-0.0230693
HlaPreSeq97=Ser && E8=Arg	-0.0133636
HlaPreSeq113=His && E8=Arg	-0.0169134
HlaPreSeq138=Thr && E8=Arg	-0.0232192
HlaPreSeq24=Ser && E9=Trp	-0.0105282
HlaPreSeq65=Gln && E9=Trp	-0.00638
HlaPreSeq66=Ile && E9=Trp	-0.0099517
HlaPreSeq71=Ala && E9=Trp	0.0265086
HlaPreSeq80=Asn && E9=Trp	-0.0224887
HlaPreSeq138=Thr && E2=Lys	-0.0140256
HlaPreSeq65=Gln && E3=Asn	0.017618
HlaPreSeq114=Asp && E6=Tyr	-0.014966
negative(HlaPreSeq45) && aromatic(E2)	-0.0165784
cyclic(HlaPreSeq67) && aromatic(E2)	-0.019233
aromatic(HlaPreSeq67) && aromatic(E2)	-0.0192277
aliphatic(HlaPreSeq71) && aromatic(E2)	-0.0199526
buried(HlaPreSeq71) && aromatic(E2)	-0.0199478
hydrophobic(HlaPreSeq71) && aromatic(E2)	-0.019943
HlaPreSeq45=Glu && E8=Leu	-0.0102922
HlaPreSeq71=Ala && E8=Leu	-0.0089974
HlaPreSeq24=Ser && E5=Val	-0.0083832
HlaPreSeq24=Ser && E7=Val	-0.0078718
HlaPreSeq45=Glu && E7=Val	-0.0089373
HlaPreSeq80=Asn && E7=Val	0.0196801
HlaPreSeq163=Glu && E7=Val	-0.0099278

HlaPreSeq113=His && E4=Tyr	-0.0149766
HlaPreSeq43=Pro && E9=Pro	-0.0093889
HlaPreSeq45=Glu && E2=Ser	-0.013035
HlaPreSeq65=Gln && E2=Ser	-0.0174542
HlaPreSeq66=Ile && E2=Ser	-0.0179883
HlaPreSeq163=Glu && E2=Ser	-0.0102672
HlaPreSeq24=Ser && E5=Lys	0.0174294
HlaPreSeq45=Glu && E5=Lys	0.0241922
HlaPreSeq66=Ile && E5=Lys	0.0154432
HlaPreSeq67=Tyr && E5=Lys	-0.0108784
HlaPreSeq71=Ala && E5=Lys	-0.0117269
HlaPreSeq97=Ser && E5=Lys	0.0215642
HlaPreSeq114=Asp && E5=Lys	-0.0150827
HlaPreSeq45=Glu && E6=Arg	0.0097844
HlaPreSeq80=Asn && E9=Ile	-0.0210264
HlaPreSeq114=Asp && E9=Ile	-0.0194018
HlaPreSeq43=Pro && E9=Gln	-0.0106104
HlaPreSeq138=Thr && E9=Gln	-0.0102421
HlaPreSeq24=Ser && E9=Tyr	0.0136096
HlaPreSeq66=Ile && E9=Tyr	0.0124121
HlaPreSeq71=Ala && E9=Tyr	-0.0203317
HlaPreSeq77=Ser && E9=Tyr	0.0190093
HlaPreSeq80=Asn && E9=Tyr	0.0222914
HlaPreSeq114=Asp && E9=Tyr	0.0197071
HlaPreSeq24=Ser && E7=Arg	0.0232199
HlaPreSeq45=Glu && E7=Arg	0.0187008
HlaPreSeq114=Asp && E7=Arg	0.0249844
HlaPreSeq97=Ser && E4=Trp	0.0103352
HlaPreSeq97=Ser && E6=Cys	0.0136533
HlaPreSeq24=Ser && E7=Trp	0.0179343
HlaPreSeq65=Gln && E7=Trp	0.0180841
HlaPreSeq24=Ser && E2=His	0.0182997
HlaPreSeq45=Glu && E2=His	0.0178199
HlaPreSeq113=His && E2=His	0.0118492
HlaPreSeq113=His && E3=His	-0.0098967
HD in Epitope[@4-5]	-0.011998
HlaPreSeq114=Asn && E6=Ala	0.00880039
HlaPreSeq114=Asn && E7=Lys	0.0160531
HlaPreSeq114=Asn && E8=Glu	0.0192662
HlaPreSeq114=Asn && E9=Ile	0.018388
HlaPreSeq114=Asn && E2=Val	-0.0123914
HlaPreSeq114=Asn && E2=Ile	-0.010186
HlaPreSeq114=Asn && E8=Ala	0.0186703
HlaPreSeq114=Asn && E9=Val	0.0202682
HlaPreSeq114=Asn && E4=Glu	-0.0153967
HlaPreSeq114=Asn && E7=Thr	-0.0219175
HlaPreSeq114=Asn && E3=Leu	-0.0159213

HlaPreSeq114=Asn && E9=Leu	-0.0251446
HlaPreSeq11=Ala	-0.0068648
HlaPreSeq67=Phe	-0.0146796
HlaPreSeq69=Thr	-0.0102596
HlaPreSeq70=Asn	-0.011586
HlaPreSeq71=Thr	-0.0125772
charged(HlaPreSeq9)	-0.0160482
medium(HlaPreSeq69)	-0.013705
polar(HlaPreSeq69)	-0.0157404
medium(HlaPreSeq70)	-0.0135371
HlaPreSeq67=Phe && E1=Glu	0.00828757
medium(HlaPreSeq69) && large(E:	-0.0143571
polar(HlaPreSeq69) && large(E1)	-0.0179874
negative(HlaPreSeq9) && negative	0.0114383
charged(HlaPreSeq9) && negative	0.0152723
aliphatic(HlaPreSeq11) && negativ	0.0118141
buried(HlaPreSeq11) && negative(	0.0118249
hydrophobic(HlaPreSeq11) && ne	0.0118338
medium(HlaPreSeq69) && negativ	0.0145114
polar(HlaPreSeq69) && negative(E	0.0138945
medium(HlaPreSeq70) && negativ	0.0144765
medium(HlaPreSeq71) && negativ	0.014466
negative(HlaPreSeq9) && charged	0.0069939
charged(HlaPreSeq9) && charged(	0.0132224
aliphatic(HlaPreSeq11) && polar(E	-0.0159398
negative(HlaPreSeq9) && aliphatic	0.0138588
charged(HlaPreSeq9) && aliphatic	0.0111426
aliphatic(HlaPreSeq11) && aliphatic	0.0163243
buried(HlaPreSeq11) && aliphatic(	0.0166252
hydrophobic(HlaPreSeq11) && ali	0.0168969
polar(HlaPreSeq69) && aliphatic(E	0.0188949
negative(HlaPreSeq9) && buried(E	0.0165486
charged(HlaPreSeq9) && buried(E:	0.0157449
aliphatic(HlaPreSeq11) && buried(	0.0146202
buried(HlaPreSeq11) && buried(E:	0.0147543
hydrophobic(HlaPreSeq11) && bu	0.0148365
negative(HlaPreSeq9) && hydroph	-0.0115419
charged(HlaPreSeq9) && hydroph	-0.0299304
aliphatic(HlaPreSeq11) && hydro	-0.0148215
buried(HlaPreSeq11) && hydroph	-0.015098
hydrophobic(HlaPreSeq11) && hyc	-0.0153267
medium(HlaPreSeq69) && hydro	-0.0153165
polar(HlaPreSeq69) && hydroph	-0.0208683
medium(HlaPreSeq70) && hydro	-0.015748
medium(HlaPreSeq71) && hydro	-0.0158285
medium(HlaPreSeq156) && hydro	-0.0108834
negative(HlaPreSeq156) && hydro	-0.0108767

negative(HlaPreSeq9) && large(E2)	0.00818477
charged(HlaPreSeq9) && large(E2)	0.0233891
medium(HlaPreSeq69) && large(E:	0.0109129
polar(HlaPreSeq69) && large(E2)	0.0115093
medium(HlaPreSeq70) && large(E:	0.0119726
medium(HlaPreSeq71) && large(E:	0.0123742
HlaPreSeq9=Asp && E3=Lys	0.0272819
HlaPreSeq11=Ala && E3=Lys	0.0336478
HlaPreSeq67=Phe && E3=Lys	0.0343765
HlaPreSeq69=Thr && E3=Lys	0.0333972
HlaPreSeq70=Asn && E3=Lys	0.0333929
HlaPreSeq71=Thr && E3=Lys	0.0333881
HlaPreSeq114=Asn && E3=Lys	0.024416
HlaPreSeq156=Asp && E3=Lys	0.0273788
charged(HlaPreSeq9) && large(E3)	0.0191333
negative(HlaPreSeq9) && positive(	0.0216471
charged(HlaPreSeq9) && positive(	0.023682
medium(HlaPreSeq156) && positiv	0.0243868
negative(HlaPreSeq156) && positiv	0.0243769
charged(HlaPreSeq9) && charged(	0.0241232
polar(HlaPreSeq69) && charged(E:	0.0224044
negative(HlaPreSeq9) && medium	-0.0109891
charged(HlaPreSeq9) && medium(	-0.0210293
polar(HlaPreSeq69) && negative(E	0.0121053
negative(HlaPreSeq9) && charged	0.011909
medium(HlaPreSeq156) && polar(	-0.0104286
negative(HlaPreSeq156) && polar(	-0.0104307
aliphatic(HlaPreSeq11) && mediur	-0.0130168
buried(HlaPreSeq11) && medium(	-0.0130363
hydrophobic(HlaPreSeq11) && me	-0.0130466
medium(HlaPreSeq69) && mediun	-0.013312
medium(HlaPreSeq70) && mediun	-0.013351
medium(HlaPreSeq71) && mediun	-0.0133861
medium(HlaPreSeq156) && mediu	-0.0103547
negative(HlaPreSeq156) && mediu	-0.0103573
HlaPreSeq11=Ala && E6=Lys	0.0105242
negative(HlaPreSeq9) && large(E6	0.0237737
charged(HlaPreSeq9) && large(E6)	0.00937057
charged(HlaPreSeq9) && polar(E6)	-0.0200537
HlaPreSeq156=Asp && E7=Glu	-0.0137089
HlaPreSeq11=Ala && E8=Ala	0.0168383
charged(HlaPreSeq9) && hydropho	-0.0189422
negative(HlaPreSeq9) && aliphatic	0.011763
medium(HlaPreSeq156) && alipha	-0.013221
negative(HlaPreSeq156) && alipha	-0.0132499
negative(HlaPreSeq9) && buried(E	0.0142423
aliphatic(HlaPreSeq11) && buried(	0.0265406

buried(HlaPreSeq11) && buried(E5)	0.0261961
hydrophobic(HlaPreSeq11) && buried(E5)	0.0256977
medium(HlaPreSeq69) && buried(E5)	-0.0114908
medium(HlaPreSeq70) && buried(E5)	-0.0122008
medium(HlaPreSeq71) && buried(E5)	-0.0128541
medium(HlaPreSeq156) && hydrophobic(E5)	-0.0095928
charged(HlaPreSeq9) && large(E9)	-0.0171963
negative(HlaPreSeq9) && medium(E9)	-0.0161355
charged(HlaPreSeq9) && medium(E9)	-0.0133338
medium(HlaPreSeq156) && medium(E9)	-0.0116782
negative(HlaPreSeq156) && medium(E9)	-0.0116806
HlaPreSeq69=Thr && E2=Thr	-0.0246978
HlaPreSeq70=Asn && E2=Thr	-0.0247092
HlaPreSeq71=Thr && E2=Thr	-0.0247205
charged(HlaPreSeq9) && medium(E9)	-0.0305936
aliphatic(HlaPreSeq11) && medium(E9)	-0.0207905
buried(HlaPreSeq11) && medium(E9)	-0.0210578
hydrophobic(HlaPreSeq11) && medium(E9)	-0.0212712
medium(HlaPreSeq69) && medium(E9)	-0.0312336
polar(HlaPreSeq69) && medium(E9)	-0.0439058
medium(HlaPreSeq70) && medium(E9)	-0.0316009
medium(HlaPreSeq71) && medium(E9)	-0.031697
charged(HlaPreSeq9) && polar(E2)	0.0111715
aliphatic(HlaPreSeq11) && polar(E2)	0.00218018
buried(HlaPreSeq11) && polar(E2)	0.0025945
hydrophobic(HlaPreSeq11) && polar(E2)	0.0030732
polar(HlaPreSeq69) && polar(E2)	0.00328764
medium(HlaPreSeq70) && polar(E2)	0.0007492
medium(HlaPreSeq71) && polar(E2)	0.0011687
HlaPreSeq67=Phe && E3=Asp	-0.0096468
polar(HlaPreSeq69) && negative(E2)	0.0180253
medium(HlaPreSeq156) && negative(E2)	-0.012325
negative(HlaPreSeq156) && negative(E2)	-0.0123243
HlaPreSeq11=Ala && E4=Thr	-0.0139353
HlaPreSeq67=Phe && E4=Thr	-0.0165098
HlaPreSeq114=Asn && E4=Thr	-0.0146355
HlaPreSeq9=Asp && E5=Leu	0.016991
HlaPreSeq69=Thr && E5=Leu	-0.0180737
HlaPreSeq70=Asn && E5=Leu	-0.0180807
HlaPreSeq71=Thr && E5=Leu	-0.0180877
medium(HlaPreSeq156) && buried(E5)	-0.0144843
negative(HlaPreSeq156) && buried(E5)	-0.0144912
negative(HlaPreSeq9) && large(E5)	0.00919545
aliphatic(HlaPreSeq11) && large(E5)	-0.0037564
buried(HlaPreSeq11) && large(E5)	-0.0030811
hydrophobic(HlaPreSeq11) && large(E5)	-0.0023717
HlaPreSeq9=Asp && E6=Leu	0.0189041

HlaPreSeq67=Phe && E6=Leu	-0.0130742
HlaPreSeq69=Thr && E6=Leu	-0.0196252
HlaPreSeq70=Asn && E6=Leu	-0.0195997
HlaPreSeq71=Thr && E6=Leu	-0.0195736
aliphatic(HlaPreSeq11) && small(E	-0.0216473
buried(HlaPreSeq11) && small(E7)	-0.0216071
hydrophobic(HlaPreSeq11) && sm	-0.0215631
medium(HlaPreSeq69) && small(E	-0.0168118
polar(HlaPreSeq69) && small(E7)	-0.0222904
medium(HlaPreSeq70) && small(E	-0.0167271
medium(HlaPreSeq71) && small(E	-0.0166874
negative(HlaPreSeq9) && medium	-0.0220854
charged(HlaPreSeq9) && medium(	-0.0207646
medium(HlaPreSeq156) && mediu	-0.0140836
negative(HlaPreSeq156) && mediu	-0.014074
medium(HlaPreSeq156) && negati	0.0114265
negative(HlaPreSeq156) && negat	0.0114297
HlaPreSeq69=Thr && E9=Trp	-0.0117856
HlaPreSeq70=Asn && E9=Trp	-0.011781
HlaPreSeq71=Thr && E9=Trp	-0.0117765
aliphatic(HlaPreSeq11) && cyclic(E	-0.021802
buried(HlaPreSeq11) && cyclic(E9)	-0.021353
hydrophobic(HlaPreSeq11) && cyc	-0.020863
aliphatic(HlaPreSeq11) && hydrop	0.0055179
buried(HlaPreSeq11) && hydrophc	0.00636086
hydrophobic(HlaPreSeq11) && hyc	0.00718782
HlaPreSeq9=Asp && E2=Pro	-0.0149902
HlaPreSeq67=Phe && E2=Pro	0.0171497
negative(HlaPreSeq9) && cyclic(E2	-0.0249811
charged(HlaPreSeq9) && cyclic(E2	-0.0455825
aliphatic(HlaPreSeq11) && cyclic(E	-0.0241662
buried(HlaPreSeq11) && cyclic(E2)	-0.0240631
hydrophobic(HlaPreSeq11) && cyc	-0.0239346
polar(HlaPreSeq69) && cyclic(E2)	-0.0206043
medium(HlaPreSeq156) && cyclic(	-0.0214041
negative(HlaPreSeq156) && cyclic(	-0.0214022
HlaPreSeq9=Asp && E3=Leu	-0.0133601
aliphatic(HlaPreSeq11) && aliphati	0.0119988
buried(HlaPreSeq11) && aliphatic(	0.0124738
hydrophobic(HlaPreSeq11) && aliq	0.0129257
medium(HlaPreSeq69) && buried(	-0.014159
polar(HlaPreSeq69) && buried(E3)	-0.0280143
medium(HlaPreSeq156) && buriec	-0.0182153
negative(HlaPreSeq156) && buriec	-0.0181987
negative(HlaPreSeq9) && small(E4	0.00994745
charged(HlaPreSeq9) && small(E4)	0.0102386
medium(HlaPreSeq69) && small(E	0.0144837

polar(HlaPreSeq69) && small(E4)	0.0113325
medium(HlaPreSeq70) && small(E	0.014851
medium(HlaPreSeq71) && small(E	0.0150497
negative(HlaPreSeq9) && cyclic(E5	-0.0159489
aliphatic(HlaPreSeq11) && mediur	0.0169306
buried(HlaPreSeq11) && medium(	0.0172303
hydrophobic(HlaPreSeq11) && me	0.0175119
HlaPreSeq114=Asn && E8=Leu	-0.0145094
HlaPreSeq156=Asp && E8=Leu	-0.0112879
aliphatic(HlaPreSeq11) && positiv	-0.0209971
buried(HlaPreSeq11) && positive(f	-0.0209853
hydrophobic(HlaPreSeq11) && po	-0.0209699
medium(HlaPreSeq69) && positiv	-0.0196901
polar(HlaPreSeq69) && positive(E1	-0.0178528
medium(HlaPreSeq70) && positiv	-0.0196883
medium(HlaPreSeq71) && positiv	-0.0196753
charged(HlaPreSeq9) && negativ	0.026697
medium(HlaPreSeq69) && negativ	0.030993
polar(HlaPreSeq69) && negative(E	0.0230417
medium(HlaPreSeq70) && negativ	0.031016
medium(HlaPreSeq71) && negativ	0.0310089
medium(HlaPreSeq156) && negati	0.0134701
negative(HlaPreSeq156) && negat	0.0134787
charged(HlaPreSeq9) && charged(	0.0267289
medium(HlaPreSeq69) && charge	0.0179482
polar(HlaPreSeq69) && charged(E:	0.0200013
medium(HlaPreSeq70) && charge	0.0178927
medium(HlaPreSeq71) && charge	0.017803
aliphatic(HlaPreSeq11) && hydrop	-0.0019033
HlaPreSeq67=Phe && E9=Ile	0.0163266
HlaPreSeq9=Asp && E2=Leu	0.0229472
HlaPreSeq156=Asp && E2=Leu	0.0146518
HlaPreSeq9=Asp && E6=Val	-0.011795
negative(HlaPreSeq9) && medium	-0.0215479
charged(HlaPreSeq9) && medium(	-0.0155688
medium(HlaPreSeq69) && mediun	-0.0166975
medium(HlaPreSeq70) && mediun	-0.0166183
medium(HlaPreSeq71) && mediun	-0.016537
medium(HlaPreSeq156) && mediu	-0.022005
negative(HlaPreSeq156) && mediu	-0.0220028
HlaPreSeq114=Asn && E3=Ser	-0.0120461
charged(HlaPreSeq9) && small(E3)	-0.0254002
medium(HlaPreSeq156) && small(	-0.018582
negative(HlaPreSeq156) && small(	-0.0185707
charged(HlaPreSeq9) && aromatic	0.0120666
medium(HlaPreSeq156) && buriec	0.0142371
negative(HlaPreSeq156) && buriec	0.0142433

polar(HlaPreSeq69) && large(E4)	-0.0180855
negative(HlaPreSeq9) && charged	0.0178031
medium(HlaPreSeq69) && charged	0.0183499
polar(HlaPreSeq69) && charged(E	0.0274997
medium(HlaPreSeq70) && charged	0.0186614
medium(HlaPreSeq71) && charged	0.0188026
charged(HlaPreSeq9) && small(E5)	-0.0224806
HlaPreSeq9=Asp && E6=Thr	-0.0144532
HlaPreSeq114=Asn && E6=Thr	0.0110764
HlaPreSeq156=Asp && E6=Thr	-0.0161518
aliphatic(HlaPreSeq11) && aliphatic	-0.0204836
buried(HlaPreSeq11) && aliphatic	-0.0201453
hydrophobic(HlaPreSeq11) && aliq	-0.0197903
medium(HlaPreSeq156) && alpha	-0.0184863
negative(HlaPreSeq156) && alpha	-0.0184694
negative(HlaPreSeq9) && buried(E	0.00416968
HlaPreSeq69=Thr && E8=Gly	-0.0116674
HlaPreSeq70=Asn && E8=Gly	-0.0116509
HlaPreSeq71=Thr && E8=Gly	-0.0116344
HlaPreSeq69=Thr && E5=Ile	0.00967841
HlaPreSeq70=Asn && E5=Ile	0.0096833
HlaPreSeq71=Thr && E5=Ile	0.00968799
charged(HlaPreSeq9) && small(E6)	-0.0109225
medium(HlaPreSeq69) && small(E	0.0139595
medium(HlaPreSeq70) && small(E	0.0140516
medium(HlaPreSeq71) && small(E	0.0141417
HlaPreSeq11=Ala && E7=Gln	0.0163279
HlaPreSeq67=Phe && E3=Gly	-0.0132571
medium(HlaPreSeq69) && positive	0.0200629
medium(HlaPreSeq70) && positive	0.0201007
medium(HlaPreSeq71) && positive	0.0201348
medium(HlaPreSeq156) && positiv	0.0193971
negative(HlaPreSeq156) && positi	0.0193957
HlaPreSeq67=Phe && E2=Glu	-0.0110245
HlaPreSeq69=Thr && E2=Glu	0.0351366
HlaPreSeq70=Asn && E2=Glu	0.0351017
HlaPreSeq71=Thr && E2=Glu	0.0350548
HlaPreSeq156=Asp && E2=Glu	0.011306
HlaPreSeq67=Phe && E6=Pro	-0.0183189
negative(HlaPreSeq9) && cyclic(E6	-0.0143
polar(HlaPreSeq69) && aromatic(E	0.0167247
medium(HlaPreSeq70) && aromati	0.0118935
medium(HlaPreSeq71) && aromati	0.011902
charged(HlaPreSeq9) && aromatic	0.0156828
HlaPreSeq69=Thr && E9=Tyr	0.0178118
HlaPreSeq70=Asn && E9=Tyr	0.0177504
HlaPreSeq71=Thr && E9=Tyr	0.0176919

HlaPreSeq114=Asn && E9=Tyr	-0.0177395
HlaPreSeq9=Asp && E5=Val	-0.0109846
HlaPreSeq69=Thr && E8=Lys	-0.0168513
HlaPreSeq70=Asn && E8=Lys	-0.0168449
HlaPreSeq71=Thr && E8=Lys	-0.0168384
medium(HlaPreSeq69) && positive	-0.0243979
medium(HlaPreSeq70) && positive	-0.0243803
medium(HlaPreSeq71) && positive	-0.0243631
medium(HlaPreSeq156) && positive	-0.0131795
negative(HlaPreSeq156) && positive	-0.0131778
HlaPreSeq11=Ala && E1=Val	-0.0168146
HlaPreSeq67=Phe && E1=Val	-0.0176706
negative(HlaPreSeq9) && aromatic	-0.0098508
charged(HlaPreSeq9) && aromatic	-0.019397
aliphatic(HlaPreSeq11) && aromatic	-0.0218081
buried(HlaPreSeq11) && aromatic	-0.0217809
hydrophobic(HlaPreSeq11) && aromatic	-0.0217517
polar(HlaPreSeq69) && aromatic(E	-0.0103019
medium(HlaPreSeq156) && aromatic	-0.0134383
negative(HlaPreSeq156) && aromatic	-0.0134374
medium(HlaPreSeq156) && positive	-0.0131205
negative(HlaPreSeq156) && positive	-0.0131194
HlaPreSeq11=Ala && E3=Ala	0.00862664
HlaPreSeq114=Asn && E3=Ala	0.0106981
HlaPreSeq114=Asn && E5=Glu	-0.0155434
HlaPreSeq156=Asp && E5=Glu	-0.0114789
aliphatic(HlaPreSeq11) && charged	-0.0180631
buried(HlaPreSeq11) && charged(l	-0.0180209
hydrophobic(HlaPreSeq11) && charged	-0.0179787
polar(HlaPreSeq69) && charged(E	-0.0245053
HlaPreSeq11=Ala && E2=Gln	0.025457
HlaPreSeq69=Thr && E2=Gln	0.0162065
HlaPreSeq70=Asn && E2=Gln	0.0162235
HlaPreSeq71=Thr && E2=Gln	0.0162406
HlaPreSeq114=Asn && E2=Gln	0.0256185
HlaPreSeq11=Ala && E7=Val	0.021208
HlaPreSeq67=Phe && E7=Val	0.0116903
HlaPreSeq69=Thr && E7=Val	0.0125256
HlaPreSeq70=Asn && E7=Val	0.0125364
HlaPreSeq71=Thr && E7=Val	0.0125474
HlaPreSeq11=Ala && E9=Ala	-0.0164468
HlaPreSeq67=Phe && E9=Ala	-0.0140569
HlaPreSeq11=Ala && E1=Trp	0.011076
HlaPreSeq67=Phe && E5=Phe	-0.0156195
negative(HlaPreSeq9) && aromatic	-0.0127148
HlaPreSeq11=Ala && E1=Lys	-0.018188
HlaPreSeq69=Thr && E1=Lys	-0.0196353

HlaPreSeq70=Asn && E1=Lys	-0.0196381
HlaPreSeq71=Thr && E1=Lys	-0.0196408
HlaPreSeq9=Asp && E2=Arg	0.0127133
HlaPreSeq69=Thr && E2=Arg	-0.0198899
HlaPreSeq70=Asn && E2=Arg	-0.0198739
HlaPreSeq71=Thr && E2=Arg	-0.0198582
HlaPreSeq9=Asp && E5=Lys	0.0227415
HlaPreSeq67=Phe && E5=Lys	0.026955
HlaPreSeq69=Thr && E5=Lys	0.0173447
HlaPreSeq70=Asn && E5=Lys	0.0173448
HlaPreSeq71=Thr && E5=Lys	0.0173444
HlaPreSeq114=Asn && E5=Lys	0.0217164
HlaPreSeq156=Asp && E5=Lys	0.0224492
HlaPreSeq9=Asp && E7=Trp	0.0123336
HlaPreSeq11=Ala && E2=Val	-0.0091092
HlaPreSeq11=Ala && E9=Pro	-0.0129222
HlaPreSeq114=Asn && E4=Gln	0.0167174
HlaPreSeq11=Ala && E2=Tyr	-0.0163809
HlaPreSeq12=Met && E2=Tyr	-0.0155636
HlaPreSeq67=Phe && E2=Tyr	-0.0136823
HlaPreSeq69=Thr && E2=Tyr	-0.0175401
HlaPreSeq70=Asn && E2=Tyr	-0.0175379
HlaPreSeq71=Thr && E2=Tyr	-0.0175357
HlaPreSeq114=Asn && E2=Tyr	-0.0104109
HlaPreSeq156=Asp && E2=Tyr	-0.0095073
HlaPreSeq11=Ala && E3=Arg	-0.0154461
HlaPreSeq69=Thr && E3=Arg	-0.0138154
HlaPreSeq70=Asn && E3=Arg	-0.0138133
HlaPreSeq71=Thr && E3=Arg	-0.0138113
HlaPreSeq67=Phe && E8=Glu	0.0119939
HlaPreSeq67=Phe && E7=Ile	-0.0132569
HlaPreSeq11=Ala && E3=Asn	0.0234774
HlaPreSeq69=Thr && E3=Asn	0.015497
HlaPreSeq70=Asn && E3=Asn	0.0154978
HlaPreSeq71=Thr && E3=Asn	0.0154985
HlaPreSeq11=Ala && E2=Gly	-0.0116678
charged(HlaPreSeq9) && small(E2)	-0.0103568
aliphatic(HlaPreSeq11) && small(E	0.0229786
buried(HlaPreSeq11) && small(E2)	0.0229274
hydrophobic(HlaPreSeq11) && sm	0.022854
polar(HlaPreSeq69) && small(E2)	0.0150372
aliphatic(HlaPreSeq11) && positiv	0.0161696
buried(HlaPreSeq11) && positive(I	0.0162253
hydrophobic(HlaPreSeq11) && po	0.0162821
HlaPreSeq156=Asp && E6=Tyr	0.0117693
HlaPreSeq69=Thr && E8=Arg	-0.0161457
HlaPreSeq70=Asn && E8=Arg	-0.0161469

HlaPreSeq71=Thr && E8=Arg	-0.0161481
HlaPreSeq69=Thr && E8=Thr	0.018011
HlaPreSeq70=Asn && E8=Thr	0.0180146
HlaPreSeq71=Thr && E8=Thr	0.0180181
HlaPreSeq114=Asn && E8=Thr	0.0147866
HlaPreSeq114=Asn && E8=Pro	-0.0162583
HlaPreSeq11=Ala && E2=Ala	0.0394295
HlaPreSeq67=Phe && E2=Ala	0.0160614
HlaPreSeq69=Thr && E2=Ala	0.0168576
HlaPreSeq70=Asn && E2=Ala	0.0168624
HlaPreSeq71=Thr && E2=Ala	0.0168663
HlaPreSeq114=Asn && E2=Ala	0.0286032
HlaPreSeq67=Phe && E1=Ala	0.0106598
HlaPreSeq11=Ala && E1=Ser	-0.0108553
HlaPreSeq67=Phe && E6=Ala	0.0111791
HlaPreSeq12=Met && E3=Met	-0.0123626
HlaPreSeq69=Thr && E3=Met	-0.0128406
HlaPreSeq70=Asn && E3=Met	-0.0128389
HlaPreSeq71=Thr && E3=Met	-0.0128373
HlaPreSeq67=Phe && E6=His	-0.0107951
HlaPreSeq11=Ala && E3=Phe	-0.0133034
small(HlaPreSeq67) && aliphatic(E	0.0157851
small(HlaPreSeq131) && small(E1)	-0.0175122
HlaPreSeq46=Ala && E2=Gln	0.0142682
HlaPreSeq95=Trp && E2=Gln	0.0142472
HlaPreSeq103=Leu && E2=Gln	0.0140583
HlaPreSeq131=Ser && E2=Gln	0.013121
HlaPreSeq145=Leu && E2=Gln	0.013288
medium(HlaPreSeq24) && large(E:	0.0235671
medium(HlaPreSeq41) && large(E:	0.0130414
polar(HlaPreSeq41) && large(E2)	0.013044
small(HlaPreSeq67) && large(E2)	0.0290707
polar(HlaPreSeq67) && large(E2)	0.0519515
hydrophobic(HlaPreSeq74) && lar	-0.0067505
large(HlaPreSeq103) && large(E2)	-0.0166644
buried(HlaPreSeq116) && large(E2)	0.0174257
small(HlaPreSeq67) && polar(E2)	0.0200688
polar(HlaPreSeq67) && polar(E2)	0.0371207
large(HlaPreSeq103) && polar(E2)	-0.0164605
buried(HlaPreSeq116) && polar(E2)	0.0236457
HlaPreSeq41=Thr && E3=Gly	0.0137669
HlaPreSeq67=Ser && E3=Gly	0.0163097
HlaPreSeq103=Leu && E3=Gly	-0.0114517
large(HlaPreSeq103) && hydrophc	-0.0140909
buried(HlaPreSeq116) && hydropt	-0.0185715
small(HlaPreSeq67) && cyclic(E5)	0.00948134
hydrophobic(HlaPreSeq74) && cyc	0.0141509

cyclic(HlaPreSeq95) && cyclic(E5)	0.00997123
aromatic(HlaPreSeq95) && cyclic(E5)	0.0099711
hydrophobic(HlaPreSeq74) && aromatic(E5)	0.00848315
cyclic(HlaPreSeq95) && aromatic(E5)	0.0127606
aromatic(HlaPreSeq95) && aromatic(E5)	0.0127601
buried(HlaPreSeq116) && buried(E5)	0.018112
small(HlaPreSeq131) && buried(E5)	0.0142846
cyclic(HlaPreSeq95) && hydrophobic(E5)	0.016442
aromatic(HlaPreSeq95) && hydrophobic(E5)	0.0164559
medium(HlaPreSeq41) && large(E5)	-0.0121386
polar(HlaPreSeq41) && large(E5)	-0.0121559
hydrophobic(HlaPreSeq74) && large(E5)	-0.0176267
HlaPreSeq131=Ser && E6=Thr	0.01686
aliphatic(HlaPreSeq46) && medium(E5)	0.0164181
buried(HlaPreSeq46) && medium(E5)	0.016426
hydrophobic(HlaPreSeq46) && medium(E5)	0.0164341
small(HlaPreSeq46) && medium(E5)	0.0164421
buried(HlaPreSeq116) && medium(E5)	0.0249588
small(HlaPreSeq131) && medium(E5)	0.00825144
medium(HlaPreSeq24) && polar(E5)	-0.0117069
polar(HlaPreSeq67) && polar(E6)	-0.0095053
polar(HlaPreSeq67) && cyclic(E7)	-0.0157807
large(HlaPreSeq103) && hydrophobic(E5)	0.00812265
buried(HlaPreSeq116) && hydrophobic(E5)	0.0243181
aliphatic(HlaPreSeq46) && large(E5)	0.0175901
buried(HlaPreSeq46) && large(E8)	0.0175962
hydrophobic(HlaPreSeq46) && large(E5)	0.0176025
small(HlaPreSeq46) && large(E8)	0.017609
small(HlaPreSeq67) && large(E8)	-0.0057928
buried(HlaPreSeq116) && large(E8)	0.017327
HlaPreSeq67=Ser && E9=Ile	-0.0085906
HlaPreSeq95=Trp && E9=Ile	0.0231027
small(HlaPreSeq67) && aliphatic(E5)	-0.0285662
polar(HlaPreSeq67) && aliphatic(E5)	-0.0102697
hydrophobic(HlaPreSeq74) && aliphatic(E5)	-0.0234257
cyclic(HlaPreSeq95) && aliphatic(E5)	0.0117692
aromatic(HlaPreSeq95) && aliphatic(E5)	0.0117556
small(HlaPreSeq131) && aliphatic(E5)	-0.0146612
small(HlaPreSeq67) && buried(E9)	-0.0198478
polar(HlaPreSeq67) && buried(E9)	-0.0130227
hydrophobic(HlaPreSeq74) && buried(E9)	-0.0069529
large(HlaPreSeq103) && buried(E9)	0.0260097
buried(HlaPreSeq116) && buried(E9)	0.0197263
medium(HlaPreSeq24) && hydrophobic(E5)	-0.0090444
medium(HlaPreSeq24) && large(E5)	-0.0199767
medium(HlaPreSeq41) && large(E5)	-0.0159499
polar(HlaPreSeq41) && large(E9)	-0.0160307

polar(HlaPreSeq67) && large(E9)	-0.0190254
buried(HlaPreSeq116) && large(E9)	-0.0198997
HlaPreSeq67=Ser && E1=Val	0.0112644
polar(HlaPreSeq67) && medium(E	0.0170868
buried(HlaPreSeq116) && medium	0.0262109
small(HlaPreSeq131) && medium(	0.0135744
HlaPreSeq103=Leu && E2=Gly	-0.0169156
buried(HlaPreSeq116) && aliphatic	-0.0131099
medium(HlaPreSeq24) && hydrop	-0.0171314
medium(HlaPreSeq41) && hydrop	-0.0116682
polar(HlaPreSeq41) && hydrophok	-0.01167
small(HlaPreSeq67) && hydrophok	-0.0151444
polar(HlaPreSeq67) && hydrophok	-0.0393647
large(HlaPreSeq103) && hydrophc	0.0131891
buried(HlaPreSeq116) && hydropt	-0.0129234
medium(HlaPreSeq24) && small(E	-0.0111297
polar(HlaPreSeq67) && small(E2)	-0.0124949
hydrophobic(HlaPreSeq74) && sm	0.0179772
small(HlaPreSeq131) && small(E2)	0.0138216
medium(HlaPreSeq24) && buried(	-0.0101392
medium(HlaPreSeq41) && buried(	-0.0125461
polar(HlaPreSeq41) && buried(E3)	-0.0125684
small(HlaPreSeq67) && buried(E3)	-0.0103122
polar(HlaPreSeq67) && buried(E3)	-0.0102302
medium(HlaPreSeq24) && large(E:	-0.0104439
medium(HlaPreSeq41) && large(E:	-0.0132141
polar(HlaPreSeq41) && large(E3)	-0.0132504
small(HlaPreSeq67) && large(E3)	-0.0100801
polar(HlaPreSeq67) && large(E3)	-0.0074503
hydrophobic(HlaPreSeq74) && lar	-0.011261
large(HlaPreSeq103) && large(E3)	-0.0123324
hydrophobic(HlaPreSeq74) && cyc	-0.0165217
hydrophobic(HlaPreSeq74) && arc	-0.0148786
hydrophobic(HlaPreSeq74) && hyc	-0.0218354
polar(HlaPreSeq67) && aliphatic(E	-0.0051761
small(HlaPreSeq67) && cyclic(E6)	0.0223824
polar(HlaPreSeq67) && cyclic(E6)	0.00902218
large(HlaPreSeq103) && cyclic(E6)	-0.0297731
buried(HlaPreSeq116) && cyclic(E6)	-0.0189774
aliphatic(HlaPreSeq46) && aromat	-0.0135352
buried(HlaPreSeq46) && aromatic	-0.0135352
hydrophobic(HlaPreSeq46) && arc	-0.0135351
small(HlaPreSeq46) && aromatic(E	-0.0135352
small(HlaPreSeq67) && aromatic(E	0.0127101
large(HlaPreSeq103) && aromatic(	-0.0191164
buried(HlaPreSeq116) && aromati	-0.0178513
small(HlaPreSeq131) && aromatic	-0.0204168

polar(HlaPreSeq67) && large(E6)	-0.0144626
large(HlaPreSeq103) && large(E6)	-0.0131129
buried(HlaPreSeq116) && large(E6)	-0.0317454
small(HlaPreSeq131) && large(E6)	-0.021383
HlaPreSeq131=Ser && E7=Gln	0.0173012
large(HlaPreSeq103) && polar(E7)	-0.0114217
buried(HlaPreSeq116) && polar(E7)	-0.0142095
hydrophobic(HlaPreSeq74) && cyc	0.00744915
aliphatic(HlaPreSeq46) && aromat	0.0129156
buried(HlaPreSeq46) && aromatic	0.0129187
hydrophobic(HlaPreSeq46) && arc	0.0129219
small(HlaPreSeq46) && aromatic(E	0.0129251
hydrophobic(HlaPreSeq74) && arc	0.0161846
medium(HlaPreSeq24) && buried(	-0.0134186
small(HlaPreSeq67) && buried(E8)	0.0112836
medium(HlaPreSeq41) && small(E	0.0124698
polar(HlaPreSeq41) && small(E9)	0.0124684
small(HlaPreSeq67) && small(E9)	0.0103098
HlaPreSeq103=Leu && E1=Ala	0.0146718
medium(HlaPreSeq24) && cyclic(E	-0.017595
small(HlaPreSeq67) && cyclic(E2)	-0.0216445
polar(HlaPreSeq67) && cyclic(E2)	-0.0181842
hydrophobic(HlaPreSeq74) && cyc	0.007691
large(HlaPreSeq103) && cyclic(E2)	0.0181401
small(HlaPreSeq131) && cyclic(E2)	0.00839957
medium(HlaPreSeq24) && aromat	-0.0135528
large(HlaPreSeq103) && aromatic(	-0.0105721
medium(HlaPreSeq24) && buried(	-0.0158431
medium(HlaPreSeq41) && buried(	-0.0151792
polar(HlaPreSeq41) && buried(E2)	-0.0151806
buried(HlaPreSeq116) && buried(E	-0.0133775
HlaPreSeq131=Ser && E3=Asp	0.0143708
small(HlaPreSeq67) && medium(E	0.014224
hydrophobic(HlaPreSeq74) && me	0.00790099
buried(HlaPreSeq116) && medium	0.0183945
small(HlaPreSeq67) && negative(E	0.0131591
polar(HlaPreSeq67) && negative(E	0.0192896
buried(HlaPreSeq116) && negativ	0.0143281
small(HlaPreSeq131) && negative(	0.0068826
large(HlaPreSeq103) && charged(E	-0.0114995
large(HlaPreSeq103) && polar(E3)	0.0109343
buried(HlaPreSeq116) && polar(E3)	0.0286848
cyclic(HlaPreSeq95) && buried(E4)	0.0105683
aromatic(HlaPreSeq95) && buried	0.0105688
large(HlaPreSeq103) && charged(E	-0.0180897
buried(HlaPreSeq116) && charged	-0.0131193
medium(HlaPreSeq41) && buried(	-0.0127601

polar(HIaPreSeq41) && buried(E7)	-0.0127701
large(HIaPreSeq103) && buried(E7)	0.00387159
buried(HIaPreSeq116) && buried(E7)	0.0229449
medium(HIaPreSeq24) && cyclic(E7)	-0.0163469
buried(HIaPreSeq116) && cyclic(E7)	0.0156698
hydrophobic(HIaPreSeq74) && arc	0.00999758
small(HIaPreSeq131) && aromatic	0.00934706
polar(HIaPreSeq67) && large(E1)	-0.0176578
hydrophobic(HIaPreSeq74) && positive	-0.0128368
HIaPreSeq74=Tyr && E2=Leu	-0.0247277
HIaPreSeq131=Ser && E2=Leu	-0.0264223
large(HIaPreSeq103) && aliphatic	0.0106401
buried(HIaPreSeq116) && aliphatic	0.0229241
small(HIaPreSeq131) && aliphatic	0.0186493
large(HIaPreSeq103) && small(E7)	-0.0152292
buried(HIaPreSeq116) && small(E7)	-0.0121187
HIaPreSeq24=Thr && E8=Val	-0.0156141
hydrophobic(HIaPreSeq74) && medium	-0.0157144
large(HIaPreSeq103) && medium	-0.0090395
buried(HIaPreSeq116) && medium	0.0230657
polar(HIaPreSeq67) && medium(E7)	-0.0171176
large(HIaPreSeq103) && medium	0.0201559
buried(HIaPreSeq116) && medium	0.0116061
hydrophobic(HIaPreSeq74) && small	0.0142363
aliphatic(HIaPreSeq46) && buried	-0.0137402
buried(HIaPreSeq46) && buried(E6)	-0.013728
hydrophobic(HIaPreSeq46) && buried	-0.0137157
small(HIaPreSeq46) && buried(E6)	-0.0137034
polar(HIaPreSeq67) && buried(E6)	-0.0162693
cyclic(HIaPreSeq95) && buried(E6)	0.00725528
aromatic(HIaPreSeq95) && buried	0.00726511
HIaPreSeq67=Ser && E8=Arg	-0.0165446
small(HIaPreSeq67) && positive(E6)	-0.0151496
polar(HIaPreSeq67) && positive(E6)	-0.0145826
large(HIaPreSeq103) && positive(E6)	0.0105276
HIaPreSeq131=Ser && E1=Lys	-0.0164013
HIaPreSeq67=Ser && E2=Thr	-0.0112939
medium(HIaPreSeq24) && medium	-0.01844
small(HIaPreSeq67) && medium(E6)	-0.0160408
polar(HIaPreSeq67) && medium(E6)	-0.0409744
buried(HIaPreSeq116) && medium	-0.0104524
small(HIaPreSeq131) && medium	-0.0150997
HIaPreSeq41=Thr && E3=Asn	0.0115231
HIaPreSeq67=Ser && E3=Asn	0.0110737
HIaPreSeq67=Ser && E4=Thr	0.0101439
cyclic(HIaPreSeq95) && small(E6)	0.0130735
aromatic(HIaPreSeq95) && small(E6)	0.0130756

buried(HlaPreSeq116) && small(E	0.0167252
HlaPreSeq74=Tyr && E7=Val	0.0133774
HlaPreSeq103=Leu && E7=Val	0.0235389
aliphatic(HlaPreSeq46) && mediur	-0.0113765
buried(HlaPreSeq46) && medium(	-0.0113716
hydrophobic(HlaPreSeq46) && me	-0.0113666
small(HlaPreSeq46) && medium(E	-0.0113615
large(HlaPreSeq103) && medium(l	0.0162554
HlaPreSeq74=Tyr && E4=Gly	0.0142768
hydrophobic(HlaPreSeq74) && aliç	0.0159355
small(HlaPreSeq131) && aliphatic(	0.0140654
large(HlaPreSeq103) && small(E4)	-0.0150048
large(HlaPreSeq103) && negative(	0.024251
medium(HlaPreSeq41) && chargec	-0.0117421
polar(HlaPreSeq41) && charged(E!	-0.0117456
medium(HlaPreSeq24) && polar(E	-0.0127284
small(HlaPreSeq67) && polar(E5)	-0.0140666
cyclic(HlaPreSeq95) && polar(E5)	-0.0150286
aromatic(HlaPreSeq95) && polar(E	-0.0150204
HlaPreSeq74=Tyr && E7=Glu	0.00746618
HlaPreSeq103=Leu && E7=Glu	0.0110604
large(HlaPreSeq103) && negative(	0.0246643
small(HlaPreSeq131) && charged(l	-0.0073535
buried(HlaPreSeq116) && positive	-0.0135549
large(HlaPreSeq103) && charged(f	-0.0174003
buried(HlaPreSeq116) && charged	-0.0144903
HlaPreSeq24=Thr && E2=Glu	0.0278463
HlaPreSeq41=Thr && E2=Glu	0.0341042
HlaPreSeq67=Ser && E2=Glu	0.0497314
HlaPreSeq74=Tyr && E2=Glu	0.0330121
medium(HlaPreSeq24) && negativ	0.0255331
medium(HlaPreSeq41) && negativ	0.0355978
polar(HlaPreSeq41) && negative(E	0.0355551
small(HlaPreSeq67) && negative(E	0.0489283
polar(HlaPreSeq67) && negative(E	0.0291102
hydrophobic(HlaPreSeq74) && neç	0.0238976
large(HlaPreSeq103) && negative(	-0.0113123
medium(HlaPreSeq24) && chargec	0.0213102
medium(HlaPreSeq41) && chargec	0.0135303
polar(HlaPreSeq41) && charged(E:	0.0134631
aliphatic(HlaPreSeq46) && chargec	-0.0150349
buried(HlaPreSeq46) && charged(l	-0.0150341
hydrophobic(HlaPreSeq46) && cha	-0.0150333
small(HlaPreSeq46) && charged(E:	-0.0150325
small(HlaPreSeq67) && charged(E:	0.01854
polar(HlaPreSeq67) && charged(E:	0.0414596
large(HlaPreSeq103) && charged(f	-0.0230546

HlaPreSeq103=Leu && E6=Pro	-0.0106391
small(HlaPreSeq67) && positive(E	-0.0091963
polar(HlaPreSeq67) && positive(E	-0.0103386
hydrophobic(HlaPreSeq74) && po	-0.0081554
large(HlaPreSeq103) && positive(E	-0.0090689
small(HlaPreSeq131) && positive(I	-0.0078192
HlaPreSeq103=Leu && E5=Glu	0.0144172
HlaPreSeq95=Trp && E6=Ala	0.0112146
cyclic(HlaPreSeq95) && aliphatic(E	0.0133278
aromatic(HlaPreSeq95) && aliphat	0.0133409
HlaPreSeq67=Ser && E8=Asp	0.00947357
HlaPreSeq131=Ser && E1=Ser	-0.0150934
HlaPreSeq67=Ser && E8=Leu	0.0119305
HlaPreSeq103=Leu && E8=Leu	-0.0126033
HlaPreSeq95=Trp && E3=Ala	0.0124768
HlaPreSeq74=Tyr && E6=Leu	-0.0157392
HlaPreSeq131=Ser && E6=Leu	-0.0185525
medium(HlaPreSeq41) && positive	-0.021547
polar(HlaPreSeq41) && positive(E	-0.0215479
small(HlaPreSeq67) && positive(E	-0.0293584
polar(HlaPreSeq67) && positive(E	0.0138418
hydrophobic(HlaPreSeq74) && po	-0.0209006
large(HlaPreSeq103) && positive(E	-0.0116867
small(HlaPreSeq131) && positive(I	0.0081046
HlaPreSeq131=Ser && E7=Thr	-0.0197965
HlaPreSeq67=Ser && E9=Leu	-0.0198233
HlaPreSeq74=Tyr && E9=Leu	-0.0137172
HlaPreSeq95=Trp && E9=Leu	-0.0224305
small(HlaPreSeq67) && negative(E	0.0175437
HlaPreSeq74=Tyr && E6=Arg	-0.0180378
HlaPreSeq103=Leu && E6=Arg	-0.0144267
large(HlaPreSeq103) && positive(E	-0.0218712
buried(HlaPreSeq116) && positive	-0.0153489
hydrophobic(HlaPreSeq74) && po	-0.0124921
large(HlaPreSeq103) && positive(E	-0.0133158
HlaPreSeq103=Leu && E7=Lys	-0.0107638
large(HlaPreSeq103) && positive(E	-0.0104104
buried(HlaPreSeq116) && positive	-0.0082057
medium(HlaPreSeq24) && cyclic(E	-0.0140569
aliphatic(HlaPreSeq46) && cyclic(E	0.0120188
buried(HlaPreSeq46) && cyclic(E9)	0.0120467
hydrophobic(HlaPreSeq46) && cyc	0.0120749
small(HlaPreSeq46) && cyclic(E9)	0.0121035
small(HlaPreSeq67) && cyclic(E9)	0.0260804
polar(HlaPreSeq67) && cyclic(E9)	0.00455597
hydrophobic(HlaPreSeq74) && cyc	0.0175612
cyclic(HlaPreSeq95) && cyclic(E9)	-0.0131557

aromatic(HlaPreSeq95) && cyclic(E	-0.0131538
small(HlaPreSeq131) && cyclic(E9)	0.00963829
HlaPreSeq67=Ser && E3=Arg	-0.0085282
HlaPreSeq74=Tyr && E3=Arg	-0.0102619
HlaPreSeq131=Ser && E3=Arg	-0.0084911
HlaPreSeq131=Ser && E6=Asn	-0.0166345
large(HlaPreSeq103) && cyclic(E3)	-0.0142747
HlaPreSeq103=Leu && E4=Asp	0.0187027
HlaPreSeq131=Ser && E4=Asp	-0.0111461
medium(HlaPreSeq24) && negativ	-0.0134159
polar(HlaPreSeq67) && charged(E'	-0.0139785
hydrophobic(HlaPreSeq74) && cha	0.0123345
HlaPreSeq74=Tyr && E5=Leu	-0.0164709
HlaPreSeq103=Leu && E5=Leu	0.0152816
HlaPreSeq131=Ser && E5=Leu	-0.0152855
small(HlaPreSeq131) && aromatic	0.00845219
HlaPreSeq74=Tyr && E4=Glu	0.0121685
HlaPreSeq131=Ser && E4=Glu	0.00629829
HlaPreSeq67=Ser && E5=Ala	-0.0118367
HlaPreSeq67=Ser && E6=His	0.00962087
HlaPreSeq67=Ser && E2=Pro	-0.0157624
HlaPreSeq103=Leu && E2=Pro	0.0290342
HlaPreSeq131=Ser && E2=Pro	0.0104788
HlaPreSeq103=Leu && E4=Lys	-0.0138862
polar(HlaPreSeq67) && positive(E'	-0.0071852
HlaPreSeq67=Ser && E4=Pro	-0.0149853
HlaPreSeq74=Tyr && E5=Asn	-0.0158805
HlaPreSeq131=Ser && E5=Asn	-0.0193769
HlaPreSeq74=Tyr && E9=Val	-0.0101295
HlaPreSeq74=Tyr && E2=Ala	0.0203462
HlaPreSeq95=Trp && E2=Ala	0.0118708
HlaPreSeq103=Leu && E2=Ala	0.0195545
HlaPreSeq131=Ser && E2=Ala	0.0214055
HlaPreSeq103=Leu && E8=Thr	-0.0119466
HlaPreSeq67=Ser && E9=Tyr	0.0261696
HlaPreSeq74=Tyr && E9=Tyr	0.0161339
HlaPreSeq131=Ser && E9=Tyr	0.0114376
aliphatic(HlaPreSeq46) && arom	0.0142408
buried(HlaPreSeq46) && aromatic	0.0142721
hydrophobic(HlaPreSeq46) && arc	0.0143037
small(HlaPreSeq46) && aromatic(E	0.0143356
small(HlaPreSeq67) && aromatic(E	0.0251389
polar(HlaPreSeq67) && aromatic(E	0.00602685
hydrophobic(HlaPreSeq74) && arc	0.0212474
cyclic(HlaPreSeq95) && aromatic(E	-0.012471
aromatic(HlaPreSeq95) && aroma	-0.0124687
small(HlaPreSeq131) && aromatic	0.0148226

HlaPreSeq131=Ser && E6=Gly	0.0177598
HlaPreSeq74=Tyr && E6=Gln	0.024342
HlaPreSeq131=Ser && E6=Gln	0.0238119
HlaPreSeq24=Thr && E2=Arg	0.0146657
HlaPreSeq67=Ser && E2=Arg	-0.0183704
HlaPreSeq74=Tyr && E2=Arg	-0.0279983
HlaPreSeq67=Ser && E7=Asn	0.0121843
HlaPreSeq103=Leu && E3=Ser	0.00686182
HlaPreSeq74=Tyr && E6=Trp	0.0133626
HlaPreSeq74=Tyr && E3=Leu	0.0267585
HlaPreSeq131=Ser && E3=Leu	0.0260545
HlaPreSeq67=Cys && E2=Arg	0.029309
HlaPreSeq116=Phe && E2=Arg	0.0131493
cyclic(HlaPreSeq97) && buried(E3)	-0.0159928
aromatic(HlaPreSeq97) && buried	-0.0159765
cyclic(HlaPreSeq97) && polar(E6)	0.0171715
aromatic(HlaPreSeq97) && polar(E	0.0171904
HlaPreSeq171=His && E7=Lys	0.010071
cyclic(HlaPreSeq97) && buried(E9)	0.0129983
aromatic(HlaPreSeq97) && buried	0.0130629
cyclic(HlaPreSeq97) && medium(E	0.00978157
aromatic(HlaPreSeq97) && mediu	0.00978484
cyclic(HlaPreSeq97) && large(E9)	-0.0140278
aromatic(HlaPreSeq97) && large(E	-0.0139858
cyclic(HlaPreSeq97) && positive(E!	-0.0143253
aromatic(HlaPreSeq97) && positiv	-0.014324
cyclic(HlaPreSeq97) && charged(E!	-0.015047
aromatic(HlaPreSeq97) && charge	-0.0150449
HlaPreSeq171=His && E5=Ile	-0.0134694
HlaPreSeq171=His && E6=Gly	-0.0133933
cyclic(HlaPreSeq97) && hydrophol	-0.0215622
aromatic(HlaPreSeq97) && hydropr	-0.0215322
cyclic(HlaPreSeq97) && small(E6)	-0.010289
aromatic(HlaPreSeq97) && small(E	-0.0102874
cyclic(HlaPreSeq97) && aliphatic(E	0.015151
aromatic(HlaPreSeq97) && aliphatic	0.0151694
cyclic(HlaPreSeq97) && medium(E	-0.015262
aromatic(HlaPreSeq97) && mediu	-0.0152555
HlaPreSeq67=Cys && E1=Leu	-0.0116926
HlaPreSeq67=Cys && E2=Glu	-0.0133845
HlaPreSeq171=His && E2=Glu	0.0118847
cyclic(HlaPreSeq97) && cyclic(E9)	-0.0128092
aromatic(HlaPreSeq97) && cyclic(E	-0.0128
HlaPreSeq171=His && E2=Ala	0.0182252
cyclic(HlaPreSeq97) && negative(E	0.0096809
aromatic(HlaPreSeq97) && negativ	0.00968475
HlaPreSeq97=Trp && E6=Leu	0.0126533

HlaPreSeq67=Cys && E9=Leu	0.0193565
HlaPreSeq97=Trp && E9=Leu	0.0153615
HlaPreSeq67=Cys && E8=Val	-0.0129171
HlaPreSeq67=Cys && E7=Gln	0.012165
HlaPreSeq67=Cys && E1=Arg	0.0112527
HlaPreSeq67=Cys && E6=Thr	0.0170115
HlaPreSeq116=Phe && E6=Thr	0.0227405
HlaPreSeq67=Cys && E1=Glu	-0.0123136
HlaPreSeq131=Ser && E3=Met	-0.0107252
HlaPreSeq97=Trp && E5=Leu	0.0171473
HlaPreSeq67=Cys && E3=Asp	0.0106794
HlaPreSeq116=Phe && E3=Asp	0.0136738
HlaPreSeq171=His && E3=Asp	0.010078
HlaPreSeq116=Phe && E2=Gln	0.0133864
HlaPreSeq116=Phe && E7=Val	0.0178178
HlaPreSeq67=Cys && E2=His	0.0191879
aliphatic(HlaPreSeq163) && arom	0.0138062
buried(HlaPreSeq163) && aromati	0.0138563
hydrophobic(HlaPreSeq163) && ar	0.0139077
aliphatic(HlaPreSeq163) && buried	0.0108289
buried(HlaPreSeq163) && buried(E	0.0110901
hydrophobic(HlaPreSeq163) && bu	0.0113423
aliphatic(HlaPreSeq163) && hydro	0.0175906
buried(HlaPreSeq163) && hydropt	0.0178869
hydrophobic(HlaPreSeq163) && h	0.0181354
small(HlaPreSeq116) && large(E1)	-0.0098807
aliphatic(HlaPreSeq163) && large(	0.0168448
buried(HlaPreSeq163) && large(E1	0.0170723
hydrophobic(HlaPreSeq163) && la	0.0172216
HlaPreSeq163=Leu && E2=Phe	0.011926
aliphatic(HlaPreSeq163) && cyclic(	0.0217942
buried(HlaPreSeq163) && cyclic(E	0.0219462
hydrophobic(HlaPreSeq163) && cy	0.0220949
small(HlaPreSeq116) && buried(E	0.014564
aliphatic(HlaPreSeq163) && hydro	0.0160694
buried(HlaPreSeq163) && hydropt	0.0160882
hydrophobic(HlaPreSeq163) && h	0.0160099
small(HlaPreSeq116) && large(E2)	-0.0187371
aliphatic(HlaPreSeq163) && large(	-0.0270087
buried(HlaPreSeq163) && large(E2	-0.0269194
hydrophobic(HlaPreSeq163) && la	-0.0268321
small(HlaPreSeq116) && negative(	0.0128319
aliphatic(HlaPreSeq163) && charg	0.0189829
buried(HlaPreSeq163) && charged	0.0189813
hydrophobic(HlaPreSeq163) && ct	0.0189691
aliphatic(HlaPreSeq163) && cyclic(	0.0164305
buried(HlaPreSeq163) && cyclic(E	0.0164376

hydrophobic(HlaPreSeq163) && cy	0.0164437
aliphatic(HlaPreSeq163) && arom	0.0144263
buried(HlaPreSeq163) && aromati	0.0144378
hydrophobic(HlaPreSeq163) && ar	0.0144489
small(HlaPreSeq116) && hydrophc	-0.0167313
aliphatic(HlaPreSeq163) && cyclic(	0.00947652
buried(HlaPreSeq163) && cyclic(E	0.00950684
hydrophobic(HlaPreSeq163) && cy	0.00953578
aliphatic(HlaPreSeq163) && arom	0.0145312
buried(HlaPreSeq163) && aromati	0.0145451
hydrophobic(HlaPreSeq163) && ar	0.0145583
aliphatic(HlaPreSeq163) && large(	-0.0087692
buried(HlaPreSeq163) && large(E8	-0.008926
hydrophobic(HlaPreSeq163) && la	-0.009105
small(HlaPreSeq116) && medium(	-0.0201163
aliphatic(HlaPreSeq163) && mediu	-0.0158998
buried(HlaPreSeq163) && medium	-0.0159057
hydrophobic(HlaPreSeq163) && m	-0.0159121
small(HlaPreSeq116) && polar(E9)	-0.0176353
HlaPreSeq163=Leu && E2=Arg	-0.0179991
small(HlaPreSeq116) && positive(f	-0.0129275
small(HlaPreSeq116) && charged(l	-0.0157799
small(HlaPreSeq116) && polar(E2)	-0.020937
aliphatic(HlaPreSeq163) && polar(	-0.0118164
buried(HlaPreSeq163) && polar(E2	-0.0118133
hydrophobic(HlaPreSeq163) && p	-0.0118223
HlaPreSeq116=Ser && E4=Ala	-0.0133523
small(HlaPreSeq116) && buried(E4	-0.0163987
small(HlaPreSeq116) && hydrophc	-0.0107364
small(HlaPreSeq116) && small(E4)	-0.0156849
aliphatic(HlaPreSeq163) && mediu	-0.007256
buried(HlaPreSeq163) && medium	-0.0072819
hydrophobic(HlaPreSeq163) && m	-0.0073124
small(HlaPreSeq116) && negative(	0.0361273
aliphatic(HlaPreSeq163) && polar(	-0.0011007
buried(HlaPreSeq163) && polar(E5	-0.0011639
hydrophobic(HlaPreSeq163) && p	-0.0012474
HlaPreSeq116=Ser && E6=Gly	0.0147614
HlaPreSeq163=Leu && E7=Val	0.0143393
aliphatic(HlaPreSeq163) && hydro	-0.0138076
buried(HlaPreSeq163) && hydropt	-0.0138754
hydrophobic(HlaPreSeq163) && h	-0.0139419
HlaPreSeq116=Ser && E8=Gly	-0.0102583
aliphatic(HlaPreSeq163) && negat	-0.0141957
buried(HlaPreSeq163) && negativ	-0.0141874
hydrophobic(HlaPreSeq163) && n	-0.0141791
aliphatic(HlaPreSeq163) && charg	-0.0151718

buried(HlaPreSeq163) && charged	-0.0151684
hydrophobic(HlaPreSeq163) && cl	-0.0151699
aliphatic(HlaPreSeq163) && polar(	-0.0166401
buried(HlaPreSeq163) && polar(E3	-0.0167106
hydrophobic(HlaPreSeq163) && pc	-0.0167731
HlaPreSeq116=Ser && E5=Arg	-0.010998
small(HlaPreSeq116) && positive(I	-0.0190186
small(HlaPreSeq116) && large(E9)	0.0126649
aliphatic(HlaPreSeq163) && large(	0.0233991
buried(HlaPreSeq163) && large(E9	0.022864
hydrophobic(HlaPreSeq163) && la	0.0223029
aliphatic(HlaPreSeq163) && positi	-0.0158747
buried(HlaPreSeq163) && positive	-0.0159149
hydrophobic(HlaPreSeq163) && pc	-0.015954
aliphatic(HlaPreSeq163) && charg	-0.0169403
buried(HlaPreSeq163) && charged	-0.0170258
hydrophobic(HlaPreSeq163) && cl	-0.0171085
aliphatic(HlaPreSeq163) && polar(	-0.0164323
buried(HlaPreSeq163) && polar(E1	-0.0165168
hydrophobic(HlaPreSeq163) && pc	-0.0165801
HlaPreSeq116=Ser && E2=Pro	0.0131376
HlaPreSeq163=Leu && E2=Pro	0.0181583
HlaPreSeq116=Ser && E9=Val	-0.0137148
HlaPreSeq163=Leu && E9=Val	-0.0100642
small(HlaPreSeq116) && aliphatic(	-0.0208208
aliphatic(HlaPreSeq163) && alipha	-0.0251474
buried(HlaPreSeq163) && aliphatic	-0.0254265
hydrophobic(HlaPreSeq163) && al	-0.0256903
small(HlaPreSeq116) && buried(E9	-0.0118352
HlaPreSeq163=Leu && E7=Gln	0.0111487
aliphatic(HlaPreSeq163) && mediu	0.00967556
buried(HlaPreSeq163) && medium	0.009663
hydrophobic(HlaPreSeq163) && m	0.00965128
HlaPreSeq116=Ser && E4=Glu	0.00794191
HlaPreSeq163=Leu && E5=Asn	-0.0222568
small(HlaPreSeq116) && cyclic(E9)	0.0171467
small(HlaPreSeq116) && aromatic	0.0195942
aliphatic(HlaPreSeq163) && arom:	0.0136443
buried(HlaPreSeq163) && aromati	0.0136327
hydrophobic(HlaPreSeq163) && ar	0.0136172
HlaPreSeq163=Leu && E2=Lys	0.00965028
small(HlaPreSeq116) && buried(E6	-0.0218193
HlaPreSeq116=Ser && E7=Lys	-0.012369
small(HlaPreSeq116) && cyclic(E4)	-0.0099607
small(HlaPreSeq116) && small(E5)	-0.0125932
aliphatic(HlaPreSeq163) && small(	0.0139001
buried(HlaPreSeq163) && small(E5	0.0139196

hydrophobic(HIaPreSeq163) && sr	0.0139381
HIaPreSeq163=Leu && E2=Leu	-0.018892
aliphatic(HIaPreSeq163) && positive	0.0159002
buried(HIaPreSeq163) && positive	0.0158659
hydrophobic(HIaPreSeq163) && positive	0.0158327
HIaPreSeq163=Leu && E6=Leu	-0.0229878
HIaPreSeq116=Ser && E7=Glu	0.010005
HIaPreSeq163=Leu && E2=Ala	0.0254649
aliphatic(HIaPreSeq163) && small(E2)	0.0245166
buried(HIaPreSeq163) && small(E2)	0.0244596
hydrophobic(HIaPreSeq163) && sr	0.0243956
HIaPreSeq163=Leu && E6=Gln	0.0193562
HIaPreSeq67=Ser && E5=Thr	-0.0136099
HIaPreSeq163=Leu && E8=Gln	-0.0150622
HIaPreSeq163=Leu && E8=Asn	0.0174557
HIaPreSeq163=Leu && E4=Leu	-0.0148016
HIaPreSeq116=Ser && E6=Ala	-0.0142399
HIaPreSeq116=Ser && E7=Leu	-0.0160378
HIaPreSeq116=Ser && E2=Ile	0.011382
HIaPreSeq116=Ser && E5=Glu	0.0200736
HIaPreSeq116=Ser && E9=Ile	-0.0127392
HIaPreSeq163=Leu && E1=Thr	0.00959915
HIaPreSeq116=Ser && E4=Ser	-0.0153454
HIaPreSeq163=Leu && E5=Leu	-0.0165296
HIaPreSeq163=Leu && E1=Val	-0.0146686
HIaPreSeq116=Ser && E9=Tyr	0.0181182
HIaPreSeq67=Ser && E5=Lys	-0.0119144
HIaPreSeq74=Tyr && E5=Lys	-0.013994
HIaPreSeq116=Ser && E5=Lys	-0.0090244
HIaPreSeq163=Leu && E3=Leu	0.0256518
HIaPreSeq116=Ser && E2=Gly	-0.0166366
HIaPreSeq116=Ser && E8=Thr	-0.0094892
small(HIaPreSeq116) && aromatic	-0.0170223
C in NFlank[1@] && G in Epitope[C]	0.0124238
HIaPreSeq163=Leu && E1=Trp	0.0104009
small(HIaPreSeq70) && large(E2)	-0.0136937
small(HIaPreSeq70) && cyclic(E9)	0.0213641
small(HIaPreSeq70) && aromatic(E2)	0.0233344
HIaPreSeq70=Ser && E2=Thr	0.0128842
small(HIaPreSeq70) && small(E2)	0.0155736
HIaPreSeq9=His && E2=Pro	-0.0112711
HIaPreSeq30=Gly && E2=Pro	-0.0107065
HIaPreSeq45=Thr && E2=Pro	0.0189611
positive(HIaPreSeq9) && cyclic(E2)	-0.0213195
aliphatic(HIaPreSeq30) && cyclic(E2)	-0.0148462
hydrophobic(HIaPreSeq30) && cyclic(E2)	-0.0148475
small(HIaPreSeq30) && cyclic(E2)	-0.0148487

medium(HlaPreSeq45) && cyclic(E	0.00787641
positive(HlaPreSeq9) && hydrophic	-0.0199186
medium(HlaPreSeq45) && hydroph	0.0200246
positive(HlaPreSeq9) && medium(E	-0.0214683
medium(HlaPreSeq45) && large(E:	0.015159
positive(HlaPreSeq9) && negative(E	0.0104707
aliphatic(HlaPreSeq30) && negativ	0.0156508
hydrophobic(HlaPreSeq30) && ne	0.015644
small(HlaPreSeq30) && negative(E	0.0156373
positive(HlaPreSeq9) && charged(E	0.0108214
aliphatic(HlaPreSeq30) && large(E:	0.0106651
hydrophobic(HlaPreSeq30) && lar	0.010638
small(HlaPreSeq30) && large(E4)	0.0106115
medium(HlaPreSeq45) && buried(E	0.00548856
medium(HlaPreSeq45) && medium	0.0137912
positive(HlaPreSeq9) && large(E6)	-0.0197012
HlaPreSeq9=His && E9=Tyr	0.0100933
HlaPreSeq30=Gly && E9=Tyr	0.0134669
HlaPreSeq45=Thr && E9=Tyr	0.0135662
aliphatic(HlaPreSeq30) && cyclic(E	0.017838
hydrophobic(HlaPreSeq30) && cyc	0.0178127
small(HlaPreSeq30) && cyclic(E9)	0.0177876
medium(HlaPreSeq45) && cyclic(E	0.0089455
aliphatic(HlaPreSeq30) && aromat	0.0143262
hydrophobic(HlaPreSeq30) && arc	0.0143045
small(HlaPreSeq30) && aromatic(E	0.0142831
medium(HlaPreSeq45) && aromat	0.00804902
positive(HlaPreSeq9) && hydrophic	-0.0189405
positive(HlaPreSeq9) && large(E9)	-0.0250024
medium(HlaPreSeq45) && large(E:	0.0101648
positive(HlaPreSeq9) && negative(E	0.0263563
aliphatic(HlaPreSeq30) && negativ	0.0151489
hydrophobic(HlaPreSeq30) && ne	0.0151294
small(HlaPreSeq30) && negative(E	0.01511
positive(HlaPreSeq9) && charged(E	0.0194725
medium(HlaPreSeq45) && charged	-0.0200462
medium(HlaPreSeq45) && polar(E	-0.0295626
medium(HlaPreSeq45) && positive	-0.0096432
medium(HlaPreSeq45) && negativ	0.0191563
positive(HlaPreSeq9) && polar(E5)	-0.0228725
HlaPreSeq45=Thr && E6=Glu	-0.009893
positive(HlaPreSeq9) && charged(E	-0.0210411
medium(HlaPreSeq45) && charged	-0.0184904
positive(HlaPreSeq9) && polar(E6)	-0.0189134
HlaPreSeq30=Gly && E8=Leu	0.0134425
positive(HlaPreSeq9) && buried(E	-0.0204319
positive(HlaPreSeq9) && hydrophic	-0.0229192

HlaPreSeq9=His && E1=Val	0.0129283
HlaPreSeq9=His && E2=Arg	0.013756
HlaPreSeq45=Thr && E2=Arg	-0.0112923
medium(HlaPreSeq45) && large(E1)	-0.0288551
aliphatic(HlaPreSeq30) && positive(E1)	-0.0122352
hydrophobic(HlaPreSeq30) && positive(E1)	-0.0122347
small(HlaPreSeq30) && positive(E1)	-0.0122343
medium(HlaPreSeq45) && positive(E1)	-0.0217057
positive(HlaPreSeq9) && hydrophobic(E1)	-0.0122945
positive(HlaPreSeq9) && charged(E1)	-0.0146894
HlaPreSeq45=Thr && E6=Leu	-0.0106987
medium(HlaPreSeq45) && aliphatic(E1)	0.0104844
positive(HlaPreSeq9) && aliphatic(E1)	-0.0224061
aliphatic(HlaPreSeq30) && aliphatic(E1)	-0.0176337
hydrophobic(HlaPreSeq30) && aliphatic(E1)	-0.0176446
small(HlaPreSeq30) && aliphatic(E1)	-0.0176554
medium(HlaPreSeq45) && aliphatic(E1)	-0.023587
positive(HlaPreSeq9) && buried(E1)	-0.0273309
aliphatic(HlaPreSeq30) && buried(E1)	-0.0173777
hydrophobic(HlaPreSeq30) && buried(E1)	-0.0174024
small(HlaPreSeq30) && buried(E1)	-0.0174262
medium(HlaPreSeq45) && buried(E1)	-0.021158
medium(HlaPreSeq45) && aliphatic(E1)	0.0101078
medium(HlaPreSeq45) && buried(E1)	0.0151333
positive(HlaPreSeq9) && aliphatic(E1)	-0.0161197
medium(HlaPreSeq45) && buried(E1)	0.0145727
medium(HlaPreSeq45) && medium(E1)	-0.0105366
medium(HlaPreSeq45) && small(E1)	0.021751
positive(HlaPreSeq9) && small(E1)	-0.0122293
aliphatic(HlaPreSeq30) && medium(E1)	0.0109724
hydrophobic(HlaPreSeq30) && medium(E1)	0.0109671
small(HlaPreSeq30) && medium(E1)	0.0109621
HlaPreSeq9=His && E2=Glu	0.0339683
HlaPreSeq30=Gly && E2=Glu	0.0175818
HlaPreSeq45=Thr && E1=Gly	-0.014264
HlaPreSeq45=Thr && E3=Gly	-0.0165586
positive(HlaPreSeq9) && small(E3)	-0.0197342
HlaPreSeq9=His && E2=Thr	-0.0104603
HlaPreSeq45=Thr && E2=Thr	-0.0108094
positive(HlaPreSeq9) && cyclic(E6)	0.00860561
HlaPreSeq9=His && E7=Val	-0.0102059
HlaPreSeq45=Thr && E7=Val	0.0176164
HlaPreSeq9=His && E2=Leu	-0.0131994
HlaPreSeq45=Thr && E2=Leu	-0.0146817
HlaPreSeq9=His && E7=Ile	0.01343
HlaPreSeq9=His && E7=Asn	0.0111849
HlaPreSeq9=His && E2=Lys	-0.0123493

HlaPreSeq9=His && E7=Gln	-0.0114161
HlaPreSeq9=His && E9=Leu	-0.0071702
HlaPreSeq30=Gly && E9=Leu	-0.010451
HlaPreSeq45=Thr && E9=Leu	-0.0174743
HlaPreSeq9=His && E3=Asp	0.0100293
positive(HlaPreSeq9) && aromatic	0.0109629
HlaPreSeq30=Gly && E4=Asp	-0.0112801
HlaPreSeq30=Gly && E4=Glu	0.0121607
HlaPreSeq45=Thr && E4=Glu	0.0104589
HlaPreSeq45=Thr && E2=Ala	0.0230369
HlaPreSeq45=Thr && E6=Gln	0.0241036
HlaPreSeq32=Leu	-0.0159129
aliphatic(HlaPreSeq32)	-0.0161671
buried(HlaPreSeq32)	-0.0164044
hydrophobic(HlaPreSeq32)	-0.0166225
medium(HlaPreSeq97) && positive	0.0160977
aliphatic(HlaPreSeq32) && buried(	-0.0137509
buried(HlaPreSeq32) && buried(E2	-0.0137477
hydrophobic(HlaPreSeq32) && bui	-0.0137444
aliphatic(HlaPreSeq32) && hydrop	-0.0150467
buried(HlaPreSeq32) && hydrophc	-0.0150353
hydrophobic(HlaPreSeq32) && hyc	-0.0150237
aliphatic(HlaPreSeq32) && large(E	0.00911467
buried(HlaPreSeq32) && large(E2)	0.00888839
hydrophobic(HlaPreSeq32) && lar	0.00866556
aliphatic(HlaPreSeq32) && large(E	-0.0172089
buried(HlaPreSeq32) && large(E4)	-0.0173368
hydrophobic(HlaPreSeq32) && lar	-0.0174615
aliphatic(HlaPreSeq32) && large(E	-0.0171797
buried(HlaPreSeq32) && large(E5)	-0.017222
hydrophobic(HlaPreSeq32) && lar	-0.0172618
aliphatic(HlaPreSeq32) && cyclic(E	0.0106729
buried(HlaPreSeq32) && cyclic(E6)	0.0106665
hydrophobic(HlaPreSeq32) && cyc	0.0106603
aliphatic(HlaPreSeq32) && large(E	-0.0271779
buried(HlaPreSeq32) && large(E9)	-0.0273069
hydrophobic(HlaPreSeq32) && lar	-0.0274219
medium(HlaPreSeq97) && large(E	-0.0096946
medium(HlaPreSeq97) && polar(E	0.0117033
medium(HlaPreSeq97) && mediun	-0.013947
medium(HlaPreSeq97) && polar(E	-0.0107236
medium(HlaPreSeq97) && cyclic(E	-0.0116374
medium(HlaPreSeq97) && aromat	-0.0085646
aliphatic(HlaPreSeq32) && hydrop	-0.0218313
buried(HlaPreSeq32) && hydrophc	-0.0219697
hydrophobic(HlaPreSeq32) && hyc	-0.0220921
medium(HlaPreSeq97) && hydrop	-0.0175005

aliphatic(HIaPreSeq32) && cyclic(E	-0.0138513
buried(HIaPreSeq32) && cyclic(E2)	-0.0138475
hydrophobic(HIaPreSeq32) && cyc	-0.0138436
medium(HIaPreSeq97) && cyclic(E	0.01794
medium(HIaPreSeq97) && arom	0.0154288
medium(HIaPreSeq97) && positiv	0.0160589
aliphatic(HIaPreSeq32) && charge	0.022369
buried(HIaPreSeq32) && charged(I	0.0221645
hydrophobic(HIaPreSeq32) && cha	0.0219667
medium(HIaPreSeq97) && large(E	0.00956773
HIaPreSeq32=Leu && E8=Val	-0.0160337
aliphatic(HIaPreSeq32) && small(E	0.0097966
buried(HIaPreSeq32) && small(E9)	0.00979482
hydrophobic(HIaPreSeq32) && sm	0.00979302
medium(HIaPreSeq97) && small(E	0.0130342
medium(HIaPreSeq97) && mediun	-0.0192982
aliphatic(HIaPreSeq32) && mediur	-0.0162947
buried(HIaPreSeq32) && medium(	-0.0162897
hydrophobic(HIaPreSeq32) && me	-0.0162845
medium(HIaPreSeq97) && mediun	-0.0170634
aliphatic(HIaPreSeq32) && negativ	0.024824
buried(HIaPreSeq32) && negative(	0.0247706
hydrophobic(HIaPreSeq32) && ne	0.0247185
medium(HIaPreSeq97) && negativ	-0.0189874
HIaPreSeq32=Leu && E2=Arg	0.0132553
HIaPreSeq70=Lys && E2=Arg	0.0223186
HIaPreSeq97=Asn && E2=Arg	0.0222889
medium(HIaPreSeq97) && mediun	0.00966226
medium(HIaPreSeq97) && negativ	-0.0103015
HIaPreSeq32=Leu && E2=Glu	0.0269549
HIaPreSeq70=Lys && E1=Arg	0.010799
HIaPreSeq97=Asn && E1=Arg	0.0107986
HIaPreSeq32=Leu && E8=Leu	0.0103365
HIaPreSeq94=Ile && E2=Pro	0.0179244
aliphatic(HIaPreSeq94) && mediur	0.00807872
buried(HIaPreSeq94) && medium(	0.00808035
hydrophobic(HIaPreSeq94) && me	0.00807928
large(HIaPreSeq94) && medium(E	0.00807525
HIaPreSeq94=Ile && E4=Pro	0.00999858
aliphatic(HIaPreSeq94) && mediur	0.0156926
buried(HIaPreSeq94) && medium(	0.0156695
hydrophobic(HIaPreSeq94) && me	0.0156457
large(HIaPreSeq94) && medium(E	0.0156212
aliphatic(HIaPreSeq94) && buried(	-0.0171532
buried(HIaPreSeq94) && buried(E	-0.0171659
hydrophobic(HIaPreSeq94) && bui	-0.0171775
large(HIaPreSeq94) && buried(E7)	-0.0171879

aliphatic(HlaPreSeq94) && large(E	-0.0220403
buried(HlaPreSeq94) && large(E7)	-0.0220927
hydrophobic(HlaPreSeq94) && lar	-0.022148
large(HlaPreSeq94) && large(E7)	-0.0222045
aliphatic(HlaPreSeq94) && aliphati	-0.0311893
buried(HlaPreSeq94) && aliphatic(	-0.0312703
hydrophobic(HlaPreSeq94) && ali	-0.0313493
large(HlaPreSeq94) && aliphatic(E	-0.0314255
aliphatic(HlaPreSeq94) && large(E	0.0141321
buried(HlaPreSeq94) && large(E9)	0.0140327
hydrophobic(HlaPreSeq94) && lar	0.0139285
large(HlaPreSeq94) && large(E9)	0.0138173
aliphatic(HlaPreSeq94) && polar(E	-0.0133873
buried(HlaPreSeq94) && polar(E2)	-0.0133979
hydrophobic(HlaPreSeq94) && pol	-0.0134057
large(HlaPreSeq94) && polar(E2)	-0.0134105
aliphatic(HlaPreSeq94) && cyclic(E	-0.0103042
buried(HlaPreSeq94) && cyclic(E3)	-0.0103099
hydrophobic(HlaPreSeq94) && cyc	-0.0103159
large(HlaPreSeq94) && cyclic(E3)	-0.0103223
aliphatic(HlaPreSeq94) && aliphati	-0.0191491
buried(HlaPreSeq94) && aliphatic(	-0.0191831
hydrophobic(HlaPreSeq94) && ali	-0.0192185
large(HlaPreSeq94) && aliphatic(E	-0.019255
aliphatic(HlaPreSeq94) && hydroph	-0.0122668
buried(HlaPreSeq94) && hydrophc	-0.0122926
hydrophobic(HlaPreSeq94) && hyc	-0.0123154
large(HlaPreSeq94) && hydrophob	-0.0123341
aliphatic(HlaPreSeq94) && cyclic(E	0.0153275
buried(HlaPreSeq94) && cyclic(E9)	0.0153024
hydrophobic(HlaPreSeq94) && cyc	0.015272
large(HlaPreSeq94) && cyclic(E9)	0.015236
aliphatic(HlaPreSeq94) && mediur	-0.0197298
buried(HlaPreSeq94) && medium(	-0.0197364
hydrophobic(HlaPreSeq94) && me	-0.019743
large(HlaPreSeq94) && medium(E	-0.0197496
aliphatic(HlaPreSeq94) && charge	-0.0222518
buried(HlaPreSeq94) && charged(l	-0.0222489
hydrophobic(HlaPreSeq94) && cha	-0.0222466
large(HlaPreSeq94) && charged(E	-0.0222449
aliphatic(HlaPreSeq94) && buried(	-0.0202177
buried(HlaPreSeq94) && buried(E	-0.0202326
hydrophobic(HlaPreSeq94) && bui	-0.0202472
large(HlaPreSeq94) && buried(E4)	-0.0202612
aliphatic(HlaPreSeq94) && small(E	-0.0113503
buried(HlaPreSeq94) && small(E4)	-0.0113385
hydrophobic(HlaPreSeq94) && sm	-0.011327

large(HlaPreSeq94) && small(E4)	-0.0113155
aliphatic(HlaPreSeq94) && cyclic(E	0.0128924
buried(HlaPreSeq94) && cyclic(E8)	0.0128869
hydrophobic(HlaPreSeq94) && cyc	0.0128815
large(HlaPreSeq94) && cyclic(E8)	0.0128761
aliphatic(HlaPreSeq94) && polar(E	-0.0129505
buried(HlaPreSeq94) && polar(E9)	-0.0129506
hydrophobic(HlaPreSeq94) && pol	-0.0129507
large(HlaPreSeq94) && polar(E9)	-0.0129509
HlaPreSeq94=Ile && E6=Val	0.00838009
aliphatic(HlaPreSeq94) && aromat	0.0202808
buried(HlaPreSeq94) && aromatic	0.0202498
hydrophobic(HlaPreSeq94) && arc	0.0202154
large(HlaPreSeq94) && aromatic(E	0.0201778
HlaPreSeq94=Ile && E8=Ala	-0.0089109
HlaPreSeq94=Ile && E9=Val	-0.0107583
aliphatic(HlaPreSeq94) && large(E	-0.0366162
buried(HlaPreSeq94) && large(E2)	-0.0366207
hydrophobic(HlaPreSeq94) && lar	-0.0366185
large(HlaPreSeq94) && large(E2)	-0.0366091
aliphatic(HlaPreSeq94) && positiv	-0.0158767
buried(HlaPreSeq94) && positive(I	-0.0158745
hydrophobic(HlaPreSeq94) && po	-0.0158722
large(HlaPreSeq94) && positive(E2	-0.0158698
aliphatic(HlaPreSeq94) && charge	-0.0143922
buried(HlaPreSeq94) && charged(I	-0.0144259
hydrophobic(HlaPreSeq94) && cha	-0.0144584
large(HlaPreSeq94) && charged(E2	-0.0144895
HlaPreSeq103=Leu && E7=Asp	0.0134313
aliphatic(HlaPreSeq94) && mediur	0.0103774
buried(HlaPreSeq94) && medium(	0.0103612
hydrophobic(HlaPreSeq94) && me	0.010347
large(HlaPreSeq94) && medium(E!	0.0103348
HlaPreSeq94=Ile && E2=Leu	-0.0162877
aliphatic(HlaPreSeq94) && negativ	-0.0173192
buried(HlaPreSeq94) && negative(	-0.0173179
hydrophobic(HlaPreSeq94) && ne	-0.0173165
large(HlaPreSeq94) && negative(E	-0.0173152
aliphatic(HlaPreSeq94) && negativ	0.0163672
buried(HlaPreSeq94) && negative(	0.0163619
hydrophobic(HlaPreSeq94) && ne	0.0163565
large(HlaPreSeq94) && negative(E	0.0163509
HlaPreSeq94=Ile && E7=Val	0.0129325
HlaPreSeq94=Ile && E6=Leu	-0.0141719
HlaPreSeq94=Ile && E9=Ile	-0.0129914
HlaPreSeq94=Ile && E8=Asn	0.0159211
HlaPreSeq94=Ile && E2=Ala	0.0167321

aliphatic(HlaPreSeq94) && small(E	0.019503
buried(HlaPreSeq94) && small(E2)	0.0194797
hydrophobic(HlaPreSeq94) && sm	0.0194541
large(HlaPreSeq94) && small(E2)	0.0194263
HlaPreSeq94=Ile && E3=Leu	0.0235903
HlaPreSeq94=Ile && E5=Gly	-0.0091042
HlaPreSeq94=Ile && E8=Gln	-0.0120232
HlaPreSeq94=Ile && E6=Gln	0.0178917
HlaPreSeq94=Ile && E3=Glu	-0.012418
aliphatic(HlaPreSeq94) && aromat	0.0129329
buried(HlaPreSeq94) && aromatic	0.0129278
hydrophobic(HlaPreSeq94) && arc	0.0129227
large(HlaPreSeq94) && aromatic(E	0.0129178
HlaPreSeq94=Ile && E7=Pro	0.0115396
HlaPreSeq94=Ile && E3=Ser	0.0099721
YD in Epitope[@2-3]	0.0133479
HlaPreSeq94=Ile && E9=Trp	0.0196195
HlaPreSeq94=Ile && E9=Met	0.0172057
NW in Epitope[@8-9]	0.012901
HlaPreSeq45=Lys && E2=Glu	0.0333137
positive(HlaPreSeq45) && negativ	0.0348841
positive(HlaPreSeq45) && charged	0.0157993
positive(HlaPreSeq45) && large(E5	-0.0217003
positive(HlaPreSeq45) && cyclic(E	0.0131277
positive(HlaPreSeq45) && aromati	0.0136089
positive(HlaPreSeq45) && large(E9	-0.0218905
positive(HlaPreSeq45) && buried(I	-0.0131066
positive(HlaPreSeq45) && small(E9	0.0126027
aliphatic(HlaPreSeq147) && buriec	-0.0132931
HlaPreSeq45=Lys && E1=Arg	-0.0134956
HlaPreSeq45=Lys && E5=Gly	0.0149724
positive(HlaPreSeq45) && positive	-0.0190143
HlaPreSeq45=Lys && E1=Leu	0.0110137
HlaPreSeq97=Thr && E3=Ala	0.0104026
HlaPreSeq97=Thr && E9=Leu	-0.01437
HlaPreSeq97=Thr && E2=Ala	0.0123279
HlaPreSeq97=Thr && E9=Ile	0.0169599
polar(HlaPreSeq167) && large(E7)	-0.014353
polar(HlaPreSeq167) && positive(I	-0.0117689
polar(HlaPreSeq167) && charged(I	0.00901778
HlaPreSeq167=Ser && E2=Glu	0.0163124
polar(HlaPreSeq167) && negative(	0.0207836
HlaPreSeq70=Ser && E9=Trp	0.0218443
QC in Epitope[@8-9]	0.0142516
HlaPreSeq45=Gly && E2=Ala	0.0181097
HlaPreSeq52=Val && E2=Ala	0.0181037
HlaPreSeq69=Arg && E2=Ala	0.0173256

HlaPreSeq45=Gly && E5=Leu	0.0159766
HlaPreSeq52=Val && E5=Leu	0.0159776
HlaPreSeq69=Arg && E5=Leu	0.0159615
aliphatic(HlaPreSeq45) && buried(E	0.0223949
small(HlaPreSeq45) && buried(E9)	0.0223754
medium(HlaPreSeq52) && buried(E	0.0223537
large(HlaPreSeq69) && buried(E9)	0.0204914
positive(HlaPreSeq69) && buried(E	0.020456
charged(HlaPreSeq69) && buried(E	0.020418
aliphatic(HlaPreSeq45) && positive(E	0.0102417
small(HlaPreSeq45) && positive(E2)	0.0102406
medium(HlaPreSeq52) && positive(E	0.0102396
large(HlaPreSeq69) && positive(E2)	0.0102326
positive(HlaPreSeq69) && positive(E	0.0102317
charged(HlaPreSeq69) && positive(E	0.0102309
aliphatic(HlaPreSeq45) && negative(E	0.0119761
small(HlaPreSeq45) && negative(E	0.0119708
medium(HlaPreSeq52) && negative(E	0.0119655
large(HlaPreSeq69) && negative(E	0.01196
positive(HlaPreSeq69) && negative(E	0.0119545
charged(HlaPreSeq69) && negative(E	0.0119488
aliphatic(HlaPreSeq45) && medium(E	-0.0156328
small(HlaPreSeq45) && medium(E	-0.0156319
medium(HlaPreSeq52) && medium(E	-0.0156309
large(HlaPreSeq69) && medium(E	-0.0117449
positive(HlaPreSeq69) && medium(E	-0.0117451
charged(HlaPreSeq69) && medium(E	-0.0117452
aliphatic(HlaPreSeq45) && charged(E	-0.0159951
small(HlaPreSeq45) && charged(E	-0.0159964
medium(HlaPreSeq52) && charged(E	-0.0159977
HlaPreSeq45=Gly && E3=Lys	-0.0115831
HlaPreSeq52=Val && E3=Lys	-0.0115824
HlaPreSeq69=Arg && E3=Lys	-0.0115816
aliphatic(HlaPreSeq45) && cyclic(E	-0.0108405
small(HlaPreSeq45) && cyclic(E2)	-0.0108395
medium(HlaPreSeq52) && cyclic(E	-0.0108385
large(HlaPreSeq69) && cyclic(E2)	-0.0112631
positive(HlaPreSeq69) && cyclic(E	-0.011262
charged(HlaPreSeq69) && cyclic(E	-0.0112608
HlaPreSeq45=Gly && E6=Leu	0.0116604
HlaPreSeq52=Val && E6=Leu	0.0116597
HlaPreSeq69=Arg && E6=Leu	0.0108868
aliphatic(HlaPreSeq45) && positive(E	-0.0136549
small(HlaPreSeq45) && positive(E	-0.0136554
medium(HlaPreSeq52) && positive(E	-0.0136559
HlaPreSeq45=Gly && E2=Arg	0.0147257
HlaPreSeq52=Val && E2=Arg	0.0147236

HlaPreSeq69=Arg && E2=Arg	0.0147215
small(HlaPreSeq73) && large(E2)	0.0101152
positive(HlaPreSeq80) && positive	-0.0095126
charged(HlaPreSeq80) && positive	-0.0095108
small(HlaPreSeq73) && buried(E9)	0.0157206
positive(HlaPreSeq80) && buried(I	0.0145627
charged(HlaPreSeq80) && buried(I	0.014585
positive(HlaPreSeq80) && mediurr	-0.0078552
charged(HlaPreSeq80) && mediurr	-0.0078569
HlaPreSeq73=Ala && E6=Leu	0.0139299
small(HlaPreSeq73) && charged(E!	-0.0120369
HlaPreSeq73=Ala && E5=Leu	0.0186683
HlaPreSeq80=Lys && E5=Leu	0.0179967
HlaPreSeq73=Ala && E2=Arg	0.0123142
HlaPreSeq45=Gly && E9=Phe	0.0121545
HlaPreSeq52=Val && E9=Phe	0.0121594
HlaPreSeq69=Arg && E9=Phe	0.0117901
positive(HlaPreSeq80) && mediurr	-0.0160234
charged(HlaPreSeq80) && mediurr	-0.0160262
buried(HlaPreSeq1) && hydrophob	-0.0174593
medium(HlaPreSeq1) && hydroph	-0.0174838
polar(HlaPreSeq1) && hydrophobi	-0.0175088
buried(HlaPreSeq1) && polar(E7)	-0.0100397
medium(HlaPreSeq1) && polar(E7)	-0.0100749
polar(HlaPreSeq1) && polar(E7)	-0.0101106
buried(HlaPreSeq1) && polar(E4)	-0.0123186
medium(HlaPreSeq1) && polar(E4)	-0.0123443
polar(HlaPreSeq1) && polar(E4)	-0.0123703
buried(HlaPreSeq1) && polar(E3)	-0.0150604
medium(HlaPreSeq1) && polar(E3)	-0.0150957
polar(HlaPreSeq1) && polar(E3)	-0.0151317
buried(HlaPreSeq1) && negative(E	-0.0115012
medium(HlaPreSeq1) && negative	-0.0115024
polar(HlaPreSeq1) && negative(E1	-0.0115036
HlaPreSeq35=Gln && E6=Thr	0.0141439
HlaPreSeq35=Gln && E7=Val	0.0144062
MW in Epitope[@4-5]	0.0135365
AlwaysTrue	-0.0331736