# Allele: DRB1_0101

| Pos | MHC      | Peptide       | Of   | Core       | Core_Rel | Score_EL |
|-----|----------|---------------|------|------------|----------|----------|
| 540 | DRB1_0101| NFNFNGLTGTGVLE | 3    | FNGLTGTGV  | 1.000    | 0.938016 |
| 512 | DRB1_0101| VLSFELLHAPATVC | 3    | FELLHAPAT  | 0.967    | 0.811818 |
| 314 | DRB1_0101| QTSNFRQVQPECTIVR | 4    | FRQVQPECTI | 1.000    | 0.781642 |
| 492 | DRB1_0101| LQSYGFQFTPNGVYQ | 3    | YGFQFTPNGV | 0.993    | 0.718623 |
| 514 | DRB1_0101| SFELLHAPATVC | 3    | LLHAPATVC  | 0.927    | 0.717202 |
| 303 | DRB1_0101| LKSFTVEKGIYQTNSN | 3    | FTVEKGIYQ  | 1.000    | 0.709921 |
| 1057| DRB1_0101| PHGVVFLHVTYVFAPQ | 3    | VVFLHVTYV  | 0.993    | 0.692500 |
| 197 | DRB1_0101| IDGYFKIYSKHTPIN | 3    | YFYKYSKHT  | 1.000    | 0.607851 |

# Allele: DRB1_0401

| Pos | MHC      | Peptide       | Of   | Core       | Core_Rel | Score_EL |
|-----|----------|---------------|------|------------|----------|----------|
| 33  | DRB1_0401| TRGVYYPDKVFRSSV | 4    | YYPDKVFRS  | 1.000    | 0.905995 |
| 314 | DRB1_0401| QTSNFRQVQPECTIVR | 4    | FRQVQPECTI | 1.000    | 0.898292 |
| 1111| DRB1_0401| EPQIITTDNNTVSGN | 4    | ITTDNNTVS  | 0.927    | 0.821410 |
| 802 | DRB1_0401| FSQILPDPSKPSKS | 3    | ILPDPSKPS  | 1.000    | 0.819922 |
| 1014| DRB1_0401| RAAEIRASANLAAATK | 4    | RAASANLAA  | 1.000    | 0.802608 |
| 492 | DRB1_0401| LQSYGFQFTPNGVYQ | 3    | YGFQFTPNGV | 1.000    | 0.759073 |
| 86  | DRB1_0401| FNDGVYFASTEKSNI | 4    | VYFASTEKSN | 1.000    | 0.749776 |
| 362 | DRB1_0401| VADYSVLYNSASFST | 3    | VYLSVLYNAS| 1.000    | 0.665981 |
| 303 | DRB1_0401| LKSFTVEKGIYQTNSN | 3    | FTVEKGIYQ  | 1.000    | 0.587244 |
| 1099| DRB1_0401| GTHWFTQTRNRFYEPQ | 4    | FTQTRNRFYE | 0.987    | 0.556554 |
| 207 | DRB1_0401| HTFINLVRDLPQGF  | 3    | INLVRDLPFQ | 1.000    | 0.522253 |

# Allele: DRB1_0404

| Pos | MHC      | Peptide       | Of   | Core       | Core_Rel | Score_EL |
|-----|----------|---------------|------|------------|----------|----------|
| 207 | DRB1_0404| HTFINLVRDLPQGF  | 3    | INLVRDLPFQ | 1.000    | 0.953780 |
| 1014| DRB1_0404| RAAEIRASANLAAATK | 4    | RAASANLAA  | 1.000    | 0.923993 |
| 232 | DRB1_0404| GINITRFQITLALHR | 3    | TRQITLALHR | 1.000    | 0.895299 |
| 86  | DRB1_0404| FNDGVYFASTEKSNI | 4    | VYFASTEKSN | 1.000    | 0.852579 |
| 928 | DRB1_0404| NSAIGKIQDSDLSSA | 3    | IGKIQDSDLSS | 1.000    | 0.848992 |
| 960 | DRB1_0404| NTLVQVLSSLHNGAFF | 3    | VKQLSSNFG  | 1.000    | 0.812821 |
| 1111| DRB1_0404| EPQIITTDNNTVSGN | 4    | ITTDNNTVS  | 0.720    | 0.761306 |
| 802 | DRB1_0404| FSQILPDPSKPSKS | 3    | ILPDPSKPS  | 1.000    | 0.723057 |
| 944 | DRB1_0404| ALGKLQDVVPNQNAQA | 4    | LQDVVPNQNA | 1.000    | 0.668202 |
| Pos | MHC   | Peptide         | Of   | Core | Core_Rel | Score_EL |
|-----|-------|-----------------|------|------|----------|----------|
| 702 | DRB1_0404 | ENSVAYSNNSIAIPT | 3    | VAYSNSIA | 1.000 | 0.663927 |
| 323 | DRB1_0404 | TESIVRFNITNLCP | 3    | IVRFPNITN | 1.000 | 0.655964 |
| 690 | DRB1_0404 | QSIIAYTMSLGAENS | 3    | TAYTMSLGA | 0.973 | 0.638258 |
| 113 | DRB1_0404 | KTQSSLIVNNATNVV | 4    | LLIVNNATN | 0.993 | 0.614084 |
| 300 | DRB1_0404 | KCTLKSFTVEGIYQ | 3    | LKSFTVEKG | 1.000 | 0.600123 |
| 767 | DRB1_0404 | LTGIAVEQDKNTQEV | 3    | IAVEQDKNT | 0.967 | 0.597703 |
| 1126 | DRB1_0404 | CDVVIGIVNNTVYDP | 3    | VIGIVNNTV | 0.800 | 0.589583 |

# Allele: DRB1_0701

| Pos | MHC   | Peptide         | Of   | Core | Core_Rel | Score_EL |
|-----|-------|-----------------|------|------|----------|----------|
| 309 | DRB1_0701 | EKGIYQTSNFRVQPT | 3    | IYQTSNFRV | 1.000 | 0.912889 |
| 714 | DRB1_0701 | IPTNFTISVTTEILP | 4    | FTISVTTEI | 1.000 | 0.896225 |
| 494 | DRB1_0701 | SYGFQPTNGVGYQPY | 3    | FPPTNGVGY | 1.000 | 0.821964 |
| 632 | DRB1_0701 | TWRVYSTGNSVFPQTR | 3    | VYSTGNSVF | 1.000 | 0.716526 |
| 690 | DRB1_0701 | QSIIAYTMSLGAENS | 3    | TAYTMSLGA | 0.973 | 0.681335 |
| 1153 | DRB1_0701 | DKYFKNHTSPDVDLG | 3    | FKNHTSPDV | 0.973 | 0.639460 |
| 25  | DRB1_0701 | PPAYTNSFTRGVYYP | 3    | YTNSFTRGV | 1.000 | 0.637973 |
| 1111 | DRB1_0701 | EPQIITTDNTFVSGN | 3    | IITTDNTFV | 0.993 | 0.568150 |
| 201 | DRB1_0701 | FKIYSKHTPINLVRD | 3    | YSKHTPINL | 0.960 | 0.531197 |
| 681 | DRB1_0701 | PRRARSVASQSIAY | 3    | ARSVASQSI | 0.993 | 0.524826 |
| 797 | DRB1_0701 | FGGFNFSQILPDPSSK | 3    | FNFSQILPD | 0.960 | 0.476780 |

# Allele: DRB1_0802

| Pos | MHC   | Peptide         | Of   | Core | Core_Rel | Score_EL |
|-----|-------|-----------------|------|------|----------|----------|
| 1014 | DRB1_0802 | RAAEIRASANLAATK | 4    | IRAEIRAS | 0.960 | 0.603367 |
| 61  | DRB1_0802 | NVTWPHAIHVSQNG | 3    | WPHAIHVSG | 0.480 | 0.553870 |
| 272 | DRB1_0802 | PRTFLLKYNENGIT | 3    | LLKYNENG | 0.993 | 0.546261 |
| 1009 | DRB1_0802 | TQQLIRAEIRASAN | 4    | IRAEIRAS | 0.567 | 0.534196 |
| 446 | DRB1_0802 | GGNNYLYRLFRKSN | 3    | NYLYRLFR | 0.940 | 0.524253 |
| 978 | DRB1_0802 | NDILSRDLKDKEAEVQ | 3    | LSRLDKVEA | 0.980 | 0.523589 |

# Allele: DRB1_0901

| Pos | MHC   | Peptide         | Of   | Core | Core_Rel | Score_EL |
|-----|-------|-----------------|------|------|----------|----------|
| 714 | DRB1_0901 | IPTNFTISVTTEILP | 4    | FTISVTTEI | 1.000 | 0.845552 |
| Pos | MHC      | Peptide       | Of     | Core      | Core_Rel | Score_EL |
|-----|----------|---------------|--------|-----------|----------|----------|
| 883 | DRB1_0901| TSGWTFGAGAALQP| 3      | WTFGAGAAL| 0.553    | 0.780244 |
| 885 | DRB1_0901| GTWTFGAGAALQIFPA| 3    | FGAGAALQI| 0.953    | 0.722468 |
| 922 | DRB1_0901| IAQNFAQIGKIQS| 4      | FNSAIKIQ | 0.980    | 0.565579 |
| 255 | DRB1_0901| SSGWTTAGAAAYGYG| 4   | WTAGAAAYY| 0.907    | 0.629042 |
| 492 | DRB1_0901| QSYGFQPTNGVGYQP| 4    | FQPTNGVGY| 0.793    | 0.655929 |
| 923 | DRB1_0901| IAQYIIYMSLGAE| 3      | IAYTMSLGA| 0.640    | 0.586207 |
| 60  | DRB1_0901| SNTVFHAIHVTSTGNT| 2    | VTWFHAHV | 0.427    | 0.538172 |
| 328 | DRB1_1001| NTVYDPLQPELD| 3      | YDPLQPELD| 1.000    | 0.890783 |
| 216 | DRB1_1001| LPQGFSALEPLVDF| 4    | FSIALEPLVD| 1.000    | 0.879496 |
| 966 | DRB1_1001| LSSNFQAISSVLDI| 4    | FGIAISSVLN| 1.000    | 0.855589 |
| 512 | DRB1_1101| VLSFELLHAPATVC| 3    | FELHAPAT  | 0.953    | 0.597462 |
| 492 | DRB1_1101| LQSYGFPQPTNGVGYQ| 3    | YGFQPTNGV| 0.987    | 0.626730 |
| 978 | DRB1_1101| NDILSLDKVEAE| 3      | SLRLDKVEA| 1.000    | 0.806222 |
| 955 | DRB1_1101| NQAQANLTVKQLS| 4      | NTLTVKQLS| 1.000    | 0.741440 |
| 446 | DRB1_1101| GGNYNYLRLFRKSN| 3    | YNYLRLFR | 1.000    | 0.722800 |
### Allele: DRB1_1302

| Pos | MHC     | Peptide       | Of     | Core       | Core_Rel | Score_EL  |
|-----|---------|---------------|--------|------------|----------|-----------|
| 115 | DRB1_1302 | QSLLIVNATNVIK | 3      | LIVNNATNV  | 0.507    | 0.768378  |
| 116 | DRB1_1302 | SLLIVNATNVIKV | 3      | IVNATNVV   | 0.740    | 0.722566  |
| 309 | DRB1_1302 | EKGYQTSNFRVFQPT | 3  | YTSNFRV    | 1.000    | 0.682084  |
| 1014| DRB1_1302  | RAAEIRASANLAATK  | 4 | IRASANLAA  | 0.993    | 0.615121  |
| 1092| DRB1_1302  | EGVFVSNHTHVFVQPT | 3 | VSNHTHF    | 0.987    | 0.606284  |
| 912 | DRB1_1302  | TQNVLYENQKLIQAQNFQPT | 3 | NVLYENQK   | 0.713    | 0.583838  |
| 818 | DRB1_1302  | IEDLFLNKVTLDAG | 3 | LFLNKVTLA  | 0.967    | 0.583772  |
| 274 | DRB1_1302  | TFLLKYNENGTIDITA | 3 | LKYNENGTI  | 0.973    | 0.582775  |
| 802 | DRB1_1302  | FSQILDPFSKPSKRS | 3 | ILDPFSKPS  | 1.000    | 0.538356  |
| 314 | DRB1_1302  | QTSNFRVQPTESIVR | 4 | FRVQPTESI  | 0.987    | 0.535912  |
| 1111| DRB1_1302  | EPQIITTDNFVGSS | 3 | ITTDNFV    | 0.627    | 0.526440  |
| 430 | DRB1_1302  | TGCVIAWNSNNLDSDK | 4 | IAWNSNNLD  | 0.493    | 0.517543  |
| 778 | DRB1_1302  | TQEVFAQVKQIYKTPQ | 3 | FAQVKQIY   | 0.893    | 0.501246  |
| 1099| DRB1_1302  | GTHWFVQRFNFYPEQ | 3 | FNFYPEQ    | 0.853    | 0.472552  |
| 346 | DRB1_1302  | RFASYVAYNKNKRSN | 4 | VAYNKNKRI  | 0.507    | 0.450526  |
| 1153| DRB1_1302  | DKYFKNHTSPDVLDG | 3 | KNHTSPDV   | 0.753    | 0.443493  |
| 919 | DRB1_1302  | NQKLIANQFNSAIGK | 3 | LQFNSAIGK  | 0.740    | 0.438946  |
| 1126| DRB1_1302  | CVDVIGIVNNTVYDD | 3 | VIGIVNNTV  | 0.993    | 0.567814  |
| 689 | DRB1_1302  | SQSIIAYTMSLGAEN | 3 | IIAYTMSL   | 0.813    | 0.533005  |

### Allele: DRB1_1501

| Pos | MHC     | Peptide       | Of     | Core       | Core_Rel | Score_EL  |
|-----|---------|---------------|--------|------------|----------|-----------|
| 867 | DRB1_1501 | DEMIAQYTSALLAGT | 3 | IAQYTSALL  | 1.000    | 0.989184  |
| 430 | DRB1_1501 | TGCVIAWNSNNLDSDK | 4 | IAWNSNNLD  | 1.000    | 0.966005  |
| 309 | DRB1_1501 | EKGYQTSNFRVFQPT | 3 | YTSNFRV    | 1.000    | 0.922581  |
| 232 | DRB1_1501 | GINITRFQTLLALHR | 3 | ITRFQTLLA  | 1.000    | 0.857700  |
| 59  | DRB1_1501 | FSNTWFHAIHVSCT | 3 | TWFHAIHV   | 1.000    | 0.835947  |
| 1001| DRB1_1501 | LQSLQTYTVQQLIARA | 3 | LTQYTQQL   | 1.000    | 0.820364  |
| 790 | DRB1_1501 | KTPPIKDFGGFNFQ | 4 | KDFGGFNF   | 1.000    | 0.818158  |
| 323 | DRB1_1501 | TESIVRFNPNTNLCP | 3 | VRFPNITN   | 1.000    | 0.796209  |
| 831 | DRB1_1501 | AGFIIQYGDCLDGIAT | 3 | IQYGDCLGL  | 1.000    | 0.567814  |
| 1014| DRB1_1501 | RAAEIRASANLAATK | 4 | IRASANLAA  | 1.000    | 0.559269  |
| 1126| DRB1_1501 | CDVVIGIVNNTVYDD | 3 | VIGIVNTV   | 0.847    | 0.540038  |
| 689 | DRB1_1501 | SQSIIAYTMSLGAEN | 3 | IIAYTMSL   | 0.813    | 0.533005  |
| 239 | DRB1_1501 | QTLLAHRYSLTPGD | 3 | LALHRYSYT  | 0.967    | 0.526434  |
### Allele: DRB1_1602

| Pos  | MHC     | Peptide          | Of     | Core   | Core_Rel | Score_EL |
|------|---------|------------------|--------|--------|----------|----------|
| 867  | DRB1_1602 | DEMIAQYTSALLAGT | 3      | IAQYTSALL | 1.000 | 0.825191 |
| 309  | DRB1_1602 | EKGIYQTSNFRVQPT | 3      | IYQTSNFRV  | 1.000 | 0.776902 |
| 430  | DRB1_1602 | TGCVIAWNSNLDSDK | 3      | VIAWNSN  | 0.973 | 0.679206 |
| 314  | DRB1_1602 | QTSNFRVQPTESIVR | 4      | FRVQPTES  | 1.000 | 0.643355 |
| 1153 | DRB1_1602 | DKYFKNHSTSPDVDLG | 3      | FKNHSTSPD | 0.933 | 0.587700 |
| 59   | DRB1_1602 | FSNVTWFHAIHVSGTV | 3      | VTFHAIHV  | 0.987 | 0.573085 |
| 348  | DRB1_1602 | NATRFASVYAWNNRKR | 4      | FASVYAWNNR | 0.993 | 0.552323 |
| 197  | DRB1_1602 | IDGYFRIYSKHTF   | 3      | YFRIYSKHT | 0.907 | 0.540575 |
| 153  | DRB1_1602 | MESEFRVYSSANNCT | 4      | FRVYSSANN | 1.000 | 0.534802 |
| 232  | DRB1_1602 | GINITRFQTLLLALHR | 3      | ITRFQTLLA | 0.973 | 0.528208 |
| 1111 | DRB1_1602 | EPIITTDNTFVSNGN | 3      | ITTDNTFV  | 0.920 | 0.490496 |
| 309  | DRB1_1602 | EKGIYQTSNFRVQPT | 3      | IYQTSNFRV  | 1.000 | 0.825191 |
| 818  | DRB1_1602 | IEDLLFNKVTLDA    | 3      | LLFNKVTLA | 0.993 | 0.607752 |
| 274  | DRB1_1602 | TFLKYNENGTITDA   | 3      | KYNENGTI  | 0.927 | 0.579236 |
| 399  | DRB1_1602 | SFVIRGDERVQIPAG  | 3      | IRGDERVQI | 0.993 | 0.549064 |
| 430  | DRB1_1602 | TGCVIAWNSNLDSDK | 4      | LAWNSN   | 0.827 | 0.534940 |
| 702  | DRB1_1602 | ENSVAYNSNIAPT   | 3      | VAYNSNI   | 0.667 | 0.506589 |
| 314  | DRB1_1602 | QTSNFRVQPTESIVR | 4      | FRVQPTES  | 1.000 | 0.482288 |
| 1127 | DRB1_1602 | DVVIGIVNNTYDPL   | 2      | VIGIVNNTV | 0.467 | 0.471003 |
| 1126 | DRB1_1602 | CDVVIGIVNNTYDPL  | 4      | IGVNNTV   | 0.487 | 0.467142 |
| 1092 | DRB1_1602 | EGVFVSNGTWFVTQ   | 3      | FVSNGTHWF | 0.900 | 0.460335 |
| 947  | DRB1_1602 | KLGDIVQYNQALNT   | 4      | VYNQNAQAL | 0.607 | 0.451712 |
| 530  | DRB1_1602 | STNLVKNCVNFNFN  | 3      | LVKNKCVNF | 0.993 | 0.432644 |

### Allele: DRB3_0301

| Pos  | MHC     | Peptide          | Of     | Core   | Core_Rel | Score_EL |
|------|---------|------------------|--------|--------|----------|----------|
| 115  | DRB3_0301 | QSLLIVVNATNVVIK | 4      | IVVNATNVV | 0.493 | 0.717182 |
| 1111 | DRB3_0301 | EPIITTDNTFVSNGN | 3      | IITTDNTFV | 0.640 | 0.670303 |
| 114  | DRB3_0301 | TQSLLIVVNATNVVI | 4      | LIVVNATNVV | 0.533 | 0.638262 |
| 1014 | DRB3_0301 | RAAEIRASANLAATK | 4      | IRASANLAA | 0.987 | 0.626741 |
| 309  | DRB3_0301 | EKGIYQTSNFRVQPT | 3      | IYQTSNFRV  | 1.000 | 0.622539 |
| 818  | DRB3_0301 | IEDLLFNKVTLADAG | 3      | LLFNKVTLA | 0.993 | 0.607752 |
| 274  | DRB3_0301 | TFLKYNENGTITDA   | 3      | KYNENGTI  | 0.927 | 0.579236 |
| 399  | DRB3_0301 | SFVIRGDERVQIPAG  | 3      | IRGDERVQI | 0.993 | 0.549064 |
| 430  | DRB3_0301 | TGCVIAWNSNLDSDK | 4      | LAWNSN   | 0.827 | 0.534940 |
| 702  | DRB3_0301 | ENSVAYNSNIAPT   | 3      | VAYNSNI   | 0.667 | 0.506589 |
| 314  | DRB3_0301 | QTSNFRVQPTESIVR | 4      | FRVQPTES  | 1.000 | 0.482288 |
| 1127 | DRB3_0301 | DVVIGIVNNTYDPL   | 2      | VIGIVNNTV | 0.467 | 0.471003 |
| 1126 | DRB3_0301 | CDVVIGIVNNTYDPL  | 4      | IGVNNTV   | 0.487 | 0.467142 |
| 1092 | DRB3_0301 | EGVFVSNGTWFVTQ   | 3      | FVSNGTHWF | 0.900 | 0.460335 |
| 947  | DRB3_0301 | KLGDIVQYNQALNT   | 4      | VYNQNAQAL | 0.607 | 0.451712 |
| 530  | DRB3_0301 | STNLVKNCVNFNFN  | 3      | LVKNKCVNF | 0.993 | 0.432644 |
| Pos | MHC      | Peptide              | Of       | Core | Core_Rel | Score_EL |
|-----|----------|----------------------|----------|------|----------|----------|
| 65  | DRB3_0301| FIAHVSGTNGTKRF       | 3        | IHVSGTNGT | 0.980   | 0.423558 |
| 364 | DRB3_0301| DYSVLYNSASFSTFK      | 3        | VLYNSASFS | 0.867   | 0.421713 |
| 906 | DRB3_0301| FNGIGVTQNVLENQ       | 3        | IGVTQNVLY | 0.853   | 0.419595 |
| 703 | DRB3_0301| NSVAYSNNSIAIPTN      | 3        | AYNNSIAI  | 0.533   | 0.413595 |
| 1185| DRB3_0301| RLNEVAKNLNESLID      | 4        | VAKNLNESL | 1.000   | 0.411978 |

# Allele: DRB4_0101

| Pos | MHC      | Peptide              | Of       | Core | Core_Rel | Score_EL |
|-----|----------|----------------------|----------|------|----------|----------|
| 1190| DRB4_0101| AKNLNESLIDLQELG      | 3        | LNELSDLQ  | 1.000   | 0.373391 |
| 1009| DRB4_0101| TQQLIRAEEIRASAN      | 4        | IRAEIRAS | 0.800   | 0.372095 |
| 1014| DRB4_0101| RAAEIRASANLAATK      | 4        | IRASANLAA | 0.973   | 0.344867 |
| 86  | DRB4_0101| FNDGVYFASTEKSN        | 4        | YFASTEKS  | 1.000   | 0.333224 |
| 355 | DRB4_0101| RRKRNCSVADYSVLY       | 3        | ISVCVADYS | 1.000   | 0.319595 |
| 314 | DRB4_0101| QTSNFRVQPTESIVR       | 4        | FVQPTESI  | 0.987   | 0.318780 |
| 988 | DRB4_0101| EAEVQIDRLITGRLQ       | 3        | VQIDRLITG | 0.953   | 0.303910 |
| 39  | DRB4_0101| PDKVFHSVVLHSTQD       | 4        | VFRSSVLHS | 0.927   | 0.294615 |
| 799 | DRB4_0101| GFNSQILPDKPSKSPK      | 3        | FQILPDPS  | 0.960   | 0.294276 |
| 207 | DRB4_0101| HTPINLVRDLPQGFS       | 3        | INLVRDLPQ | 0.927   | 0.274844 |
| 457 | DRB4_0101| RSKNLKFFERDSTE        | 4        | KFFERDIS  | 0.993   | 0.268178 |
| 1003| DRB4_0101| SLQTYVTQQLIRAAB       | 4        | YVTQLIRA  | 0.733   | 0.259812 |
| 802 | DRB4_0101| FSQILPDKPSKSKP        | 3        | FSQILPDKS | 1.000   | 0.259521 |
| 1005| DRB4_0101| QTQVTQQLIRAABIR       | 3        | VTQLIRA   | 0.547   | 0.239215 |
| 764 | DRB4_0101| NRALTGIAVEQDKNT       | 3        | LTGIAVEQD | 0.973   | 0.231179 |
| 1168| DRB4_0101| DISGINASVNNQKE        | 4        | INASVNNQ  | 1.000   | 0.227370 |

# Allele: DRB4_0103

| Pos | MHC      | Peptide              | Of       | Core | Core_Rel | Score_EL |
|-----|----------|----------------------|----------|------|----------|----------|
| 1190| DRB4_0103| AKNLNESLIDLQELG      | 3        | LNELSDLQ  | 1.000   | 0.373391 |
| 1009| DRB4_0103| TQQLIRAEEIRASAN      | 4        | IRAEIRAS | 0.800   | 0.372095 |
| 1014| DRB4_0103| RAAEIRASANLAATK      | 4        | IRASANLAA | 0.973   | 0.344867 |
| 86  | DRB4_0103| FNDGVYFASTEKSN        | 4        | YFASTEKS  | 1.000   | 0.333224 |
| 355 | DRB4_0103| RRKRNCSVADYSVLY       | 3        | ISVCVADYS | 1.000   | 0.319595 |
| 314 | DRB4_0103| QTSNFRVQPTESIVR       | 4        | FVQPTESI  | 0.987   | 0.318780 |
| 988 | DRB4_0103| EAEVQIDRLITGRLQ       | 3        | VQIDRLITG | 0.953   | 0.303910 |
| 39  | DRB4_0103| PDKVFHSVVLHSTQD       | 4        | VFRSSVLHS | 0.927   | 0.294615 |
| 799 | DRB4_0103| GFNSQILPDKPSKSPK      | 3        | FQILPDPS  | 0.960   | 0.294276 |
| 207 | DRB4_0103| HTPINLVRDLPQGFS       | 3        | INLVRDLPQ | 0.927   | 0.274844 |
## Allele: DRB5_0101

| Pos | MHC          | Peptide                  | Of       | Core     | Core_Rel | Score_EL |
|-----|--------------|--------------------------|----------|----------|----------|----------|
| 343 | DRB5_0101    | NATRFASVYAWRRKR          | 4        | FASVYAWRN | 1.000    | 0.924594 |
| 672 | DRB5_0101    | ASYQTQTNSPRRNAS          | 2        | YQTQTNSPR | 0.993    | 0.839527 |
| 779 | DRB5_0101    | QEVFAQVKQIYKTPF         | 3        | FAQVKQIYK | 0.993    | 0.811819 |
| 234 | DRB5_0101    | NITRFQTLALLHRSY         | 4        | FQTLLALHR | 1.000    | 0.811567 |
| 191 | DRB5_0101    | EFVFKNIDGYFKIYS         | 3        | FKNIDGYFK | 1.000    | 0.727983 |
| 1062| DRB5_0101    | FLHVTYVPAQEKNT          | 3        | VTYVPAQEK | 0.980    | 0.691341 |
| 303 | DRB5_0101    | LKSFTVEKGIYQTNSN        | 3        | FTEKGIYQ  | 1.000    | 0.677725 |
| 556 | DRB5_0101    | NKKFLFFQFGGRDIA         | 3        | FLFFQFGGR | 1.000    | 0.612992 |
| 315 | DRB5_0101    | TSNFRVQFTESIVRF         | 3        | FRVQFTESI | 0.887    | 0.604856 |

## Allele: HLA-DPA10103-DPB10201

| Pos | MHC          | Peptide                  | Of       | Core     | Core_Rel | Score_EL |
|-----|--------------|--------------------------|----------|----------|----------|----------|
| 338 | HLA-DPA10103-DPB10201 | FGEVFNATRFASVYA          | 4        | FNATRFASV | 1.000    | 0.958081 |
| 137 | HLA-DPA10103-DPB10201 | NDPSLGVYHKNKNS          | 3        | FLGVYHKN  | 1.000    | 0.927370 |
| 448 | HLA-DPA10103-DPB10201 | NNYLYLRLFKNLK            | 3        | YLYLRLFK  | 1.000    | 0.900380 |
| 919 | HLA-DPA10103-DPB10201 | NQKLIANQFNSAIGK         | 3        | LIANQFNSA | 1.000    | 0.854497 |
| 310 | HLA-DPA10103-DPB10201 | KGIIQQTNSFRVQPTE        | 3        | YQTNSFRVQ | 1.000    | 0.798770 |
| 1059| HLA-DPA10103-DPB10201 | GVVLHVTTYPQAEEK         | 3        | FLHVTYPA  | 0.993    | 0.752146 |
| 39  | HLA-DPA10103-DPB10201 | PDVFKFRSVHSTQD          | 4        | FRSVLHST  | 1.000    | 0.751483 |
| 229 | HLA-DPA10103-DPB10201 | LPICINITRFQOTL          | 4        | INITRFQTL | 1.000    | 0.740551 |
| 500 | HLA-DPA10103-DPB10201 | TNGGVYQFPRVVLS          | 3        | VGYQFPRV  | 0.987    | 0.596171 |
| 186 | HLA-DPA10103-DPB10201 | FKNLREFVFKNIDGY          | 3        | LREFVFKNI | 1.000    | 0.556008 |
| 794 | HLA-DPA10103-DPB10201 | IKDFGGFNFQSIPLD         | 3        | FGGFNFSQI | 0.980    | 0.542803 |
| 489 | HLA-DPA10103-DPB10201 | YFPLQSYGFQPTNGV         | 3        | LSYGPFQPT | 1.000    | 0.524831 |
| 1039| HLA-DPA10103-DPB10201 | RVDFCGKYHLMSSFP         | 3        | FCGKYHLM  | 1.000    | 0.522161 |
| 167 | HLA-DPA10103-DPB10201 | TFEVYSPFQLMDEG         | 3        | YVSFPFLMD | 1.000    | 0.490941 |
| 815 | HLA-DPA10103-DPB10201 | RSFIEDLLFNKVTCA         | 3        | IEDLLFNKV | 1.000    | 0.474460 |
| 1044| HLA-DPA10103-DPB10201 | GKYHLMGFQSPAPH          | 3        | YHLMGPSP  | 0.973    | 0.374533 |
### Allele: HLA-DPA10103-DPB10301

| Pos | MHC             | Peptide             | Of     | Core | Core_Rel | Score_EL |
|-----|-----------------|---------------------|--------|------|----------|----------|
| 679 | HLA-DPA10103-DPB10301 | NSPRRARSVASQSII     | 4      | RARSVASQS | 0.680    | 0.828726 |
| 154 | HLA-DPA10103-DPB10301 | ESEFRVYSSANCTF     | 4      | RVYSSANNC | 0.693    | 0.733745 |
| 1182| HLA-DPA10103-DPB10301 | EIDRLNEVAKNLNES    | 3      | RLNEVAKNL | 0.700    | 0.657668 |
| 762 | HLA-DPA10103-DPB10301 | QLNRAILTQAVEQDK    | 3      | RALTQAVE | 0.760    | 0.657035 |
| 1016| HLA-DPA10103-DPB10301 | AERIKASANLAATKMS   | 3      | RASANLAAT | 0.867    | 0.643581 |
| 17  | HLA-DPA10103-DPB10301 | NLTTRTQLPPAYTNS    | 4      | RTQLPPAYT | 0.700    | 0.624748 |
| 234 | HLA-DPA10103-DPB10301 | NITRFQTLLALHRSY    | 3      | RFQTLLALH | 0.753    | 0.541066 |
| 630 | HLA-DPA10103-DPB10301 | TPTWRVYSTGNSVFQ    | 4      | RVYSTGNSV | 0.707    | 0.597643 |
| 343 | HLA-DPA10103-DPB10301 | NATRFNASVYAENRKR   | 3      | RFNASVYAN | 0.747    | 0.541066 |
| 243 | HLA-DPA10103-DPB10301 | NQRFQENATRFASVY    | 4      | FNATRFASV | 1.000    | 0.940954 |
| 1087| HLA-DPA10103-DPB10301 | SFVFRVEIVYPAPQEM   | 3      | VFRVEIVY  | 1.000    | 0.470661 |
| 338 | HLA-DPA10103-DPB10401 | FGEVFNATRFASVYA    | 4      | FNATRFASV | 1.000    | 0.940954 |
| 167 | HLA-DPA10103-DPB10401 | TEEYVQFPFMDLEG    | 3      | YFVFMDLEG | 1.000    | 0.649400 |
| 229 | HLA-DPA10103-DPB10401 | LPIGINIITRFQTLLA  | 4      | INITRFQTL | 1.000    | 0.613948 |
| 137 | HLA-DPA10103-DPB10401 | NDPELGVYHHKMNKS   | 3      | LGVYHHKNK | 0.993    | 0.595645 |
| 310 | HLA-DPA10103-DPB10401 | KIYVQSTNRFVQPTE  | 3      | YSTNRFVQ | 0.980    | 0.515109 |
| 919 | HLA-DPA10103-DPB10401 | NQKLQANFQPSAIK    | 3      | LQANFQPSA | 1.000    | 0.473444 |
| 1059| HLA-DPA10103-DPB10401 | GVVFHLHTYVPQAEM   | 3      | FLHTYVP  | 1.000    | 0.470661 |
| 39  | HLA-DPA10103-DPB10401 | PDKVFRSSVLHSTQD   | 4      | FRSSVLHST | 0.993    | 0.353789 |
| 815 | HLA-DPA10103-DPB10401 | RSFTIENLFFNLVTIA  | 3      | IENLFFNL | 0.993    | 0.308022 |
| 794 | HLA-DPA10103-DPB10401 | IKDFFGFPFNSQILPD  | 3      | FGFPFNSQI | 0.933    | 0.301512 |
| 465 | HLA-DPA10103-DPB10401 | ERDISTIEYQAGSTP   | 3      | IESTIEYQ  | 1.000    | 0.281516 |
| 797 | HLA-DPA10103-DPB10401 | FGGFNFSQILPDPSK  | 3      | FGFSQILPD | 0.940    | 0.200222 |
| 1044| HLA-DPA10103-DPB10401 | GKGYVRMSBPQPS    | 3      | YRMSPQS  | 0.980    | 0.194480 |
| 149 | HLA-DPA10103-DPB10401 | NKSWMESEFRVYSSA  | 3      | WMESEFRVY | 0.980    | 0.193790 |
| 364 | HLA-DPA10103-DPB10401 | DYGSLVYNSASKTFK   | 5      | YNSASKTF | 0.967    | 0.157613 |
| 500 | HLA-DPA10103-DPB10401 | TNGVFGYQPRVYVLS  | 3      | VFGYQPRYV | 0.920    | 0.146939 |
## Allele: HLA-DPA10103-DPB10601

| Pos | MHC            | Peptide     | Of       | Core | Core_REL | Score_EL |
|-----|----------------|-------------|----------|------|----------|----------|
| 507 | HLA-DPA10103-DPB10401 | FYRVSFLHAP  | 3 VVLSFELL  | 0.920 | 0.142047 |
| 448 | HLA-DPA10103-DPB10401 | NYNYLFRKSNLK | 3 YLRLFRKS    | 0.873 | 0.133866 |

## Allele: HLA-DPA10201-DPB10101

| Pos | MHC            | Peptide     | Of       | Core | Core_REL | Score_EL |
|-----|----------------|-------------|----------|------|----------|----------|
| 679 | HLA-DPA10103-DPB10601 | NSPRRARSVASQII | 3 RARSVASQ     | 0.407 | 0.820258 |
| 680 | HLA-DPA10103-DPB10601 | SPRRARSVASQSI  | 3 RARSVASQS    | 0.633 | 0.793414 |
| 154 | HLA-DPA10103-DPB10601 | ESEFRVYSSANCTF | 4 VYSSANNC  | 0.693 | 0.692347 |
| 343 | HLA-DPA10103-DPB10601 | NATRFASYAWNRKR | 3 RASFYAWN   | 0.807 | 0.623829 |
| 1181 | HLA-DPA10103-DPB10601 | KEIDRLNEVAKNLNE | 4 RLNEVAKNL | 0.687 | 0.609740 |
| 234 | HLA-DPA10103-DPB10601 | NATRFQTLLALHRSY  | 3 RASFYAWN   | 0.733 | 0.562497 |
| 630 | HLA-DPA10103-DPB10601 | TPTWRVYSTGSNVQ  | 4 RVYSTGSNV   | 0.687 | 0.556733 |
| 1016 | HLA-DPA10103-DPB10601 | AEIRASANLAATKMS | 3 RASANLAAT | 0.807 | 0.548163 |
| 1180 | HLA-DPA10103-DPB10601 | QKEIDRLNEVAKNLN | 4 DRLNEVAKN  | 0.320 | 0.499970 |
| 243 | HLA-DPA10103-DPB10601 | ALHRSLTPGDSSSG  | 3 RASANLAAT | 0.727 | 0.457338 |
| 762 | HLA-DPA10103-DPB10601 | QLNRAITGIAPQEQDK | 3 RASANLAAT | 0.780 | 0.449189 |
| 404 | HLA-DPA10103-DPB10601 | GDEVRQIAPGQTGKI  | 4 RQIAPGQTG  | 0.680 | 0.424062 |
| Pos | MHC | Peptide | Of | Core | Core_Rel | Score_EL |
|-----|-----|---------|----|------|----------|----------|
| 338 | HLA-DPA10201-DBP10501 | FGEVFNATRFASVYA | 4 | FNATRFASV | 0.953 | 0.389147 |
| 137 | HLA-DPA10201-DBP10501 | NDFPFLGVYHKNNKS | 3 | FLGVYHKNN | 0.933 | 0.306581 |
| 310 | HLA-DPA10201-DBP10501 | KGIYQTNSFRVQFTE | 3 | YGTSFRVQF | 0.820 | 0.228629 |
| 343 | HLA-DPA10201-DBP10501 | NATRFASYAWNKR | 4 | FASYAWNKR | 0.513 | 0.194153 |
| 554 | HLA-DPA10201-DBP10501 | ESNKFLPFQFGFRD | 3 | KFLPFQFGR | 0.620 | 0.187663 |
| 39  | HLA-DPA10201-DBP10501 | PDKVFRSSVLHSTQD | 4 | FRSSVLHST | 0.853 | 0.183076 |
| 919 | HLA-DPA10201-DBP10501 | NQKLIANQFNSAIGK | 3 | LIANQFNSA | 0.947 | 0.165449 |
| 1059| HLA-DPA10201-DBP10501 | GVVFLHVTYVPAQEK | 3 | FLHVTYVPA | 0.800 | 0.156823 |
| 555 | HLA-DPA10201-DBP10501 | SNKKFLPFQFGRDI | 4 | FLPFQFGRD | 0.500 | 0.133289 |
| 234 | HLA-DPA10201-DBP10501 | NITRFQTLLALHRSY | 4 | FQTLLALHR | 0.473 | 0.129145 |
| 446 | HLA-DPA10201-DBP10501 | GGNYNYLYRLFRKSN | 5 | YLYRLFRKS | 0.453 | 0.127654 |
| 167 | HLA-DPA10201-DBP10501 | TFEYVSDPQFQFLMD | 3 | YSDPQFQFL | 0.907 | 0.108624 |
| 465 | HLA-DPA10201-DBP10501 | ERDISTEIQYAGSTP | 3 | ISTEIQYAG | 0.907 | 0.108208 |
| 912 | HLA-DPA10201-DBP10501 | TQNVLYENQKLIANQ | 3 | VLYENQKLI | 0.647 | 0.105018 |
| 778 | HLA-DPA10201-DBP10501 | TQEVFAQVKQIYKTP | 3 | FAQVKQIYK | 0.587 | 0.096005 |
| 1044| HLA-DPA10201-DBP10501 | GKYHLSFFQPSAPH | 3 | YHLSFFQPS | 0.867 | 0.099378 |
| 1181| HLA-DPA10201-DBP10501 | KEIDRLNEVAKNLNE | 3 | DRLNEVAKN | 0.380 | 0.228405 |
| 338 | HLA-DPA10201-DBP11401 | FGEVFNATRFASVYA | 4 | FNATRFASV | 0.947 | 0.205779 |
| 1182| HLA-DPA10201-DBP11401 | EIDRLNEVAKNLNE | 3 | DRLNEVAKN | 0.380 | 0.228405 |
| 1015| HLA-DPA10201-DBP11401 | AAERASANLAATKM | 3 | EASANLAAT | 0.407 | 0.207001 |
| 338 | HLA-DPA10201-DBP11401 | FGEVFNATRFASVYA | 4 | FNATRFASV | 0.947 | 0.205779 |
| 1182| HLA-DPA10201-DBP11401 | EIDRLNEVAKNLNE | 3 | DRLNEVAKN | 0.380 | 0.228405 |
| 1182| HLA-DPA10201-DBP11401 | EIDRLNEVAKNLNE | 3 | DRLNEVAKN | 0.380 | 0.228405 |
| 338 | HLA-DPA10201-DBP11401 | FGEVFNATRFASVYA | 4 | FNATRFASV | 0.947 | 0.205779 |
| 1182| HLA-DPA10201-DBP11401 | EIDRLNEVAKNLNE | 3 | DRLNEVAKN | 0.380 | 0.228405 |
| 1015| HLA-DPA10201-DBP11401 | AAERASANLAATKM | 3 | EASANLAAT | 0.407 | 0.207001 |
### Allele: HLA-DPA10301-DPB10402

| Pos | MHC               | Peptide          | Of     | Core | Core_Rel | Score_EL |
|-----|-------------------|------------------|--------|------|----------|----------|
| 338 | HLA-DPA10301-DPB10402 | FGEVFNATRFASVYA  | 4      | FNASV | 1.000    | 0.799477 |
| 137 | HLA-DPA10301-DPB10402 | NDPFLGVYHNNKSR  | 3      | FLVYNK | 0.967    | 0.534338 |
| 919 | HLA-DPA10301-DPB10402 | NQKLIANQFNSAIK  | 3      | LIANQ  | 0.993    | 0.461645 |
| 310 | HLA-DPA10301-DPB10402 | KGIYQTSNFRVQTPTE| 3      | YTSNF  | 0.920    | 0.463023 |
| 39  | HLA-DPA10301-DPB10402 | PKVFRSSVLHSTQD  | 4      | FRSSH  | 0.940    | 0.442875 |
| 167 | HLA-DPA10301-DPB10402 | TFEYVSQFPLMDLEG | 3      | VSFPL  | 0.980    | 0.435622 |
| 1059| HLA-DPA10301-DPB10402 | GVVFLHVTYVPAQEK | 3      | VLYTVP | 0.933    | 0.413981 |

### Allele: HLA-DQA10101-DQB10501

| Pos | MHC               | Peptide          | Of     | Core | Core_Rel | Score_EL |
|-----|-------------------|------------------|--------|------|----------|----------|
| 207 | HLA-DQA10101-DQB10501 | HTPINLVRDLPGFS  | 3      | INLVRD | 0.920    | 0.050726 |
| 80  | HLA-DQA10101-DQB10501 | DNPFVFPLPNDVYFA  | 3      | VFPVN  | 0.940    | 0.041026 |
| 1141| HLA-DQA10101-DQB10501 | LQPELDSSKEELDKY | 4      | LDSKE  | 0.947    | 0.037753 |
| 430 | HLA-DQA10101-DQB10501 | TGCNVANSNVLDSK  | 3      | VSNVL  | 0.773    | 0.036926 |
| 867 | HLA-DQA10101-DQB10501 | DEMTAQYTSALLACT | 3      | IAQYT  | 0.887    | 0.035834 |
| 59  | HLA-DQA10101-DQB10501 | FSNVNPFAIHSVCT  | 3      | TPSFA  | 0.813    | 0.033282 |
| 309 | HLA-DQA10101-DQB10501 | EKGYQTSNFRVQPTPE| 3      | YTSNF  | 0.727    | 0.030139 |
| 764 | HLA-DQA10101-DQB10501 | NHLRTAQYVEQDKNT | 3      | LTAQE  | 0.887    | 0.029183 |
| 1130| HLA-DQA10101-DQB10501 | IGVNNTVYDLPOPE  | 4      | NTYDP  | 0.600    | 0.024867 |
| 220 | HLA-DQA10101-DQB10501 | FSALEPLVDPIGIN  | 3      | LEPLV  | 0.980    | 0.023354 |
| 618 | HLA-DQA10101-DQB10501 | TEPVPAIHDQLTPT  | 4      | VAIHAD | 0.560    | 0.022634 |

### Allele: HLA-DQA10102-DQB10502

| Pos | MHC               | Peptide          | Of     | Core | Core_Rel | Score_EL |
|-----|-------------------|------------------|--------|------|----------|----------|

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# Allele: HLA-DPA10301-DPB10402

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# Allele: HLA-DQA10101-DQB10501

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# Allele: HLA-DQA10102-DQB10502

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| Pos | MHC                        | Peptide         | Of      | Core     | Core_Rel | Score_EL |
|-----|----------------------------|-----------------|---------|----------|----------|-----------|
| 207 | HLA-DQA10102-DQB10502      | HTPINLVRDLFQGFS | 3       | INLVRDLFQ| 0.973    | 0.130955  |
| 764 | HLA-DQA10102-DQB10502      | NRALTGIAVEQDKNT| 3       | LTGIAVEQD| 0.967    | 0.102791  |
| 1141| HLA-DQA10102-DQB10502      | LQPELDSKEELDKY  | 4       | LDSKEELDKY| 0.980    | 0.073965  |
| 1150| HLA-DQA10102-DQB10502      | EELDKFYKNHTSPDV | 3       | DKFYKNHTS| 0.840    | 0.059777  |
| 1130| HLA-DQA10102-DQB10502      | IGVNNTYVDPLQPE  | 4       | NNTYVDPLQ| 0.733    | 0.055147  |
| 80  | HLA-DQA10102-DQB10502      | DNPVLPFNDGVYFAS | 3       | VLPFNDGVY| 0.893    | 0.048192  |
| 618 | HLA-DQA10102-DQB10502      | TEVPVIAHADQTLPT | 4       | VIAHADQTL| 0.707    | 0.045908  |
| 797 | HLA-DQA10102-DQB10502      | FGGFNFSQILPDP5K | 3       | FNFSQILPD| 0.773    | 0.043116  |

# Allele: HLA-DQA10102-DQB10602

| Pos | MHC                        | Peptide         | Of      | Core     | Core_Rel | Score_EL |
|-----|----------------------------|-----------------|---------|----------|----------|-----------|
| 1009| HLA-DQA10102-DQB10602      | TQQQLIRAAEIRASAN| 4       | IRAAEIRAS| 1.000    | 0.942370  |
| 1168| HLA-DQA10102-DQB10602      | DISGINASVNIQKE  | 4       | INASVNIQ | 1.000    | 0.732077  |
| 634 | HLA-DQA10102-DQB10602      | RVYSTGNSVFQTARAG| 3       | STGSVFQTS| 1.000    | 0.672240  |
| 602 | HLA-DQA10102-DQB10602      | TNTSNQAVLYQDDVN | 4       | NQAVLYQDD| 0.567    | 0.543760  |
| 764 | HLA-DQA10102-DQB10602      | NRALTGIAVEQDKNT| 3       | LTGIAVEQD| 0.993    | 0.526578  |
| 950 | HLA-DQA10102-DQB10602      | DVVNQNAQALNTLVK | 3       | NQNAQALNT| 0.980    | 0.514267  |
| 39  | HLA-DQA10102-DQB10602      | PDKVRFRSSVLHSTDQ | 4       | FRSSVLHST| 0.633    | 0.503702  |

# Allele: HLA-DQA10103-DQB10603

| Pos | MHC                        | Peptide         | Of      | Core     | Core_Rel | Score_EL |
|-----|----------------------------|-----------------|---------|----------|----------|-----------|
| 1009| HLA-DQA10103-DQB10603      | TQQQLIRAAEIRASAN| 4       | IRAAEIRAS| 0.927    | 0.561329  |
| 207 | HLA-DQA10103-DQB10603      | HTPINLVRDLFQGFS | 3       | INLVRDLFQ| 0.987    | 0.542747  |
| 1130| HLA-DQA10103-DQB10603      | IGVNNTYVDPLQPE  | 4       | NNTYVDPLQ| 0.900    | 0.494898  |
| 1168| HLA-DQA10103-DQB10603      | DISGINASVNIQKE  | 4       | INASVNIQ | 0.913    | 0.410685  |
| 566 | HLA-DQA10103-DQB10603      | GRDIAAT TDADVDPQ | 3       | IDAATDVDP| 0.767    | 0.375269  |
| 764 | HLA-DQA10103-DQB10603      | NRALTGIAVEQDKNT| 3       | LTGIAVEQD| 0.947    | 0.354426  |
| 1014| HLA-DQA10103-DQB10603      | RAAEIRASANLAATK | 4       | IRAEANLAA| 0.820    | 0.315340  |
| 278 | HLA-DQA10103-DQB10603      | KYNENGTITDADVCA | 4       | NGTITDADV| 0.627    | 0.267493  |
| 569 | HLA-DQA10103-DQB10603      | IADTVRDVPQTTLE  | 4       | TADVRDPQT| 0.893    | 0.255403  |
| 86  | HLA-DQA10103-DQB10603      | FNDGVYFASKEKNI  | 4       | VYFASKEK | 0.933    | 0.250487  |
| 1060| HLA-DQA10103-DQB10603      | VVFLHVTVPVPAKEKN| 3       | LHVTVPVAP| 0.833    | 0.250228  |
| 602 | HLA-DQA10103-DQB10603      | TNTSNQAVLYQDDVN | 3       | SNQAVLYQ | 0.620    | 0.241920  |
### Allele: HLA-DQA10104-DQB10503

| Pos | MHC              | Peptide   | Of        | Core  | Core_Rel | Score_EL |
|-----|------------------|-----------|-----------|-------|----------|----------|
| 207 | HLA-DQA10104-DQB10503 | HTPINLVRDLPGFS | 3        | INLVRDLFQ | 0.973 | 0.082710 |
| 232 | HLA-DQA10104-DQB10503 | GINITRFQTLALHR | 3        | ITRFQTLLA  | 0.900 | 0.065833 |
| 1150 | HLA-DQA10104-DQB10503 | EELDKYFKHTSPDV | 3        | DKYFKHTSPV  | 0.893 | 0.061784 |
| 1009 | HLA-DQA10104-DQB10503 | TQQLRAEIRASAN | 4        | IRAEIRASAN  | 0.773 | 0.054256 |
| 1014 | HLA-DQA10104-DQB10503 | RAAEIRASANLAATK | 4        | IRASANLAA  | 0.713 | 0.048466 |
| 1150 | HLA-DQA10104-DQB10503 | EELDKYFKNHTSPDV | 3        | DKYFKNHTSPV  | 0.893 | 0.061784 |
| 518 | HLA-DQA10104-DQB10503 | SNGTHWFVTQRNFYE | 3        | THWFVTQRNFY  | 0.787 | 0.045070 |
| 430 | HLA-DQA10104-DQB10503 | TGCVIAWNSNNLDSDK | 3        | VIAWNSNNLDSDK  | 0.747 | 0.041535 |
| 764 | HLA-DQA10104-DQB10503 | IGIVNNTYDPLQPE | 4        | NNTYDPLQPE  | 0.640 | 0.039739 |
| 617 | HLA-DQA10104-DQB10503 | CTEVPVAIHADQLTP | 4        | PVAIHADQLTP  | 0.993 | 0.692045 |
| 566 | HLA-DQA10104-DQB10503 | GRDIADTTDAVRDQP | 4        | ADTTDAVRDQP  | 0.847 | 0.657678 |
| 716 | HLA-DQA10104-DQB10503 | TNFTISVTTELIFVS | 3        | TISVTTELIFVS  | 0.773 | 0.545931 |
| 255 | HLA-DQA10104-DQB10503 | SSGNTAGAAAYVGY | 3        | VYFASTEKS  | 0.767 | 0.512220 |
| 575 | HLA-DQA10104-DQB10503 | AVRDPQTEIDIFTP | 4        | PTQTEIDIFTP  | 0.993 | 0.456995 |
| 797 | HLA-DQA10104-DQB10503 | NGGYYFSTEKSNIT | 3         | VYFASTEKSNIT  | 0.767 | 0.456972 |
| 68 | HLA-DQA10104-DQB10503 | DGVYFSTEKSNITR | 5        | ASTEKSNI  | 0.520 | 0.420900 |
| 763 | HLA-DQA10104-DQB10503 | LNRALTGIAVEQDKN | 4        | LTGIAVEQDKN  | 0.853 | 0.419571 |

### Allele: HLA-DQA10201-DQB10202

| Pos | MHC              | Peptide   | Of        | Core  | Core_Rel | Score_EL |
|-----|------------------|-----------|-----------|-------|----------|----------|
| 617 | HLA-DQA10201-DQB10202 | CTEVPVAIHADQLTP | 4        | PVAIHADQLTP  | 0.993 | 0.692045 |
| 566 | HLA-DQA10201-DQB10202 | GRDIADTTDAVRDQP | 4        | ADTTDAVRDQP  | 0.847 | 0.657678 |
| 716 | HLA-DQA10201-DQB10202 | TNFTISVTTELIFVS | 3        | TISVTTELIFVS  | 0.773 | 0.545931 |
| 255 | HLA-DQA10201-DQB10202 | SSGNTAGAAAYVGY | 3        | VYFASTEKS  | 0.767 | 0.512220 |
| 1111 | HLA-DQA10201-DQB10202 | EEQ111TTNTFTVSGN | 4        | NNTFTVSGN  | 0.840 | 0.488437 |
| 575 | HLA-DQA10201-DQB10202 | AVRDPQTEIDIFTP | 4        | PTQTEIDIFTP  | 0.993 | 0.456995 |
| 797 | HLA-DQA10201-DQB10202 | NGGYYFSTEKSNIT | 3         | VYFASTEKSNIT  | 0.767 | 0.456972 |
| 68 | HLA-DQA10201-DQB10202 | DGVYFSTEKSNITR | 5        | ASTEKSNI  | 0.520 | 0.420900 |
| 763 | HLA-DQA10201-DQB10202 | LNRALTGIAVEQDKN | 4        | LTGIAVEQDKN  | 0.853 | 0.419571 |

### Allele: HLA-DQA10201-DQB10301

| Pos | MHC              | Peptide   | Of        | Core  | Core_Rel | Score_EL |
|-----|------------------|-----------|-----------|-------|----------|----------|
| 617 | HLA-DQA10201-DQB10301 | CTEVPVAIHADQLTP | 4        | PVAIHADQLTP  | 0.993 | 0.692045 |
| 566 | HLA-DQA10201-DQB10301 | GRDIADTTDAVRDQP | 4        | ADTTDAVRDQP  | 0.847 | 0.657678 |
| 716 | HLA-DQA10201-DQB10301 | TNFTISVTTELIFVS | 3        | TISVTTELIFVS  | 0.773 | 0.545931 |
| 255 | HLA-DQA10201-DQB10301 | SSGNTAGAAAYVGY | 3        | VYFASTEKS  | 0.767 | 0.512220 |
| 1111 | HLA-DQA10201-DQB10301 | EEQ111TTNTFTVSGN | 4        | NNTFTVSGN  | 0.840 | 0.488437 |
| 575 | HLA-DQA10201-DQB10301 | AVRDPQTEIDIFTP | 4        | PTQTEIDIFTP  | 0.993 | 0.456995 |
| 797 | HLA-DQA10201-DQB10301 | NGGYYFSTEKSNIT | 3         | VYFASTEKSNIT  | 0.767 | 0.456972 |
| 68 | HLA-DQA10201-DQB10301 | DGVYFSTEKSNITR | 5        | ASTEKSNI  | 0.520 | 0.420900 |
| 763 | HLA-DQA10201-DQB10301 | LNRALTGIAVEQDKN | 4        | LTGIAVEQDKN  | 0.853 | 0.419571 |
### Allele: HLA-DQA10201-DQB10303

| Pos | HLA-DQA10201-DQB10303 | Peptide | Of    | Core | Core_Rel | Score_EL |
|-----|------------------------|---------|-------|------|----------|----------|
| 86  | HLA-DQA10201-DQB10303 | FNDGVYFASTEKSNI | 4 | VYFASTEKS | 0.973 | 0.291270 |
| 1009| HLA-DQA10201-DQB10303| TQQLIRAAEIRASAN | 4 | IRAEIRAS | 0.913 | 0.267392 |
| 1168| HLA-DQA10201-DQB10303| DISGINASVNIQKE | 4 | INASVNIQ | 0.900 | 0.267024 |
| 255 | HLA-DQA10201-DQB10303| SSGWTAGAAAYVGY | 3 | WTAGAAAYY | 0.580 | 0.253003 |
| 39  | HLA-DQA10201-DQB10303| TQQLIRAAEIRASAN | 4 | IRAEIRAS | 0.913 | 0.267392 |
| 883 | HLA-DQA10201-DQB10303| TSVGTWFAGAALQI | 5 | FGAAALQI | 0.500 | 0.227355 |
| 663 | HLA-DQA10201-DQB10303| DIPIGAGICASYQTQ | 3 | IAPQGTGKI | 1.000 | 0.598714 |
| 407 | HLA-DQA10201-DQB10303| VRQIAPGQTGKIADY | 3 | IAPGQTGKI | 1.000 | 0.595225 |
| 797 | HLA-DQA10201-DQB10303| FGGFNFSQILPDPSK | 3 | FNFSQILPD | 0.973 | 0.546661 |

### Allele: HLA-DQA10201-DQB10402

| Pos | HLA-DQA10201-DQB10402 | Peptide | Of    | Core | Core_Rel | Score_EL |
|-----|------------------------|---------|-------|------|----------|----------|
| 1009| HLA-DQA10201-DQB10402 | TQQLIRAAEIRASAN | 4 | IRAEIRAS | 0.833 | 0.472338 |
| 39  | HLA-DQA10201-DQB10402| PDKVFRSSVLHSTQD | 4 | FRSSVLHST | 0.533 | 0.402738 |
| 60  | HLA-DQA10201-DQB10402| SNVTWFHAIHVSTN | 5 | FIAHVSSTN | 0.453 | 0.381117 |
| 87  | HLA-DQA10201-DQB10402| NDGVYFASTEKSNI | 3 | VYFASTEKS | 0.773 | 0.381117 |
| 1014| HLA-DQA10201-DQB10402| RAEEIRASANLAATK | 4 | IRASANLAA | 0.473 | 0.158596 |
| 797 | HLA-DQA10201-DQB10402| FGGFNFSQILPDPSK | 3 | FNFSQILPD | 0.753 | 0.337318 |
| 88  | HLA-DQA10201-DQB10402| DGVYFASTEKSNIIR | 3 | YFASTEKS | 0.333 | 0.319097 |
| Pos | MHC               | Peptide         | Of | Core  | Core_Rel | Score_EL | Score_EL |
|-----|------------------|-----------------|----|-------|----------|----------|----------|
| 764 | HLA-DQA10201-DQB10402 | NRALTGIAVEQDKNT | 3  | LTGIAVEQD | 0.800    | 0.318981 |
| 59  | HLA-DQA10201-DQB10402 | NATRFASYAWNRKR  | 4  | FASYAWNR  | 0.720    | 0.314884 |
| 618 | HLA-DQA10201-DQB10402 | TEVPVAIHADELQTP | 3  | PVAIHADEL | 0.647    | 0.312056 |
| 255 | HLA-DQA10201-DQB10402 | SSGWTTAGAAAYVYG | 3  | WTAGAAAYV | 0.553    | 0.310478 |
| 403 | HLA-DQA10201-DQB10402 | RGDEVRIAPFQTGK  | 4  | VRQIAPGQT  | 0.860    | 0.303128 |
| 309 | HLA-DQA10201-DQB10402 | EKGIYQTSNFRVQPTE | 3   | YQTSNFRVQ  | 0.453    | 0.291809 |

# Allele: HLA-DQA10301-DQB10302

| Pos | MHC               | Peptide         | Of | Core  | Core_Rel | Score_EL | Score_EL |
|-----|------------------|-----------------|----|-------|----------|----------|----------|
| 764 | HLA-DQA10301-DQB10302 | NRALTGIAVEQDKNT | 3  | LTGIAVEQD | 0.967    | 0.063847 |
| 566 | HLA-DQA10301-DQB10302 | GRDIAADTTDAVRDPQ | 4  | ADTTDAVRD | 0.607    | 0.037359 |

# Allele: HLA-DQA10303-DQB10402

| Pos | MHC               | Peptide         | Of | Core  | Core_Rel | Score_EL | Score_EL |
|-----|------------------|-----------------|----|-------|----------|----------|----------|
| 39  | HLA-DQA10303-DQB10402 | PDKVFRSSVHLSTQD | 4  | FRSSVHLST | 0.600    | 0.231686 |
| 1009 | HLA-DQA10303-DQB10402 | TQQLIRAAEIRASAN | 4  | IRAEIRAS  | 0.793    | 0.177222 |
| 797  | HLA-DQA10303-DQB10402 | FGGFNFSQILPDPK  | 3  | FNFSQILPD | 0.787    | 0.17692  |
| 200  | HLA-DQA10303-DQB10402 | YFKIYKSHTPINLVR | 3  | IYSHKTPIN | 0.647    | 0.173023 |
| 818  | HLA-DQA10303-DQB10402 | IEELDLLNKVTLDAG | 4  | LNKVTLDAG | 0.513    | 0.172665 |

# Allele: HLA-DQA10303-DQB10402

| Pos | MHC               | Peptide         | Of | Core  | Core_Rel | Score_EL | Score_EL |
|-----|------------------|-----------------|----|-------|----------|----------|----------|
| 39  | HLA-DQA10303-DQB10402 | PDKVFRSSVHLSTQD | 4  | FRSSVHLST | 0.600    | 0.231686 |
| 1009 | HLA-DQA10303-DQB10402 | TQQLIRAAEIRASAN | 4  | IRAEIRAS  | 0.793    | 0.177222 |
| 797  | HLA-DQA10303-DQB10402 | FGGFNFSQILPDPK  | 3  | FNFSQILPD | 0.787    | 0.17692  |
| 200  | HLA-DQA10303-DQB10402 | YFKIYKSHTPINLVR | 3  | IYSHKTPIN | 0.647    | 0.173023 |
| 818  | HLA-DQA10303-DQB10402 | IEELDLLNKVTLDAG | 4  | LNKVTLDAG | 0.513    | 0.172665 |
### Allele: HLA-DQA10401-DQB10402

| Pos | MHC                  | Peptide   | Of        | Core     | Core_Rel | Score_EL |
|-----|----------------------|-----------|-----------|----------|----------|----------|
| 630 | HLA-DQA10303-DQB10402 | TPTWRVYSTGNSNVFQ | 3 | WRVYSTGSN | 0.740 | 0.160456 |
| 976 | HLA-DQA10303-DQB10402 | VLNDSLRLDKEAE | 4 | ILSRLDKVE | 0.533 | 0.159555 |

### Allele: HLA-DQA10501-DQB10201

| Pos | MHC                  | Peptide   | Of        | Core     | Core_Rel | Score_EL |
|-----|----------------------|-----------|-----------|----------|----------|----------|
| 617 | HLA-DQA10501-DQB10201 | CTEVPVIAHADQLTP | 4 | PVAIHADQL | 0.993 | 0.680372 |
| 566 | HLA-DQA10501-DQB10201 | GRDITADTDAVRDQ | 4 | ADTDAVRD | 0.687 | 0.513351 |
| 1111| HLA-DQA10501-DQB10201 | EQPQITDNTTFVSGN | 4 | ITDNTFVS | 0.860 | 0.497346 |
| 255 | HLA-DQA10501-DQB10201 | SGWTAGAAAYVGY | 3 | WTAGAAAYY | 0.560 | 0.491967 |
| 87  | HLA-DQA10501-DQB10201 | NDVVFASSTEKNI | 4 | VFASSTEK | 0.927 | 0.458878 |
| 764 | HLA-DQA10501-DQB10201 | NREALTGIALVEQDKNT | 3 | LGIAVEQD | 0.960 | 0.441353 |
| 797 | HLA-DQA10501-DQB10201 | FGFGNSQILPDPSK | 3 | FNFSQILPD | 0.920 | 0.440875 |
| 716 | HLA-DQA10501-DQB10201 | TNFTISVTEILPVS | 3 | TISVTEIL | 0.780 | 0.389275 |

### Allele: HLA-DQA10501-DQB10301

| Pos | MHC                  | Peptide   | Of        | Core     | Core_Rel | Score_EL |
|-----|----------------------|-----------|-----------|----------|----------|----------|
| 255 | HLA-DQA10501-DQB10301 | SGWTAGAAAYVGY | 3 | WTAGAAAYY | 0.620 | 0.821014 |
| 256 | HLA-DQA10501-DQB10301 | SGWTAGAAAYVGYL | 3 | TAGAAAYYV | 0.533 | 0.724726 |
| Pos | MHC              | Peptide       | Of     | Core  | Core_Rel | Score_EL |
|-----|------------------|---------------|--------|-------|----------|----------|
| 87  | HLA-DQA10501-DQB10301 | NDGVYFASTEKSNII | 3      | VFAS   | 0.940    | 0.710684 |
| 1009| HLA-DQA10501-DQB10301  | TQQLIRAAEIRASAN | 4      | IRAE   | 0.987    | 0.705335 |
| 1168| HLA-DQA10501-DQB10301 | DISGINASVNIQKE | 1      | INASVN| 1.000    | 0.674956 |
| 883 | HLA-DQA10501-DQB10301  | TSGWTFGAGAAQIQ | 5      | FGAGAALIQ | 0.607    | 0.660836 |
| 39  | HLA-DQA10501-DQB10301  | PDKVFRSSVLHSTQD | 4     | FRSSVLHST | 0.640    | 0.610266 |
| 407 | HLA-DQA10501-DQB10301  | VRQIAPGQTGKID  | 3     | IGAGI  | 0.767    | 0.595821 |
| 663 | HLA-DQA10501-DQB10301  | DISGINASVVNIQKE | 4     | INASVVNIQ | 0.807    | 0.112836 |
| 797 | HLA-DQA10501-DQB10301  | FGGFNFSQILPDPSK | 3     | FNFSQILPD | 0.973    | 0.477932 |

# Allele: HLA-DQA10501-DQB10302

| Pos | MHC              | Peptide       | Of     | Core  | Core_Rel | Score_EL |
|-----|------------------|---------------|--------|-------|----------|----------|
| 764 | HLA-DQA10501-DQB10302  | NRALTGIAVEQDKNT | 3     | LTGIAVEQD | 0.920    | 0.151863 |
| 255 | HLA-DQA10501-DQB10302  | SSGWTAGAAAYVGY | 3     | WTAGAAAYY | 0.593    | 0.117918 |
| 1111| HLA-DQA10501-DQB10302 | EPQIITDTNFTVESGN | 4     | ITTDNTFVS | 0.707    | 0.116772 |
| 618 | HLA-DQA10501-DQB10302  | TVEVPVIAHADQLTPT | 3     | PVAIHADQL | 0.780    | 0.116630 |
| 797 | HLA-DQA10501-DQB10302  | FGGFNFSQILPDPSK | 3     | FNFSQILPD | 0.833    | 0.112836 |
| 86  | HLA-DQA10501-DQB10302  | FNDGVYFASTEKSNI | 4     | VYFASTEKS | 0.887    | 0.097817 |
| 566 | HLA-DQA10501-DQB10302  | GRDITADTDADRDQPQ | 4     | ADTDADRDQ | 0.527    | 0.089850 |
| 207 | HLA-DQA10501-DQB10302  | HTFINLVRDLFGFS  | 3     | INLRVLDLG | 0.847    | 0.078411 |
| 1168| HLA-DQA10501-DQB10302  | DISGINASVNIQKE | 4     | INASVNIQ | 0.807    | 0.073628 |
| 1009| HLA-DQA10501-DQB10302  | TQQLIRAAEIRASAN | 4     | IRAEIRAS | 0.760    | 0.065519 |
| 426 | HLA-DQA10501-DQB10302  | FDDFTGCVIAWNSNN | 3     | FTGCVIANN | 0.860    | 0.062949 |
| 1014| HLA-DQA10501-DQB10302  | RAAEIRASLANLAAKT | 4     | IRASANLAA | 0.567    | 0.058167 |

# Allele: HLA-DQA10501-DQB10303

| Pos | MHC              | Peptide       | Of     | Core  | Core_Rel | Score_EL |
|-----|------------------|---------------|--------|-------|----------|----------|
| 86  | HLA-DQA10501-DQB10303  | FNDGVYFASTEKSNI | 4     | VFAS   | 0.967    | 0.281831 |
| 1009| HLA-DQA10501-DQB10303  | TQQLIRAAEIRASAN | 4     | IRAE   | 0.887    | 0.265950 |
| 1168| HLA-DQA10501-DQB10303  | DISGINASVNIQKE | 4     | INASVN| 0.893    | 0.230350 |
| 255 | HLA-DQA10501-DQB10303  | SSWTATGAAAYVGY | 3     | WTAGAAAY | 0.627    | 0.227774 |
| 39  | HLA-DQA10501-DQB10303  | PDKVFRSSVLHSTQD | 3     | FRSSVLHS | 0.527    | 0.200066 |
| 426 | HLA-DQA10501-DQB10303  | FDDFTGCVIAWNSNN | 3     | FTGCVIANN | 0.913    | 0.189912 |
| 764 | HLA-DQA10501-DQB10303  | NRALTGIAVEQDKNT | 3     | LTGIAVEQD | 0.867    | 0.161438 |
| 797 | HLA-DQA10501-DQB10303  | FGGFNFSQILPDPSK | 3     | FNFSQILPD | 0.840    | 0.155641 |
| 1014| HLA-DQA10501-DQB10303  | RAAEIRASLANLAAKT | 4     | IRASANLAA | 0.533    | 0.151400 |
| 618 | HLA-DQA10501-DQB10303  | TEVPVIAHADQLTPT | 3     | VAIHADQL | 0.713    | 0.144207 |
### Allele: HLA-DQA10501-DQB10303

| Pos | MHC             | Peptide          | Of    | Core | Core_Rel | Score_EL | Score_EL   |
|-----|-----------------|------------------|-------|------|----------|----------|------------|
| 40  | HLA-DQA10501-DQB10303 | DKVFRSSVLHSTQDL | 3     | FRSSVLHST | 0.587    | 0.131615 |
| 883 | HLA-DQA10501-DQB10303 | TSGWTFGAGAALQIP | 3     | WFTFGAGAAL | 0.340    | 0.125802 |
| 1111| HLA-DQA10501-DQB10303 | EPQ111TDNTFVSNG | 4     | ITTDNTFVS | 0.800    | 0.124045 |
| 469 | HLA-DQA10501-DQB10303 | STEIYQAGSFCNGV  | 3     | TYQAGSFC | 0.713    | 0.119697 |
| 393 | HLA-DQA10501-DQB10303 | TNVYADSFVIRGDEV | 3     | YADSFVIRG | 0.907    | 0.118041 |

### Allele: HLA-DQA10501-DQB10402

| Pos | MHC             | Peptide          | Of    | Core | Core_Rel | Score_EL | Score_EL   |
|-----|-----------------|------------------|-------|------|----------|----------|------------|
| 1009| HLA-DQA10501-DQB10402 | TQQLIRAEEIRASAN | 4     | IRAEEIRAS | 0.827    | 0.497060 |
| 39  | HLA-DQA10501-DQB10402 | PDKVFRSSVLHSTQD | 4     | FRSSVLHST | 0.493    | 0.413751 |
| 86  | HLA-DQA10501-DQB10402 | FNDGVYFASTEKSNI | 4     | VYFASTEKS | 0.780    | 0.409926 |
| 61  | HLA-DQA10501-DQB10402 | NVTWFHAIHVSNTG  | 4     | FAIHVSNG | 0.673    | 0.385892 |
| 797 | HLA-DQA10501-DQB10402 | FGDFNSQILPDPSK  | 3     | FNFSQILPD | 0.787    | 0.366966 |
| 403 | HLA-DQA10501-DQB10402 | RGDEVQRQPRTGTK  | 4     | VRQPRTGTK | 0.900    | 0.342012 |
| 764 | HLA-DQA10501-DQB10402 | NRRALTGIAVEQDNT | 3     | LTGIAVEQD | 0.853    | 0.338381 |
| 1014| HLA-DQA10501-DQB10402 | RAAEIRASANLAA   | 4     | IRASANLAA | 0.607    | 0.337765 |
| 343 | HLA-DQA10501-DQB10402 | NATRFASVYAWNKR  | 4     | FASYAWNKR | 0.740    | 0.335467 |
| 59  | HLA-DQA10501-DQB10402 | FSNTWFHAIHVSNG | 3     | VTMFHAHVS | 0.473    | 0.322681 |
| 38  | HLA-DQA10501-DQB10402 | YPKVRFRSSVLHSTQ | 4     | VFRSSVLHS | 0.433    | 0.319606 |
| 255 | HLA-DQA10501-DQB10402 | SSGWTAGAAAYGYV  | 3     | WTAGAAAYY | 0.587    | 0.316422 |
| 618 | HLA-DQA10501-DQB10402 | TEGPVIAHADQLTPT | 3     | PVAIHADQL | 0.653    | 0.314441 |
| 430 | HLA-DQA10501-DQB10402 | TGCVIAMSNNILDSK | 3     | VIAMSNIL  | 0.853    | 0.295448 |

### Allele: HLA-DQA10601-DQB10402

| Pos | MHC             | Peptide          | Of    | Core | Core_Rel | Score_EL | Score_EL   |
|-----|-----------------|------------------|-------|------|----------|----------|------------|
| 1009| HLA-DQA10601-DQB10402 | TQQLIRAEEIRASAN | 4     | IRAEEIRAS | 0.827    | 0.302170 |
| 39  | HLA-DQA10601-DQB10402 | PDKVFRSSVLHSTQD | 4     | FRSSVLHST | 0.493    | 0.258999 |
| 86  | HLA-DQA10601-DQB10402 | FNDGVYFASTEKSNI | 4     | VYFASTEKS | 0.800    | 0.253918 |
| 61  | HLA-DQA10601-DQB10402 | NVTWFHAIHVSGTNG | 4     | FAIHVSNG | 0.673    | 0.240825 |
| 797 | HLA-DQA10601-DQB10402 | FGDFNSQILPDPSK  | 3     | FNFSQILPD | 0.820    | 0.239470 |
| 403 | HLA-DQA10601-DQB10402 | RGDEVQRQPRTGTK  | 4     | VRQPRTGTK | 0.900    | 0.229841 |
| 764 | HLA-DQA10601-DQB10402 | NRRALTGIAVEQDNT | 3     | LTGIAVEQD | 0.853    | 0.222170 |
| 1014| HLA-DQA10601-DQB10402 | RAAEIRASANLAA   | 4     | IRASANLAA | 0.607    | 0.337765 |
| 343 | HLA-DQA10601-DQB10402 | NATRFASVYAWNKR  | 4     | FASYAWNKR | 0.740    | 0.335467 |
| 59  | HLA-DQA10601-DQB10402 | FSNTWFHAIHVSNG | 3     | VTMFHAHVS | 0.473    | 0.322681 |
| 38  | HLA-DQA10601-DQB10402 | YPKVRFRSSVLHSTQ | 4     | VFRSSVLHS | 0.433    | 0.319606 |
| 255 | HLA-DQA10601-DQB10402 | SSGWTAGAAAYGYV  | 3     | WTAGAAAYY | 0.587    | 0.316422 |
| 618 | HLA-DQA10601-DQB10402 | TEGPVIAHADQLTPT | 3     | PVAIHADQL | 0.653    | 0.314441 |
| 430 | HLA-DQA10601-DQB10402 | TGCVIAMSNNILDSK | 3     | VIAMSNIL  | 0.853    | 0.295448 |
| Position | HLA-DQA10601-DQB10402 | Epitope       | Length | Peptide       | Score | p-value  |
|----------|------------------------|---------------|--------|---------------|-------|----------|
| 1014     | HLA-DQA10601-DQB10402  | RAAEIRASANLAATK | 4      | IRASANLA     | 0.493 | 0.180690 |
| 256      | HLA-DQA10601-DQB10402  | SGWTAGAAAYVYGL | 3      | TAGAAAYYV    | 0.560 | 0.179288 |
| 1141     | HLA-DQA10601-DQB10402  | LQPELDSKEELDKY | 4      | LDSFKEELD    | 0.920 | 0.176775 |
| 59       | HLA-DQA10601-DQB10402  | FSNVTWFHAIHVSGT | 3      | VTWFHAIHV    | 0.447 | 0.171340 |

Note: The epitopes mutated in Omicron variant versus Wuhan-1 are indicated in red.