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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Predicting 9-mer- epitope binding HLA-A\*0201 peptides (wild type and mutant)** | | | | | | | | | | | | | | | | | | | |
|  | **Count** | | | | | | | | | | | | **Motif** | | | | | **Enzyme** | | |
|  | 9 | | | | | | | | | | | | Wild Type | | | | |  | | |
|  | 11 | | | | | | | | | | | | TGC | | | | | AID | | |
|  | 9 | | | | | | | | | | | | GCA | | | | | AID | | |
|  | 10 | | | | | | | | | | | | AGC | | | | | AID | | |
|  | 9 | | | | | | | | | | | | GCT | | | | | AID | | |
|  | 9 | | | | | | | | | | | | TAC | | | | | AID | | |
|  | 9 | | | | | | | | | | | | GTA | | | | | AID | | |
|  | 10 | | | | | | | | | | | | TC/ C >T | | | | | A3A/A3B | | |
|  | 8 | | | | | | | | | | | | TC/ G>C | | | | | A3A/A3B | | |
|  | 7 | | | | | | | | | | | | GA | | | | | A3A/A3B | | |
|  | 9 | | | | | | | | | | | | GA G>C | | | | | A3A/A3B | | |
|  | 9 | | | | | | | | | | | | TTC | | | | | A3A/A3B | | |
|  | 8 | | | | | | | | | | | | GAA | | | | | A3A/A3B | | |
|  | **Experimentally Known Epitopes** | | | | | | | | | | | | | | | | | | | |
| **Position** | | **wt Peptide** | | **Affinity (nM)** |  | **Rank** | | **Binding level** | |
| 65 | | RMPEAAPPV | | 6.2 |  | 0.06 | | SB | |
| 293 | | LLGRNSFEV | | 11.6 |  | 0.15 | | SB | |
|  | **Stop codon gained** | | | | | | | | | | | | | | | | | | | |
| **Position** | |  | **Sequence** | | | | | | | | | | **Enzyme** | | | | | | **Consist with existent mutations** | |
| 6 | |  | KQSQHMTEV  K\*SQYMTEV | | | | | | | | | | AID | | | | | |  | |
| 6 | |  | KQSQHMTEV  KQ\*QHMTEV | | | | | | | | | | A3A/A3B | | | | | |  | |
|  | **Novel Epitopes** | | | | | | | | | | | | | | | | | | | |
| **mt Peptide** | | **Affinity (nM)** | | **Rank** | **wt peptide** | **Binding level** | | **Enzyme** | | | **Consist with existent mutations** | | | | | | | | | |
| VLSPL**S**SQA | | 305.7 | | 2.00 | VLSPLPSQA | WB | | AID | | |  | | | | | | | | | |
| FL**Y**SGTAKS | | 76.0 | | 0.90 | FLHSGTAKS | WB | | AID | | | c. 343C>T p. H115Y COSM4429613  Substitution –missense in sporadic cancers; somatic mutation. | | | | | | | | | |
| VLSPLPSQ**V** | | 20.9 | | 0.3 | VLSPLPSQA | SB | | AID | | | p. A39V in a sporadic cancer; somatic mutation. | | | | | | | | | |
| **Y**LIRVEGNL | | 207.4 | | 1.70 | HLIRVEGNL | WB | | AID | | | c. 557C>T p. H193Y COSM10672  Substitution –missense in sporadic cancers; somatic mutation. | | | | | | | | | |
| VL**F**PLPFQA | | 10.1 | | 0.12 | VLSPLPSQA | SB | | A3A/A3B | | | c. 98C>T p.S33F COSM4272154  Substitution -missense | | | | | | | | | |
| **F**VTCTY**F**PA | | 34.4 | | 0.50 | SVTCTYSPA | SB | | A3A/A3B | | | c. 362C>T p.S121F COSM44027  Substitution –missense in sporadic cancer; somatic mutation  c. 380C>T p.S127F COSM44027  Substitution –missense in sporadic cancer; somatic mutation | | | | | | | | | |
| KTYQGSYG**L** | | 192.2 | | 1.60 | KTYQGSYGF | WB | | A3A/A3B | | | [p.F](http://web.expasy.org/variant_pages/VAR_044674.html)111L in a sporadic cancer; somatic mutation | | | | | | | | | |
| HLI**P**V**QA**NL | | 87.1 | | 1.00 | HLIRVEGNL | WB | | A3A/A3B | | | c. 578G>C p.R196P COSM43814  Substitution –missense in sporadic cancer; somatic mutation  c. 592G>C p.E198Q COSM45449  Substitution –missense in sporadic cancer; somatic mutation  c. 596G>C p.G199A COSM45199  Substitution –missense in sporadic cancer; somatic mutation | | | | | | | | | |
| **Increased HLA Affinity** | | | | | | | | | | | | | | | | | | | | |
| **mt Peptide** | | **Affinity (nM)** | | **Rank** | PAPAPSWPL | **wt Peptide** | | | **Affinity (nM)** | | | **Rank** | | **Binding level** | **Delta nM** | **Enzyme** | **Consist with existent mutations** | | | |
| RM**S**EA**V**PPV | | 2.9 | | 0.01 | PSWPLSSSV | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | 3.3 | AID | c. 199C>T p. P67S COSM44199  Substitution –missense in sporadic cancers; somatic mutation. | | | |
| GLAPPQ**Y**LI | | 40.4 | | 0.60 | QLWVDSTPP | GLAPPQHLI | | | 124.6 | | | 1.20 | | WB | 84.2 | AID | c. 557C>T p. H193Y COSM10672  Substitution –missense in sporadic cancers; somatic mutation. | | | |
| RMPE**TT**PPV | | 5.5 | | 0.04 | SB | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | 0.7 | AID | c. 208G>A p. A70T COSM44736  Substitution –missense in sporadic cancers; Somatic mutation | | | |
| KL**F**PENNVL | | 84.9 | | 0.90 | WB | KLLPENNVL | | | 181.2 | | | 1.50 | | WB | 96.3 | AID |  | | | |
| KQ**L**QHMTEV | | 27.2 | | 0.40 | SB | KQSQHMTEV | | | 208.8 | | | 1.70 | | WB | 181.6 | A3A/A3B | c. 497C>T p.S166L COSM44289  Substitution –missense in sporadic cancer; somatic mutation | | | |
| KLL**A**ENNV**V** | | 62.9 | | 0.80 | WB | KLLPENNVL | | | 181.2 | | | 1.50 | | WB | 118 | A3A/A3B |  | | | |
| KLLP**Q**NNVL | | 155.1 | | 1.40 | WB | KLLPENNVL | | | 181.2 | | | 1.50 | | WB | 26 | A3A/A3B |  | | | |
| ALN**N**MFCQL | | 44.4 | | 0.60 | WB | ALNKMFCQL | | | 91.8 | | | 1.00 | | WB | 47.4 | A3A/A3B | c. 396G>C p.K132N COSM43963  Substitution –missense in sporadic cancer; somatic mutation | | |
| LL**A**RNSF**Q**V | | 7.4 | | 0.08 | SB | LLGRNSFEV | | | 11.6 | | | 0.15 | | SB | 4.2 | A3A/A3B | c. 797G>C p. G266A COSM45488  Substitution –missense in sporadic cancers; somatic mutation  c. 811G>C p. E271Q COSM43706  Substitution –missense in sporadic cancers; somatic mutation | | |
| **K**MPEAAPPV | | 5.1 | | 0.04 | SB | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | 1.1 | A3A/A3B | C. ? p. R65K COM4169574 | | |
| **Reduced HLA Affinity** | | | | | | | | | | | | | | | | | | | |
| **mt Peptide** | | **Affinity (nM)** | | **Rank** | **Binding level** | **wt Peptide** | | | **Affinity (nM)** | | | **Rank** | | **Binding level** | **Delta nM** | **Enzyme** | **Consist with existent mutations** | | |
| **V**LNKMFCQL | | 105.1 | | 1.10 | WB | ALNKMFCQL | | | 91.8 | | | 1.00 | | WB | -64.51 | AID | c. 386C>T p. A129V COSM44550  Substitution –missense in sporadic cancers; somatic mutation | | |
| YQ**D**SYGFRL | | 34.0 | | 0.50 | SB | YQGSYGFRL | | | 106.5 | | | 1.10 | | WB | 72.5 | AID | c. 314G>A p. G105D COSM1167900  Substitution –missense in sporadic cancers; somatic mutation | | |
| YQG**N**YGFRL | | 138.1 | | 1.30 | WB | YQGSYGFRL | | | 106.5 | | | 1.10 | | WB | -31.5 | AID |  | | |
| LLGRN**N**FEV | | 15.1 | | 0.20 | SB | LLGRNSFEV | | | 11.6 | | | 0.15 | | SB | -3.5 | AID | c. 806G>A p. S269N COSM44236  Substitution –missense in sporadic cancers; somatic mutation | | |
| KLL**S**ENNVL | | 200.4 | | 1.60 | WB | KLLPENNVL | | | 181.2 | | | 1.50 | | WB | -19.4 | A3A/A3B | c. 79C>T p. P27S COSM1167900  Substitution –missense | | |
| RMPEAA**S**PV | | 16.2 | | 0.25 | SB | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | -10 | A3A/A3B | c. 214C>T p. P72S COSM44018  Substitution –missense | | |
| YQGSYG**L**R**V** | | 280.4 | | 2.00 | WB | YQGSYGFRL | | | 106.5 | | | 1.10 | | WB | -173.9 | A3A/A3B | [p.](http://web.expasy.org/variant_pages/VAR_044674.html) F109L in a sporadic cancer; somatic mutation | | |
| **V**LGRNSFEV | | 18.5 | | 0.25 | SB | LLGRNSFEV | | | 11.6 | | | 0.15 | | SB | -6.9 | A3A/A3B | c. 790C>G p. L264V COSM45704  Substitution –missense | | |
| **K**MP**K**AAPPV | | 19.3 | | 0.25 | SB | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | -13.1 | A3A/A3B | c. ? p. R65K COSM4169574  Substitution –missense  c. 202G>A p. E68K COSM5681716  Substitution –missense | | |
| LL**E**RNSF**K**V | | 146.6 | | 1.30 | WB | LLGRNSFEV | | | 11.6 | | | 0.15 | | SB | -135 | A3A/A3B | c. 797G>A p. G266E COSM10867  Substitution –missense in sporadic cancers; somatic mutation  c. 811G>A p. E271K COSM10719  Substitution –missense in sporadic cancers; somatic mutation | | |
| **T**MP**Q**AAPPV | | 67.9 | | 0.80 | WB | RMPEAAPPV | | | 6.2 | | | 0.06 | | SB | -61 | A3A/A3B | R65T  Substitution –missense in sporadic cancers; somatic mutation  c. 202G>C p. E68Q COSM44917  Substitution –missense in sporadic cancers; somatic mutation | | |
| KQSQH**I**T**Q**V | | 248.6 | | 1.80 | WB | KQSQHMTEV | | | 208.8 | | | 1.70 | | WB | -39.8 | A3A/A3B | c. 511G>C p. E171Q  COSM45751  Substitution –missense in sporadic cancers; somatic mutation | | |
| KLL**S**ENNVL | | 200.4 | | 1.60 | WB | KLLPENNVL | | | 181.2 | | | 1.50 | | WB | -19.2 | A3A/A3B | c. 79C>T p. P27S COSM1167900  Substitution –missense | | |
| KQSQH**I**T**K**V | | 272.75 | | 1.981 |  | KQSQHMTEV | | | 208.8 | | | 1.70 | | WB | -64 | A3A/A3B | c.507G>A p.M169I COSM44126 Substitution –missense | | |
| **Abrogated Epitopes** | | | | | | | | | | | | | | | | | | | |
| **Position** | | **wt Peptide** | | **Affinity (nM)** | **Rank** | **Binding level** | **Enzyme** | |  | | | | | | | | | | |
| 163 | | KQSQHMTEV | | 208.8 | 1.70 | WB | AID | |
| 187 | | GLAPPQHLI | | 124.6 | 1.20 | WB | A3A/A3B | | c. 574C>T p.Q192\* COSM10733  Substitution-Nonsense | | | | | | | | | | |
| 164 | | KQSQHMTEV | | 208.8 | 1.70 | WB | A3A/A3B | | c.497C>G p.S166\* COSM44467  Substitution-Nonsense | | | | | | | | | | |
| 187 | | GLAPPQHLI | | 124.6 | 1 .20 | WB | A3A/A3B | |  | | | | | | | | | | |
| 132 | | KMFCQLAKT | | 147.4 | 1.40 | WB | A3A/A3B | | c.396G>C p.K132N COSM43963  Substitution –missense  c.417G>C p.K139N COSM44101  Substitution –missense | | | | | | | | | | |