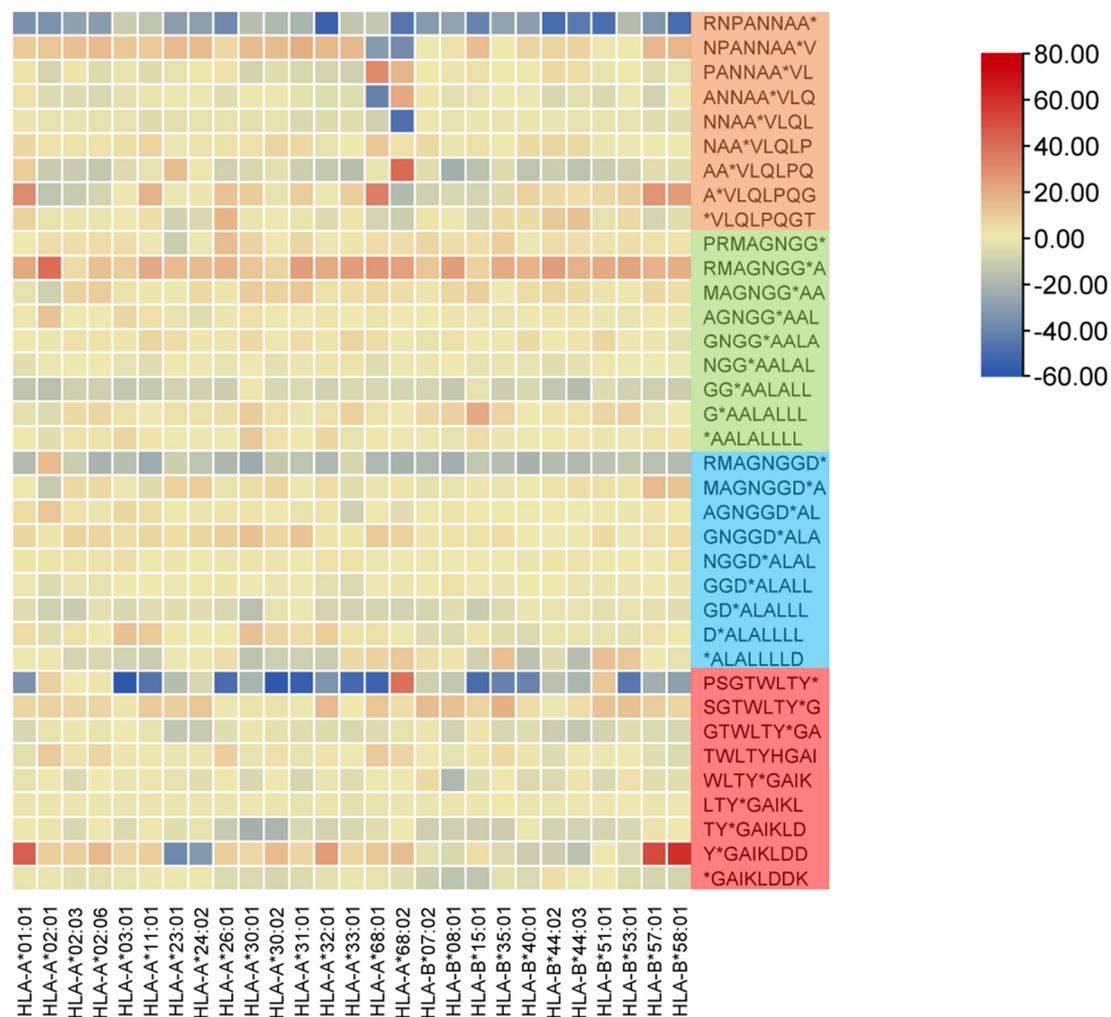


the affinity from low to high. Where white color represents MHC molecules binding to 9-mer peptide with low affinity and red color represents MHC molecules binding to 9-mer peptide with high affinity.



Supplementary Figure S2: The heatmap of 7 consecutive peptide sequences containing each mutation site. TBtools drew the heatmap of the binding affinity delta value between 76-118 and variants of corresponding HLA-I and 9-mer epitopes, where the binding affinity took the logarithm of base 2. The delta value of %Rank as minus represented the epitope of strain 76-118 with better affinity. And contrarily, plus values stood for that of variants acquiring better binding performance with corresponding MHC-I molecule.