OWA-PSSM - A Position Specific Scoring Matrix Based Method Integrated with OWA Weights for HLA-DR Peptide Binding Prediction

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Yellow Zone, Academic 1  
City University of Hong Kong  
83 Tat Chee Avenue  
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**ABSTRACT**

The binding of foreign peptides to MHC II molecules play a vital role in stimulating CD4+ helper T lymphocytes immune response. We present a pan-specific method, OWA-PSSM, that uses 35 pocket profiles generated by the TEPITOPE method to predict MHC II/peptide binding. Additionally, we develop a novel weighting approach, incorporated with OWA (Ordered Weighted Averaging) weights, for the construction of position specific scoring matrices (PSSMs) for 879 DRB alleles. This method is evaluated on four independent benchmark datasets and is demonstrated to outperform the TEPITOPEpan method. For the DRB alleles covered by TEPITOPE, the prediction performance of OWA-PSSM is comparable with TEPITOPE whereas OWA-PSSM can make prediction for up to 879 DRB alleles, while TEPITOPE can only perform prediction for 50 DRB alleles.

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**Supervisor:** Dr WONG Hau San Raymond  
**Research interests:** Immunological Bioinformatics and Computational Biology

**All are welcome!**

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