Improved methods for predicting peptide binding affinity to MHC class II molecules

Major histocompatibility complex class II (MHC-II) molecules are expressed on the surface of professional antigen presenting cells where they display peptides to T helper cells, which orchestrate the onset and outcome of many host immune responses. Understanding which peptides will be presented by the MHC-II molecule is therefore important for understanding the activation of T helper cells and can be used to identify T-cell epitopes. We here present updated versions of two MHC class II peptide binding affinity prediction methods, NetMHCII and NetMHCIIpan. These were constructed using an extended data set of quantitative MHC-peptide binding affinity data obtained from the Immune Epitope Database covering HLA-DR, HLA-DQ, HLA-DP and H-2 mouse molecules. We show that training with this extended data set improved the performance for peptide binding predictions for both methods. Both methods are publicly available at www.cbs.dtu.dk/services/NetMHCII-2.3 and www.cbs.dtu.dk/services/NetMHCIIpan-3.2. This article is protected by copyright. All rights reserved.

General information
State: Accepted/In press
Organisations: Department of Bio and Health Informatics, Immunoinformatics and Machine Learning, Universidad Nacional de San Martin, University of Copenhagen, La Jolla Institute for Allergy & Immunology
Authors: Jensen, K. K. (Intern), Andreatta, M. (Ekstern), Marcatili, P. (Intern), Buus, S. (Ekstern), Greenbaum, J. A. (Ekstern), Yan, Z. (Ekstern), Sette, A. (Ekstern), Peters, B. (Ekstern), Nielsen, M. (Intern)
Number of pages: 28
Publication date: 2018
Main Research Area: Technical/natural sciences

Publication information
Journal: Immunology
ISSN (Print): 0019-2805
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.938 SJR 1.69 CiteScore 3.72
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.74 SJR 1.964 SNIP 0.965
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.075 SNIP 0.965 CiteScore 3.83
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.048 SNIP 1.043 CiteScore 3.61
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.086 SNIP 1.084 CiteScore 3.97
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.941 SNIP 1.04 CiteScore 3.94
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.884 SNIP 0.992 CiteScore 3.75
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.121 SNIP 0.912
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2