

DPB1 TCE3 model update and revised information



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DPB1 TCE3 model

Previously, BMDW sent you information about the release of a new feature in our BMDW Search & Match Service: **DPB1 T Cell Epitope algorithm**. We already updated this feature a little bit and will release this version today.

In our last BiteSize Learning letter, we mentioned that this algorithm is based on version 1 of the tool that was originally provided through the IPD-IMGT/HLA website in 2012. However, the TCE3 grading implemented in OptiMaS is based on the following information:

Various studies have shown a potential beneficial effect if the HLA-DPB1 classification based on T-Cell Epitopes (TCE) is considered in donor selection. Among the 9/10 and 10/10 donor candidates, those with a permissive DPB1 constellation are preferred over those showing a non-permissive DPB1 constellation. The implementation in OptiMaS is called DPB1 TCE3 grading and is based on the following publications, namely the new score based algorithm [3] that was realized with 3 TCE groups.

[1] Zino E, Frumento G, Markt S, et al.

A T-cell epitope encoded by a subset of HLA-DPB1 alleles determines nonpermissive mismatches for hematologic stem cell transplantation.

Blood (2004) 103:1417-24. June 2, 2016 56

[2] Zino E, Vago L, Di Terlizzi S, et al.

Frequency and targeted detection of HLA-DPB1 T cell epitope disparities relevant in unrelated hematopoietic stem cell transplantation.

Biol Blood Marrow Transplant (2007) 13:1031-40.

[3] Crivello P, Zito L, Sizzano F, et al.





The Impact of Amino Acid Variability on Alloreactivity Defines a Functional Distance Predictive of Permissive HLA-DPB1 Mismatches in Hematopoietic Stem Cell Transplantation. Biol Blood Marrow Transplant (2015) 21:233-41.

It must be noted that a DPB1 TCE3 evaluation is performed and displayed for A, B, DR typed donors under the following conditions:

- Patient DPB1 values must be present. Ambiguities in the form of multiple alleles codes, G- codes, etc. are allowed.

- Donor DPB1 values must be present. Ambiguities in the form of multiple alleles codes, G- codes, etc. are allowed.
- The donor must be in the group of potential '9/10' and '10/10' allele matches. Therefore, it is implicitly assumed that a 10/10 search is configured and can be accessed. In case of 8/8 and 6/6 searches, there will be no DPB1 TCE3 grading.

The results of the DPB1 TCE3 grading is shown below the donor's DPB1 values by using the following symbols:

	Permissive
	Non-permissive in GvH direction
	Non-permissive in HvG direction
	Ambiguous

The explanation of the symbols is also provided via hover over the symbols.

Ambiguities in patient and/or donor HLA-DPB1 may lead to multiple possible TCE classifications. The probability values for the respectively potentially permissive, non-permissive in GvH direction or non-permissive in HvG direction are provided upon hover over the symbol. The probability values of the A-symbol are divided over more than 1 TCE group.

The probabilities are based on the consensus BMDW HLA-DPB1 allele frequencies and are rounded to one percentage point. It should be noted that HLA-DPB1 linkage disequilibrium with the other HLA-loci is not considered.

If you have any questions about the TCE3 model or other topics from the BMDW Search & Match Service, you can always contact us via support@bmdw.org

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