

A further example of HLA-DQB1*03:119 – genetics and serology



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Introduction

During our further testing of a 'verification typing sample', kindly provided by ZKRD - the German National Registry of Blood Stem Cell Donors, for one of our local haemopoietic stem cell transplant patients, we identified a further example of HLA-DQB1*03:119.

Sequencing

Sequencing of exons 2 and 3 for DQB1 was performed using 'in-house' primers and BigDye® Terminator v1.1 chemistry on a 3730 DNA Analyzer (Thermo Fisher Scientific).

DQB1*03:119 differs from DQB1*03:01:01:01 (DQ7 specificity) by a single nucleotide (320T>G) resulting in L75W.

Our sequence was accepted as a confirmatory sequence by the WHO Nomenclature Committee in November 2014:

Cell identification 66494, accession number HG518397.

Likely DQB1*03:119-bearing haplotype

Our HLA type of 66494 was:

A*01:01, A*24:02; B*07:02/61, B*44:02;
C*05:01, C*07:02; DRB1*04:01, DRB1*15:01;
DQA1*01:02; DQA1*03:03; DQB1*03:119,
DQB1*06:02; DPB1*01:01, DPB1*04:01.

On the basis of common linkage disequilibrium the likely DQB1*03:119-bearing haplotype was considered as:

A*24:02, B*44:02, C*05:01, DRB1*04:01,
DQA1*03:03, DQB1*03:119.

Serology of DQB1*03:119

Serological HLA-DQ typing, using monoclonal antibodies (One Lambda Class II trays – MDR172), suggested that DQB1*03:119 reacts as a short DQ7 specificity.

Thus, it was positive with 2 anti-DQ3 and 1/2 DQ7 antibodies and negative with a DQ8, DQ9 antibody:

Ron 2	DQ3	Positive
Ryan	DQ3	Positive
Rick 1	DQ7	Negative
Reggie	DQ7	Positive
Roy	DQ8 DQ9	Negative

Epitope/motif studies

These showed that the HLA Epitope Registry's epitope 74EL (74E 75L 77T) is present in numerous DQB1*03 and DQB1*06 products. However, when combined with epitope 45EV (45E 46V 47Y), some 10 Angstroms distant, this combination is confined to products of DQB1*03, including DQ7 but not DQ8/9 (also possessed by DQB1*06:35/53/145).

In addition, we identified that the motif 45E 75L (amino acids 10 Angstroms apart) has an almost identical profile to the 74EL, 45EV epitope combination.

Comment

Identification of these essentially DQ7 epitopes/motif that are not possessed by the DQB1*03:119 product supports our serological findings that the product of DQB1*03:119 is a short DQ7 specificity and suggests that some DQ antibodies are dependent on 75L for their reactivity.