

A new HLA-DRB1*15 allele – DRB1*15:112



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Accredited Medical Laboratory
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Introduction

During HLA typing, by Histogenetics, of donors for the Welsh Bone Marrow Donor Registry, a new HLA-DRB1*15 allele was identified and named DRB1*15:112.

Sequence

We subsequently confirmed this sequence, from our Sinhalese Sri Lankan donor (cell identification 16240383), which differs from DRB1*15:01:01:01 by a single base (282G>T) in exon 2, resulting in an amino acid substitution of K65N.

Serology

Serological typing using polyclonal, and monoclonal antibodies (One Lambda Inc.), of 16240383 gave the expected HLA-A,B,C,DR,DQ assignments.

However, one reliable monoclonal antibody ('Butch DR15') was negative.

Thus, 'Butch DR15' may be recognising an epitope involving position 65K.

Accordingly, we considered epitopes and motifs that encompass position 65K.

Epitopology

Nineteen epitopes possessed by DR15 and other DRB1*3/4/5 products in the 'Epitope Registry' are within 15 Angstroms of position 65 so could, with 65K, represent a further epitope.

However, 65K is consensus for DRB1 so these would not be unique to DR15.

Nonetheless, we identified several motifs that are unique to DRB1*15, comply with the 2-patch epitope concept and involve 65K, e.g. 65K, 71A is possessed by most DR15s but not the DRB1*15:112 product.

Thus, monoclonal antibody 'Butch DR15' could be recognising an epitope that involves 65K.

Haplotype

The donor's genotype type is:

HLA-A*01:01, A*33:03; B*15:02, B*58:01;
C*03:02, C*08:01; DRB1*10:01, DRB1*15:112;
DQB1*05:01, DQB1*06:01.

Removal of the recognised Asian haplotype

A*33:03, B*58:01, C*03:02, DRB1*10:01,
DQB1*05:01

suggests that the DRB1*15:112-bearing haplotype is:

A*01:01, B*15:02, C*08:01, DRB1*15:112,
DQB1*06:01.

Frequency

This allele was identified in a random sequence-based typed population of 32,530 subjects resident in Wales.

These are largely UK Europeans with Asian/British Asian representing just some 2% of the population.

This indicates a low precision DRB1*15:112 frequency of 0.00002 (carriage frequency 0.003%) in our local blood donor population.