

# DISTRIBUTION OF HLA-B\*27 AND B\*2708 IN THE WELSH BONE MARROW DONOR REGISTRY PANEL AND LIKELY B\*2708 BEARING HAPLOTYPES

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## Results

*Phenotype and gene frequencies (by direct counting) of B\*27 and B\*2708*

- λ **HLA-B\*27 - phenotype frequency = 8.72%** (n = 2,611 with 64 apparent homozygous subjects); gene frequency = 0.04467 (Standard Error (SE) = 0.00085).
- λ **HLA-B\*2708 - phenotype frequency = 0.06011%** (n = 18 with 0 apparent homozygotes), gene frequency = 0.00030 (SE = 0.00007).
- λ **HLA-B\*27/B\*2708 combined – phenotype frequency = 8.78%**, gene frequency = 0.04497 (SE = 0.00086).

The 'precision' of the gene frequencies (Schipper et al. (1997) Hum Immunol 52, 54) was high for HLA-B\*27 and B\*27/B\*2708 combined, but low for B\*2708.

*Distribution of B\*2708 in 'HLA-B\*27 (B\*27 and B\*2708) positive' subjects*

From the above figures it can be seen that about 1 in 150 (1 in 146) of 'HLA-B\*27 positive' subjects are likely to be B\*2708.

*Likely HLA-B\*2708 bearing haplotypes*

The **most common B\*2708 bearing haplotype** is:

**HLA-A\*3201; B\*2708; Cw\*0602; DRB1\*1101; DQA1\*05; DQB1\*0301**

While a **rarer B\*2708 bearing haplotype** probably exists, being:

**HLA-A\*3201; B\*2708; Cw\*0602; DRB1\*1501; DQA1\*01; DQB1\*0602**

Thus, all 18 B\*2708 donor phenotypes (identified by medium/high resolution PCR-SSP) possessed A\*3201 and Cw\*0602, 16 possessed DRB1\*1101, DQA1\*05 and DQB1\*0301 and 2 were DRB1\*1501, DQA1\*01 and DQB1\*0602. This suggests that although the common B\*2708 haplotype is A\*3201; B\*2708; Cw\*0602; DRB1\*1101, DQA1\*05; DQB1\*0301, a further haplotype differs in class II only being DRB1\*1501, DQA1\*01 and DQB1\*0602.

## Summary

We have identified the frequency of HLA-B\*27 and B\*2708 in a panel of almost 30,000 Northern European Caucasoid blood donors and shown that HLA-B\*2708 occurs in about 1:150 'HLA-B\*27 positive' subjects. B\*2708 is likely to be found on two distinct haplotypes which have common HLA-A, and C alleles but differing HLA-DRB1, DQA1 and DQB1 alleles.

## Introduction

### *Discovery of B2708 (B\*2708)*

In 1994 we serologically identified a new specificity, HLA-B7Qui. It reacted with about two-thirds of anti-B7, and anti-B27 antisera, possessed the Bw6 public epitope and was present on a haplotype together with: HLA-A32, Cw6 and DR11.

HLA-B7Qui was later sequenced and found to be identical to B\*2705 but possessed the Bw6, rather than the Bw4, motif. It was designated B\*2708 and its serological specificity as HLA-B2708.

HLA-B2708 was not considered a 'split' of B27 but an HLA-B27 'associated' specificity.

### *Serological typing for B2708*

On routine serological typing B2708 may be initially identified as either B7 or B27. This will largely depend on the 'cross-reactivity' of the HLA-B7 and B27 antisera used, the subject's accompanying HLA-B specificity and the calibre of the anti-Bw4 and Bw6 sera used on the typing tray.

### *Distribution of HLA-B\*27 and B\*2708 and likely B\*2708 bearing haplotypes*

We have determined the distribution of HLA-B27 (B\*2701-B\*2720 not B\*2708) and B\*2708 in the Welsh Bone Marrow Donor Registry's donor panel. In addition we have predicted the likely B\*2708 bearing HLA-A, C, DR, DQ haplotypes present in this panel.

## Donor panel and typing methods

The Welsh Bone Marrow Donor Registry panel, which consists largely of Northern European Caucasoid subjects, has HLA-A, B, (C since January 2000 by PCR-SSP), DR and DQ typed, healthy blood donors.

At the end of March 2001 the panel consisted of 29,943 donors; 69.4% were HLA-class I typed by PCR-SSP and the remainder by standard serology.

Prior to class-I typing by PCR-SSP HLA-B27 and B2708 were defined by serology. However, all serologically defined B2708 donors were subsequently confirmed as B\*2708 by PCR-SSP.