

UK NATIONAL EXTERNAL QUALITY ASSESSMENT SERVICE FOR HISTOCOMPATIBILITY AND IMMUNOGENETICS EDUCATIONAL HLA TYPING SCHEME FINDINGS IN 2014



Welsh Blood Service
Gwasanaeth Gwaed Cymru

Deborah Singleton, Jane Street, Susan Corbin & Chris Darke



for HISTOCOMPATIBILITY and IMMUNOGENETICS
UNITED KINGDOM EXTERNAL QUALITY ASSESSMENT SERVICE

WELSH TRANSPLANTATION AND IMMUNOGENETICS LABORATORY

Introduction

The UK National External Quality Assessment Service for Histocompatibility and Immunogenetics (UK NEQAS for H&I) has operated an 'Educational Scheme' for 14 years.

In this Scheme undisclosed whole blood or DNA samples with interesting HLA alleles/specificities are sent to participants. The scheme is gratis and involvement is at the discretion of each laboratory.

Findings are not assessed but participants can compare their results with some 40 other laboratories.

In 2014 four DNA extracts were provided with an HLA-A, or -C allele of interest. Here we present participants' findings:

HLA-A*24:17

A*24:17 differs from A*24:02:01:01 at nucleotide positions 413, 414 and 418 in exon 3. This results in amino acid differences at codons 114 and 116 (*Int J Immunogenet* 2008, **35**, 481).

- 30 out of 41 labs (73.2%) reported either A*24:17 (n=27) or A*24:17/41 (n=2) or A*24:17/90N (n=1)
- 10 labs reported A*24
- 1 lab reported A*24:02/17-208

HLA-A*24:21

A*24:21 differs from A*24:02:01:01 at codon 127 (AAA>AAC) which results in a single amino acid change of lysine (K) to asparagine (N) in the alpha 2 domain connecting loop (*Eur J Immunogenet* 2004, **31**, 234).

- 27 out of 40 labs (67.5%) reported A*24:21 (n=19) or A*24:21:01 (n=8)
- 11 labs reported A*24
- 1 lab reported A*24:02 and 1 reported A*24:02/02L-226

HLA-A*32:04

A*32:04 is essentially a 'hybrid' of A*03:01 and A*32:01. Thus, A*32:04 is almost identical to A*32:01:01 (except position 180) in exon 2 but identical to A*03:01:01:01 in exon 3 (*Tissue Antigens* 2000, **55**, 369; *Eur J Immunogenet* 2002, **29**, 355).

- 33 out of 40 labs (82.5%) reported A*32:04
- 7 labs reported A*32

We distributed an example of A*32:04 in 2002 (*Genes & Immunity* 2003, **4**, supplement 1, S68). Here, of 34 labs, 17 reported A*32:04 (50.0%), while 9 reported A*03/A*03 groups of alleles, 5 assigned A*32 only, 2 failed to find a second allele and 1 reported A*03:08. Clearly, there has been a significant improvement in the definition of A*32:04 during the last decade or so.

HLA-C*04:03

HLA-C*04:03 is most similar to C*04:01, differing by 10 nucleotides, 9 of which are located in the region from nucleotide 98 to 218. This region of C*04:03 is identical to both C*02:01 and C*02:02:02. The 9 nucleotide differences between C*04:01 and C*04:03 results in 6 amino acid differences in the alpha 1 domain. The guanine found in C*04:03 is identical to all HLA-C alleles except HLA-C*04:01, which has an adenine. Thus, C*04:03 was most likely formed by a gene conversion event between C*02 and C*04 (*Tissue Antigens* 1996, **48**, 113).

- 30 out of 38 labs (79.0%) reported C*04:03 (n=26) or C*4:03:01 (n=4)
- 10 labs reported A*24
- 4 labs reported C*04, 1 reported C*04:03/06-107

Comment

Overall, the alleles of interest were identified by some 75% of laboratories.

Further information

Full information on all UK NEQAS for H&I schemes is available at www.neqashandi.org or contact the Scheme Manager – Deborah Pritchard
E-mail: ukneqashandi@wbs.wales.nhs.uk