Title:	**SECTION 5.0 NZBMDR TISSUE TYPING STANDARDS**
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Accreditation

All tissue typing for the NZBMDR is carried out at the NZBS Tissue Typing Laboratory in Auckland. This laboratory holds accreditation with the American Society for Histocompatibility and Immunogenetics (ASHI) for functions and tests performed by serology or molecular typing methods. (Refer: Section 2 Form ATT). NZBMDR will hold a copy of the current certificate.

Minimal Typing and Matching Requirements

This Standard outlines minimal typing and matching requirements for Tissue Typing Laboratories testing donors from the NZBMDR for matched unrelated haematopoietic stem cell (HSC) transplantation and distinguishes these requirements from additional criteria deemed important by individual transplant units.

Four levels of typing are considered:

1. Newly registered donors

2. Additional typing requests

3. High resolution (HR) typing

4. Verification typing (VT)

Level 1 Newly registered donors

As of 1st July 2017, molecular HLA-A, -B, -C, -DRB1, -DRB3/4/5, -DQB1,-DQA1, -DPB1 typing, will be performed at registration by Next Generation Sequencing (NGS).

Level 2 Additional typing requests

As of 1st July 2017, samples will be typed by NGS for any additional typing requests.

Level 3 High resolution (HR) typing

HLA-A,-B,-C,-DRB1,DRB3/4/5, -DQA1, -DQB1 and DPB1 high resolution typing of donors must be performed with molecular testing. The test method must include all HLA alleles listed in the IMGT/ HLA database, using a database version which is less than a year old. As of 1st July 2017, all high resolution typing will be performed by NGS.

Level 4 Verification typing (VT)

Verification typing with a new blood sample is done by the Laboratory serving the Transplant Centre.

i) Blood group testing

At this stage of donor testing, ABO blood group and Rh factor must be tested, unless the donor is a NZ blood donor, in which case the blood group will have been recorded in Progesa (held by NZBS). The blood group must be reported to the Transplant Centre with the infectious disease marker (IDM) results.

ii) Donor/recipient compatibility testing – HLA antibody screening and identification

Studies have associated donor specific HLA antibodies with graft failure and rejection in both unrelated cord transplantation (Takanashi et al 2010) and HSC transplantation (Spellman et al 2010).

HLA antibody screening must be performed on all patients proceeding to HSC transplant. If the screen is positive, the antibody specificity must be defined. This is generally done by Luminex® testing, with screening and single antigen kits. Antibody testing may have been done previously as part of the patient workup, but should be repeated if this is more than three months prior to transplant or if the patient has received blood products

iii) HLA class I serology typing

HLA Class I serology typing can be used to check for allele expression.

Summary

In summary therefore, in order to provide a NZBMDR matched donor, the following tests must be performed:

i) High resolution molecular HLA-A,-B,-C,-DRB1 and -DQB1 typing at final matching level.

ii) NZBMDR allows a 1 antigen mismatch at HLA-A, -B or -DRB1 between patient and donor.

Standards for molecular typing

Information on HLA alleles can be obtained from the IMGT web site:

https://www.ebi.ac.uk/ipd/imgt/hla/

The test method used by the laboratory must include all HLA alleles listed in the IMGT/ HLA database, using a database version which is less than a year old.

Discrepant Typing Results

When a VT sample has been received from a donor centre and the tissue typing indicates a different typing to that reported by the donor centre, complete Section A of the "Discrepant Typing Report" from the WMDA website.

https://www.wmda.info/wmda-eduction?id=58

Forward this form to the donor centre who will complete Section B and return the form.

If the typing has been resolved, file the form in the Green Folder (NZBMDR). If the result has not been resolved it should be referred to a 3rd party reference Laboratory