immco DIAGNOSTICS
A Trinity Biotech Company

Immunogenetics and Transplant Immunology

The Laboratory

Immco Diagnostics is committed to providing immunologic and genetic testing of the highest quality to ensure the most favorable outcomes in organ and cellular transplantation.

Immco Diagnostics provides human leukocyte antigen (HLA) typing, HLA antibody analysis, and lymphocyte crossmatching. These services, collectively referred to as histocompatibility testing, are offered primarily for patients undergoing solid organ and bone marrow transplantation. Additionally, HLA antibody testing may be applicable to the field of platelet transfusion. HLA typing may also be used for assessments of disease susceptibility.

Immco Diagnostics is a member of the American Society for Histocompatibility and Immunogenetics (ASHI) and the United Network for Organ Sharing (UNOS). Immco Diagnostics is also approved by the New York State Department of Health, the Department of Health and Human Services, and is the sole provider of histocompatibility services for the Western New York regional transplant centers.

At Immco Diagnostics, we utilize state-of-the-art technology for the delivery of the most sensitive and reliable assays in HLA testing. HLA typing is performed using molecular-based DNA analysis through the polymerase chain reaction (PCR). The detection and identification of HLA antibodies is achieved through the Luminex platform. Lymphocyte crossmatch testing is performed by flow cytometry.

The Immco Diagnostics team draws upon a wealth of clinical and research experience, frequently contributing to the scientific literature in this field. Members of our staff are certified by the American Board of Histocompatibility and Immunogenetics (ABHI)the American Board of Medical Laboratory Immunology (ABMLI), the American Society for Clinical Pathology (ASCP), and the New York State Department of Health (NYSDOH).

Accreditation

Immco Diagnostics offers complete and comprehensive HLA typing services for hematopoietic stem cell and organ transplants. Our laboratory meets the standards of the National Marrow Donor Program (NMDP), the United Network for Organ Sharing (UNOS), and the American Society for Histocompatibility and Immunogenetics (ASHI). We are staffed by leaders with more than 20 years experience in HLA immunology.

Services

Blood and other biological specimens are collected by courier, U.S. Postal Service and overnight carriers free of charge. Our standards of service require that testing be performed and results be issued within two business days.

Immco Diagnostics supplies detailed reports offering interpretation and background information on related diseases. These are issued by mail or by fax and are available at www.immco.com, a HIPAA compliant patient tracking system. We also support HL7 interface for seamless transacting.

Our laboratory also offers flexible billing options to suit the varied needs of our clients. Immco Diagnostics clients expect the personalized service of a neighborhood laboratory along with the cutting edge diagnostic capabilities of a specialized research institution.

Organ Transplant Candidate Evaluation

Initial Evaluation

The initial evaluation of each candidate for organ transplantation includes confirmatory ABO blood type, HLA tissue typing for donor matching purposes, and HLA antibody (PRA) detection and identification for class I (HLA-A, -B, -Bw) and class II (HLA-DR, -DQ, and DRw) specificities.

Follow-up Evaluations

The follow-up evaluation includes a monthly HLA antibody analysis. Generally, the monthly sera are screened for both class I and class II HLA antibodies with class I identification (PRA) updated quarterly and class II antibody identification at least annually. At anytime during the evaluation period should the antibody screening assay convert from negative to positive, reflex testing for antibody identification will be performed. All sera collected during the candidate's follow up evaluation period will be archived for potential use in the lymphocyte crossmatch assay in the event a suitable donor is identified.

Organ Transplant Candidate

- HLA A, B, Bw typing/ low resolution
- HLA DR, DQ, DRw typing/low resolution
- ABO blood group (confirmatory)
- HLA antibody screen/identification (PRA)

Living Donor Evaluation

The evaluation of a living donor begins with the determination of ABO blood type. If the donor is found to be ABO incompatible with the intended recipient, subsequent testing is deferred unless otherwise instructed by the client.

Provided the donor recipient pair is ABO compatible, HLA typing is performed to ensure the absence of unacceptable HLA based on the transplant candidate's predetermined antibody profile.

The final step of this evaluation is the lymphocyte crossmatch to confirm histocompatibility. ABO compatibility, absence of a high risk antigen in the donor, and a non-reactive crossmatch assay are predictive of a favorable transplant outcome.

Living Donor for Organ Transplant

- HLA A, B, Bw typing/ low resolution
- HLA DR, DQ, DRw typing/low resolution
- ABO blood group (confirmatory)
- HLA antibody screen/identification (PRA)
- Lymphocyte crossmatch (preliminary)
- Lymphocyte crossmatch (final)

Deceased Donor Evaluation

The evaluation of the deceased donor begins with a confirmatory ABO blood type and HLA tissue type. This information is entered into the national data base to search for perfectly matched candidates and to allocate the organs equitably among local candidates.

Local candidates are ranked based on ABO identity with the donor, the degree of HLA matching, and the extent of HLA sensitization as determined by antibody analysis (PRA). Topped ranked candidates are crossmatched with the deceased donor to ensure their compatibility.

Deceased Donor Evaluation

- HLA A, B, Bw typing/ low resolution
- HLA DR, DQ, DRw typing/low resolution
- ABO blood group (confirmatory)
- Lymphocyte crossmatch

Bone Marrow Transplant

The evaluation of bone marrow transplant candidates and potential donors involves extended HLA tissue typing often referred to as high resolution typing. A favorable outcome is dependent on a higher standard of HLA identity between the intended recipient and potential donor.

One cost efficient approach to matching bone marrow donors and recipients is to begin with limited, lower resolution HLA typing and proceed to extended, higher resolution HLA typing only if the potential for HLA identity remains based on the results of the preliminary testing.

Bone Marrow Transplant Candidate or Donor

- HLA A, B, Bw, Cw typing/ high resolution
- HLA DR, DQ, DRw typing/high resolution
- HLA antibody screen/identification (PRA)

HLA Tissue Typing

The HLA tissue typing procedure utilizes the polymerase chain reaction (PCR) with sequence specific primers (SSP) to identify alleles of the HLA-A, -B, -DR, and -DQ loci, as well as -C and -DRw.

Specimen requirement:

- Two or three 10mL yellow-top (ACD) or lavender-top (EDTA) tubes of peripheral blood

Analytic time:

- 6 hours, Monday through Friday

HLA Antibody Analysis

HLA antibody analysis is performed using the Luminex technology. It is available in various formats including: HLA class I and II antibody screen (single assay), class I antibody identification, class II antibody identification, and the single antigen bead format (primarily for antibodies to donor-specific antigens).

Sample requirement:

- One 10mL red-top tube of peripheral blood (no anticoagulant)

Analytic time:

- 24 to 48 hours, Monday through Friday, 6 hours, 8am to 5pm, if STAT

Immunogenetics

Often, HLA tissue typing for select alleles provides an advantage for the differential diagnosis and treatment of certain ailments.

A family of disorders referred to seronegative arthropathies or reactive arthropathies are associated with the HLA allele HLA-B27. These conditions include ankylosing spondylitis, Reiter's disease, and acute uveitis.

The neurological sleep disorder narcolepsy has demonstrated a strong relationship to the HLA alleles DR15 and DQ6.

Gluten enteropathy or celiac disease is associated with two genetic subtypes of the HLA-DQ2 antigen: DQA* 0501 and DQB*0201.

Numerous other conditions exist that may benefit from HLA tissue typing. HLA analysis also offers a means of assessing familial risk associated with these disorders.

Disease Susceptibility Testing

- HLA-B27
- HLA-DR, -DQ
- HLA-DQA/DQB
- Other

Pharmacogenetics

- HLA-B57/58

Post Transplant Monitoring

Organ transplant recipients may be monitored for the development of HLA antibodies as a predictor of humoral immune or vascular rejection episodes. Generally, transplant recipient are tested for HLA antibody with special emphasis on those relative to the donor HLA profile (antibodies to donor specific antigens). The levels of antibodies to donor specific antigens (anti-DSA) may be measured in a semi-quantitative fashion sequentially over time to monitor the efficacy of interventional therapy, i.e. plasmapheresis.

Transfusion Support Services

HLA antibody detection may be an important aspect of transfusion medicine, particularly in platelet transfusions.

A potential complication of platelet therapy is the development of a pulmonary distress syndrome in the recipient. Called transfusion related acute lung injury (TRALI), it is most often the result of HLA antibodies of donor origin found in the residual plasma. To avoid this complication, it is highly recommended that platelet donors, especially the higher risk female donors, be screened for the presence of HLA antibodies.

The detection of antibodies to HLA antigens is also an important consideration in recipients of platelet transfusions. A subset of patients who do not experience the full benefit of platelet transfusions (platelet refractoriness) often exhibit the presence of HLA antibodies that are detrimental to the transfused cells. In these cases, identifying HLA compatible platelet donors is important in resolving this problem.

Cord Blood Testing

Cord blood may be collected at birth and stored for multiple reasons, which include its potential use in autologous therapeutic treatments, sibling transplantation, or as an alternative to bone marrow derived stem cells for altruistic use. In support of this collection and storage process, the Immunogenetics Division of Immco Diagnostics offers HLA typing at both low (HLA-A, -B, -DR) and high (HLA-A, -B, -C, -DR, -DRw and DQ) resolutions.

Easy as 1, 2, 3

Getting started with Immco Diagnostics

Immco is committed to exceed every expectation with premium immunogenetic and transplant immunology testing services, simple test referral, prompt turnaround time, and impeccable service.

Step 1

Contact Immco Diagnostics at 716.566.3977 to request preprinted test request forms. You can also download test request forms by visiting www. immco.com. A customer care representative will work with you to set up your account. Select from a number of reporting options including HIPAA compliant and secure online reporting, fax, USPS Express or standard US mail.

Step 2

Forward your test specimens to us free of charge via FedEx with pre-printed Immco Diagnostics shipping labels or by courier service.

Step 3

Receive your report within 48 hours of sample receipt.

Transplant Support Services

Name of Test	Specimen Requirements
Organ Transplant Candidate	
HLA Typing	One or two 10 mL yellow-top (ACD) tubes of peripheral blood
HLA Antibody Analysis	One 10 mL red-top tube (no anticoagulant)
Living Donor for Organ Transplant	
HLA Typing	One or two 10 mL yellow-top (ACD) tubes of peripheral blood
HLA Antibody Analysis	One 10 mL red-top tube (no anticoagulant)
Lymphocytic Cross Match	Two 10 mL yellow-top (ACD) tubes one 10mL red-top tube (no anticoagulant)
Deceased Donor Evaluation	
HLA Typing	One or two 10 mL yellow-top (ACD) tubes of peripheral blood
HLA Antibody Analysis	One 10 mL red-top tube (no anticoagulant)
Lymphocytic Cross Match	Five or six yellow-top (ACD) tubes of peripheral blood, or lymph node or spleen section in MEM or RPMI media, and one 10 mL red-top tube of peripheral blood (no anticoagulant)
Bone Marrow Transplant Candidate or Donor	
HLA Typing	Two or three 10 mL yellow-top (ACD) or lavender-top (EDTA) tubes of peripheral blood
HLA Antibody Analysis	One 10 mL red-top tube (no anticoagulant)
Transplant Monitoring	
Luminex® Donor-Specific Antibody	One 10 mL red-top tube (no anticoagulant)
Immunogenetics / Pharmacogenetics	
HLA Typing	Two or three 10 mL yellow-top (ACD) or lavender-top (EDTA) tubes of peripheral blood

For details about our products and services, please contact techsupport@immco.com.

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ML 008 REV 09/13