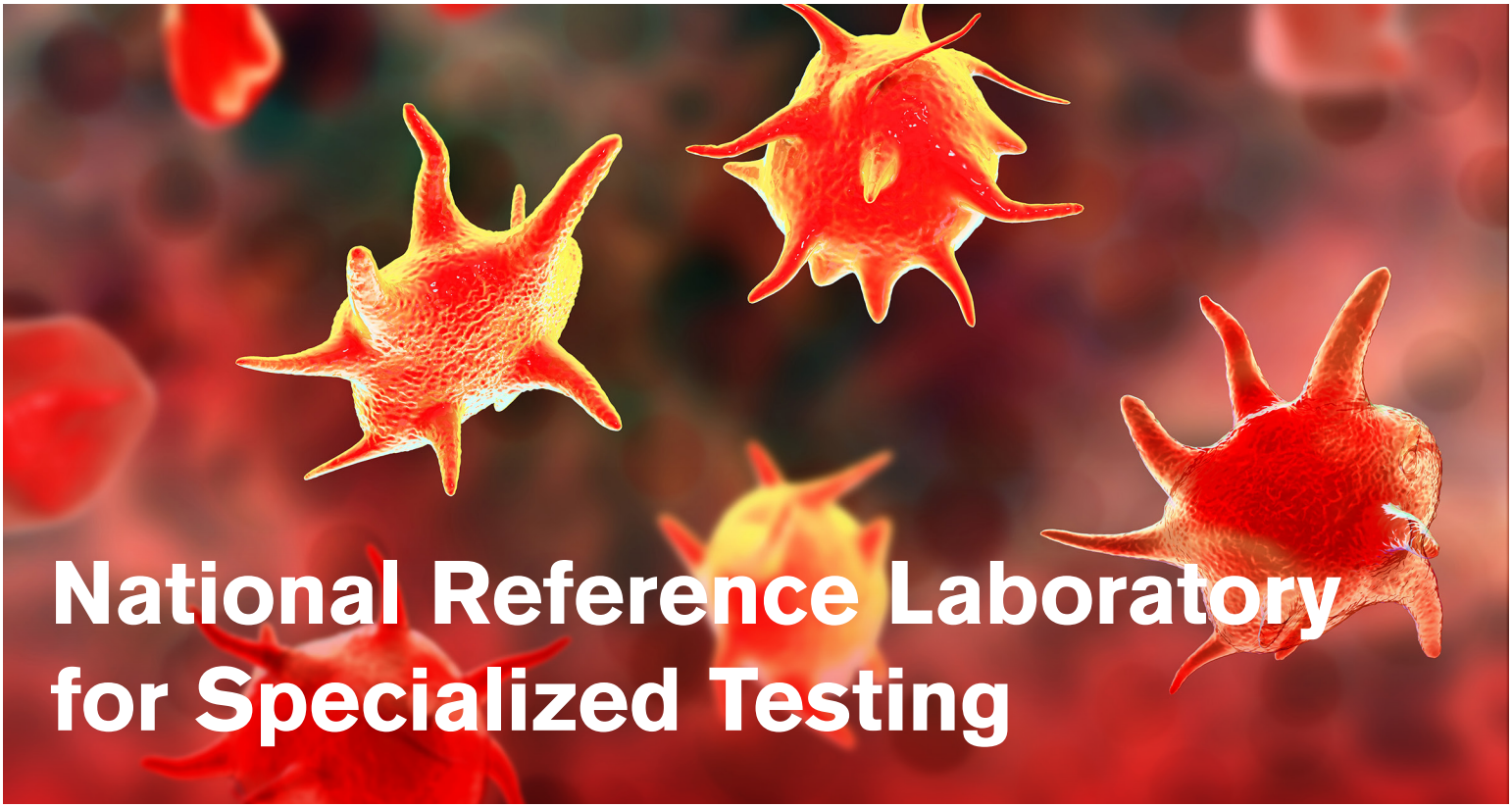

National Reference Laboratory for Specialized Testing

Our National Reference Laboratory for Specialized Testing (NRLST) is an expert in diagnosing antibody-mediated thrombocytopenia and in investigating the causes of platelet refractoriness.

Our platelet testing is part of critical patient care plans, serving a wide range of conditions, including various bleeding disorders, pregnancy difficulties, and cancer. The NRLST collaborates with our complete system of testing facilities to find the most effective product match for optimal patient treatments.

Direct and Indirect Platelet Antibody Testing

Indications

For diagnosis of suspected:

- **Fetal and neonatal alloimmune thrombocytopenia (FNAIT):** FNAIT is an immune disorder where placental transfer of maternal antibody, from an antigen-negative mother, binds to the platelets of an antigen-positive fetus and results in platelet destruction and in some cases life threatening bleeding.
- **Post-transfusion purpura (PTP):** This syndrome is characterized by an abrupt drop in platelet count occurring 7–10 days after transfusion and the presence of platelet-specific antibody(ies).
- **Immune thrombocytopenia (ITP):** Patients with ITP produce autoantibodies to platelets. In many cases, this is a clinical diagnosis with thrombocytopenia as the only clinical sign.
- **Platelet transfusion refractoriness:** Failure to respond to platelet transfusion is seen most often in multiply transfused patients. The usual cause of refractoriness is the production of antibodies to HLA Class I antigens, which are present on the transfused platelets. Antibodies to platelet-specific (HPA) antigens may also be present in some cases.
- **Drug-induced thrombocytopenia:** Patients may become thrombocytopenic during or soon after drug therapy. Heparin, quinine (quinidine) and sulfa drugs are the most frequently studied, but many drugs have been implicated in immune thrombocytopenia.
- Other platelet-related diseases

Description

The NRLST and some regional HLAs and IRLs offer a variety of laboratory techniques to investigate and characterize platelet-specific auto- and alloantibodies. While initial testing may be completed within our other laboratories, the NRLST offers comprehensive platelet testing and consultative services for the indications listed.

Test Methods

- Solid Phase Red Cell Adherence Assay (SPRCA)
- Platelet Suspension Immunofluorescence Testing (PSIFT)
- Bead based flow cytometry assay for the detection of antibodies directed against GPIIb/IIIa (HPA-1, -3, -4), GPIa/IIa (HPA-5), GPIbIX (HPA-2), GPIV and HLA Class I
- HPA-1a serologic antigen typing
- HPA genotyping is offered in the NML

Platelet Crossmatching

Indications

- Platelet crossmatching using the SPRCA technique is widely used to select platelet products for patients who have become refractory to random platelet support.
- Use of crossmatched platelets may improve transfusion outcomes for individuals on an interim basis until HLA-selected products are available or as continuous transfusion support when the transfusion outcome is favorable.
- Platelets crossmatched against maternal serum can also be used to support neonates in some cases of FNAIT, depending on antibody specificity.

Description

Platelet crossmatch testing detects IgG antibodies to platelet-specific and HLA antigens. A serum or plasma sample from the patient is tested against apheresis platelets. Depending on the antibody, compatible platelets may or may not be readily available. In partnership with the HLA matching service, the crossmatching program provides transfusion support and medical consultation for refractory patients who are difficult to support by standard methods. Platelet crossmatching services are also available in the NNL, select HLA laboratories, and select IRLs.

Test Method

- SPRCA

Antigen Negative Platelets

Indications

- In certain clinical situations (FNAIT, PTP, alloimmunization to HPA antigens), it is necessary to provide products negative for specific platelet antigens, and commonly this includes HPA-1a.

Sensitive IgA and Anti-IgA Testing

Indications

- Identification of IgA-deficient patients and blood donors
- Investigation of transfusion-associated anaphylaxis

Description

Normal serum IgA levels range from 70 to 400 mg/dL.* Selective IgA deficiency involves an IgA level <7 mg/dL with normal IgM and IgG in individuals 4 years old or older. A fraction of individuals with selective IgA deficiency have absolute IgA deficiency, which is defined as an IgA level of <0.05 mg/dL. Individuals with absolute IgA deficiency are at risk of developing anti-IgA and individuals with anti-IgA are at risk of transfusion reaction if exposed to blood products containing IgA.

IgA testing may be performed on serum or plasma samples from blood donors or patients who have not been transfused in the past four months to determine if the level of IgA is less than or greater than 0.05 mg/dL.

IgA testing may be performed on serum or plasma samples from patients to assess their risk of transfusion reaction if exposed to blood products containing IgA. Patients found to have anti-IgA may require IgA-reduced cellular products or IgA-deficient plasma and derivatives. The American Rare Donor Program can aid in the transfusion support of such cases.

Test Methods

- A sensitive bead-based immunosorbent Assay, validated to measure IgA levels as low as 0.05mg/dL, is used to determine absolute IgA deficiency.
- A flow cytometry-based assay to detect anti-IgA and evaluate specificity using inhibition with IgA is used to determine presence of anti-IgA.

*Citations available upon request.