American Red Cross

Saving Lives Through Testing

A comprehensive review of
Red Cross Laboratory Services

Index

American Red Cross

Trusted Testing Services to Enable Effective Patient Care

The American Red Cross offers comprehensive testing services through a coordinated system of more than 50 nationwide testing laboratories, offering synergized expertise in specialties that include molecular, platelet serology, neutrophil, histocompatibility/HLA, and red cell serology. With more than 500 lab professionals and over five decades of experience, the Red Cross is the single largest blood supplier providing extensive product, testing, and consulting services in the United States.

We perform testing services for collected blood donations and patients who require transfusion and/or transplantation services. Customized patient testing and product recommendations through clinical consultations with Red Cross expert laboratory staff and medical directors help support better patient outcomes.

Our patient testing is tailored to the individualized transfusion needs of a broad array of patients; from babies in utero and elderly patients undergoing cancer treatment, to patients with blood disorders, such as sickle cell disease. We also support hematopoietic cell transplantation (HCT), Solid Organ Transplantation (SOT), Disease Association Studies, HLA Pharmacogenomics, and Clinical Trials through our histocompatibility services.

The Red Cross has an extensive offering of specialized testing including Fetal and Neonatal Alloimmune Thrombocytopenia Maternal Evaluation, Monocyte Monolayer Assay, RHD Genotyping, and KIR Low-Resolution Typing. In addition, we are the only laboratory that provides both the sensitive IgA test as well as testing for anti-IgA.

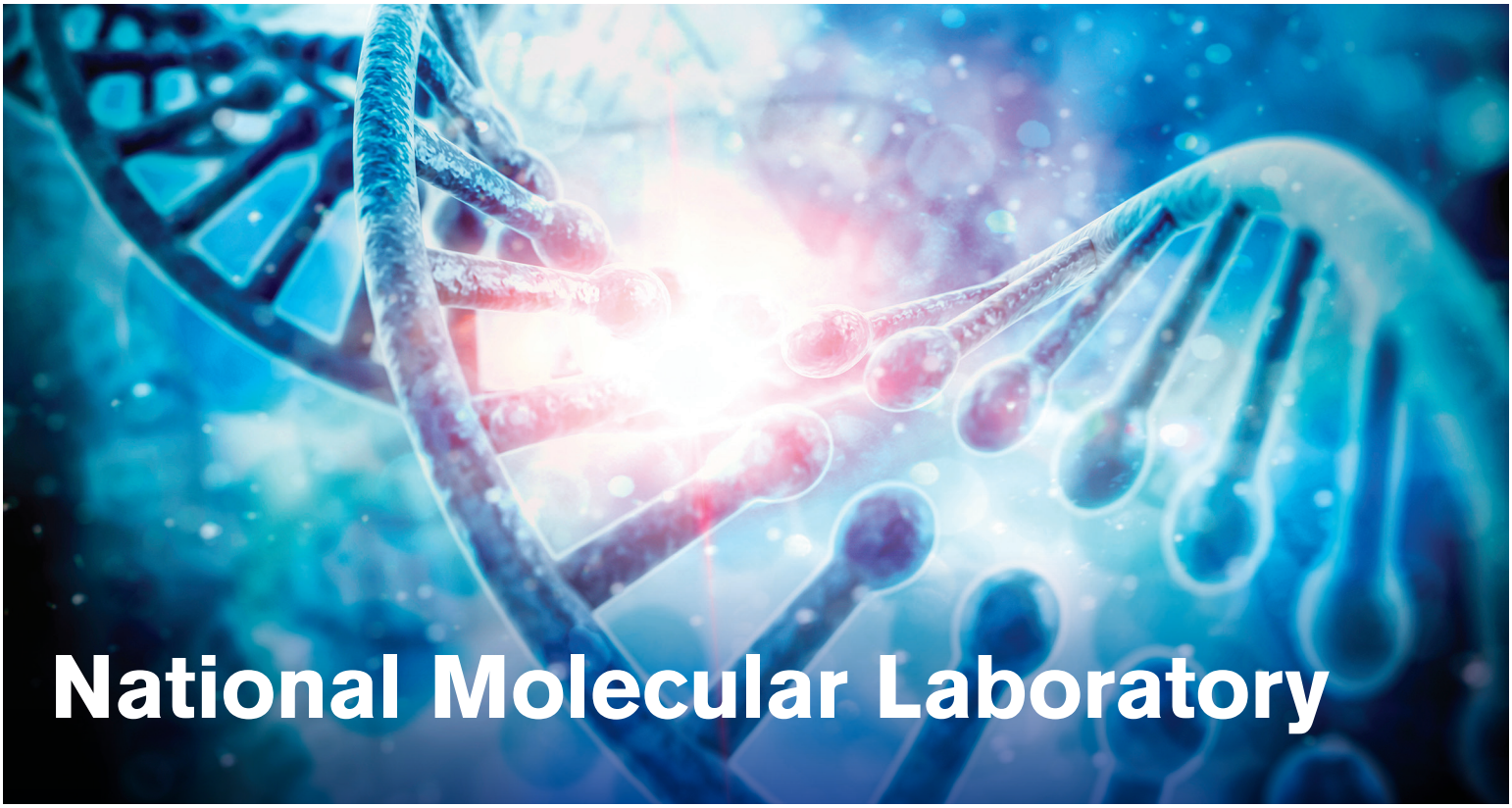
Our National Neutrophil Laboratory is one of the few labs in the United States that routinely utilizes a combination of the granulocyte immunofluorescence test (GIFT) and granulocyte agglutination test (GAT) for detecting HNA antibodies and routinely offers a monoclonal antibody immobilization of neutrophil antigen (MAINA) assay. We are also an early adopter of advanced testing technology, Next Generation Sequencing (NGS) for transplant workups.

With years of experience in transfusion medicine and serology, the Red Cross can assist with the identification of red blood cell (RBC) antibodies, RBC phenotyping, and crossmatching, and provide matched RBC units for patients requiring them. As a founding member of the American Rare Donor Program, we house a diverse stock of rare and antigen-negative blood units and are a critical component in helping hospitals fulfill rare blood needs and identify the best-matched blood products for patients.

In addition, our CLIA-licensed National Molecular Laboratory offers advanced testing services to help you care for patients in challenging situations such as resolving typing discrepancies, determining an extended RBC phenotype, or determining candidacy for Rh immune globulin in women with a serologic weak D phenotype of discordant RhD types.

The Red Cross offers world-class consultation and training to some of the most renowned institutions in the country. We are one of the few organizations offering the Specialist in Blood Banking Technology (SBB) advanced certification program, with over 20% of our technologists having SBB certification.

The testing of blood and patients goes beyond the results at the Red Cross, it incorporates the passion and dedication to helping hospitals deliver the best possible care.



National Molecular Laboratory

The American Red Cross National Molecular Laboratory (NML) is an inclusive central testing facility at the forefront of research and testing efforts related to molecular testing. The laboratory is recognized for its ability to characterize complex blood group alleles including identification of novel and null alleles. We provide a predicted RBC phenotype based on an FDA approved test. The facility also uses advanced genomic methodologies to predict blood group and platelet antigen phenotypes. The laboratory has been performing RBC genotyping of donors since 2008 and has screened more than 300,000 blood donors.

Our NML is AABB-accredited, CLIA-certified, and licensed by the Department of Health of multiple states. NML laboratory leadership contributes to several industry programs including the AABB Molecular Testing Program Unit and the International Society of Blood Transfusion (ISBT) Working Party for Red Cell Immunogenetics and Blood Group Terminology.

Blood Group and Platelet Antigen Testing Indications

Indications

- Multi-transfused patients, including those with sickle cell disease and thalassemia
- Patients with warm autoantibodies, and those receiving immunotherapies including anti-CD38
- Extended genotype matching of patients requiring long-term transfusion support
- Molecular characterization of the major antigens in the RH system
- Identification of RH variants, including those encoding weak and partial D phenotypes
- Determination of paternal RHD gene zygosity
- Evaluation of risk of hemolytic disease of the fetus and newborn (HDFN)
- Evaluation of fetal and neonatal alloimmune thrombocytopenia (FNAIT)
- Support of serology-related discrepancy resolutions and complex serologic evaluations
- Cost-effective and efficient screening of blood donors for prediction of antigens
- Accurate typing of panel and rare donor cells for reference laboratories

Description

Peripheral blood or buccal swab specimens are used to obtain genomic DNA for genotyping. Testing can predict one specific blood group antigen or can involve use of a genotyping panel that can predict multiple human erythrocyte antigen (HEA) or human platelet antigen (HPA) phenotypes simultaneously.

Sanger sequence analysis is used to characterize new alleles in many blood group systems, resolve complex Rh blood group alleles, and identify weak ABO subgroups. Plasmid cloning is used to resolve complex allele assignments. Testing is available for the following systems:

Blood Group Antigens, including

- HEA panel (including antigens in RH, KEL, FY, JK, MNS, LU, DO, LW, DI, CO, SC systems)
- ABO, including subgroups
- *RHD* gene zygosity
- *RHD* gene variants including weak D types 1, 2 and 3 and partial D types
- C, c, E, e, VS, V, hr^B, hr^S, Hr^B
- FY – Fy^a, Fy^b, Fy^x, GATA, Fy null
- KEL – K, k, Js^a, Js^b, Kp^a, Kp^b, K_{mod}, K_0
- MNS – M, N, S, s, U^{+var}, U-
- JK – Jk^a, Jk^b including weak and null phenotypes
- DO – Do^a, Do^b, Hy, Jo^a, Gy^a
- LU – Lu^a, Lu^b and In(Lu)
- CO – Co^a, Co^b
- KN – Kn^a, Kn^b, McC^a, McC^b, Sl^a, Sl3, Vil, KCAM
- YT – Yt^a, Yt^b
- CR – Cr^a, Cr^b

Platelet Antigens, including

- HPA-1a/1b
- HPA-2a/2b
- HPA-3a/3b
- HPA-4a/4b
- HPA-5a/5b
- HPA-6a/6b
- HPA-7a/7b
- HPA-8a/8b
- HPA-9a/9b
- HPA-11a/11b
- HPA-15a/15b

Test Methods

- Sequence-specific primer (SSP)-Polymerase chain reaction (PCR) PCR-restriction fragment length polymorphism (RFLP)
- Multiplex PCR-based hybridization and elongation, including use of PreciseType™ | HEA
- Multiplex PCR and single base primer extension by MALDI-TOF mass spectrometry
- Sequence-based typing (SBT) using Sanger Sequencing
- Transcript analysis by Sanger Sequencing of cDNA

The Red Cross can help resolve complex antibody identification problems and aid in the selection of compatible donors with state-of-the-art molecular testing. Here are two cases to illustrate the utility of molecular testing:

Sample Case 1:

A sample from a pregnant woman is found to be RhD negative when tested as part of a preoperative work-up by the hospital. Previously the patient's red blood cells typed RhD positive. The sample is submitted for D variant testing as part of the discrepancy resolution. The sample is found to be weak D+, carrying the *RHD*weak D type 2* allele. Based on the *RHD* genotype carried by the patient, they are not predicted to be at risk of RhD alloimmunization and do not need Rh immunoprophylaxis.

Sample Case 2:

A patient with sickle cell disease presents with anti-C; their RBCs type D+C+E+c+e+. The physician requests molecular genotyping for red cell antigens. The HEA genotyping panel indicated that the patient might carry an r's allele. RH genotyping predicts the patient to express an altered C antigen, supporting that the anti-C detected is an alloantibody. In addition, the patient is predicted to express a partial e antigen and lack the high prevalence antigen hr^B. This information can be used in selection of blood products to minimize risk of further Rh alloimmunization.

Histocompatibility Laboratories

The American Red Cross Histocompatibility Laboratories provide comprehensive and leading edge human leukocyte antigen (HLA) services supporting related and unrelated hematopoietic cell transplantation (HCT), and HLA-matched platelet transfusions to help patients and their physicians. The Red Cross Histocompatibility laboratories are at the forefront of testing best practices and provide expert consultation and guidance to institutions throughout the country.

Our histocompatibility laboratories are CLIA-certified and accredited by agencies such as the American Society for Histocompatibility and Immunogenetics (ASHI), the New York State Department of Health, the Florida Health Agency, and the State of California Department of Public Health and provide contracted histocompatibility services to the National Marrow Donor Program (NMDP) supporting national and international transplant centers.

Indications

- High-resolution HLA typing of all class I and class II loci, KIR gene typing, and HLA antibody detection for hematopoietic cell transplantation (HCT)
- Detection/identification of HLA antibodies in patients and donors by Solid-Phase Single Antigen Beads (SAB)
- Comprehensive studies to assist in the provision of optimal HLA-matched platelet transfusion therapy by HLA typing of the patients and donors, HLA antibody profiling of the patients, and platelet crossmatching of the patient with platelet donor panels
- Unrelated HCT donor testing for CCR5-Delta 32 genetic variant to assist donor selection for HIV-1 infected patients
- Engraftment monitoring, including multiple lineage-specific subsets, for post-HCT patients
- Identification of disease-predisposition HLA genes for Celiac disease, Narcolepsy, Ankylosing spondylitis and others
- Identification of drug hypersensitivity related HLA genes, including: –HLA-B*57:01 with Abacavir –HLA-B*15:02 with Carbamazepine –HLA-B*58:01 with Allopurinol, and others
- Allele and high resolution level HLA typing for non-transplant purposes, including the support of subjects enrolled in clinical cellular therapy trials for solid tumors and hematological malignancies for biotech and pharmaceutical companies

Description

HLA services include allelic resolution, high resolution, and intermediate resolution of Class I (HLA-A, -B, -C) and Class II (HLA-DRB1, -DRB345, -DQA1, -DQB1, -DPA1, -DPB1) typing and low resolution KIR gene typing. Both NGS and STR markers are utilized for post-HCT engraftment monitoring. The laboratories also use various approaches to test for HLA antibody profile to assist donor selections for highly sensitized patients receiving transplantations or identify acceptable antigens for highly immunized patients receiving platelet transfusions.

Test Methods

- HLA typing: qPCR, PCR-SSP, PCR-SSOP, Sanger-SBT, NGS
- HLA antibody detection/identification: SAB (Single-Antigen Bead) panel or Luminex-based flow cytometry methods
- T and B cell FCXM (Flow Cytometric Crossmatch)
- KIR gene typing: qPCR, PCR-SSP, PCR-SSOP
- CCR5-Delta 32 mutation: NGS, Sanger-SBT, PCR-SSP
- Engraftment monitoring: NGS, STR
- Disease association and HLA typing for all non-transplant purpose: qPCR, PCR-SSP, PCR-SSOP, Sanger-SBT, NGS
- Relationship testing

HLA Testing for Platelet Transfusion Support:

Platelets play a vital role in the maintenance of normal hemostatic activity. Refractoriness to platelet transfusion can be separated into non-immune and immune causes. Working together with the Red Cross HLA laboratories, strategies for effective patient support can be achieved.

HLA Testing for Transplantation:

HLA is one of the most polymorphic gene systems in the human genome. Consequently, many patients lack HLA-matched donors. In recent years, advances in HLA testing and matching, extensive research on the role of each HLA locus mismatched on clinical outcome and further knowledge of donor selection factors, have made it easier to search for and select a partially matched donor.

Immunohematology Reference Laboratories

The Red Cross Immunohematology Reference Laboratories (IRL) is one of the largest IRL networks in the United States, with over 40 labs. Our notable size and technical experience allow us to serve a range of patients coping with diseases such as cancer, sickle cell disease and other hematologic diagnoses resulting in anemia. We regularly support hospital-based sickle cell disease management programs, as part of efforts to enhance treatment plans and overall patient care. Select IRLs provide platelet crossmatching services.

The specialists in our IRLs are sought-after contributors to AABB inspections, industry standard committees, state boards, and organizations and often speak at regional, national and international symposiums and educational events.

Additionally, our National Reference Laboratory for Blood Group Serology (NRLBGS), provides specialty IRL testing to the Red Cross network and supports the American Rare Donor Program.

Red Cell Antibody Investigations

Indication

- As ordered by the hospital blood bank, pathologist or patient's physician

Description

- Identification of red blood cell (RBC) antibodies to high prevalence, low prevalence, single and/or multiple antigens
- Evaluation of RBC autoantibodies
- Investigation of direct antiglobulin test (DAT)-negative autoimmune hemolytic anemia
- Positive DAT and eluate
- Drug-induced immune hemolytic anemia investigations
- RBC phenotyping of patients (also see Molecular Testing section)
- Donath-Landsteiner Test

- Cold agglutinins screen and titer, thermal amplitude test
- ABO discrepancy investigations
- Transfusion reaction investigations
- Prenatal antibody identification and titers for hemolytic disease of the fetus and newborn (HDFN)
- Preselected units for hospital compatibility testing

Test Methods

- Tube, gel and solid phase RBC adherence methods (may vary by location)
- Enhancements, serum neutralization and inhibition media
- Autologous, allogeneic and miscellaneous adsorptions
- Chemical treatment of RBCs and plasma
- Reticulocyte separations
- Elution techniques
- Titrations

Antigen-Negative Blood Products

Indication

- For patients with special red blood cell antigen negative requirements

Description

Our IRLs maintain an inventory of known antigen types to assist hospitals with antigen-negative blood needs. IRLs work through the American Rare Donor Program (ARDP) to locate and obtain rare units not available in inventory. Services include:

- Single and multiple antigen-negative RBC units
- RBC units negative for high and low prevalence antigens
- Hemoglobin S negative RBC units
- Access to the ADRP for rare RBC components including RH allele matching for variant Rh antigens

Antigen Matched RBC Units

Indication

- Patients who are alloimmunized to RBC antigens and require red cell transfusion
- For patients undergoing RBC transfusion therapy for management of sickle cell disease

Description

Due to chronic transfusions, alloimmunization to RBC antigens is a significant risk for many patients with sickle cell disease. Studies have shown that the transfusion of antigen-selected units is the standard of care for chronically transfused patients with sickle cell disease.* This may facilitate the long-term management of these patients. IRLs provide RBC units that are phenotypically matched with the patient's RBC antigens as requested by the physician.

Drug-induced Immune Hemolytic Anemia Evaluations

Indications

- Patients with hemolytic anemia with a temporal relationship to drug therapy. These patients usually have a positive direct antiglobulin test and usually no reactivity in an eluate prepared from their RBCs.

Description

In vitro drug-induced antibodies that are reactive in *in vitro* tests are in four general categories:

- Some drugs (e.g., penicillin and cephalosporins) bind firmly to RBCs. Normal RBCs can be coated with the drug, *in vitro*, and the patient's serum and/or eluate from the patient's RBCs is tested against the drug-coated RBCs to detect the presence of the drug-induced antibody.
- Many drugs will not covalently bond to RBCs, thus drug-coated RBCs cannot be prepared. Antibodies to such drugs are detected by incubating the patient's serum with the drug and RBCs and looking for hemolysis, agglutination and/or positive antiglobulin tests.
- Some drugs can bind protein non-specifically, and some normal sera will be reactive when drug studies are performed. This may require manipulation of tests including dilution studies.
- Drug-independent antibodies will react with RBCs *in vitro* without any drug being present (i.e., they appear as autoantibodies).

Test Methods

- Patient's serum/eluate tested against drug-treated RBCs
- Patient's serum tested against RBCs in the presence of a drug

Donath-Landstiner

Indication

- Diagnose paroxysmal cold hemoglobinuria (PCH) when there is evidence of intravascular hemolysis (e.g. hemoglobinemia and hemoglobinuria) and C3 only on the RBCs

Description

Serologic test used to detect the presence of a biphasic hemolysin.

Test Methods

- Serologic, Tube

Cold Agglutinins Titer

Indications

- IgM RBC agglutination with clinical indication of hemolysis

Description

Determines clinical significance of IgM agglutinins.

Test Method

- Serologic, Tube

Thermal Aptitude Test

Indications

- Cold agglutinin titer >40; RBCs positive with C3; clinical evidence of hemolysis

Description

Identify the thermal amplitude, titer, and specificity of an autoagglutinin suspected to be clinically significant.

Test Method

- Serologic, Tube

Monocyte Monolayer Assay

Indications

- Determination of suitability of incompatible blood transfusion using an *in vitro* (noninvasive) procedure to predict the *in vivo* extravascular hemolysis process. This testing is useful for IgG antibodies to a high incidence antigen or antibodies for which a specificity could not be determined, or for those with variable reports of clinical relevance.

Description

The Monocyte Monolayer Assay (MMA) is an *in vitro* procedure used to assist in predicting if incompatible blood can be transfused safely to a patient. The mononuclear cells are harvested from the whole blood of random healthy donors. The incompatible RBCs are sensitized with a fresh serum sample of the patient and incubated with the monocyte monolayer (obtained from layering the mononuclear cells onto a glass slide). RBCs are selected for sensitization based on the patient's RBC antibodies. A source of fresh complement is added to the test system for all antibodies except those in the RH system.

The "normal" range is determined by the testing laboratory using *in vivo* correlation studies. Values below the normal range indicate that the antibody is clinically insignificant and is unlikely to cause overt transfusion reaction due to transfused antigen-positive RBCs. Values above the normal range indicate that the antibody may cause the accelerated destruction of antigen-positive RBCs and may result in a hemolytic transfusion reaction.

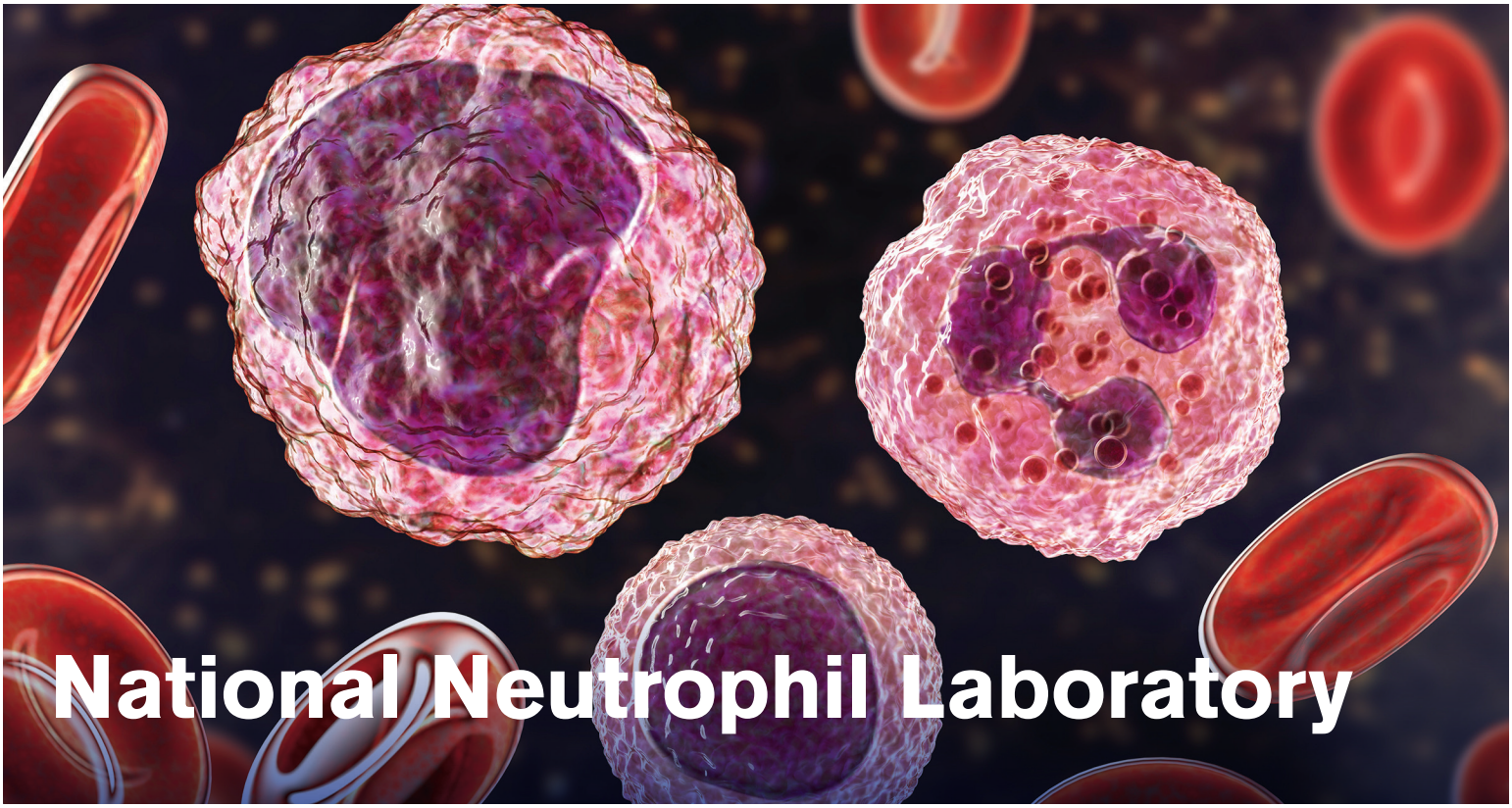
Test Method

- Monocyte Monolayer Assay

American Rare Donor Program

The American Rare Blood Donor Program (ARDP) headquartered in Philadelphia, was first established as a collaboration with AABB and American Red Cross rare donor registries. For more than 25 years, the ARDP has worked to ensure that rare blood is available for patients who need it, utilizing their extensive network and large, centralized database of rare donors to locate rare and Rh allele-selected blood products worldwide.

With an extensive product inventory, the Red Cross is a major source for rare blood products. We provide support 24 hours a day, 7 days a week to the ARDP to ensure that all requests received are addressed as quickly as possible.



National Neutrophil Laboratory

The American Red Cross National Neutrophil Laboratory (NNL) is a worldwide leader in neutrophil testing. Our Neutrophil Laboratory is one of the few facilities in the United States that perform a combination of the granulocyte immunofluorescence test (GIFT) and granulocyte agglutination test (GAT) for detecting HNA antibodies.

Additionally, NNL is one of a few neutrophil laboratories to routinely offer a monoclonal antibody immobilization of neutrophil antigen (MAINA) assay, the recommended testing of neutrophil antibodies in children with a presumptive autoimmune neutropenia diagnosis. The laboratory includes extremely rare donor cells in our neutrophil panel that assists in the detection of HNA-2, HNA-3a, HNA-3b, HNA-4a, HNA-4b, HNA-5a and FcγRIIIb (CD16) antibodies.

In collaboration with other testing facilities, our neutrophil testing laboratory serves patients ranging from infants, pregnant women, transfusion patients, and conditions such as drug-induced neutropenia and TRALI cases. The Red Cross is also a founding member of the ISBT Working Party on Granulocyte Immunobiology, and participates in the International Granulocyte Immunology Workshop consortium.

Indications

The presence of antibodies directed toward neutrophil results in their destruction and leads to a clinical condition known as neutropenia. Neutropenia is defined as an abnormally low concentration of neutrophils. Neutrophils are the most abundant white blood cells found in the bloodstream and are essential in fighting off bacterial and fungal infections. Antibodies to neutrophil antigens can be found in the blood of multi-transfused individuals, donors, patients with autoimmune disease, and women following pregnancy, causing transfusion reactions. These tests can aid in the clinical diagnosis of the following disorders:

- **Transfusion-related acute lung injury (TRALI):** TRALI is a pulmonary syndrome associated with transfusion that usually develops within 6 hours after the transfusion of any blood component. Often severe and potentially life-threatening, it is one of the most frequent causes of transfusion-associated mortality in the United States.* TRALI has been associated with the activation of neutrophils located in the pulmonary capillary vasculature due to the passive transfer of leukocyte antibodies found in transfused blood components, or on rare occasions leukocyte antibodies in the recipient. In cases of suspected TRALI, testing of plasma from implicated donors and recipients is critical.

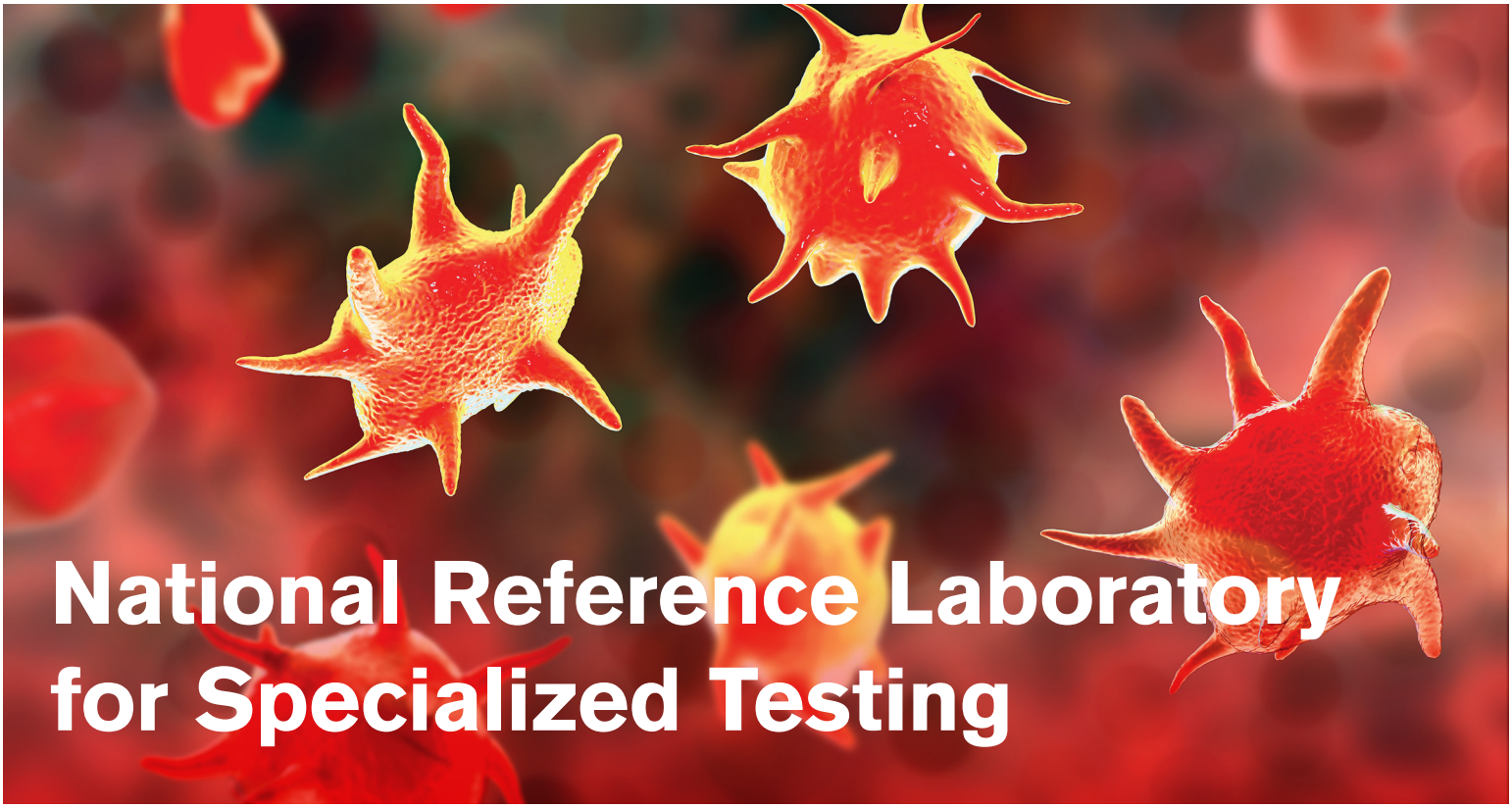
- **Alloimmune neonatal neutropenia (ANN):** ANN is an uncommon condition where a newborn may present with bacterial infection(s) due to neutropenia in which destruction of neutrophils occurred by maternal alloantibodies to specific human neutrophil antigens (HNAs).
- **Autoimmune neutropenia (AIN):** AIN is a disorder most common in infants and young children where the body makes IgG antibodies directed against neutrophil antigens which results in neutrophil clearance. When neutropenia is the only blood abnormality detected, it is also known as primary autoimmune neutropenia.
- **Drug-induced neutropenia:** Patients may become neutropenic during or soon after drug therapy, and it can be mild, moderate or severe. Drugs known to be involved in immune-mediated neutropenia include antibiotics, analgesics, antiarrhythmics, antimalarials, and antithyroid medications.

Description

The lab follows the ISBT Working Party on Granulocyte Biology guidelines for detecting HNA antibodies, specifically a combination of the granulocyte agglutination test (GAT) and granulocyte immunofluorescence test (GIFT), and is one of only a few laboratories to offer the monoclonal antibody immobilization of neutrophil antigen assay (MAINA) which can distinguish neutrophil antibodies from HLA antibodies.

Test Methods

- Granulocyte agglutination test (GAT)
- Granulocyte immunofluorescence test (GIFT)
- Monoclonal antibody immobilization of neutrophil antigens (MAINA)
- Neutrophil antigen typing



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.

For more information about our testing capabilities and other services, visit **RedCrossBlood.org**

*Citations available upon request.

Mission

The American Red Cross prevents and alleviates human suffering in the face of emergencies by mobilizing the power of volunteers and the generosity of donors.