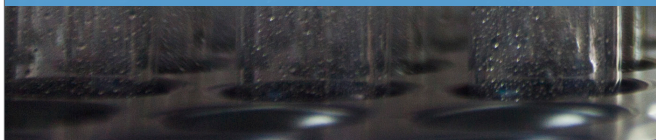




## Red Cross Laboratory Services: Sample Preparation and Shipping Instructions



### Key

Platelet/Neutrophil Serology Service Request
Molecular Service Request
Immunohematology Service Request
HLA Service Request

Laboratory	Acronym
Human Leukocyte Antigen Laboratory	HLA
National Molecular Laboratory	NML
National Neutrophil Laboratory	NNL
National Reference Laboratory for Specialized Testing	NRLST

The Red Cross is pleased to provide you with an extensive array of blood testing services. Samples should be prepared and shipped as directed here so that our testing laboratories can obtain optimal results. The table below provides a summary listing of these tests. For a complete listing, refer to our **Saving Lives Through Testing, Laboratory Services Guide** available from your Red Cross Account Representative. Order forms can be found on our online ordering portal, Connect. Request forms are also available on RedCrossBlood.org. In addition to the guidance below and for the safety of our employees, please place all sample tubes in spill-proof, puncture-proof packaging.

### Sample Preparation and Shipment Conditions

FOR ALL SAMPLES PLEASE PRINT THE REQUEST AND INCLUDE A PAPER COPY OF SERVICE REQUEST WITH THE SAMPLE SHIPMENT. SHIP PATIENT SPECIMENS ACCORDING TO DEPARTMENT OF TRANSPORTATION REGULATIONS FOR BIOLOGICAL SPECIMENS. Specifically, the Federal Department of Transportation has requirements when packaging biological specimens for testing that will be transported in a vehicle. The inner packaging must be leakproof, and the outer packaging must contain sufficient absorbent material to absorb the entire contents of the inner packaging. In addition, the outer container must be constructed of a rigid material resistant to punctures and securely closed to prevent leaks or punctures. OSHA also requires a biohazard label on the outside of the packaging.

Questions about sample type or quantity should be directed to the lab performing the test. Contact information can be found on RedCrossBlood.org. Samples submitted with insufficient volume may not be tested unless prior arrangements are made with the lab staff. No special preparation of the patient is needed prior to collecting samples. **These directions pertain only to patient samples.**

Test	Sample Preparation	Sample Shipping	Notes								
Alloimmune Neonatal Neutropenia (NNL)	<p>Mother: <b>Neutrophil Antibody Identification:</b> 1–2 mL serum (red top) or plasma (EDTA/lavender top tube). <b>Neutrophil Genotyping:</b> 4–6 mL of EDTA/lavender top tube) or Citrate (light blue top) whole blood.</p> <p>Father: <b>Neutrophil Genotyping:</b> 4–6 mL of EDTA (lavender top) or Citrate (light blue top) whole blood.</p> <p><i>Submit the mother's and father's sample with a separate request form.</i></p>	<p><b>Antibody:</b> Ship plasma or serum refrigerated (<math>\leq</math> 72 hours of draw date) using ice packs/wet ice or frozen on dry ice (<math>&gt;</math> 72 hours of draw date).</p> <p><b>Genotyping:</b> Ship EDTA or Citrate whole blood refrigerated using ice packs/wet ice or room temperature. Do not separate plasma from cells.</p> <p>Ship next day delivery.</p>	<p>Segments, gel tubes, and PPT tubes are NOT acceptable.</p> <p>Neutrophil Antibody Sample: Separate the plasma/serum from the cells as soon as possible.</p> <p>Send samples on Mon.–Thurs. to ensure weekday delivery.</p>								
Alloimmune Neonatal Thrombocytopenia (FNAIT)	<p>Mother: <b>Platelet Antibody Identification:</b> 1–2 mL serum (red top). <b>Platelet crossmatch and HPA genotyping (if needed):</b> 6–10 mL of EDTA/lavender top tube whole blood.</p> <p>Father: <b>Platelet Crossmatch and HPA genotyping (if needed):</b> 6–10 mL of EDTA/lavender top whole blood.</p> <p><i>Submit the mother's and father's sample with a separate request form.</i></p>	<p>Ship serum refrigerated (<math>\leq</math> 48 hours of draw date) using ice packs/wet ice or frozen on dry ice (<math>&gt;</math> 48 hours of draw date).</p> <p>Ship EDTA whole blood at room temperature.</p> <p>Ship next day delivery.</p>	<p>Send samples on Mon.–Thurs. to ensure weekday delivery.</p> <p>Separate serum from cells as soon as possible.</p>								
Red Cell Antibody Identification/ Crossmatch	<p>3 purple/pink top 5-7mL tubes and 1 red top 5-7 mL tube. Sample label must include 1) Patient name, 2) Patient ID Number, 3) Date Collected, 4) Phlebotomist Initials/ID (if Test of Record crossmatch is requested).</p>	<p>Do not separate plasma from cells prior to shipment unless directed by the lab. Ship at room temperature.</p>									
<p>1. Platelet Antibody Screen (if positive reflexes to Platelet Antibody Identification)</p> <p>2. Platelet Antibody Identification</p>	<p>EDTA whole blood sample. Do not spin or separate.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Plt Count (/mm<sup>3</sup>)</th> <th>Sample required (mL)</th> </tr> </thead> <tbody> <tr> <td><math>&gt;</math> 100,000</td> <td>15</td> </tr> <tr> <td>60 to 100,000</td> <td>25</td> </tr> <tr> <td>25 to 59,999</td> <td>40</td> </tr> </tbody> </table>	Plt Count (/mm <sup>3</sup> )	Sample required (mL)	$>$ 100,000	15	60 to 100,000	25	25 to 59,999	40	<p>Store and ship at room temperature. Must be received at testing lab within 48 hours of collection.</p>	<p>Test cannot be performed if platelet count is <math>&lt;</math> 25,000/mm<sup>3</sup></p> <p>Hours of operation: Mon.–Fri. 7am–4pm EST.</p> <p>Sample receipt hours on Fridays are 7am–12pm EST if sample needs to be tested that day.</p>
Plt Count (/mm <sup>3</sup> )	Sample required (mL)										
$>$ 100,000	15										
60 to 100,000	25										
25 to 59,999	40										

Test	Sample Preparation	Sample Shipping	Notes								
Drug-dependent Neutrophil Antibody	1–2 mL serum (red top) or plasma (EDTA-lavender top).  10–50 mg of each drug of interest.	Ship plasma or serum refrigerated ( $\leq$ 72 hours of draw date) using ice packs/wet ice or frozen on dry ice ( $>$ 72 hours of draw date).  Ship next day delivery.	Call lab (651) 291-6797 before sample collection. Segments, gel tubes, and PPT tubes are NOT acceptable. Separate the serum/plasma from the cells as soon as possible.								
HLA Antibody Testing	5–10 mL EDTA/lavender top tube or clot, please contact the HLA laboratory for preference. Serum/plasma can be separated. DO NOT use a gel separator.	Room temperature shipping with the sample to arrive within 24 hours of collection Monday to Sunday.	IVIG pre-treatment can interfere with testing, please notify the laboratory if the patient has received IVIG within the last 3 months.								
HLA Typing	Collect in 5–10 mL EDTA/lavender top tube or ACD, do not separate. Buccal swabs can be collected if needed, please contact the HLA laboratory for guidance.	Room temperature shipping with the sample to arrive within 24 hours of collection Monday to Sunday.									
HPA Antibody Testing (performed by specific HLA laboratories only)	5–10 mL EDTA/lavender top tube or clot, please contact the HLA laboratory for preference. Serum/plasma can be separated. Do not use a gel separator.	Room temperature shipping with the sample to arrive within 24 hours of collection Monday to Sunday.	IVIG pre-treatment can interfere with testing, please notify the laboratory if the patient has received IVIG within the last 3 months.								
HPA-1a Phenotyping	6–10 mL of EDTA/lavender top tube whole blood.	Ship EDTA whole blood at room temperature.  Ship next day delivery.	Do not separate plasma from cells. Call lab (651) 291-6797 before sample collection. Sample MUST arrive within 24 hours of collection.								
HPA-1a Platelet Antigen Typing (NRLST)	EDTA whole blood sample. Do not spin or separate. Test cannot be performed if platelet count is $<$ 25,000/mm <sup>3</sup> . <table border="1"> <thead> <tr> <th>Plt Count (/mm<sup>3</sup>)</th> <th>Sample required (mL)</th> </tr> </thead> <tbody> <tr> <td><math>&gt;</math> 100,000</td> <td>15</td> </tr> <tr> <td>60 to 100,000</td> <td>25</td> </tr> <tr> <td>25 to 59,999</td> <td>40</td> </tr> </tbody> </table> OR Platelet Rich Plasma from Single Donor Platelet Donations	Plt Count (/mm <sup>3</sup> )	Sample required (mL)	$>$ 100,000	15	60 to 100,000	25	25 to 59,999	40	EDTA whole blood sample: Store and ship at room temperature. Must be received at testing lab within 48 hours of collection.  Platelet Rich Plasma: Ship on wet ice. Must be received at testing lab within 5 days of collection.	For molecular genotyping, follow the National Molecular Laboratory requirements for HPA Genotyping. Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day.
Plt Count (/mm <sup>3</sup> )	Sample required (mL)										
$>$ 100,000	15										
60 to 100,000	25										
25 to 59,999	40										
IgA Testing (NRLST)	2.0 mL serum or plasma (pre-transfusion sample or sample collected at least 6 weeks after transfusion of IgA-containing component—including IVIG)	Store frozen or on wet ice.	Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day.								
MAINA (performed in conjunction with a Neutrophil Antibody Identification request)	1–2 mL serum (red top) or plasma (EDTA/lavender top tube).	Ship plasma or serum refrigerated ( $\leq$ 72 hours of draw date) using ice packs/wet ice or frozen on dry ice ( $>$ 72 hours of draw date).  Ship next day delivery.	Segments, gel tubes, and PPT tubes are NOT acceptable. Separate plasma/serum from cells as soon as possible. Send samples on Mon.–Thurs. to ensure weekday delivery.								
FNAIT Evaluation (NRLST)	Maternal: serum from 6 mL plain red top tube. AND 30 mL of EDTA whole blood.  Paternal (if applicable): 35 mL of EDTA whole blood.	Serum: Ship on wet ice. Freeze serum if sample cannot be received in testing lab within 48 hours of collection (must be completely frozen and shipped on dry ice). EDTA whole blood: Store and ship at room temperature. Must be received at testing lab within 48 hours of collection.	Serum <ul style="list-style-type: none"> <li>Separate serum from red cells and label as serum</li> <li>Label tube as serum</li> </ul> EDTA whole blood <ul style="list-style-type: none"> <li>Do not spin or separate</li> </ul> Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day.								

Test	Sample Preparation	Sample Shipping	Notes
Molecular Testing for Human Erythrocyte Antigen (HEA) panel including C/c, E/e, VS, KEL, FY, JK, MNS including U and U variant, LU, DI, CO, LW, SC and DO	<p><b>Whole Blood:</b> 5-10 ml EDTA/lavender top tube or ACD type A (yellow top) whole blood tube. If submitting pre- and post-transplant samples, clearly label them as such and submit separate service request.</p> <p><b>Amniocytes:</b> 1-5 ml amniotic fluid or 1-5x10<sup>6</sup> cultured amniocytes. A maternal blood sample is required when submitting fetal sample. NOTE: Submit with separate service request.</p> <p><b>Buccal swabs:</b> Minimum of 2 buccal samples using sterile cotton tipped swabs, completely air dried before packaging. If submitting both blood and buccal swab (such as after transplant), submit separate service requests.</p>	<p>Ship at room temperature (whole blood) or refrigerated using ice packs or wet ice sealed in plastic bags (amniocytes, buccal swabs), according to DOT regulations for biological specimens.</p> <p>Wrap samples in absorbent materials to safeguard from freezing or breakage.</p> <p>Buccal swabs (dried completely) before packaging in a conical tube or plastic bag and shipping using ice packs or wet ice.</p> <p>Ship all samples "Next Day" delivery.</p>	<p>Lithium heparin sample tubes are NOT acceptable for testing.</p> <p>Blood specimens submitted for DNA analysis should be less than 10 days old for optimal DNA yield. Older specimens may yield insufficient material for testing.</p> <p>Blood specimens submitted for cDNA analysis should be less than 7 days old for optimal RNA yield.</p> <p>Hours of operation: Sun 8:30am–5:00pm EST, Mon-Thurs 8:00am–7:30pm EST, Fri 8:00am–6:00pm EST</p> <p>Call lab (215) 451-4917 if shipping for weekend delivery.</p>
Molecular Testing for <i>RHD</i> variant testing including weak, Del and partial D			
Molecular Testing for <i>RHCE</i> variant testing including C, c, E, e, V, VS, hrB, hrS			
Molecular Testing for Rh variants (includes both <i>RHD</i> and <i>RHCE</i> variant testing)			
Molecular Testing for ABO, common alleles or variants encoding subgroups other than A <sub>2</sub>			
Molecular Testing for Bombay or para-Bombay			
Molecular testing of minor blood group systems (JK, FY, KEL, LU, KN, XK, MNS)			
Molecular testing for <i>In(Lu)</i> phenotype including LU and KLF1			
Molecular testing for HPA antigens (including HPA-1, -2, -3, -4, -5, -15)			
Neutrophil Antibody Identification	1–2 mL serum (red top) or plasma (EDTA/lavender top tube).	Ship plasma or serum refrigerated (≤ 72 hours of draw date) using ice packs/wet ice or frozen on dry ice (> 72 hours of draw date). Ship next day delivery.	Segments, gel tubes, and PPT tubes are NOT acceptable. Separate plasma/serum from cells as soon as possible. Send samples on Mon.–Thurs. to ensure weekday delivery.
Neutrophil Crossmatch	<p><b>ANN: Mother   TRALI: Donor</b> 1–2 mL serum (red top) or plasma (EDTA/lavender top tube).</p> <p><b>ANN: Father   TRALI: Recipient</b> 14–28 mL of EDTA whole blood. Do not separate plasma from cells.</p>	<p><b>Sample 1:</b> Ship plasma or serum refrigerated (≤ 72 hours of draw date) using ice packs/wet ice or frozen on dry ice (&gt; 72 hours of draw date).</p> <p><b>Sample 2:</b> Ship EDTA whole blood at room temperature. Ship next day delivery.</p>	Call lab (651) 291-6797 before sample collection. Segments, gel tubes, and PPT tubes are NOT acceptable. Serum or Plasma: Separate from cells as soon as possible. EDTA Whole blood MUST arrive within 24 hours of collection.
Neutrophil Genotyping	4–6 mL of EDTA/lavender top tube or Citrate (light blue top) whole blood.	Ship EDTA or Citrate whole blood refrigerated using ice packs/wet ice or room temperature. Ship next day delivery.	Call lab (651) 291-6797 before sample collection. Send samples on Mon.–Thurs. to ensure weekday delivery. Do not separate plasma from cells.
Neutrophil Phenotyping	14–28 mL of EDTA/lavender top tube whole blood. Do not separate plasma from cells.	Ship EDTA whole blood at room temperature. Ship next day delivery.	Call lab (651) 291-6797 before sample collection. Sample MUST arrive within 24 hours of collection. Send samples on Mon.–Thurs. to ensure weekday delivery.

Test	Sample Preparation	Sample Shipping	Notes
Platelet Antibody Drug Investigation (NRLST)	Whole blood from 6 mL plain red top tube. Do not spin or separate. AND Sample of the implicated drug (minimum 50 mg)	Store and ship at room temperature.	Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day.
Platelet Antibody Screen (if positive reflexes to Antibody Identification) AND Platelet Antibody Identification (NRLST)	Serum from 6 mL plain red top tube Separate serum from red cells	Ship on wet ice. Freeze separated serum if sample cannot be received in testing lab within 48 hours of collection (must be completely frozen and shipped on dry ice).	Gel separation tubes will not be accepted Ship separated and frozen sample in plastic tubes Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day.
Platelet Crossmatch (NRLST)	Whole blood from 6 mL plain red top tube (unseparated) OR 6 mL of EDTA whole blood Sample tube must be labeled with the following: <ul style="list-style-type: none"> <li>▪ Patient first and last name</li> <li>▪ Date of collection</li> <li>▪ Identification number and/or date of birth</li> </ul>	Store and ship at room temperature.	Do not spin or separate. For continuous crossmatching, weekly samples are recommended. Maximum number of days a sample can be used for testing is 14 days from date of collection. Hours of operation: Monday-Friday 7am-4pm EST. Sample receipt hours on Fridays are 7am-12pm EST if sample needs to be tested that day. For information regarding matched product support, contact Hospital Services HLA Matching Program at (215) 451-4132. A separate form must be submitted for platelet products.
Platelet Crossmatch Incompatibility Screen (NNL)	3–4 mL plasma (EDTA/lavender top tube, ACD, CPDA or CPDA-1).	Ship plasma refrigerated using ice packs/wet ice or frozen on dry ice. Ship next day delivery.	A new platelet crossmatch sample should be collected every 7 days. Send samples on Mon.–Thurs. to ensure weekday delivery.
Platelet Crossmatch Incompatibility Screen HLA	5 or 6 mL clot tube.	Room temperature shipping with the sample to arrive within 24 hours of collection Monday to Sunday.	IVIG pre-treatment can interfere with testing, please notify the laboratory if the patient has received IVIG within the last 3 months.
TRALI Investigation (Donor)	2–3 mL serum (red top) or plasma (EDTA/lavender top tube).	Ship plasma or serum refrigerated ( $\leq$ 72 hours of draw date) using ice packs/wet ice or frozen on dry ice ( $>$ 72 hours of draw date). Ship next day delivery.	Segments, gel tubes, and PPT tubes are NOT acceptable. Separate plasma/serum from cells as soon as possible. Send samples on Mon.–Thurs. to ensure weekday delivery.
TRALI Investigation (Recipient typing)	5–10 mL EDTA/lavender top tube or ACD type A (yellow top) whole blood tube. Samples less than 10 days old are preferred. DNA yield of older specimens may be low or QNS.	Ship at room temperature or refrigerated using ice packs or wet ice sealed in plastic bags. Wrap samples in absorbent materials to safeguard from freezing or breakage. Ship all samples “Next Day” delivery.	Blood specimens submitted for DNA analysis should be less than 10 days old for optimal DNA yield. Older specimens may yield insufficient material for testing.

