

**UW Retinal Studies**  
in collaboration with the  
**National Centralized Repository for  
Alzheimer's Disease and Related  
Dementias**



**NCRAD**

**Biospecimen Collection, Processing, and Shipment Manual of  
Procedures**

**Version 08.27.2021**

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## 1.0 ABBREVIATIONS

<b>AD</b>	Alzheimer's Disease
<b>DNA</b>	Deoxyribonucleic Acid
<b>EDTA</b>	Ethylene Diamine Tetra-acetic Acid
<b>GUID</b>	Globally Unique Identifier
<b>IATA</b>	International Air Transport Association
<b>NCRAD</b>	National Centralized Repository for Alzheimer's Disease and Related Dementias
<b>PHI</b>	Protective Health Information
<b>RBCs</b>	Red Blood Cells
<b>RCF</b>	Relative Centrifugal Force
<b>RPM</b>	Revolutions Per Minute

## 2.0 PURPOSE

The purpose of this manual is to provide the UW Retinal Studies staff (PIs, study coordinators, and the sample collection and processing teams) with instructions for collection and submission of biological samples for UW Retinal Studies. It includes instructions for biospecimen submission to the National Centralized Repository for Alzheimer's Disease and Related Dementias (NCRAD) located at Indiana University. The following samples may be collected:

- Buffy Coat (DNA Extraction)

This manual includes instructions for collection of blood, fractionation of blood from collection tubes, aliquoting, labeling, storage prior to shipping, and shipping to NCRAD.

These procedures are relevant to all study personnel responsible for processing blood specimens to be submitted to NCRAD for the UW Retinal Studies protocol.



## 3.0 NCRAD INFORMATION

### 3.1 NCRAD Contacts

**Tatiana Foroud, PhD, Core Leader**

Email: [tforoud@iu.edu](mailto:tforoud@iu.edu)

**Kelley Faber, MS, CCRC, Project Manager**

Phone: 317-274-7360

Email: [kelfaber@iu.edu](mailto:kelfaber@iu.edu)

**Diont'e Keys, CRC, Clinical Research Coordinator**

Phone: 317-274-7890

Email: [dlkeys@iu.edu](mailto:dlkeys@iu.edu)

**General NCRAD Contact Information**

Phone: 1-800-526-2839

Email: [alzstudy@iu.edu](mailto:alzstudy@iu.edu)

Website: [www.ncrad.org](http://www.ncrad.org)

**Sample Shipment Mailing Address**

NCRAD

Indiana University School of Medicine

351 W. 10<sup>th</sup> St

TK-217

Indianapolis, IN 46202

### 3.2 Hours of Operation

Indiana University business hours are from 8 AM to 5 PM Eastern Time, Monday through Friday.

Frozen samples must be shipped **Monday-Wednesday only**.

Check weather report to make sure impending weather events (blizzards, hurricanes, etc.) will not affect the shipping or delivery of the samples.

### 3.3 Holiday Schedules

Please note that courier services may observe a different set of holidays. Please be sure to verify shipping dates with your courier prior to any holiday.

### 3.4 Holiday Observations

Date	Holiday
January 1	New Year's Day
3 <sup>rd</sup> Monday in January	Martin Luther King, Jr Day
4 <sup>th</sup> Monday in May	Memorial Day
July 4	Independence Day (observed)
1 <sup>st</sup> Monday in September	Labor Day
4 <sup>th</sup> Thursday in November	Thanksgiving
4 <sup>th</sup> Friday in November	Friday after Thanksgiving
December 25	Christmas Day

Please note that between December 24<sup>th</sup> and January 2<sup>nd</sup>, Indiana University will be open Monday through Friday for essential operations **ONLY** and will re-open for normal operations on January 2<sup>nd</sup>. If at all possible, biological specimens for submission to Indiana University should **NOT** be collected and shipped to Indiana University after the second week of December. Should it be necessary to ship blood samples for DNA extraction to Indiana University during this period, please contact the Indiana University staff before December 20th by e-mailing [alzstudy@iu.edu](mailto:alzstudy@iu.edu), so that they can arrange to have staff available to process incoming samples.

Please see: [https://ncrad.org/holiday\\_closures.html](https://ncrad.org/holiday_closures.html) for additional information.

## 4.0 GLOBALLY UNIQUE IDENTIFIER (GUID)

The GUID is a subject ID that allows researchers to share data specific to a study participant, without exposing personally identifiable information. A GUID is made up of random alpha-numeric characters and does not include any PHI in the identifier. By using GUIDs in your research data, the system can associate a single research participant's genetic, imaging, and clinical assessment data even if the data was collected at different locations or throughout different studies.

To create a GUID follow these steps:

1. Create an account: <https://bricsguid.nia.nih.gov/portal/jsp/login.jsp>
2. Once you have an account, go to the GUID Tool – Create GUID

3. To open the 'Launch GUID Tool' you will need to have Java installed on your device
4. In order to generate a GUID, the following PHI is required ([Appendix C](#)):
  - Complete legal given (first) name of subject at birth
  - If the subject has a middle name
  - Complete legal family (last) name of subject at birth
  - Day of birth
  - Month of birth
  - Year of birth
  - Name of city/municipality in which subject was born
  - Country of birth

## 5.0 NCRAD LABORATORY INFORMATION

### 5.1 Site Required Equipment

The following materials and equipment are necessary for the processing of specimens at the collection site and are to be **supplied by the local site**:

- Personal Protective Equipment: lab coat, nitrile/latex gloves, safety glasses
- Tourniquet
- Alcohol Prep Pad
- Gauze Pad
- Bandage
- Butterfly needles and hub
- Microcentrifuge tube rack
- Sharp's bin and lid
- Wet Ice Bucket
- Wet ice
- Dry ice

In order to process samples consistently across all projects and ensure the highest quality samples possible, project sites must have access to the following equipment:

- Centrifuge capable of  $\geq 2000 \times g$  with refrigeration to  $4^{\circ}\text{C}$
- $-80^{\circ}\text{C}$  Freezer

In order to ship specimens, you must provide:

- Dry ice (about approximately 30-45 lbs per shipment)

### 5.2 Biospecimens Sent to NCRAD

Biospecimens collected include whole blood for buffy coat extraction only. Whole blood is collected into a lavender top EDTA tube. The lavender top EDTA tube is

processed locally into plasma and buffy coat fractions, aliquoted, frozen at the study site, and then shipped to NCRAD.

Consent forms must specify that any biological samples and de-identified clinical data may be shared with academic and/or industry collaborators through NCRAD. A copy of the consent form for each subject should be kept on file by the site investigator.

Frozen samples are to be submitted according to the shipping methods outlined in [Section 8.0](#). Guidelines for the processing, storage location, and timing of sample collection are listed in the tables below.

### 5.3 Biospecimen Collection Charts

#### 5.3.1 Biospecimen Collection

Collection Tube	Specimen Type	Aliquot Volume	Total Number of Aliquots	Shipping Temperature
1 EDTA (Purple-Top) Blood Collection Tubes (10 ml)	Buffy Coat	~1.0 ml buffy coat aliquots	1	Frozen
	Plasma	N/A	N/A	<b>Stored at University of Washington</b>

## 6.0 SPECIMEN COLLECTION KITS, SHIPPING KITS, AND SUPPLIES

NCRAD will provide: 1) Blood sample collection kits for research specimens to be stored at NCRAD, and the Frozen Shipment Kit; 2) clinical lab supplies (with the exception of dry ice and equipment supplies listed in [Section 5.1](#)). These materials include EDTA tubes, gray capped cryovials, and boxes for buffy coat aliquots, as well as shipping supplies to send materials to NCRAD. Kit Number Labels, ID Labels, and Cryovial Labels will all be provided by NCRAD. Details regarding the blood kits are found in this Manual of Procedures. Cryovial Labels will be pre-printed with study information specific to the type of sample being drawn. Ensure that all tubes are properly labeled during processing and at the time of shipment according to [Section 7.1](#).

## 6.1 Specimen Collection Kit Contents

Collection kits contain the following (for each subject) and provide the necessary supplies to collect samples from a given subject. Do not replace or supplement any of the tubes or kit components provided with your own supplies unless you have received approval from the NCRAD Study team to do so. Please store all kits at room temperature until use.

### Blood Collection Kit

Quantity	Blood Collection Kit Components
1	EDTA tube, 10ml
1	Cryovial tube (2.0 mL) with gray cap
1	Pre-printed Cryovial Label
3	Pre-printed Kit Number Label
2	Labels for Handwritten ID
1	Resealable bag

### Frozen Shipping Kit (Batch)

Quantity	Frozen Shipping Kit Components
1	Microcentrifuge box (48-slot)
1	Plastic Biohazard bag with absorbent sheet (small)
1	Shipping box/Styrofoam container
1	Warning label packet with dry ice sticker

### Individual Supplies

Quantities	Items Available upon request within the NCRAD kit module.
By Request	EDTA tube, 10ml
By Request	Microcentrifuge box (48-slot)
By Request	Cryovial tube (2.0 ml) with gray cap
By Request	Plastic biohazard bag with absorbent sheet (small)
By Request	UN3373 label
By Request	Biohazard label
By Request	Dry ice shipping label
By Request	UPS Airbill Sleeve
By Request	Fine Point Markers
By Request	Labels for Handwritten ID

## 6.2 Kit Supply to Study Sites

Each individual site will be responsible for ordering and maintaining a steady supply of kits from NCRAD. We advise sites to keep a supply of each kit type available. Be sure to check your supplies and order additional materials before

you run out or supplies expire so you are prepared for study visits. Please go to [kits.iu.edu/uwretinal](https://kits.iu.edu/uwretinal) to request additional kits and follow the prompts to request the desired supplies. Options include ordering a specific number of kits; we are also including the option of simply ordering the desired number of extra supplies.

Please allow **TWO weeks** for kit orders to be processed and delivered.

## 7.0 BLOOD COLLECTION AND PROCESSING PROCEDURES

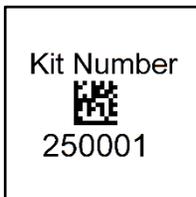
### 7.1 Labeling Samples

**\*\*\*Important Note\*\*\***

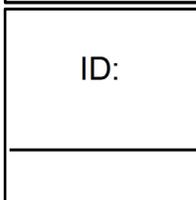
In order to ensure the highest quality samples are collected, processed, and stored, it is essential to follow the specific collection, processing, and shipment procedures detailed in the following pages. Please read the following instructions first before collecting any specimens. Have all your supplies and equipment out and prepared prior to drawing blood. Please note that the centrifuge may take 30 minutes to cool, so please plan accordingly.

**\*\*Label Type Summary\*\***

1. Kit Number Label
2. ID Label
3. Cryovial Label



The **Kit Number Labels** do not indicate a specimen type but are affixed on the collection tube and Biological Sample and Shipment Notification Form.



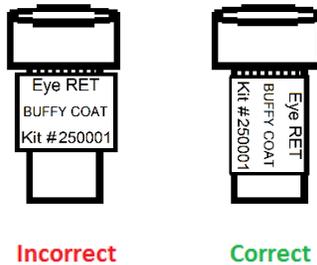
**ID Labels** are used to document the individual's unique ID. Place one label on the blood collection tube.



The **Cryovial Label** is placed on each buffy coat sample. Will be specific to each study (i.e. Eye RET, BEV or ADC).

In order to ensure the label adheres properly and remains on the tube, please follow these instructions:

- Place cryovial labels on **ALL** gray capped cryovials and EDTA tubes **BEFORE** sample collection, processing, or freezing. This should help to ensure the label properly adheres to the tube before exposure to moisture or different temperatures.
- Using a fine point permanent marker, fill-in and place the ID label on the EDTA tube **BEFORE** sample collection or processing. This label is in addition to the kit number label. **DO NOT** place ID labels on any gray capped cryovial.
- Place cryovial label **horizontally** on the tube (wrapped around sideways if the tube is upright) and just below the cap. **DO NOT** cover the barcode on the cryovial with the cryovial label (see following diagram).
- Take a moment to ensure the label is **completely adhered** to each tube. It may be helpful to roll the tube between your fingers after applying the label.



If there are any unused cryovials, please do not send them to NCRAD. These unused cryovials (ensure labels are removed) can be saved as part of a supplemental supply at your site or the cryovial can be disposed of per your site’s requirements.

## 7.2 Filling Gray Capped Cryovial (Buffy Coat)

In order to ensure that NCRAD receives a sufficient amount of sample for processing and storage, and to avoid cracking of the tubes prior to shipment, each cryovial should be filled to the assigned volume with the respective biological material after processing is completed (refer to detailed processing instructions for average yield per sample). Over-filled tubes may burst once placed in the freezer, resulting in a loss of that sample.

To assist in the preparation and aliquoting of samples, colored caps and cap stickers are used for the cryovial tubes. The chart below summarizes the association between cap color and type of cryovial.

Cap Color	Sample Type
Gray Cap	Buffy Coat

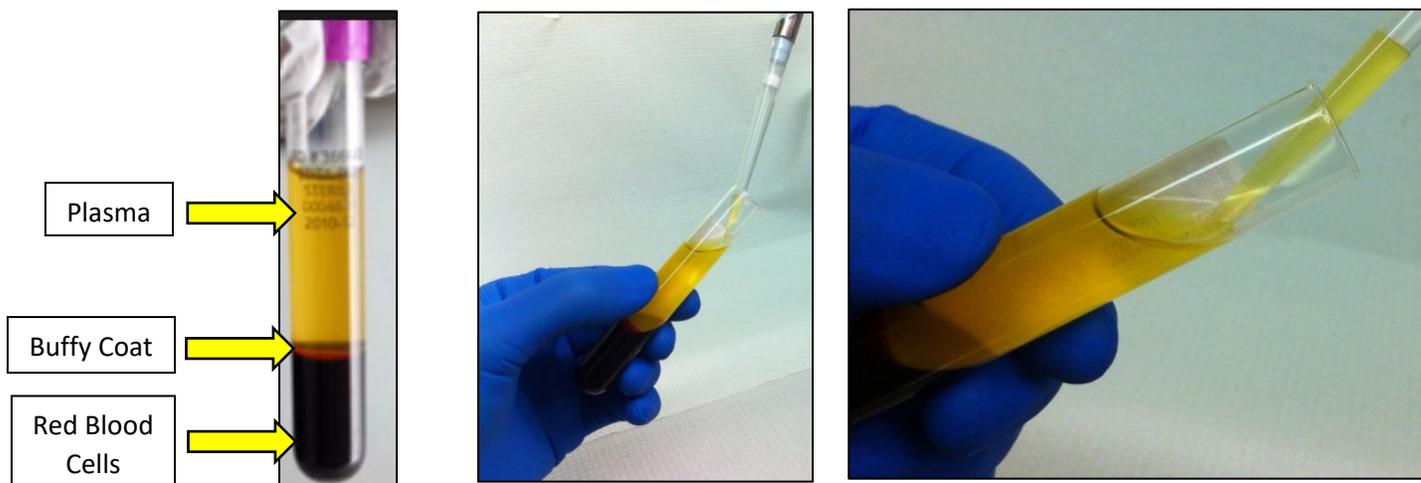
### 7.3 Whole Blood Collection for Isolation of Plasma and Buffy Coat: EDTA (Lavender-Top) Blood Collection Tube (10 ml) (for processing of plasma aliquots and buffy coat aliquot)

1. Store empty EDTA tubes at room temperature, 64°F - 77°F (18 °C – 25 °C) before use.
2. Set centrifuge to 4°C to pre-chill before use.
3. Place completed ID Label and pre-printed Kit Number Label on the lavender-top EDTA tube. Place another pre-printed Kit Number Label on the Biological Sample and Shipment Notification Form ([Appendix B](#)). Place pre-printed “BUFFY COAT” Cryovial Label on the one 2 ml cryovial with a gray cap.
4. Using a blood collection set and a holder, collect blood into the **EDTA (Lavender-Top) Blood Collection Tube (10 ml)** using your institution's recommended procedure for standard venipuncture technique.

#### The following techniques shall be used to prevent possible backflow:

- a. Place donor's arm in a downward position.
  - b. Hold tube in a vertical position, below the donor's arm during blood collection.
  - c. Release tourniquet as soon as blood starts to flow into tube.
  - d. Make sure tube additives do not touch stopper or end of the needle during venipuncture.
5. Allow at least 10 seconds for a complete blood draw to take place in each tube. **Ensure that the blood has stopped flowing into the tube before removing the tube from the holder.** The tube with its vacuum is designed to draw 10 ml of blood into the tube.
    - a. If complications arise during the blood draw, please note the difficulties on the Biological Sample and Shipment Notification Form. Do not attempt to draw an additional EDTA tube at this time. Process blood obtained in existing EDTA tube.
  6. **CRITICAL STEP: Immediately after blood collection, gently invert/mix (180 degree turns) the EDTA tube 8-10 times.**
  7. **CRITICAL STEP: Immediately after inverting the EDTA tube, place it on wet ice until centrifugation begins.**
    - a. Preferably within 30 minutes of blood collection, centrifuge balanced tubes for 10 minutes at 2000 RCF (x g) at 4°C. **It is critical that the tubes be centrifuged at the appropriate speed and temperature to ensure proper plasma separation (see worksheet in [Appendix A](#) to calculate RPM.**

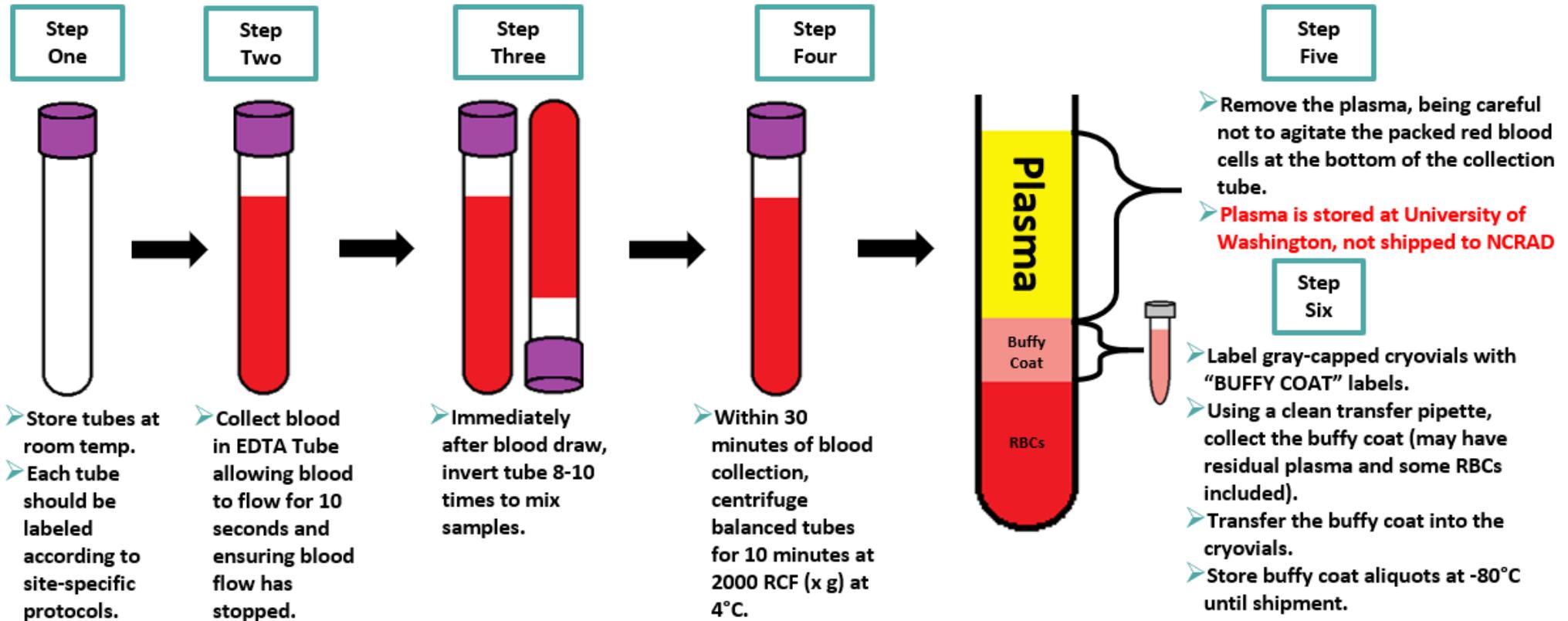
- b. Equivalent rpm for spin at 2000 x g.
  - c. While centrifuging, remember to record all volumes, barcodes, times, temperatures and spin rates on the Biological Sample and Shipment Notification Form.
  - d. Record time aliquoted on the Biological Sample and Shipment Notification Form.
8. Remove the plasma, being careful not to agitate the packed red blood cells at the bottom of the collection tube.
  9. Each EDTA tube should yield, on average, 4-5 ml of plasma. Tilt the tube and placing the disposable pipette tip along the lower side of the wall without touching the pellet (buffy coat) so that plasma is not contaminated (see below).



**NOTE: When pipetting plasma from the plasma tube into the gray capped cryovials, be very careful to pipette the plasma top layer only, leaving the buffy coat and the red blood cell layers**

10. After plasma has been removed from the EDTA (Lavender-Top) Blood Collection Tube (10 ml), aliquot buffy coat layer (in the top layer of cells, the buffy coat is mixed with RBCs-see figure) into labeled cryovial with gray cap using a disposable graduated micropipette. All of the buffy coat will be placed into one cryovial. The buffy coat aliquot is expected to have a reddish color from the RBCs. Be sure to place buffy coat into cryovial with the gray cap and "BUFFY COAT" label.
11. Dispose of collection tube with red blood cell pellet according to your site's guidelines for disposing of biomedical waste.
12. Place the labeled cryovial in a cryobox and place on dry ice. Transfer to **-80°C Freezer when possible**. Store all samples upright at **-80°C until shipped** to NCRAD on dry ice.

## Plasma and Buffy Coat Preparation (10ml Lavender-Top Tube)



## 8.0 PACKAGING AND SHIPPING INSTRUCTIONS

ALL study personnel responsible for shipping should be certified in biospecimen shipping. If not available at your University, please contact NCRAD with questions and information regarding resources.

Specimens being shipped to NCRAD should be considered as Category B UN3373 specimens and as such must be tripled packaged and compliant with IATA Packing Instructions 650. *See the Latest Edition of the IATA Regulations for complete documentation.*

Triple packaging consists of a primary receptacle(s), a secondary packaging, and a rigid outer packaging. The primary receptacles must be packed in secondary packaging in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary packaging. Secondary packaging must be secured in outer packaging with suitable cushioning material. Any leakage of the contents must not compromise the integrity of the cushioning material or of the outer packaging.

### 8.1 Frozen Shipping Instructions

**\*\*\*Important Note\*\*\*  
Frozen samples should be shipped Monday-Wednesday only!**

The most important issue for shipping is to maintain the temperature of the samples. The frozen samples must never thaw; not even the outside of the tubes should be allowed to defrost. This is best accomplished by making sure the Styrofoam container is filled completely with pelleted dry ice.

**\*\*\*Important Note\*\*\*  
FROZEN SAMPLES MUST BE SHIPPED MONDAY-WEDNESDAY ONLY!**

Specimens being shipped to NCRAD should be considered as Category B UN3373 specimens and as such must be tripled packaged and compliant with IATA Packing Instructions 650. *See the Latest Edition of the IATA Regulations for complete documentation.*

Triple packaging consists of a primary receptacle(s), a secondary packaging, and a rigid outer packaging. The primary receptacles must be packed in secondary packaging in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary packaging. Secondary packaging must be secured in outer packaging with suitable cushioning material. Any leakage of

the contents must not compromise the integrity of the cushioning material or of the outer packaging.

**\*\*\* Packing and Labeling Guidelines \*\*\***

- The primary receptacle (cryovial) must be leak proof and must not contain more than 1L total.
- The secondary packaging (biohazard bag) must be leak proof and if multiple blood tubes are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent direct contact with adjacent blood tubes.
- Absorbent material must be placed between the primary receptacle and the secondary packaging. The absorbent material should be of sufficient quantity in order to absorb the entire contents of the specimens being shipped. Examples of absorbent material are paper towels, absorbent pads, cotton balls, or cellulose wadding.
- A shipping manifest of specimens being shipped must be included between the secondary and outer packaging.
- The outer shipping container must display the following labels:
  - ✓ Sender's name and address
  - ✓ Recipient's name and address
  - ✓ Responsible Person
  - ✓ The words "Biological Substance, Category B"
  - ✓ UN3373
  - ✓ UPS Dry Ice label and net weight of dry ice contained



*8.1.1 Packaging Instructions*

1. Contact UPS to confirm service is available and schedule package to be picked up.
2. Notify NCRAD of shipment by emailing NCRAD coordinators at [alzstudy@iu.edu](mailto:alzstudy@iu.edu). Attach the following to the email:
  - a. Completed Sample Form ([Appendix B](#)) to the email notification (email NCRAD coordinator prior to shipment to receive sample form).
  - b. If email is unavailable, please call NCRAD at 1-800-526-2839 and do not ship until you've contacted and notified NCRAD coordinators about the shipment in advance.
3. Place the cryovial box containing 10 frozen, labeled samples into a biohazard bag.
4. As the samples are placed in the plastic biohazard bag, do NOT remove the absorbent material found in the bag. Seal according to the instructions on the bag.
5. Place approximately 2-3 inches of dry ice in the bottom of the Styrofoam shipping container.

6. Place the biohazard bags into the provided Styrofoam-lined shipping container on top of the dry ice. Please ensure that cryovial boxes are placed so the cryovials are upright in the shipping container.
7. Fully cover the biohazard bags containing the cryovial boxes tubes with approximately 2 inches of dry ice.
8. After the samples have been placed into the shipping container, fill the inner Styrofoam with plenty of dry ice pellets to ensure the frozen state of the specimens during transit.
  - a. Each Styrofoam shipper must contain about 10 lbs (4.5 kg) of dry ice.
9. Replace the lid on the Styrofoam carton. Place the completed Blood Sample and Shipment Notification Form in the package on top of the Styrofoam lid for each patient specimen, and close and seal the outer cardboard shipping carton with packing tape.
10. Complete the UPS Dry Ice Label with the following information:
  - a. Net weight of dry ice in kg (must match amount on the airbill)
  - b. Do not cover any part of this label with other stickers, including preprinted address labels.
11. Apply all provided warning labels and the completed UPS return airbill to the outside of package, taking care not to overlap labels.
12. Hold packaged samples in -80°C freezer until time of UPS pick-up/drop-off.
13. Specimens should be sent to the following address via UPS Next Day Air. Frozen shipments should be sent Monday through Wednesday to avoid shipping delays on Thursday or Friday.

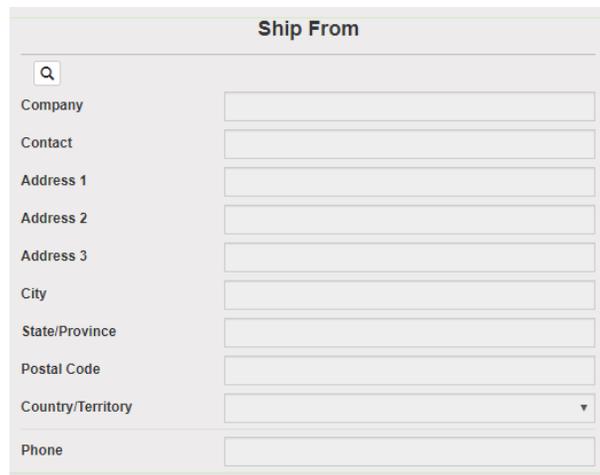
UW Retinal Studies at NCRAD  
Indiana University School of Medicine  
351 W. 10th St. TK-217  
Indianapolis, IN 46202
14. Use UPS tracking to ensure the delivery occurs as scheduled and is received by NCRAD. Please notify NCRAD by email ([alzstudy@iu.edu](mailto:alzstudy@iu.edu)) that a shipment has been sent and include the UPS tracking number in your email.

### 8.1.2 Shipping Instructions

1. Log into the ShipExec Thin Client at kits.iu.edu/UPS.
  - a. If a new user or contact needs access, please reach out to your study contact for access.
2. Click “Shipping” at the top of the page and select “Shipping and Rating”.



3. Select your study from the “Study Group” drop down on the right side of the main screen. Choosing your study will automatically filter the address book to only addresses within this study.
4. Click on the magnifying glass icon in the “Ship From” section to search for your shipping address.



- a. Search by Company (site), Contact (name), or Address 1 (first line of your site’s street address). Click Search.
  - b. Click Select to the left of the correct contact information.
5. Verify that both the shipping information AND study reference are correct for this shipment.
  - a. If wrong study contact or study reference, click Reset in the bottom right of the screen to research for the correct information.
6. Enter Package Information
  - a. Frozen shipments
    - i. Enter the total weight of your package in the “Weight” field.

- ii. Enter the dry ice weight in the “Dry Ice Weight” field.
    - iii. If the “Dry Ice Weight” field is higher than the “Weight” field, you will receive an error message after clicking Ship and need to reenter these values.
  - b. Click Ship in the bottom right of the page when complete.
7. If your site does not already have a daily UPS pickup, you can schedule one here.
  - a. Click the blue Pickup Request button. Enter the earliest pickup time and latest pickup time in 24-hr format.
  - b. Give a name & phone number of someone who the UPS driver can call if having issues finding the package
  - c. Give the Floor and Room Number (if needed) to be as descriptive as possible where this package needs to be picked up from. Click Save.
8. Print the airbill that is automatically downloaded.
  - a. To reprint airbill, click History at the top left of the page.
    - i. Shipments created from the user that day will automatically populate. If shipments from a previous day need to be located, search by ship date.
    - ii. Locate the correct shipment and click on the printer icon to the left of the tracking number under “Action” to reprint the airbill.
    - iii. Click print icon on right side of the tracking number line.
9. Fold airbill and place inside plastic UPS sleeve.
10. Peel the back off of the UPS sleeve and stick the sleeve to the package.

## 9.0 DATA QUERIES AND SAMPLE RECONCILIATION

The Laboratory worksheets must be completed on the day that samples are collected since they capture information related to the details of the sample collection and processing. These forms include information that will be used to reconcile sample collection and receipt, as well as information essential to future analyses.

Data queries or discrepancies with samples shipped and received at NCRAD may result from:

- Missing samples
- Incorrect samples collected and shipped
- Damaged or incorrectly prepared samples



- Unlabeled samples, samples labeled with incomplete information, or mislabeled samples
- Discrepant information documented on the Biological Sample and Shipment Notification Form and logged at NCRAD compared to information entered into the study database.
- Samples that are frozen and stored longer than one quarter at the site
- Use of an incorrect Biological Sample and Shipment Notification Form

## 10.0 APPENDICES

[Appendix A. Rate of Centrifuge Worksheet](#)

[Appendix B. Biological Sample and Shipment Notification Form](#)

[Appendix C. GUID Demographics Form](#)

## Appendix A. Rate of Centrifuge Worksheet

Please complete and return this form by email to the NCRAD Project Manager if you have any questions regarding sample processing. The correct RPM will be sent back to you.

### Submitter Information

Name:

Site:

Submitter e-mail:

### Centrifuge Information

Please answer the following questions about your centrifuge.

#### Centrifuge Type

Fixed Angle Rotor:       Swing Bucket Rotor:

#### Radius of Rotation (mm):

Determine the centrifuge's radius of rotation (in mm) by measuring distance from the center of the centrifuge spindle to the bottom of the device when inserted into the rotor (if measuring a swing bucket rotor, measure to the middle of the bucket).

#### Calculating RPM from G-Force:

$$\text{RCF} = \left( \frac{\text{RPM}}{1,000} \right)^2 \times r \times 1.118 \quad \Rightarrow \quad \text{RPM} = \sqrt{\frac{\text{RCF}}{r \times 1.118}} \times 1,000$$

RCF = Relative Centrifugal Force (G-Force)

RPM = Rotational Speed (revolutions per minute)

R = Centrifugal radius in mm = distance from the center of the turning axis to the bottom of centrifuge

Comments:

Please send this form to NCRAD Study Coordinator

[alzstudy@iu.edu](mailto:alzstudy@iu.edu)



**Appendix B. Biological Sample and Shipment Notification Form**

*Please email the form on or prior to the date of shipment.*

To: Kelley Faber	Email: <a href="mailto:alzstudy@iu.edu">alzstudy@iu.edu</a>	Phone: 1-800-526-2839			
From: _____	UPS Tracking #: <u>1Z976R8W</u>				
Phone: _____	Email: _____				
Study: <input type="checkbox"/> EyeRET <input type="checkbox"/> Brain and Eye Vasculature <input type="checkbox"/> ADRC: Site #: _____ PTID #: _____ ID #: _____ GUID (if available): _____ Sex: <input type="checkbox"/> M <input type="checkbox"/> F    Birth Year: _____					
		KIT BARCODE			
<i>Blood Collection:</i>					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;">Date of Draw: _____ [MMDDYY]</td> <td style="padding: 5px;">Time of Draw: _____ [HHMM] (24hr format)</td> </tr> </table>			Date of Draw: _____ [MMDDYY]	Time of Draw: _____ [HHMM] (24hr format)	
Date of Draw: _____ [MMDDYY]	Time of Draw: _____ [HHMM] (24hr format)				
<i>Blood Processing:</i>					
<b>DNA (Buffy Coat)</b>					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; border-right: 1px solid black; padding: 5px;">Buffy Coat specimen number (<b>Last four digits</b>): _____</td> <td style="width: 10%; border-right: 1px solid black; padding: 5px;">_____</td> <td style="width: 40%; padding: 5px;">Original blood volume of EDTA: _____ mL</td> </tr> </table>			Buffy Coat specimen number ( <b>Last four digits</b> ): _____	_____	Original blood volume of EDTA: _____ mL
Buffy Coat specimen number ( <b>Last four digits</b> ): _____	_____	Original blood volume of EDTA: _____ mL			
<b>Notes:</b> _____ _____ _____					

### Appendix C. GUID Demographics Form

Please be certain to collect the following demographic information to generate a Global Unique Identifier:

1. Complete legal given (first) name of subject at birth: \_\_\_\_\_
2. Complete additional (middle) name or names at birth: \_\_\_\_\_
3. Complete legal family (last) name of subject at birth: \_\_\_\_\_
4. Suffix: \_\_\_\_\_
5. Date of Birth: \_\_\_\_\_
6. Name of city/municipality in which subject was born: \_\_\_\_\_
7. Country of birth: \_\_\_\_\_