



Biospecimen Exchange for Neurological Disorders

# The role of **Microglia** In Parkinson's disease **Cognitive and MotoR** Impairment +PD (MICRO-PD)

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BIOSPECIMEN COLLECTION & PROCESSING

# Overview

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1. Specimen uniformity and quality
2. Site Equipment
3. Procedures
  - Kit Contents and Ordering
  - Sample Labelling
  - Sample Collection and Processing
  - Shipping Samples
  - Non-Conformance
4. Contact Information

# Specimen Uniformity and Quality

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GENERAL REMINDERS



# Specimen Standardization and Quality

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Most biomarkers are sensitive to *time* and *temperature*

- Standardization of processing across sites is key
- Specimens must be processed within 2 hours of collection
- Reference the *BioSEND Biomarker Specimen Collection, Processing, and Shipment Manual* as needed
- Do not replace or supplement any kit components without first receiving approval from BioSEND/NINDS

Questions? Email [biosend@iu.edu](mailto:biosend@iu.edu)

# Site Consumables and Equipment

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*Sites will need to supply the following items:*

- Gloves
- Alcohol wipes
- Butterfly needles
- Tourniquet
- Gauze pads
- Bandages
- Microcentrifuge tube rack
- Sharps bin and lid
- Crushed ice
- Pipettes and pipette tips
- Centrifuge capable of maintaining 4°C
- -80°C Freezer
- Dry ice

# BioSEND.org

On the website, you can:

- Access your study's kit request module and sample submission form
- Download the most recent version of the Manual of Procedures
- View a recording of this training
- Find information about holiday closures
- Access shipping resources

## Study Resources

### KIT REQUEST MODULE

Please follow the below link to access the Kit Request Module. This link will direct you to a REDCap database where study coordinators and staff may request kits, individual supplies, and/or labels. Please allow a total of two weeks for kit requests to be fulfilled.

[Kit Request System](#) →

### SPECIMEN COLLECTION AND PROCESSING FORM

Please use the below link to access the collection and processing form for this protocol. This form must be completed prior to shipment. We also ask that all shipments include a physical copy of the shipping manifest portion of the form.

[Specimen Collection and Processing Form](#) →

### MANUAL OF PROCEDURES

The below downloadable manual was created specifically for the DxCTEII study. Please feel free to explore the manual through the hyperlinked 'Table of Contents'. Questions concerning any part of the manual may be directed to [biosend@iu.edu](mailto:biosend@iu.edu) for further clarification.

[Manual of Procedures](#) ↓

### TRAINING SLIDES

These slides correspond to the BioSEND DxCTEII protocol training. Training is available upon request by contacting [biosend@iu.edu](mailto:biosend@iu.edu).

[Training Slides](#) ↓

### SAMPLE SHIPPING

BioSEND can receive samples Monday-Friday, excluding holidays. Frozen samples should be shipped M-W. Ambient samples may be shipped on Th.

[Generate UPS airbill or schedule pickup](#) →

[Check holiday closures](#) →

[What do I do for Friday blood draws](#) →

# Procedures

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MAINTAINING SPECIMEN UNIFORMITY AND QUALITY

# Biospecimen Collection Protocol

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Sample Type & Volume	BL
Plasma aliquots, 1.5ml	3
Serum aliquots, 1.5ml	3
Buffy Coat	1
Whole Blood, 3ml	1
PBMC aliquots	2



# Kit Contents and Ordering

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- All sites will be sent a Supplemental Kit with their first kit shipment
  - Contains extra blood collection tubes and processing supplies
  - May be used to replace items in study visit kits
- Study Visit Kits should be ordered as soon as visits are planned
  - Contains collection, processing, and shipping supplies specific to each visit
  - Includes barcoded labels
  - The supplies/labels in each study visit kit are intended for that visit only

# Kit Contents and Ordering – REDCap Survey

<https://redcap.link/MICRO-PD>

Order kits online through the Kit Request Module for:

- Blood kits
- Shipping kits
- Extra Supplies

Please provide as much notice as possible when ordering kits and/or supplies.

AAA  
□ □

## BioSEND

Biospecimen Exchange for Neurological Disorders

### NINDS Biosend MICRO-PD Kit Request System

Blood collection supplies have expiration dates determined by the manufacturer. *Please limit requests to kits you will use within 2-3 months.*

Please provide your preferred email address to receive notifications about this request

Study Site

# Kit Contents and Ordering: Confirm Site Info

MICRO-PD Kit Request Module

<b>Study Site</b> <small>* must provide value</small>	Indiana University
Indiana University School of Medicine Carolyn Dunifon Dept. of Medical & Molecular Genetics 351 West 10th Street, TK-318 Indianapolis, IN 46202-3002 (317) 274-5751 cdunifon@iu.edu	
<b>Is the contact name above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input checked="" type="radio"/> No <a href="#">reset</a>
<b>New Contact Name</b> <small>* must provide value</small>	Claire Wegel
<b>Is the shipping address above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No <a href="#">reset</a>
<b>Is the e-mail address above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No <a href="#">reset</a>
<b>Is the phone number above correct?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No <a href="#">reset</a>

Select your site from the drop-down list

Verify contact information and update if needed

# Kit Contents and Ordering: Kit Types

## MICRO-PD Kit Request Module

- Kits are not specific to a subject or time point. After collection, sites will indicate the subject and time point to which BioSEND should link the samples.
- Shipping Kits are ordered independently of Blood Kits

Which kits or supplies are you requesting?

*This request will be delivered to your site by 01-31-2025.*

*Please note in **Comments** if you need this order to arrive sooner. Include date of visit.*

- Blood Collection Kit
- Standard Shipping Kit
- Bulk Shipping Kit
- Extra Supplies

Please specify in comments if you need kits before the standard two week shipment time.

How many Blood Collection Kit(s) do you need?

# Kit Contents and Ordering: Kit Breakdown

MICRO-PD Kit Request Module

**Comments**

Expand

---

**Blood Collection Kit contains:**

- 19 - Cryovial (Sarstedt®) with purple cap, 2ml
- 5 - Cryovial (Sarstedt®) with clear cap, 2ml
- 17 - Cryovial (Sarstedt®) with red cap, 2ml
  
- 3 - EDTA (glass) tube, 10ml
- 2 - Serum (glass) tube, 10ml
- 2 - EDTA (plastic) tube, 3ml
  
- 5 - PBMC (NaHep) tube, 10ml
  
- 12 - Bubble-tube sleeve
  
- 2 - Plastic Biohazard bag with absorbent sheet (small)
- 2 - Disposable pipet, 3ml
- 1 - Cryobox, 25 cell
  
- 50- Internal sample labels
- 1 - Label set (kit & specimen labels)

Kit contents of selected kit will appear at the bottom of the page



# Kit Contents and Ordering: Blood and Shipping Kit



# Kit and Supply Ordering

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- Click “Submit” to send order to BioSEND; staff will confirm receipt of your order
- Please allow two week turn-around time for kit shipments
- If urgent request needed, please note date needed by in comments and email BioSEND. We cannot guarantee urgent orders, but we will do our best to accommodate.
- BioSEND will send confirmation of shipment and tracking number when supplies ship

# Collection Volumes

Total blood volumes

Sample Type	Amount
Whole Blood for Plasma and Buffy Coat	10 ml
Whole Blood for Serum	10 ml
Whole Blood for Banking	3 ml
Whole Blood for PBMC	10 ml



# Sample Labelling: Example Labels


## Labels are provided by Indiana University

- Please check that all samples are properly labelled to ensure correct identification by IU
- If do not have enough labels to complete a visit, please contact IU *immediately*
- Labelling the tubes during processing prevents sample mix-ups

KIT NUMBER



1000001




MICROPD

Kit: 1000001

**1000000123**

PLASMA

EDTA10



Site ID: \_\_\_\_\_

GUID: \_\_\_\_\_

Kit #: \_\_\_\_\_

Collection \_\_\_\_\_

D & T: \_\_\_\_\_

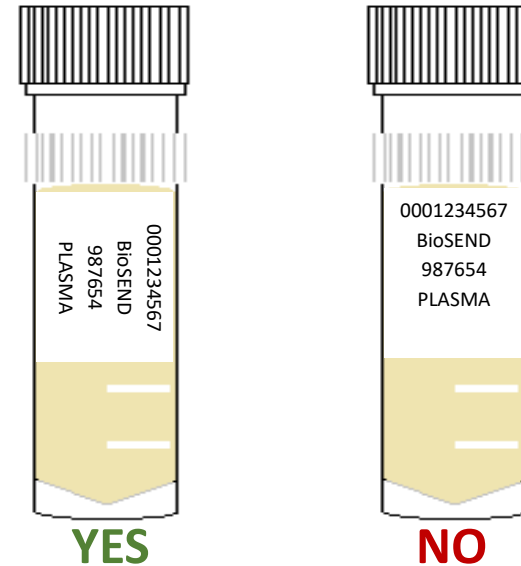
Sample Type: \_\_\_\_\_

# Sample Labelling: Label Placement

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Please...

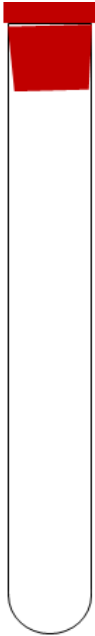
- Label all collection and aliquot tubes before cooling, collecting, processing, or freezing samples
- Label only 1 subject's tubes at a time to avoid mix-ups
- Wrap the label around the tube horizontally - label position is important for all tube types
- Make sure the label is completely adhered by rolling between your fingers



# Sample Collection and Processing

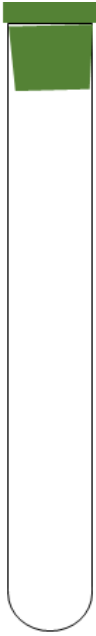
Blood Tube Draw Order

1 x 10ml Serum tubes



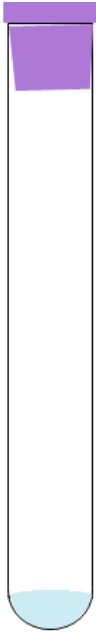
1

1 x 10ml NaHep tube for PBMC



2

1 x 10ml EDTA tubes



3

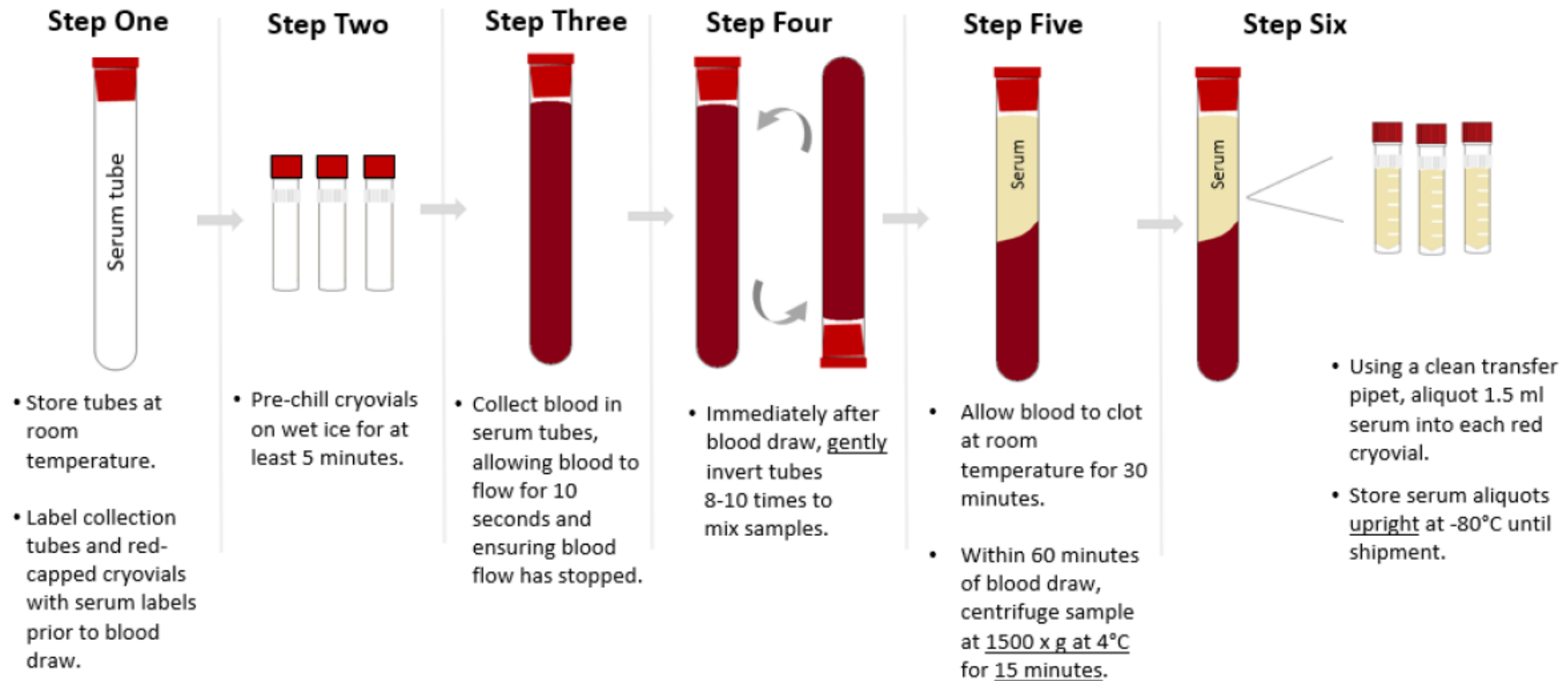
1 x 3ml EDTA tube



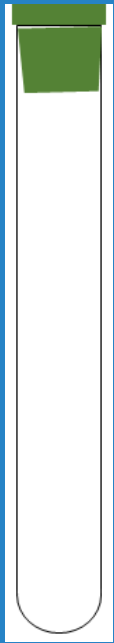
4

# Sample Collection and Processing: Serum

## Serum Preparation –10 ml Serum (Red Top) Tube



# PBMC Collection

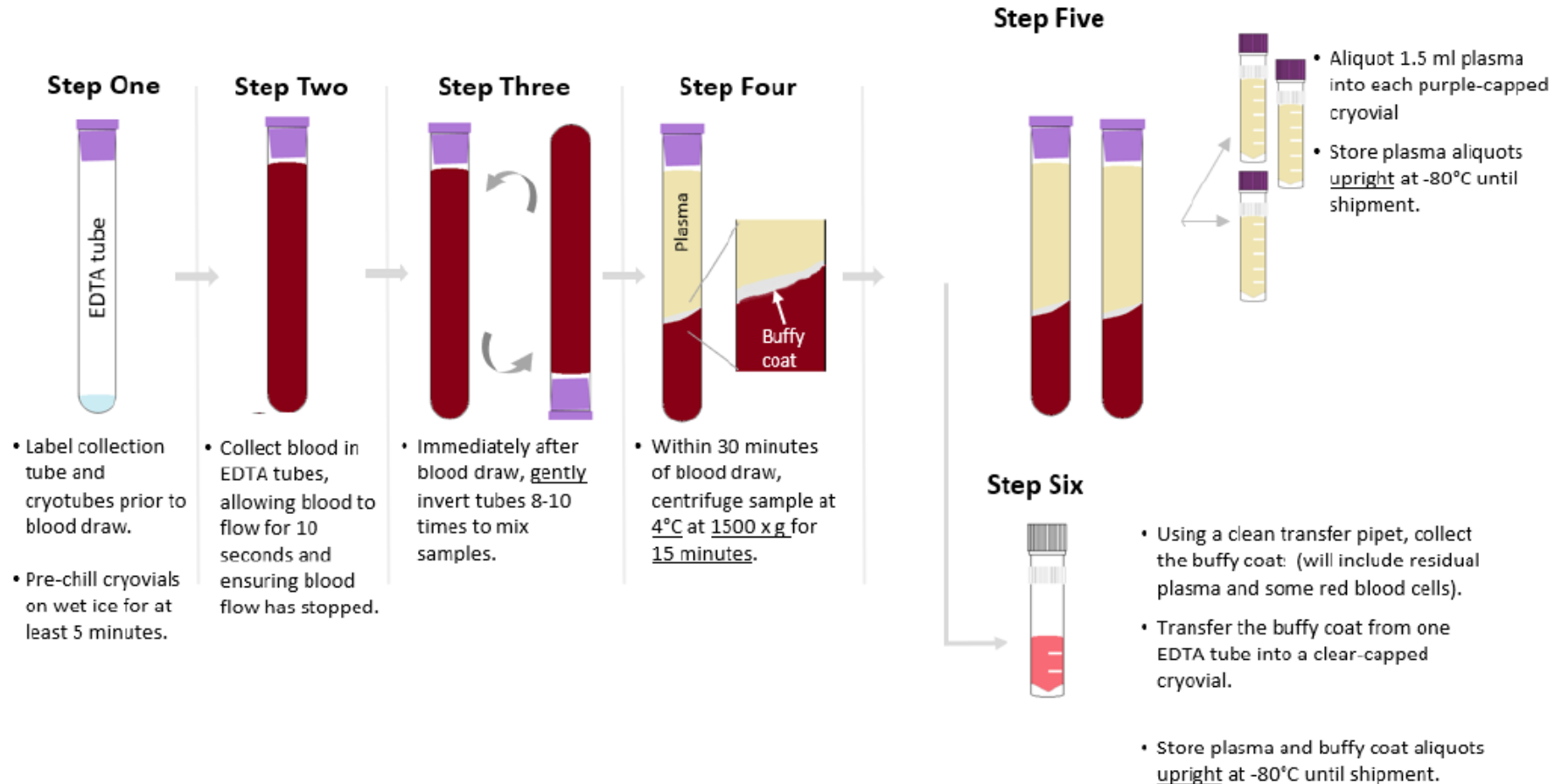


PBMCs will be isolated at Johns Hopkins in the Calabresi Lab per their internal protocol.

The Calabresi lab will process enough blood sample to isolate an additional  $6 \times 10^6$  cells, to be shipped to BioSEND in 2 aliquots.

# Sample Collection and Processing: Plasma & Buffy Coat

## Plasma and Buffy Coat Collection and Preparation – 10ml K3 EDTA (glass) Tube



# Sample Collection and Processing: Whole Blood

## WBLD Preparation – 1 x 3 ml K2 EDTA (Purple Top) Tube

Step One



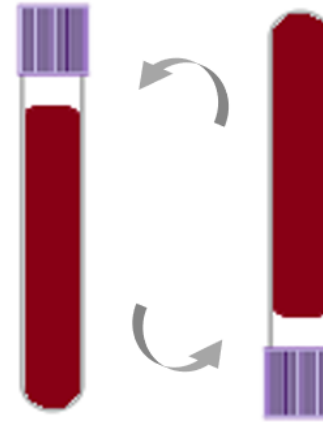
- Store tube at room temperature.
- Label tube with preprinted WBLD label prior to blood draw.

Step Two



- Collect blood into 3ml EDTA tube, allowing blood to flow for 10 seconds and ensuring blood flow has stopped.

Step Three



- Immediately after blood draw, invert tube 8-10 times to mix sample.

Step Four



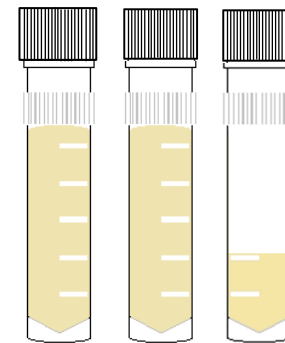
- Transfer to -80°C. Store upright and keep frozen until shipment to BioSEND.

# Sample Collection and Processing: Aliquots

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Filling biomarker serum and plasma aliquots:

- Fill as many cryovials as possible to 1.5 ml
- Over-filled vials may burst in freezer!
- Ship ALL material to IU, even if final vial is less than standard volume



**YES**

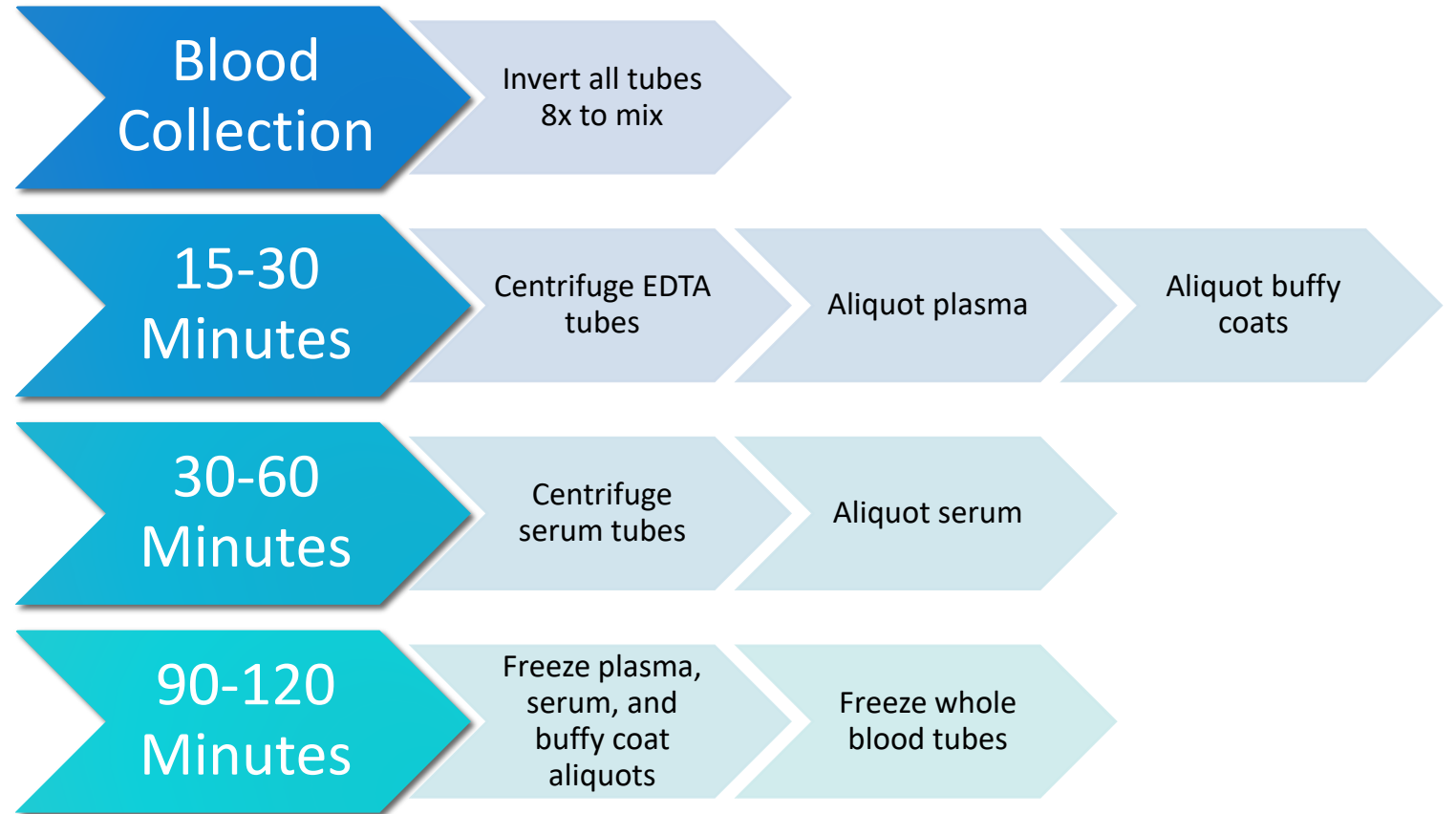


**NO**



# Sample Collection and Processing: Timeline

Timeline for blood processing



# Sample Collection and Processing: Issue #1

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## Troubleshooting Blood Collection

### Issue #1: Tube with little/no vacuum

- Always check expiration date on the tube before beginning blood draw and discard expired tubes
- Store tubes at “room temperature” – extreme temperature can affect vacuum
- Keep extra vacutainer tubes from supplemental kit nearby during blood draw to replace “bad” tubes
- If this is a frequent occurrence, report tube type and lot number to IU.

# Sample Collection and Processing: Issue #2

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## Troubleshooting Blood Collection

### Issue #2: Hemolyzed serum and/or plasma caused by incorrect collection

Cause: Blood Collection Methods	Corrective Action
Improper venipuncture site	Draw from median cubital, basilic, and cephalic veins from antecubital region of arm
Prolonged tourniquet use	Tourniquet should be released after no more than 1 min, excessive fist clenching should be avoided
Not allowing alcohol to dry on skin before venipuncture	Without touching, allow the venipuncture site to air dry
Use of too large/small bore needle resulting in excess force applied to blood	Avoid using too small/large needle. Needle size dependent on the subject's physical characteristics & amount of blood to be drawn. Most commonly used sizes are 19 – 23.
Pulling/pushing plunger too fast while drawing/transferring blood	Avoid drawing the syringe plunger too forcefully when collecting blood
Ensure all blood collection assemblies are fitted securely, to avoid frothing	

For more information, visit: [http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk\\_Jan2004\\_VS7167.pdf](http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk_Jan2004_VS7167.pdf)

# Sample Collection and Processing: Issue #2 continued

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## Troubleshooting Blood Collection

### Issue #2: Hemolyzed serum and/or plasma caused by incorrect processing

Cause: Sample Processing Methods	Corrective Actions
Vigorous mixing/shaking	Gently invert blood collection tube when mixing additive with specimen, follow guidelines in Biologics Manual regarding number of times to invert each type of tube
Not allowing serum to clot for recommended time	Serum tubes without clot activator should be allowed to clot for 60 min in a vertical position
Exposure to excessive heat or cold	Keep samples at ambient temperature until processing
Prolonged contact of serum/plasma with cells	Do not store uncentrifuged samples beyond recommended time

For more information, visit: [http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk\\_Jan2004\\_VS7167.pdf](http://www.bd.com/vacutainer/pdfs/techtalk/TechTalk_Jan2004_VS7167.pdf)

# Sample Collection and Processing Form

Specimen Collection and Processing Form

Direct Link:

<https://redcap.link/MICRO-PDSampleForm>

First page captures basic subject and visit information

**BioSEND** Returning? AAA + -

Biospecimen Exchange for Neurological Disorders  
Protocol: MICRO-PD





Please complete the Specimen Collection and Processing Form, below.

Page 1 of 2

Study Site	<input type="text"/>
Email address of staff member completing this form	<input type="text"/>
<i>Note: A copy of the completed sample form and the shipping manifest will be sent to this address.</i>	
GUID:	<input type="text"/>
Sex (used for DNA quality control)	<input type="text"/>
Visit	<input type="text"/>
IU Kit Number	<input type="text"/> 7 characters remaining

# Sample Collection and Processing Form

Second page captures processing information

Blood Collection and Processing	
Date of venipuncture blood collection	<input type="text"/>  Today M-D-Y
Time of venipuncture blood collection	<input type="text"/>  Now H:M Use 24 Hour clock
1. SERUM (red-top tubes, 10 mL)	
Was blood collected and processed for SERUM?	<input checked="" type="button" value="Yes"/> <input type="button" value="No"/> <a href="#">reset</a>
Time of SERUM tube centrifugation	<input type="text"/>  Now H:M Use 24 Hour clock
Duration of SERUM tube centrifugation	<input type="text" value="15"/> minutes
Rate of SERUM tube centrifugation	<input type="text" value="1500"/> x g
Temperature of SERUM tube centrifugation	<input type="text" value="4"/> degrees Celsius
Total volume of SERUM collected	<input type="text"/> mL
Number of SERUM aliquots created for BioSEND	<input type="text"/> Each aliquot should be 1.5 mL
Time SERUM aliquots were placed in freezer	<input type="text"/>  Now H:M Use 24 Hour clock

# Sample Collection and Processing Form

PDF form of responses will be emailed to you. Print a copy and include with shipment.

## MICRO-PD Frozen Shipping Manifest

Please verify/update the information below. When you click the "Submit" button below, a PDF copy of the Frozen Shipping Manifest will be emailed to you for Subject [subj\_id].

Please print a copy of that document and include it in the Kit #[kit\_num] shipping container.

Study

Study Site:

GUID:

Visit:

IU Kit Number:

Date of blood collection:

### SERUM

Number of SERUM aliquots shipped:

### PLASMA EDTA

Number of PLASMA EDTA aliquots shipped:

Number of BUFFY COAT aliquots shipped:

### WHOLE BLOOD EDTA

Number of WHOLE BLOOD tubes shipped:

### Shipping Information - Please complete.

Frozen shipments should be sent Monday-Wednesday only. Please check for holiday closures prior to shipping. Contact us at biosend@iu.edu if you are unsure whether or not it is safe to ship.

Date of shipment:

Did/will you use the IU UPS interface to generate the shipping label?

- Yes  
 No

# Sample Collection and Processing Form

Submission of the Shipping Manifest portion of the form serves as shipment notification to BioSEND

- Must be completed prior to shipment
- If samples are shipped and not received, BioSEND will follow-up with courier. It is recommended that sites also track shipment to ensure safe delivery



# Shipping Frozen Samples: Tips

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## Packing and Shipping Frozen Samples

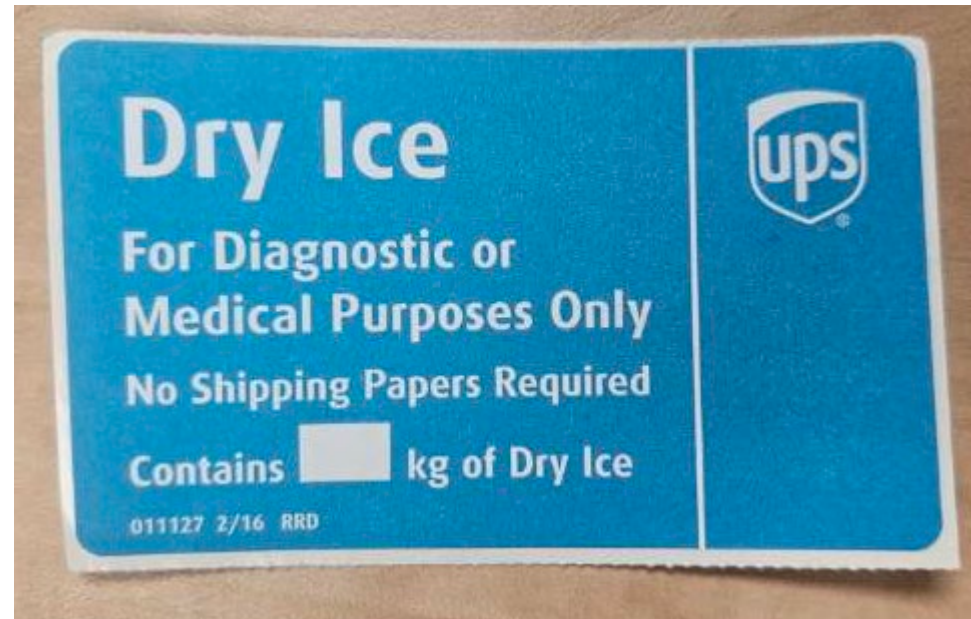
- Serum, plasma, buffy coats and whole blood all ship frozen on dry ice
- Frozen samples should be shipped **only** Monday through Wednesday
- Always fill carton to **top** with dry ice
- Do not pack shipment until the day of pickup



# Shipping Samples

Packing and Shipping Frozen  
Samples

UPS Dry Ice label should not be covered with other stickers  
and must be completed, or UPS will reject/return your  
package!



# Shipping Samples: Frozen

Do not ship more than 4 biohazard bags in a standard shipper (equivalent to two subject-visits) or 8-10 biohazard bags in a bulk shipper (equivalent to 4-5 subject-visits).

- Allows room for dry ice to keep samples frozen in transit
- Minimizes loss in the rare but unfortunate event of courier issues



# Shipping Samples – UPS: <https://kits.iu.edu/UPS>

The screenshot shows the shipping interface for Indiana University School of Medicine. The header features the IU logo and the text "INDIANA UNIVERSITY SCHOOL OF MEDICINE". Below the header, the text "and Affiliated Biorepositories" is displayed. The interface is divided into two main sections: "Ship From" and "Shipment Information".

**Ship From Section:**

- Search for address: A search bar with a magnifying glass icon and a "Clear" button.
- Code: Input field.
- Company: Icahn School of Medicine - Mt. Sinai
- Contact: Kenny Persaud
- Address 1: 1425 Madison (Icahn Building)
- Address 2: Icahn L4 39
- Address 3: Input field.
- City: New York
- State/Province: NY
- Postal Code: 10029
- Country/Territory: United States

**Shipment Information Section:**

- Study Group: SSBC (dropdown menu)
- Weight: 20 (input field) LB (dropdown menu)
- Dry Ice Weight: 10 (input field) LB (dropdown menu)
- Description of Return: Biologic Specimens
- Pickup Request: A blue button.

**Annotations:**

- "Search for address": A dashed box around the search bar with a blue arrow pointing to it.
- "Choose Study": A dashed box around the "Study Group" dropdown with a blue arrow pointing to it.
- "Enter weight": A dashed box around the "Weight" and "Dry Ice Weight" input fields with a blue arrow pointing to them.
- "Schedule Pickup": A dashed box around the "Pickup Request" button with a blue arrow pointing to it.
- "Click 'Ship'": A dashed box around the "Ship" button at the bottom right with a blue arrow pointing to it.

**Buttons:**

- Clear (blue button)
- Pickup Request (blue button)
- Reset (blue button)
- Ship (blue button)

# Shipping Samples via UPS

IU UPS ShipExec Shipping Portal

- Print out UPS air waybill
- Ensure all elements (barcode, return address, etc.) printed clearly
- Fold and insert UPS air waybill into clear plastic sleeve on package

JOHN SMITH  
INDIANA UNIVERSITY  
410 WEST 10TH STREET  
INDIANAPOLIS IN 46202

2 LBS

1 OF 1

RS

SHIP TO:

SCHOOL OF MEDICINE  
317-278-2694  
INDIANA UNIVERSITY  
TK 217  
351 W 10TH ST  
INDIANAPOLIS IN 46202



IN 461 9-01



UPS NEXT DAY AIR

1

TRACKING #: 1Z 976 R8W 84 3985 8595



BILLING: P/P  
DESC: Biological Specimens  
RETURN SERVICE

Reference No. 1: 4087277

XOL 20.03.09 NV45 83.0A 12/2019



# Shipping Samples: Closures

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
June 19	Juneteenth (observed)
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

Please also consider weather when shipping. UPS will post service updates on their webpage. Reach out to BioSEND if you are unsure if it is safe to ship.

# Non-Conformance

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Non-conformance to standard procedures may reduce the utility of the biospecimens:

- Not processing serum/plasma within 2 hours of collection allows for breakdown of certain proteins and small molecules
- Over/under centrifuging changes plasma or serum composition



# Non-Conformance Reporting con't

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Most common non-conformance issues:

- Shipment notification not sent
- Samples shipped for weekend/holiday delivery
- Sample form incomplete/inaccurate
- Low volume
- Unlabeled or mislabeled tube(s)
- Sample hemolysis





# Non-Conformance and Inventory Reporting

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Most common non-conformance issues:

- BioSEND will notify sites directly of any issues upon receipt
- BioSEND will email sites a monthly inventory report of all samples received from that site to date
- ***If you are experiencing issues, please reach out to us for help! It is much easier to prevent an issue before sample collection & shipment than trying to fix it after the fact***

# Contacts

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## Indiana University

General Questions/Shipment Notifications:

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

317-278-6158

Request kits:

<https://redcap.link/MICRO-PD>