



Concussion Assessment, Research, and Education for Kids
CARE4Kids

BIOSPECIMEN COLLECTION & PROCESSING

Overview

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

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 Indiana

Questions? Email biosend@iu.edu

Site Equipment

Sites will need to supply the following items:

Phlebotomy

- Gloves
- Alcohol wipes
- Butterfly needles
- Tourniquet
- Gauze pads
- Bandages
- Sharps bin and lid



Site Equipment

Sites will need to supply the following items:

Processing

- Crushed ice
- Microcentrifuge tube rack
- Calibrated micropipettes and pipette tips (adjustable or fixed at 200 μ l and 500 μ l)
- Centrifuge capable of maintaining 4°C with adapter for microtubes
- -80°C Freezer
- Dry ice



Kit Contents and Ordering

- 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
 - Tasso+ Hemolink™ devices will be provided with the Supplemental Kit
- Study Visit Kits should be ordered as soon as visits are planned
 - Contains collection, processing, and shipping supplies specific to each visit
 - Include barcoded labels
 - The supplies/labels in each study visit kit are intended for that visit only
 - Kits can be ordered on the BioSEND website, <https://biosend.org/>

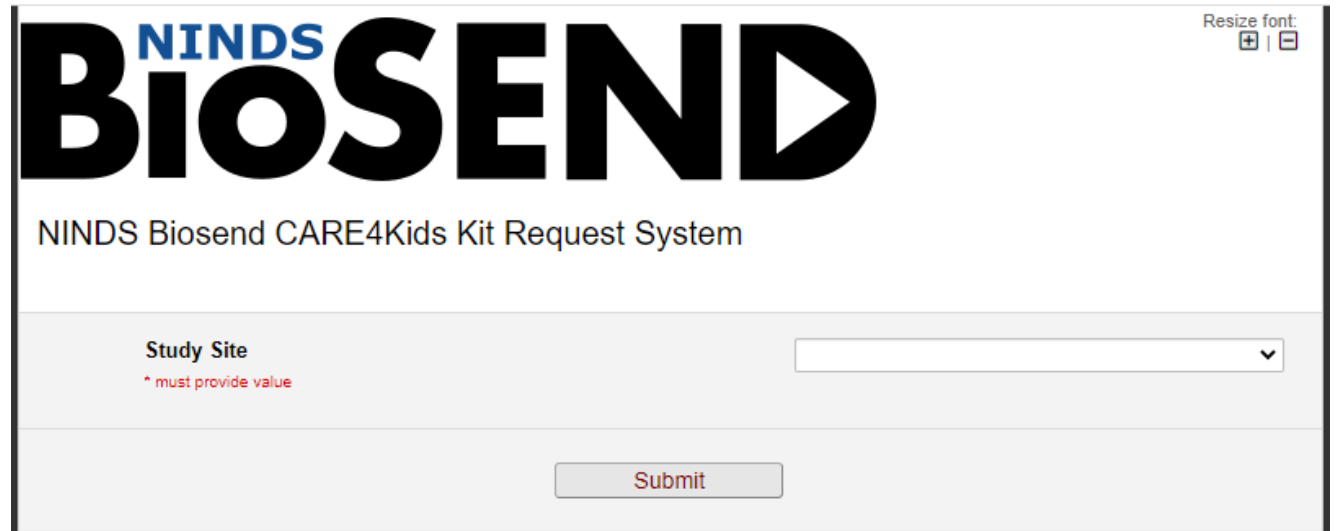
Kit Contents and Ordering

<http://kits.iu.edu/care4kids>

Order kits online through the Kit Request Module for:

- T1/T3 Collection Kits
- Subject Labels
- Extra Supplies

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



The screenshot shows the NINDS Biosend CARE4Kids Kit Request System interface. At the top, the logo "NINDS Biosend" is displayed in large, bold, black letters, with "NINDS" in blue. Below the logo, the text "NINDS Biosend CARE4Kids Kit Request System" is visible. In the top right corner, there is a "Resize font:" option with a plus icon and a minus icon. The main form area has a light gray background. It contains a label "Study Site" in bold black text, followed by a red asterisk and the text "must provide value". To the right of this label is a white dropdown menu with a downward arrow. At the bottom right of the form, there is a gray button with the word "Submit" in red text.

Kit Contents and Ordering

CARE4Kids Kit Request Module

Study Site <small>* must provide value</small>	Indiana University	<div>Select your site from the drop-down list</div>
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		
Is the contact name above correct? <small>* must provide value</small>	<input type="radio"/> Yes <input checked="" type="radio"/> No	<div>Verify contact information and update if needed</div>
		reset
New Contact Name <small>* must provide value</small>	Claire Wegel	
Is the shipping address above correct? <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset
Is the e-mail address above correct? <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset
Is the phone number above correct? <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No	reset

Kit Contents and Ordering

CARE4Kids Kit Request Module

Kit Type **Please allow two weeks for shipment** <small>* must provide value</small>	<input checked="" type="checkbox"/> T1/T3 Visit Kit <input type="checkbox"/> Supplemental Kit <input type="checkbox"/> Extra Supplies <small>Please specify in comments if you need kits before the standard two week shipment time.</small>
T1/T3 Visit Kit Quantity <small>* must provide value</small>	<input type="text" value="2"/>
Comments	<div></div> <div>Expand</div>

Kit Contents and Ordering


CARE4Kids Kit Request Module

T1/T3 Collection Kit

Blood Collection Kit Contents:

- 1 - EDTA (Purple) tube (2ml), plastic
- 1 - P100 tube (2ml)
- 1 - RNA PAXgene™ tube (2.5ml)
- 10 - Purple-capped cryovial, 2ml
- 1 - Clear-capped cryovial, 2ml
- 5 - Orange-capped cryovial (siliconized), 0.5ml
- 1 - White-capped cryovial (siliconized), 0.5ml
- 1 - Disposable transfer pipette (3ml)

- 1 - 25-Slot Cryobox
- 1 - Warning label packet (incl. dry ice label)
- 1 - Airway bill envelope
- 1 - Shipping container for dry ice shipments
- 1 - Biohazard bag with absorbent sheet
- 1 - 100 ml absorbent sheet
- 3 - Bubble sleeves for tubes
- 30 - Cryohold specimen labels



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

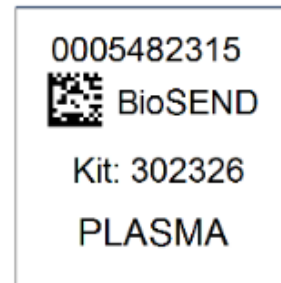
Sample Labelling

Labels are provided by Indiana University

- Please check that all samples are properly labelled with correct specimen type and visit



Kit Labels

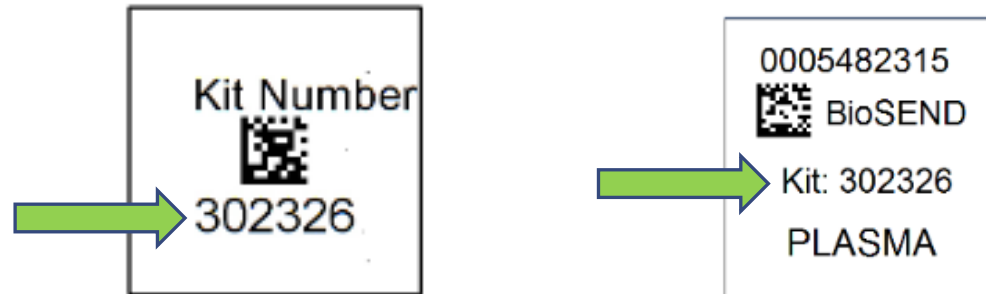


Specimen Labels

Sample Labelling

Kit Number

- Any kit number can be used for any subject or visit—which is why it is very important to document which kit number was used for which subject and visit



Collection Volumes

Total blood volumes

Sample Type	Amount
Whole Blood for RNA (PAXgene™ tube)	2.5 ml
Whole Blood for Plasma and Buffy Coat (EDTA purple-top tube)	10 ml
Whole Blood for Plasma (P100 protease inhibitor tube)	2 ml
Whole Blood for Plasma (Tasso Hemolink™ device with EDTA microtainer)	0.5 ml

Maximum blood volume: 15 ml (approx. 2 teaspoons)

Timeline for Blood Collection and Processing

Blood Collection

- Collect blood (EDTA, P100, and PAXgene™ tubes) via venipuncture
- Collect blood using Hemolink™ device, if applicable
- Immediately invert all tubes 8-10 times to mix

15-30 Minutes

- Centrifuge EDTA (10 ml and 500 ul) and P100 tubes
- Aliquot plasma from all tubes

60-90 Minutes

- Freeze plasma aliquots
- Freeze buffy coat

2-24 Hours

- Freeze PAXgene™ RNA tube

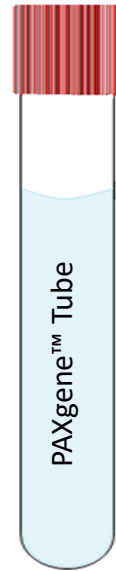
2-14 Days

- Ship samples to BioSEND on dry ice

Blood Collection and Processing

Blood Tube Draw Order

2.5ml
PAXgene™



1

10ml EDTA



2

2ml P100
EDTA + protease
inhibitor cocktail

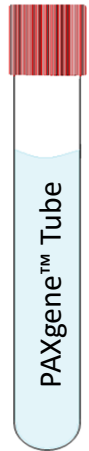


3

**Plasma from Tasso™ HemoLink Device collected through non-venipuncture method*

Whole Blood for RNA (PAXgene™ tube)

Step One



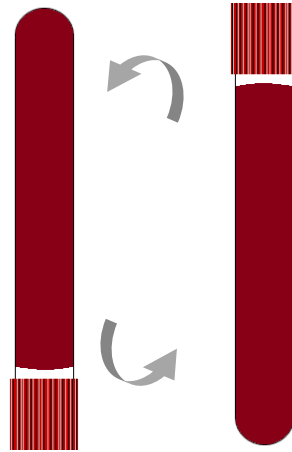
- Store tube at room temperature.
- Label tube prior to draw.

Step Two



- Collect blood into PAXGene™ 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 samples.

Step Four



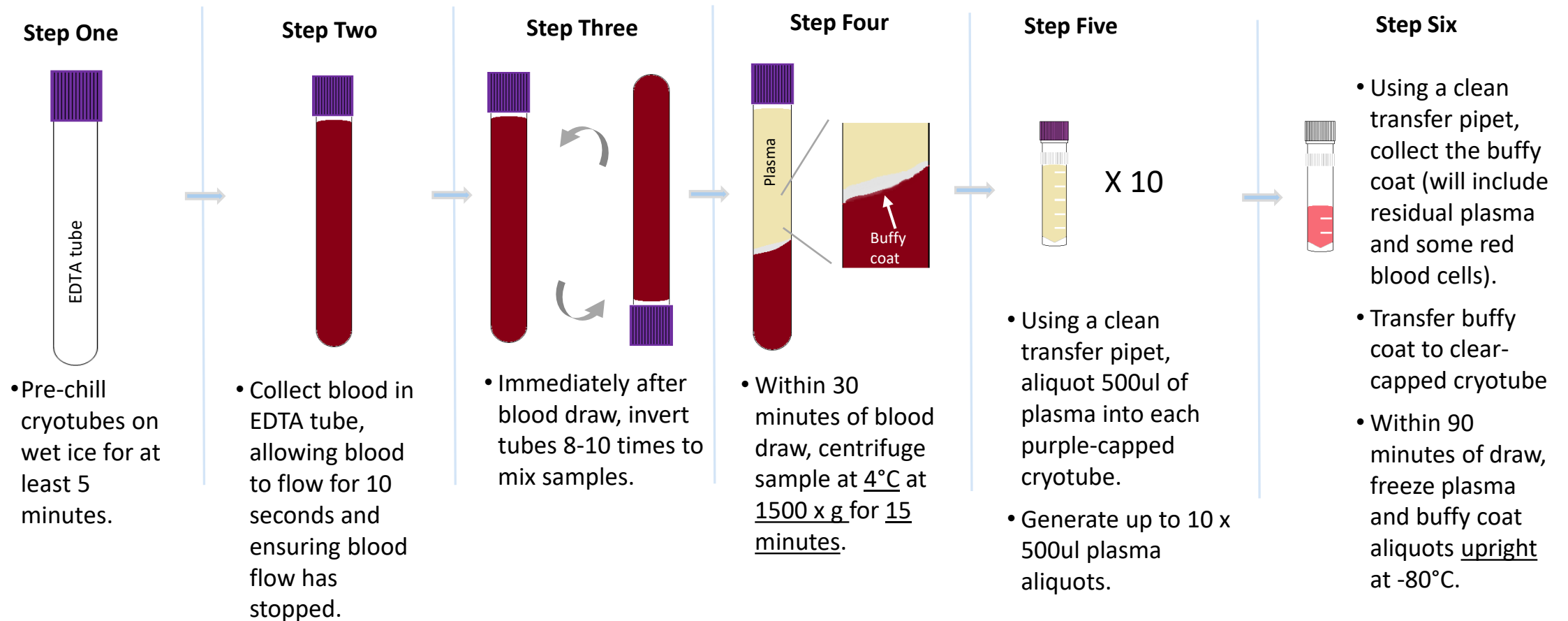
- Incubate tube upright at room temperature for 24 hours.

Step Five

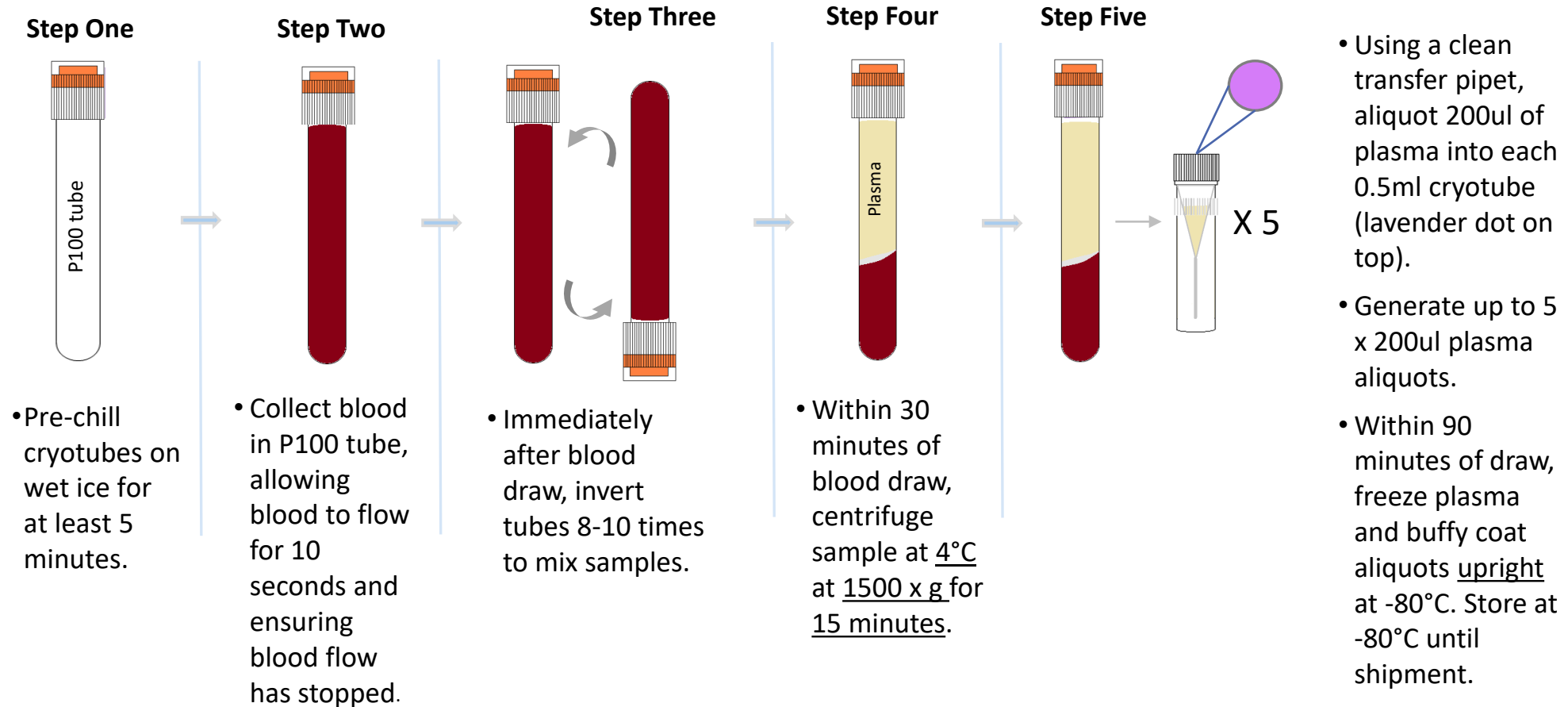


- After incubation period, freeze tube upright at -80°C in a wire rack. Store at -80°C until shipment.

Plasma (EDTA) and Buffy Coat



Plasma (P100)



Tasso+ HemoLink™ Device

Collection instructions – please follow manufacturer's guide

- Within 30 minutes of blood collection, centrifuge tube for 15 minutes at 1500 RCF (x g) at 4°C.
- Remove the plasma by tilting the tube and placing the pipette tip along the lower side of the wall. Using a disposable tipped micropipette, transfer plasma into the 0.5ml (white dot) cryotube. Aliquot 200 ul per cryotube.

Sample Collection and Processing Form

Hyperlinked above

First page captures basic subject and
visit information

NINDS
BIOSEND

Resize font:
+ | -

[Returning?](#)

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 manifests will be sent to this address.</i>	
CARE4Kids Subject ID:	<input type="text"/> 8 characters remaining
Subject's biological sex (used for DNA quality control)	<input type="text"/>
Visit	<input type="text"/>
IU Kit Number	<input type="text"/> 6 characters remaining

[Next Page >>](#)

[Save & Return Later](#)

Sample Collection and Processing Form

Hyperlinked above

Second page captures processing
information

Blood Collection and Processing

Date of blood collection

 Today M-D-Y

Time of blood collection

 Now H:M

Use 24 Hour clock.

Date participant last ate

 Today M-D-Y

Time participant last ate

 Now H:M

Use 24 Hour clock.

1. RNA (PAXGene™ tube)

Was blood collected for RNA?

Yes

No

reset

Number of PAXGene™ tubes collected for RNA

Blood volume collected for RNA

Note: Max collection volume per tube is 2.5 ml.

mL

Date RNA was frozen

 Today M-D-Y

Time RNA was placed in freezer

 Now H:M

Use 24 Hour clock.

RNA storage temperature

-80

degrees Celsius

Sample Collection and Processing Form

Hyperlinked above

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

CARE4Kids 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 Site:

- ☐ Children's National Hospital
- ☐ Seattle Children's Hospital
- ☐ University of California - Los Angeles
- ☐ University of Rochester
- ☐ University of Texas - Southwestern
- ☐ Wake Forest University
- ☐ Washington University

CARE4Kids Subject ID:

Visit:

- ☐ T1
- ☐ T3

IU Kit Number:

Date of blood collection:

PLASMA EDTA

Number of PLASMA EDTA aliquots shipped:

Number of BUFFY COAT aliquots shipped:

PLASMA P100

Number of PLASMA P100 aliquots shipped:

PLASMA TASSO

Number of PLASMA TASSO aliquots shipped:

RNA

Number of PAXGene™ tubes shipped

Shipping Samples: Frozen

Packing and Shipping Frozen Samples

- Biomarker plasma, buffy coats, and whole blood for RNA 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

Class 9 Dry Ice Label should not be covered with other stickers and must be completed, or UPS will reject/return your package!

Shipper's Declaration not Required.

Dry Ice amount must be in kilograms.

Note: 2 lbs. = 1 kg.

Airwaybills / airbills must have the following:
1. Dry Ice; 9; UN 1845
2. $\frac{\text{Number}}{\text{(Number pks)}} \times \frac{\text{wt}}{\text{(wt)}} \text{ Kg}$

Net weight of dry ice in kg

Dry Ice kg.

Your name & address

Shipper's Name and Address

UN 1845


Consignee Name and Address

IU information and address

06426 1/01 RRD

Shipping Samples

UPS resources available on BioSEND website



Accessing Biospecimens




Banking Samples

→

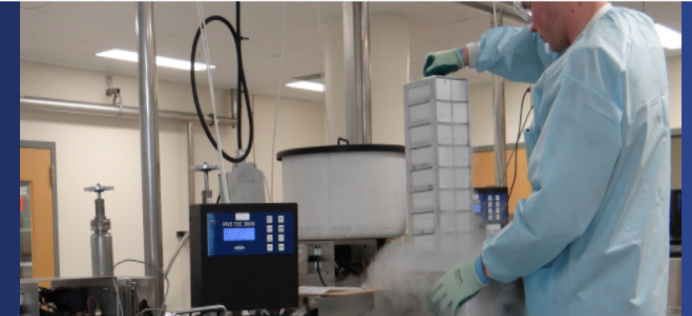
Active Studies

About BioSEND

AJPD Study Resources	MBPS Study Resources	SPARX3 Study Resources
CHANGE-HD Study Resources	PBS Study Resources	Udall Study Resources
DLB Study Resources	PHD3 Study Resources	Holiday Closures
DVRP Study Resources	PSP Study Resources	Shipping Information
EpiBioS4Rx Study Resources	SBPD Study Resources	Sample Shipment Form
LBD Study Resources	CRC-SCA Study Resources	Withdrawn Subject Notification
LETBI Study Resources	READISCA Study Resources	



Shipping Information



Shipping Samples

Links on this page to generate airwaybills, schedule pickups, request account, and view a guide for using the UPS ShipExec Thin Client system.

Shipping Address

BioSEND
Indiana University School of Medicine
351 West 10th Street
TK-217
Indianapolis, IN 46202

UPS Shipping Resources

To generate air waybills and schedule UPS pickups for shipments to BioSEND, please visit the UPS ShipExec™ Thin Client [website](#).

For instructions on how to use the UPS ShipExec™ Thin Client website, please refer to the [BioSEND UPS ShipExec™ Thin Client Guide](#)

To request a new user account for UPS ShipExec™ Thin Client or to request an update to your site's address in the system, please [use this form](#) to submit your request.


Additional Resources

[Sample Submission Form](#)
[UPS ShipExec™ Guide](#)

Contact Us

biosend@iu.edu
317-278-0594

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



INDIANA UNIVERSITY

SCHOOL OF MEDICINE

and Affiliated Biorepositories

Search for address

Code

Company

Contact

Address 1

Address 2

Address 3

City

State/Province

Postal Code

Country/Territory

Clear

Icahn School of Medicine - Mt. Sinai

Kenny Persaud

1425 Madison (Icahn Building)

Icahn L4 39

New York

NY

10029

United States

Shipment Information

Study Group

Weight

Dry Ice Weight

Description of Return

SSBC

20LB

10LB

Biologic Specimens

Pickup Request

Choose Study

Enter weight

Click "Ship"

Reset

Ship

Shipping Samples

UPS

- Print out UPS air waybill
- 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		
 SAMPLE		
BILLING: P/P DESC: Biological Specimens RETURN SERVICE		
Reference No.1: 4087277		
XOL 20.03.09 NV45 83.0A 12/2019		 TM

Shipping Samples: Closures

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

*Please also consider weather when shipping. UPS will post service updates on their webpage. Please reach out to BioSEND if you are unsure if it is safe to ship. **We are closed to shipments the last two weeks of the year and will resume normal operations the first business day of 2022.**

Non-Conformance

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

- Not processing and freezing plasma within 90 minutes of collection allows for breakdown of certain proteins and small molecules
- Delayed shipping of samples may exclude subjects/visits from analyses
- Over/under centrifuging changes plasma composition



Questions?

Indiana University

General Questions/Shipment Notifications:

biosend@iu.edu

Biorepository Manager:

Claire Wegel

cwegel@iu.edu

Tel: 317.278.6158

Biorepository Coordinator:

Carolyn Dunifon

cdunifon@iu.edu

Tel: 317.274.5751