BIOSPECIMEN COLLECTION & PROCESSING

Schizophrenia Spectrum Biomarkers Consortium
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

I WILL REPEAT THESE WORDS A LOT. YOU MAY WANT TO START A TALLY.
Biorepositories at Indiana University

NCRAD

PARKINSON’S PROGRESSION MARKERS INITIATIVE

Play a Part in Parkinson’s Research

IB

INDIANA BIOBANK

NINDS BioSEND

NCAA-DOD Grand Alliance CARE Consortium
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 *SSBC 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 ssbc@iu.edu
Site Equipment

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
- CryoStor® freezing media
Procedures

MAINTAINING SPECIMEN UNIFORMITY AND QUALITY
Subject ID: Assigning SSBC Subject ID

• Each site will assign SSBC Subject ID from list of unique, site-specific IDs provided by Broad Institute

• SSBC Subject ID will be patient identifier throughout participation in study

• Batch of barcoded SSBC Subject ID labels will be sent to each site with initial kit shipment

• Replacements and additional SSBC Subject ID label sets can be requested from IUGB via the Kit Request Module https://kits.iu.edu/ssbc

• Affix labels to:
  • Local site documents
  • Specimen kits
  • Biological specimens sent to local analysis labs

• Do NOT place on specimens sent to IUGB!

• SSBC Subject ID should also be entered into IUGB Sample Submission form when shipping to IUGB
Subject ID: Requesting the GUID

- Globally Unique Identifier (GUID) will be the “master” subject ID
- Random alpha-numeric string
- To request a GUID for a subject, you must set up an account with the NIMH Data Archive

https://nda.nih.gov/s/guid/nda-guid.html

In order to generate a GUID, the following PHI is required:
- 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
Kit Contents and Ordering

• All sites will be sent a Supplemental Kit with their first kit shipment
  o Contains extra blood collection tubes, processing supplies, and LP needles
  o May be used to replace items in study visit kits

• Study Visit Kits should be ordered as soon as visits are planned
  o Contains collection, processing, and shipping supplies specific to each visit
  o Include barcoded labels
  o The supplies/labels in each study visit kit are intended for that visit only
Kit Contents and Ordering

http://kits.iu.edu/ssbc

Order kits online through the Kit Request Module for:
- Baseline Blood & CSF kits (includes PBMC collection)
- Follow-Up Blood & CSF kits (No PBMC)
- Subject Labels
- Extra Supplies

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

SSBC Kit Request Module

Select your site from the drop-down list

Verify contact information and update if needed
Kit Contents and Ordering

SSBC Kit Request Module

Kit Type
* must provide value

- Baseline Blood & CSF Kit (includes PBMC collection)
- Follow-Up Blood & CSF Kit (no PBMC)
- Subject Labels
- Extra Supplies

Baseline Blood & CSF Kit Quantity

Extra Shipping Supplies - Please indicate the quantity needed.

Date Needed: 04-07-2022

Please Note: We cannot guarantee receipt of kits < 7 business days from request.

Comments

[Expand]
Kit Contents and Ordering
SSBC Kit Request Module

Each Complete Blood & CSF Kit includes:
1. Set of protective bubble pouches for tubes
2. Cryobox
3. Cryogenic vials (2 ml) with clear caps
4. Cryogenic vials (2 ml) with red caps
5. Cryogenic vials (2 ml) with purple caps
6. Cryogenic vials (2 ml) with orange caps
7. Cryogenic vials (2 ml) with blue caps
8. Cryogenic vial (4 ml) with orange cap
9. Sterile screw-top centrifuge tubes (15 ml)
10. Screw-top centrifuge tubes (15 ml)
11. Shipping container for dry ice shipments
12. 95 kPa biohazard bag with absorbent sheet
13. PAXgene™ tube (2.5 ml)
14. Purple-top EDTA tube (10 ml)
15. Red-top serum tube (10 ml)
16. Green-top sodium heparin tube (10 ml)
17. Gold-top SST tube (5 ml)
18. Transfer pipette
19. Shipping label packets
20. Shipping instruction sheets
21. Ambient shipping box with coldpack and biohazard bag
22. Ambient shipping overpack
23. Lumbar puncture tray
24. Medication transfer filter straw
### Extra Blood Collection and Processing Supplies - Please indicate the quantity needed.

<table>
<thead>
<tr>
<th>Item</th>
<th>2</th>
<th>5</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDTA tube, 10 mL (glass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serum tube, 10 mL (glass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAXgene™ RNA tube, 2.5 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naïve tube, 10 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SST tube, 5mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purple-capped cryotube, 2 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red-capped cryotube, 2 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue-capped cryotube, 2 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear-capped cryotube, 2 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange-capped cryotube, 2 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposable pipettes, 3mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange-cap Conical tube, 15 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conical tube, 50 mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange-capped cryotube, 4mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Extra CSF Collection Supplies - Please indicate the quantity needed.

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>22G LP Tray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22G LP Needle w/ introducer, 3.5&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22G LP Needle w/ introducer, 4.75&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medication transfer filter straw</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterile Conical tube, 15mL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Extra Shipping Supplies - Please indicate the quantity needed.

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient shipping kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frozen shipping box (small)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>546/P biohazard bag w/ absorbent sheet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN3373 Category B labels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN1875 Dry Ice label</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear UPS Label Sleeves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frozen shipping box (XS) - for UPenn NMDA samples</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date Needed**

Date: 04-07-2022

Please Note: We cannot guarantee receipt of kits < 7 business days from request.

**Comments**

Submit
Kit Contents and Ordering

Blood Kit (frozen):

PBMC supplies:
Kit Contents and Ordering

CSF:

LP Tray:
22G Needle with Introducer

These 22G needles can be ordered from the Extra Supplies option of the SSBC Kit Request Survey
Kit Contents and Ordering

UPenn anti-NMDA Shipping Kit:
<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Blood for Clinical Labs</td>
<td>5 ml</td>
</tr>
<tr>
<td>Whole Blood for RNA</td>
<td>5 ml</td>
</tr>
<tr>
<td>Whole Blood for Plasma and Buffy Coat</td>
<td>10 ml</td>
</tr>
<tr>
<td>Whole Blood for Serum</td>
<td>10 ml</td>
</tr>
<tr>
<td>Whole Blood for PBMCs (OPTIONAL)</td>
<td>20 ml</td>
</tr>
<tr>
<td>Cerebrospinal Fluid</td>
<td>13-15 ml</td>
</tr>
</tbody>
</table>

**Maximum blood volume: 50 ml** (approx. 8 teaspoons)

**Maximum CSF volume: 15 ml** (approx. 3 teaspoons)
Sample Flow

“Wait, where are these samples going?”
Sample Labelling

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 ID

987654

0001234567

SSBC

987654

CSF

CSF NMDA

987654
Sample Labelling

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. 5mL SST for Clinical Labs
2. 10mL Serum
3. 2 x 10mL NaHep for PBMC
4. 10mL EDTA for Plasma
5. 2 x 2.5mL PAXgene™ for RNA
**Sample Collection and Processing: Serum**

**Steps 1-2**
- Store tubes at room temperature.
- Label tubes with preprinted SSBC serum label prior to blood draw.

**Steps 3-4**
- Collect blood in serum tube, allowing blood to flow for 10 seconds and ensuring blood flow has stopped.

**Step 5**
- Immediately after blood draw, invert tubes 8-10 times to mix samples.

**Step 6**
- Allow blood to clot at room temp. for at least 15 minutes.
  - Within 60 minutes of blood draw, centrifuge sample at 4°C at 1500 x g for 15 minutes.

**Steps 7-13**
- Label red-capped cryotubes with SERUM labels and orange-capped cryotube with SERUM NMDA labels.
- Using a clean transfer pipet, transfer all serum into a 15 ml conical tube and mix gently by inverting 3-4 times.
- Aliquot 1 ml of serum into the orange-capped SERUM NMDA labelled tube. Aliquot 1.5 ml into each SERUM cryotube.
- If a residual aliquot (<1.5 ml) is created, place a blue cap on this aliquot.
- Store serum aliquots upright at -80°C until shipment.
Sample Collection and Processing: PBMCs

Steps 1-2

- Collect blood in Sodium Heparin tube, allowing blood to flow for 10 seconds and ensuring blood flow has stopped.
- Immediately after blood draw, invert tubes 8-10 times to mix samples.
- Store tubes at room temperature until shipment.
- Must be shipped ambient to IU on day of blood draw!

Steps 3-4

- Store tubes at room temperature.

Step 5

- Label tubes with preprinted SSBC PBMC label prior to blood draw.
Sample Collection and Processing: Plasma

**Steps 1-2**
- Collect blood in EDTA tubes, allowing blood to flow for 10 seconds and ensuring blood flow has stopped.

**Steps 3-4**
- Immediately after blood draw, invert tubes 8-10 times to mix samples.

**Step 5**
- Within 30 minutes of blood draw, centrifuge sample at 4°C at 1500 x g for 15 minutes.

**Step 6**
- Label purple-capped cryotubes with preprinted plasma labels.
- Using a clean transfer pipet, transfer plasma into a 15 ml conical tube and mix gently by inverting 3-4 times.
- Aliquot 1.5 ml plasma into each cryotube.
- If a residual aliquot (<1.5 ml) is created, place a blue cap on this aliquot.
- Store plasma aliquots upright at -80°C until shipment.

**Steps 7-8**
- Label clear-capped cryotubes with preprinted SSBC buffy coat labels.
- Using a clean transfer pipet, collect the buffy coats (will include some plasma and red blood cells).
- Transfer each buffy coat to separate cryotubes.
- Store plasma and buffy coat aliquots upright at -80°C until shipment.

**Steps 9-11**
- Store tubes at room temperature.
- Label tubes with preprinted SSBC plasma label prior to blood draw.

**Legend**
- EDTA tube
- Plasma
- Buffy coat
Sample Collection and Processing: Whole blood RNA

**Steps 1-2**
- Store tubes at room temperature.
- Label tubes with preprinted SSBC RNA label prior to blood draw.

**Steps 3-4**
- Collect blood in PAXgene™ tube, allowing blood to flow for 10 seconds and ensuring blood flow has stopped.

**Steps 5**
- Immediately after blood draw, invert tubes 8-10 times to mix samples.
- Incubate the tubes at room temperature for 2 to 24 hours.
- Freeze tubes upright at -80°C until shipment. (DO NOT freeze in solid Styrofoam tube racks)

**Steps 7-8**
- Freeze tubes upright at -80°C until shipment. (DO NOT freeze in solid Styrofoam tube racks)
Sample Collection and Processing: CSF

Steps 1-3

- Prepare Mr. Frosty™

Steps 4-5

- Collect 15ml of CSF into 1 centrifuge tube.

Step 6

- **BASELINE VISIT ONLY:**
  - Dispense 1ml into the CSF NMDA-labelled orange-capped cryovial

Step 7

- Dispense 2-4ml CSF into the 4 ml orange-capped cryovial
- Send to local pathology lab for testing. Label and handle sample per your local path lab's instructions.

Steps 1-3

- Chill 15 ml conical tubes in their wrappings on wet ice.
- Label twenty clear-capped 2 ml cryotubes with preprinted SSBC CSF labels.
- Label one orange-capped 2 ml cryotube with CSF PELLET label.
- Label one orange-capped 2 ml cryotube with CSF NMDA label.
Sample Collection and Processing: CSF (cont’d)

**Step 8**
- Gently invert the remaining 10 ml of CSF in the centrifuge tube 3-4 times to mix the sample.

**Step 9**
- Within 30 minutes of collection, centrifuge samples at 300 x g for 10 minutes at 4°C.
- Aliquot 500 ul of supernatant directly into each of the prepared cryotubes, being careful not to disturb the pellet at the bottom of the conical tube.
- **Leave 500 ul of CSF in the conical tube.**

**Steps 10-12**
- Add 500 ul CryoStor® to 500 ul of CSF and cell pellet in the 15 ml conical tube.
- Resuspend pellet using pipetting technique.
- Transfer the resuspended CSF pellet to the pre-labeled orange cryotube.
- Within 60 minutes of CSF collection, freeze CSF aliquots **upright** in rack or cryobox at -80°C.
- Place pellet aliquot in the prepared Mr. Frosty™ and store at -80°C overnight.
Sample Collection and Processing: Aliquots

Filling biomarker serum, plasma, and CSF aliquots:

• Ensure that you are using the correct vials
  o Red cap = serum
  o Purple cap = plasma
  o Clear cap = CSF and buffy coat
  o Blue cap = residuals
  o Orange = CSF pellet, anti-NMDA samples

• Fill as many cryovials as possible to 1.5 ml (plasma & serum) or 0.5 ml (CSF)

• Over-filled vials may burst in freezer!

• Ship ALL material to IU, even if final vial is less than standard volume
Sample Collection and Processing

Timeline for blood processing

**Blood Collection**
- Invert all tubes 8x to mix

**15-30 Minutes**
- Centrifuge EDTA tubes
- Aliquot plasma

**30-60 Minutes**
- Centrifuge serum tubes
- Aliquot serum

**90-120 Minutes**
- Freeze plasma and serum

**2-24 Hours**
- Freeze PAXgene™ tubes
- Ship NaHep tubes for PBMCS
Sample Collection and Processing

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**

**Troubleshooting Blood Collection**

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

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

Ensure all blood collection assemblies are fitted securely, to avoid frothing

## Sample Collection and Processing

### Troubleshooting Blood Collection

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

<table>
<thead>
<tr>
<th>Cause: Sample Processing Methods</th>
<th>Corrective Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous mixing/shaking</td>
<td>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</td>
</tr>
<tr>
<td>Not allowing serum to clot for recommended time</td>
<td>Serum tubes without clot activator should be allowed to clot for 60 min in a vertical position</td>
</tr>
<tr>
<td>Exposure to excessive heat or cold</td>
<td>Keep samples at ambient temperature until processing</td>
</tr>
<tr>
<td>Prolonged contact of serum/plasma with cells</td>
<td>Do not store uncentrifuged samples beyond recommended time</td>
</tr>
</tbody>
</table>

Sample Collection and Processing

Specimen Collection and Processing Form

Please complete the Specimen Collection and Processing Form, below.

<table>
<thead>
<tr>
<th>Study Site</th>
<th>Icahn School of Medicine at Mount Sinai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email address of staff member completing this form</td>
<td><a href="mailto:reynoldh@iu.edu">reynoldh@iu.edu</a></td>
</tr>
<tr>
<td>Note: A copy of the completed sample form and the shipping manifests will be sent to this address.</td>
<td></td>
</tr>
<tr>
<td>SSBC ID</td>
<td>MS123456</td>
</tr>
<tr>
<td>Subject's biological sex (used for DNA quality control)</td>
<td>Female</td>
</tr>
<tr>
<td>Visit</td>
<td>Baseline Visit</td>
</tr>
<tr>
<td>IU Kit Number</td>
<td>987654</td>
</tr>
</tbody>
</table>
### Blood Collection and Processing

**Date of blood collection:** 06-01-2020

**Time of blood collection:** 09:00

**Patient’s fasting status at time of blood collection:** Fasted

**1. SERUM (red-top serum tube)**

**Was blood collected and processed for SERUM?** Yes

**Blood volume collected for SERUM:** 10 mL

**Time of SERUM tube centrifugation:** 09:30

**Rate of SERUM tube centrifugation:** 1500 x g

**Duration of SERUM tube centrifugation:** 15 minutes

**Temperature of SERUM tube centrifugation:** 4 degrees Celsius

**Total volume of SERUM collected:** 4.5 mL
Sample Collection and Processing

Specimen Collection and Processing Form

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume of SERUM collected</td>
<td>4.5 mL</td>
</tr>
<tr>
<td>Number of SERUM aliquots created</td>
<td>3</td>
</tr>
<tr>
<td>Was a residual SERUM aliquot (less than 1.5 mL) created?</td>
<td>Yes</td>
</tr>
<tr>
<td>Time SERUM was placed in freezer</td>
<td>10:00</td>
</tr>
<tr>
<td>SERUM storage temperature</td>
<td>-80</td>
</tr>
<tr>
<td>SERUM notes</td>
<td></td>
</tr>
</tbody>
</table>
### Sample Collection and Processing

Specimen Collection and Processing Form

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2. PBMCs (green-top sodium heparin tubes)</strong></td>
<td></td>
</tr>
<tr>
<td>Was blood collected for PBMCs?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Number of tubes collected for PBMCs</td>
<td>2</td>
</tr>
<tr>
<td>Total blood volume collected for PBMCs</td>
<td>12 mL</td>
</tr>
<tr>
<td>Reason volume was less than standard</td>
<td>Bad tube vacuum</td>
</tr>
<tr>
<td>PBMC notes</td>
<td>Second tube had very little vacuum, so only 2 ml were collected in that tube.</td>
</tr>
</tbody>
</table>
### Sample Collection and Processing

#### Specimen Collection and Processing Form

**3. PLASMA (purple-top EDTA tube)**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was blood collected and processed for PLASMA?</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of PLASMA aliquots created</td>
<td>4</td>
</tr>
<tr>
<td>Aliquot to 1.5 mL if possible.</td>
<td></td>
</tr>
<tr>
<td>Was a residual PLASMA aliquot (less than 1.5 mL) created?</td>
<td>Yes</td>
</tr>
<tr>
<td>Was the BUFFY COAT collected?</td>
<td>Yes</td>
</tr>
<tr>
<td>Time PLASMA and BUFFY COAT were placed in freezer</td>
<td>10:00</td>
</tr>
<tr>
<td>Use 24 Hour clock.</td>
<td></td>
</tr>
<tr>
<td>PLASMA and BUFFY COAT storage temperature</td>
<td>-80</td>
</tr>
<tr>
<td>degrees Celsius</td>
<td></td>
</tr>
<tr>
<td>PLASMA notes</td>
<td></td>
</tr>
</tbody>
</table>
### 4. RNA (PAXGene™ tubes)

<table>
<thead>
<tr>
<th>Question</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was blood collected for RNA?</td>
<td></td>
</tr>
<tr>
<td>Number of PAXGene™ tubes collected for RNA</td>
<td>2</td>
</tr>
<tr>
<td>Blood volume collected for RNA</td>
<td>5 mL</td>
</tr>
<tr>
<td>RNA notes</td>
<td></td>
</tr>
</tbody>
</table>
Sample Collection and Processing

**Specimen Collection and Processing Form**

### CSF Collection and Processing

<table>
<thead>
<tr>
<th>Question</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was CSF collected?</td>
<td>Yes</td>
</tr>
<tr>
<td>Date of CSF collection</td>
<td>06-01-2020</td>
</tr>
<tr>
<td>Time of CSF collection</td>
<td>12:00</td>
</tr>
<tr>
<td>Patient’s fasting status at time of CSF collection</td>
<td>Not fasted/no dietary limitation</td>
</tr>
<tr>
<td>Was CSF submitted for clinical labs?</td>
<td>Yes</td>
</tr>
<tr>
<td>Total volume of CSF collected (incl. CSF submitted for clinical labs)</td>
<td>12 mL</td>
</tr>
<tr>
<td>Time of CSF tube centrifugation</td>
<td>12:00</td>
</tr>
<tr>
<td>Rate of CSF tube centrifugation</td>
<td>300 x 8</td>
</tr>
<tr>
<td>Duration of CSF tube centrifugation</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Temperature of CSF tube centrifugation</td>
<td>4 degrees Celsius</td>
</tr>
<tr>
<td>Question</td>
<td>Option</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Number of CSF aliquots created</td>
<td>20</td>
</tr>
<tr>
<td>Aliquot to 500 μL, if possible.</td>
<td></td>
</tr>
<tr>
<td>Was a residual CSF aliquot (less than 500 μL) created?</td>
<td>Yes</td>
</tr>
<tr>
<td>Was the CSF PELLET collected?</td>
<td>Yes</td>
</tr>
<tr>
<td>Was the CSF PELLET frozen in a prepared Mr. Frosty™?</td>
<td>Yes</td>
</tr>
<tr>
<td>Time CSF and CSF PELLET were placed in freezer</td>
<td>13:30</td>
</tr>
<tr>
<td>Use 24 Hour clock</td>
<td></td>
</tr>
<tr>
<td>CSF and CSF PELLET initial storage temperature</td>
<td>-80</td>
</tr>
<tr>
<td>degrees Celsius</td>
<td></td>
</tr>
<tr>
<td>Was the CSF PELLET transferred to liquid nitrogen storage?</td>
<td>Yes</td>
</tr>
<tr>
<td>Required if samples held on site &gt;48 hours.</td>
<td></td>
</tr>
<tr>
<td>CSF notes</td>
<td></td>
</tr>
</tbody>
</table>
Shipping Samples: Shipping Manifests

A copy of the Shipping Manifest should be included in every shipment to Indiana University.
Shipping Samples: Shipping Manifests

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SSBC Ambient Shipping Manifest

Please verify/update the information below. When you click the "Submit" button below, a PDF copy of the Ambient Shipping Manifest will be emailed to you for Subject MS123456. Please print a copy of that document and include it in the shipping container with Kit #987654.

If you did NOT collect PBMCs, this form should be blank.

Shipping Information - Please complete.

Date of shipment: 06-02-2020

Did/will you use the IU UPS interface to generate the shipping label? Yes/No

Which shipping service did you use? FedEx

What is the shipment tracking number? 985798741234

Submit

Save & Return Later
Shipping Samples: Shipping Manifests

A copy of the Shipping Manifest should be included in every shipment to Indiana University.
Please verify/update the information below. When you click the "Submit" button below, a PDF copy of the NMDAR Shipping Manifest will be emailed to you for Subject MS123456.

Please print a copy of that document and include it in the UPENN Kit #987654 shipping container.

Shipping Information - Please complete.

Date of shipment: 02-05-2021

What is the tracking number on the preprinted UPS label provided with the NMDAR shipping kit? 12976R8W123456

Samples shipping attention:
Junxian Zhang
University of Pennsylvania
3610 Hamilton Walk
165 Johnson Pavilion/Neurology
Philadelphia, PA 19104

Phone: 215-746-8511
Shipping Samples: Shipping Manifests

A copy of the NMDAR Shipping Manifest should be included in every shipment to UPenn.

<table>
<thead>
<tr>
<th>SSBC NMDAR Shipping Manifest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please verify/update the information below. When you click the &quot;Submit&quot; button below, a PDF copy of the NMDAR Shipping Manifest will be emailed to you for Subject (subject_id). Please print a copy of this document and include it in the UPENN Kit #kit_num shipping container.</td>
</tr>
</tbody>
</table>

| Study Site: | |
| Email address of site contact: | |
| Subject ID: | |
| Visit: | |
| IU Kit Number: | |

**SERUM**

| Number of 1 ml SERUM aliquots for anti-NMDAR testing: | |
| Date of serum collection: | |

**CSF**

| Number of 1 ml CSF aliquots for anti-NMDAR testing: | |
| Date of CSF collection: | |

**Shipping Information - Please complete.**

| Date of shipment: | |
| What is the tracking number on the preprinted UPS label provided with the NMDAR shipping kit? | |
| Estimated date and time of hand delivery (UPENN site only): | |
| Please call the laboratory (215-746-8511) or text Junchan (mobile: 610-366-2425) and Eric (mobile: 215-200-7646) to let them know you are on your way. |

Samples shipping to:
Junchan Zhang
University of Pennsylvania
3810 Hamilton Walk
165 Johnsson Pavilion/Neurology
Philadelphia, PA 19104

Phone: 215-746-8511
Shipping Samples: Ambient

Packing and Shipping Ambient Samples

◦ Whole blood for PBMCs ships at ambient temperature
◦ Ship ambient samples **only** Monday through Thursday
◦ Ship on **same day** of collection
◦ Only ship one subject’s specimens in each shipping carton (unless otherwise instructed)
Shipping Samples: Ambient

Packing and Shipping Ambient Samples
Shipping Samples: Frozen

Packing and Shipping Frozen Samples

- Biomarker serum, plasma, buffy coats, CSF, and whole blood for RNA all ship frozen
- Ship frozen samples on dry ice
- Frozen samples should be shipped **only** Monday through Thursday
- Only ship one subject’s specimens in each shipping carton
- Always fill carton to **top** with dry ice
- Do not pack shipment until the day of pickup
Shipping Samples: Frozen

**Special instructions for CSF cell pellet:**

- Ship within *two days* of collection*
  
- CSF pellet must be frozen in Mr. Frosty™ / -80° C freezer overnight and shipped to IU the next day

- If frozen samples collected on Thursday, CSF pellet must be frozen in Mr. Frosty™ / -80° C freezer overnight and then placed in LN2 tank until shipment following Monday

*CSF pellet must be moved to LN2 if not shipped within 48 hours*
Class 9 Dry Ice Label should not be covered with other stickers and must be completed, or UPS will reject/return your package!
Shipping Samples: Frozen

Packing and Shipping Frozen Samples
Shipping Samples – UPS: https://kits.iu.edu/UPS

1. Search for address
2. Choose Study
3. Enter weight
4. Schedule Pickup
5. Click “Ship”
Shipping Samples

- Print out UPS air waybill
- Fold and insert UPS air waybill into clear plastic sleeve on package
Non-Conformance

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
- Delayed shipping of PBMC samples leads to extraction failures
- Over/under centrifuging changes plasma, serum, CSF composition
Non-Conformance Reporting

IU will send non-conformance report for any specimen submission that does not meet requirements

- A copy of each report should be filed in the study binder
- Confirm procedures are being followed per the Biologics Manual
- Track issues over time to determine where changes may be needed
Non-Conformance Reporting

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
Contacts

Indiana University

General Questions: ssbc@iu.edu

Biorespository Project Manager:
Claire Wegel
Tel: 317.278.6158

Request kits:
http://kits.iu.edu/ssbc

Biorespository Clinical Research Specialist:
Holly Reynolds
Tel: 317.278.1217