MWAC/UNSW Biospecimen Services

Standard Operating Procedure

Isolation of Plasma from Whole Blood

Effective date: 15th May 2023

Review date: 15th May 2026

1. Purpose

The purpose of this document is to describe the procedure for isolating plasma from whole blood.

2. Scope

This SOP describes the isolation of plasma from whole blood.

This is to be used by the Health Precincts Biobank and can be adopted by individual collection protocols that require plasma. See *Biospecimen Services SOP - Blood Processing to a Cell Pellet* in *Section 8 – Related Documents* for all protocols requiring a cell pellet.

This SOP does not cover making a cell pellet from whole blood, use of plasma in research and processing and use for clinical diagnostic purposes.

3. Roles & Responsibilities

The SOP applies to all Biospecimen Services personnel responsible for isolating plasma from whole blood.

Personnel	Responsibility
Technician	• To ensure that the procedure outlined in this standard operating procedure is closely adhered to, as any changes in the methodology will jeopardise the validity of the results. • To be trained in Good Laboratory Practice and be inducted into the PC2 facility. • Carry out accurate pipetting and avoid cross-contamination of specimens.

4. Materials & Equipment

The materials and equipment listed below are required to perform this method.

4.1. Consumables

4.1.1. Screw cap cryotube, 1.5~2 ml internal thread

4.1.2. 1000~1250mL filter tips

4.2. Equipment

4.2.1. Biological safety cabinet class II

4.2.2. Eppendorf Centrifuge 5810

4.2.3. P1000 pipette

4.2.4. -80ºC freezer

4.2.5. 4ºC fridge

5. Safety Requirements

5.1. Clean back-opening gowns, eye protection and powderless gloves must be worn during all operations in this standard operating procedure.

5.2. All samples must be treated as potential infection risks and must be handled according to good laboratory procedures under PC2 requirements and methods to prevent occupational exposure.

5.3. All biohazardous material must be disposed in accordance with the UNSW Laboratory Hazardous Waste Disposal Guideline

5.4. All work surfaces should be clean prior to commencing and after processing.

6. Method

6.1. Operation

6.1.1. Blood will generally be collected into EDTA tubes and stored at 4ºC until processing commences.

6.1.2. Ideally plasma should be collected within 24 – 48hrs of whole blood collection to minimise haemolysis.

6.1.3. Register all participants in OpenSpecimen following the *Biospecimen Services SOP - Registering a Participant and Recording Consent in OpenSpecimen* listed in *Section 9 - Related Documents* and complete the e-processing form (Appendix A).

6.1.4. Book all specimens into OpenSpecimen following the instructions in each individual collection protocol.

6.1.5. Centrifuge blood tube(s) at 2500 rpm for 10 min.

6.1.6. Perform all further manipulations in a Class II Biological Safety cabinet.

6.1.7. Remove the plasma to within 1 cm of the buffy coat with a P1000 pipette and tip into the 1.5 or 2mL cryotubes.

6.1.8. The amount of plasma required for each aliquot and the number of tubes will be detailed in the individual Collection Protocols for each study.

6.1.9. Keep the EDTA tubes in the 4ºC fridge for processing the rest of the blood to a cell pellet. See *Biospecimen Services SOP - Blood Processing to a Cell Pellet*

6.1.10. See *Section 6.3 – Labelling & Storage* for assigning storage locations and labelling tubes.

6.1.11. Place the plasma aliquot tubes into the –80ºC freezer in the locations shown on the label.

6.2. Shutdown

6.2.1. All solid waste should be placed in the resealable sample bag and disposed in a bio-waste bin.

6.2.2. All liquid waste should be disposed into a container with 10% betadine with a proper label for future batch disposal according to UNSW Laboratory Hazardous Waste Disposal regulations.

6.2.3. Make sure the BSC, all equipment and bench areas are clean.

6.3. Labelling & Storage

6.3.1. To assign a storage location, when booking in the specimen, choose the box that is currently being used, this will be in the e-processing form (Appendix A) and the system will select the next available spot when the **Submit** button is clicked in OpenSpecimen.

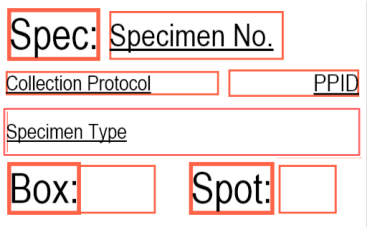
6.3.2. Specimens should be labelled with, at a minimum, specimen number, PPID, specimen type, box/spot location, Collection Protocol. See *Biospecimen Services SOP – Biospecimen Storage and Retrieval* for more information.

6.3.3. Labels are created in LabelMark5 and the printed thermal labels are attached to the plasma aliquots.

6.3.4. Please see how to print the tube thermal labels in file *LTB-WI-006-V3 Print Permanent label from LabelMark5.pdf*.

6.3.5. Use the following label template for plasma tubes:

LabelMark > New > A new Label File based on an existing Template > TissueCellPlasma.l5t for part THT-133



7. Monitoring of compliance to this SOP is ongoing.

7.1. The Biospecimen Services Manager or their delegate is responsible for ongoing monitoring of biobank operations to verify compliance with this SOP.

7.2. The Biospecimen Services Manager or their delegate is responsible for obtaining annual updates to this SOP and for communicating these changes to all personnel.

8. Definitions

Term or Abbreviation	Definition
PC2 Facility	Physical Containment 2 facility
Whole Blood	Blood with all its components (white cells, red blood cells, platelets, and plasma) intact that has been withdrawn from a donor/participant.
Plasma	Plasma is a layer of blood that is isolated when whole blood is collected in tubes treated with an anti-coagulant. The anti-coagulant prevents the blood from clotting. When this blood is centrifuged, the plasma separates and is the uppermost clear liquid layer.
Buffy Coat	The *buffy coat* is the thin white layer between the plasma and the red cells in a centrifuged anticoagulated blood sample. This fraction contains most of the white blood cells and platelets.
Haemolysis	The rupturing (lysis) of red blood cells (erythrocytes) and the release of their contents into surrounding fluid (e.g. blood plasma).
BSC	Biological Safety Cabinet.
PPID	Unique code or number assigned to the participant.
Specimen Number	Unique code or number assigned to individual specimens.
Collection Protocol	A Collection Protocol is an ongoing accrual and storage of specimens, undertaken by a Principal Investigator (PI) in association with Biospecimen Services. A Collection Protocol in OpenSpecimen has defined specimen

	collection groups, time points and a predetermined specimen type and processing protocol.

9. Related Documents

Document	Description
Biospecimen Services SOP – Blood Processing to a Cell Pellet, Version 2, 15/05/2023	SOP that describes the process of making a cell pellet from whole blood.
Biospecimen Services SOP – Biospecimen Storage and Retrieval, Version 3, 12/05/2023	SOP that describes how to store, retrieve and ship biospecimens.
Biospecimen Services SOP - Registering a Participant and Recording Consent in OpenSpecimen, Version 1, 26/04/2023	SOP that describes the data entry procedure to follow when registering participants and recording consent in Open Specimen.
LTB-WI-006-V3 Print Permanent label from LabelMark5	Instructions on how to print labels saved on the DVCR drive.
NSW/CTRNet Required Operational Practice 9: Biospecimen Collection and Processing	ROP that describes the key principles regarding biospecimen collection and processing that should be adhered to, to meet the current best practice standards.
NSW/CTRNet Required Operational Practice 10: Biospecimen Storage and Retrieval	ROP that describes the key principles regarding biospecimen storage and retrieval that should be adhered to, to meet the current best practice standards.
NSW/CTRNet Required Operational Practice 13: Safety and Waste Disposal	ROP that describes the key principles regarding safety and waste disposal that should be adhered to, to meet the current best practice standards.
UNSW Laboratory Hazardous Waste Disposal	UNSW Guideline for disposing of hazardous waste in laboratories.
UNSW Biosafety Policy	UNSW Policy for identifying biohazardous material and meeting legislative and regulatory requirements.
UNSW Personal Protective Equipment Guideline	UNSW Guideline for selecting, using, and maintaining PPE.

10. Appendices

Appendix A: e-Processing Form

11. References, Regulations & Guidelines

11.1. NSW Health Statewide Biobank Blood Processing and Storage Template SOP, NSWHSB Cert Prog SOP 4.3.0 28/10/2019

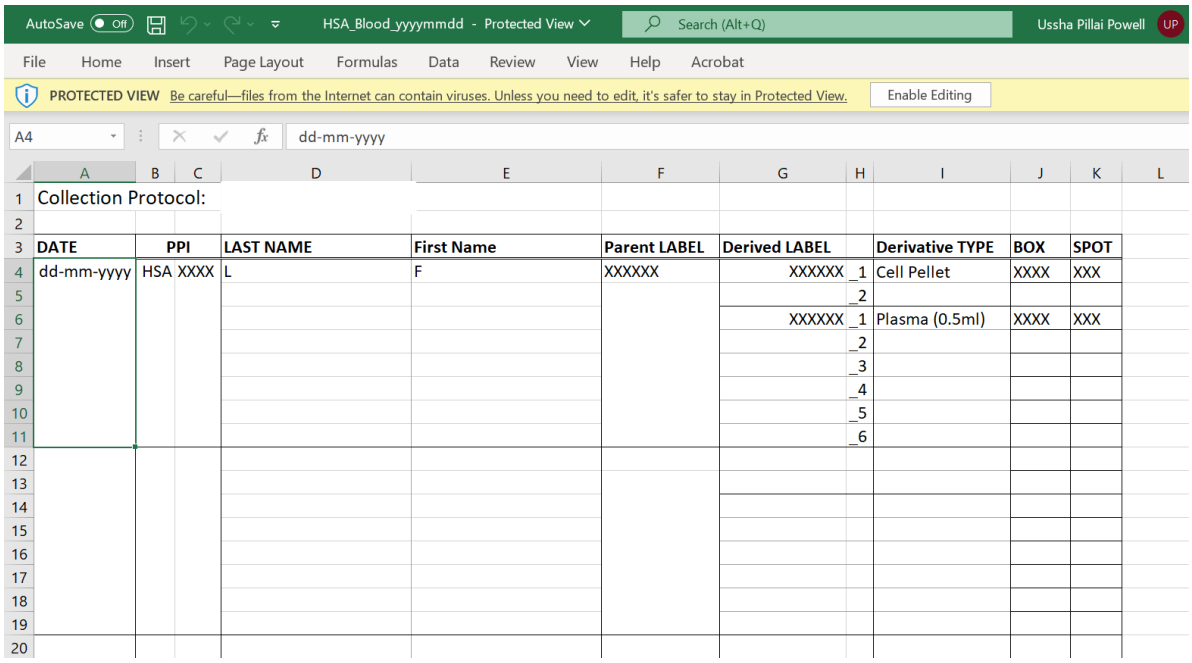
11.2. International Society for Biological and Environmental Repositories (ISBER) (2018) Best Practices: Recommendations for Repositories, Fourth Edition ISBER Best Practices For Repositories - ISBER

12. Version History & Authorisation

Version	Date	Author	Summary of Changes	Authorised By:
2	30/03/2018	Anusha Hettiaratchi	Original	Anusha Hettiaratchi
3	15/05/2023	Ussha Pillai/ Pearl Zhu	Updated to new SOP format	Manager, Biospecimen

			Added more information about labelling and storage	Services: Anusha Hettiaratchi

Appendix A: e-Processing Form



Collection Protocol:

DATE	PPI	LAST NAME	First Name	Parent LABEL	Derived LABEL		Derivative TYPE	BOX	SPOT
dd-mm-yyyy	HSA XXXX	L	F	XXXXXX	XXXXXX	_1	Cell Pellet	XXXX	XXX
						_2			
					XXXXXX	_1	Plasma (0.5ml)	XXXX	XXX
						_2			
						_3			
						_4			
						_5			
						_6			