

## THE 45 AND UP STUDY POLICY ON COLLECTION OF BIOLOGICAL SPECIMENS IN SUB-STUDIES

### Definitions

In this Policy, unless the contrary intention appears:

**Biobank** means the 45 and Up Study biobank.

**Biological Specimen** means any human biological specimen. This term is to be interpreted broadly and given its full meaning to include the full range of human specimen types including, but not limited to:

- a.) Sub-cellular components such as DNA or RNA
- b.) Cells or tissues from any part of the human body
- c.) Organs
- d.) Gametes
- e.) Exhaled air
- f.) Bodily products such as teeth, hair, nail clippings, sweat, urine, faeces
- g.) Blood and blood fractions: plasma, serum, buffy coat, red blood cells
- h.) Saliva and buccal cells

**Policy** means the *45 and Up Study Collection of Biological Specimens in Sub-Studies*

**Researcher** means any person named as an investigator in the Sub-Study Application to the 45 and Up Study, or in a Sub-Study Amendment.

**Study** means the 45 and Up Study

**Sub-Study** means projects approved by the 45 and Up Study to collect additional data from Participants that is not part of follow-up or other activity of the Coordinating Centre

## **1. Purpose**

- 1.1 The purpose of this policy is to define the requirements for Sub-Studies collecting Biological Specimens.
- 1.2 This policy will:
  - a.) assist researchers who are considering utilising the 45 and Up Study resource to collect Biological Specimens, to determine whether the 45 and Up Study offers the most appropriate study population for their project.
  - b.) provide the foundation for an agreement between the research organisation undertaking the approved Sub-Study and the Sax Institute for the research organisation to collect Biological Specimens from Participants.

## **2. Principles**

- 2.1 The 45 and Up Study is designed as an accessible collaborative resource for researchers in NSW. As such, researchers may apply to the 45 and Up Study to conduct a Sub-Study. Sub-Studies may include the collection of Biological Specimens from Participants.
- 2.2 The inclusion of Biological Specimens, and the establishment of a Biobank, will enhance the value of the Study as a resource for health-related research.
- 2.3 The 45 and Up Study aims to promote efficiencies in research. Biological Specimens are a highly sought after, yet costly, resource for research. As such, the collection of Biological Specimens for research is an area where there is particular utility in developing efficiencies.

## **3. Background and applicability**

- 3.1 The Study will aim to invite all Participants to provide a blood sample during the life of the study for inclusion in a 45 and Up Study Biobank.
- 3.2 Researchers wishing to utilise Biological Specimens will have the option of applying to the 45 and Up Study to:
  - a.) access Biological Specimens already collected and stored in the Biobank; and/or
  - b.) conduct a Sub-Study inviting Participants to provide additional Biological Specimen/s.

- 3.3 Where a Sub-Study involves inviting Participants to provide an additional Biological Specimen (see 3.2b.) this Policy will apply.

#### **4. Collection Quantity**

- 4.1 Where a Sub-Study invites Participants to provide a Biological Specimen, the Sub-Study must also collect a quantity of that Biological Specimen, from each Participant who consents to participate in the Sub-Study, for inclusion in the Biobank.
- 4.2 The total quantity of each Biological Specimen collected from each Participant who participates in the Sub-Study will be made up as follows:
- a.) a quantity, defined in the Sub-Study Application, required for the purposes of the Sub-Study (**Sub-Study Specimen**), and;
  - b.) a quantity, to be determined by the 45 and Up Study, for inclusion in the Biobank (**Biobank Specimen**).
- 4.3 Where, by no fault of the Sub-Study, a Participant is only able to provide a quantity of the Biological Specimen less than the total of the Sub-Study Specimen and the Biobank Specimen, the Sub-Study Specimen will be given priority. The Biobank Specimen will be the remaining quantity of the Biological Specimen, if any.

#### **5. Specific Collection and Processing Requirements for Blood Samples**

- 5.1 The 45 and Up Study will provide the Sub-Study with a *Biobank Protocol*. The *Biobank Protocol* will outline the specific requirements for the transportation, collection and processing of the Biobank Specimen. The Sub-Study must comply strictly with the requirements of the *Biobank Protocol*.
- 5.2 Where the Sub-Study deviates from the requirements of the *Biobank Protocol*, or has a reasonable expectation that it will not be able to meet the requirements of the *Biobank Protocol*, the Sub-Study must notify the 45 and Up Study as soon as possible. Where a deviation occurs, the Sub-Study must keep accurate and detailed records of the deviation, such that any blood sample not collected, processed and/or transported in compliance with the *Biobank Protocol* may be identified.

### *Collection of blood samples*

5.3 To ensure the long-term viability of the Biobank, the *Biobank Protocol* will, at a minimum, require that the Biobank Specimen be collected into the following anticoagulants, unless otherwise agreed by the Study:

- a.) EDTA; and
- b.) ACD; and
- c.) Lithium Heparin

5.4 The volume to be collected into each anticoagulant is to be determined by the 45 and Up Study, with consideration given to the consumables available to the Sub-Study, and the anticoagulant(s) the Sub-Study Specimen is being collected in.

### *Transportation of blood samples*

5.5 To ensure the integrity of the blood samples, the *Biobank Protocol* will, at a minimum, require that the Biobank Specimen be refrigerated at 4°C prior to, and during, transportation, and be transported to the processing facility within 36 hours of collection.

### *Processing of blood samples*

5.6 Processing of the Biobank Specimen may, at the discretion of the 45 and Up Study, be undertaken by:

- a.) the Sub-Study, or;
- b.) a sub-contractor or agent of the Sub-Study, or;
- c.) a sub-contractor or agent of the 45 and Up Study

5.7 Where processing of the blood samples is to be undertaken by the Sub-Study or a sub-contractor or agent of the Sub-Study, the Sub-Study *Biobank Protocol* will outline the specific requirements for the processing of the Biobank Specimen. The Sub-Study must comply strictly with the requirements of the *Biobank Protocol*.

5.8 The *Biobank Protocol* will, at a minimum, require that the Biobank Specimen is spun down to allow collection of the following blood fractions:

- a.) Plasma; and

- b.) Buffy coat; and
- c.) Red cells

The total number of aliquots of each blood fraction is to be determined by the 45 and Up Study.

- 5.9 Where processing of blood samples is to be undertaken by a sub-contractor or agent of the 45 and Up Study, the Sub-Study will be charged on a cost recovery basis, and in accordance with any relevant provisions of the *45 and Up Study Fees and Charges Policy*.

## **6. Responsibility for Costs Incurred**

### *Collection and processing*

- 6.1 Any and all costs incurred in the collection and processing of the Biological Specimens will be the responsibility of the Sub-Study, including any costs associated with the collection and processing of the Biobank Specimen.

### *Transportation*

- 6.2 Any and all costs incurred in the transportation of the Biological Specimens from the collection location to the processing location will be the responsibility of the Sub-Study, including any costs associated with the transportation of the Biobank Specimen.
- 6.3 Where the processed Sub-Study Specimen is to be stored at the Biobank, the Sub-Study will be responsible for any and all costs incurred in the transportation of the Sub-Study Specimen and the Biobank Specimen from the processing centre to the Biobank.
- 6.4 Where the processed Sub-Study Specimen is to be stored at a location other than the Biobank;
- a.) the Sub-Study will be responsible for costs incurred in the transportation of the Sub-Study Specimen to the storage location.
  - b.) the 45 and Up Study will be responsible for costs incurred in the transportation of the Biobank Specimen to the Biobank.

## *Storage*

- 6.5 The Sub-Study will be responsible for costs incurred for the storage of the Sub-Study Specimen only.
- 6.6 The Sax Institute will be responsible for the costs incurred for the storage of the Biobank Specimen only.

## **7. Custody**

### *Sub-Study Specimen*

- 7.1 The Sub-Study will have exclusive custody of the Sub-Study Specimen.
- 7.2 Notwithstanding paragraph 7.1, prior to any unused portion, fraction or by-product of the Sub-Study Specimen being destroyed, the Sub-Study is required to give the Sax Institute a first option to assume custody of the Sub-Study Specimen, for inclusion in the Biobank. If the Sax Institute assumes custody of the unused Sub-Study Specimen, it is then treated as a Biobank Specimen.

### *Biobank Specimen*

- 7.3 The Sax Institute will have exclusive custody of the Biobank Specimen.
- 7.4 Where the Researchers wish to access the Biobank Specimen, either for the purposes of the Sub-Study or for other research, the Researchers will be required to apply for access in accordance with the *45 and Up Study Data Access Policy for Biological Samples*. The Researchers will not be given preferential access to the Biobank Specimen.

## **8. Storage and Ongoing Management**

- 8.1 Sub-Studies will be given the option of:
  - a.) assuming complete responsibility for the storage and ongoing management of the Sub-Study Specimens. The researchers will source their own storage facility and develop their own systems for ongoing management; or

- b.) engaging the 45 and Up Study to oversee the storage and ongoing management of the Sub-Study Specimen. The Sub-Study Specimen will be stored in the Biobank and established 45 and Up Study systems for ongoing management will be utilised. The Sub-Study will be charged in accordance with the *Sax Institute Charging Policy* for Sax Institute staff time and utilisation of systems developed by the Sax Institute, and on a cost recovery basis for the physical storage of the Sub-Study Specimen.

## **9. Ethics**

9.1 It will be the responsibility of the Researchers to ensure that appropriate ethical approval is obtained for the Sub-Study and any subsequent amendments to the Sub-Study protocol. This includes ensuring that ethical approval is obtained for any 45 and Up Study requirement relating to the collection of Biological Specimens, as described in this Policy.

9.2 The researchers must ensure that;

a.) Ethics committee approval; and

b.) Participant consent

have been obtained, prior to collection of the Biological Specimen, for:

c.) inclusion of the Biobank Specimen in the Biobank; and

d.) any unused portion, fraction or by-product of the Sub-Study Specimen to be included in the Biobank

for future use in health-related research approved by the 45 and Up Study.

## **Attachment 1: Standard *Biobank Protocol***

*The following attachment is the standard Biobank Protocol for use by Sub-Studies collecting blood samples. The 45 and Up Study reserves the right to amend this standard protocol, as it reasonably sees fit, from time to time, or for the purposes of individual Sub-Studies.*

### **The 45 and Up Study Biobank Protocol**

The purpose of this protocol is to ensure the integrity of blood samples collected by Sub-Studies for inclusion in the 45 and Up Study Biobank. This protocol outlines the minimum 45 and Up Study requirements for the collection, transportation and processing of the quantity of blood collected by the Sub-Study for inclusion in the Biobank (the **Biobank Specimen**).

Where the Sub-Study deviates from the requirements of the *Biobank Protocol*, or has a reasonable expectation that it will not be able to meet the requirements of the *Biobank Protocol*, the Sub-Study must inform the 45 and Up Study as soon as possible. Where a deviation occurs, the Sub-Study must keep accurate and detailed records of the deviation, such that any blood sample not transported in compliance with the *Biobank Protocol* may be identified.

### **Collection**

Where fasting samples are being collected, participants should be informed that they should not eat or drink anything (except for water) for 10 hours prior to collection. Where a participant has not complied with fasting instructions, the sub-study should keep accurate records of this deviation and the 45 and Up Study should be notified.

In addition to the quantity of blood collected for the purposes of the sub-study, 20 ml of whole blood should be collected from each participant for inclusion in the 45 and Up Study Biobank. The specimen should be collected in the following quantities, into the specified anticoagulants:

- a.) 8ml into EDTA tube(s)
- b.) 6ml into ACD tube(s)
- c.) 6ml into Lithium Heparin tube(s)



**Handling after collection:**

Immediately following collection, each tube should be accurately labelled with the date and time of collection and the participant's Study ID, date of birth and sex. No other identifying information should be included on or with the tubes, and specifically, the participant's name should not be recorded on or with the tubes.

The samples should be refrigerated at 4°C, in a secure location, until ready for transporting to the processing location.

**Transportation:**

The samples must be transported to the processing facility within 36 hours of collection and refrigerated at 4°C at all times.

Transportation of the samples must be tracked, and receipt of samples must be signed for by an authorised person at the processing location.

**Processing:**

Samples must be processed within 48 hours of collection. Each sample should be spun down as follows:

- Centrifuged at 2500 rpm for 10 minutes at room temperature to separate the blood into an upper plasma layer, a lower red blood cell layer, and a thin interface containing buffy coat.
- Plasma will be removed with a transfer pipette and 0.5ml aliquotted into 1.0ml cryo tubes.
- Once plasma has been removed, buffy coat (interface) will be removed with a transfer pipette into 1.0ml cryo tubes.
- One 0.5ml aliquot of red cells will be removed from one of the EDTA tubes, with a transfer pipette into one 1.0ml cryo tube.
- Once aliquotted, each tube will be assigned a unique ID number and labelled.
- Aliquots must be labelled with white thermal transfer poly printer labels, with a permanent adhesive, to ensure the integrity of labels once samples are frozen.

- Aliquots should be placed in tubes according to the following colour-coded system:
  - Plasma and buffy coat obtained from ACD tubes will be aliquotted into Blue top cryo tubes.
  - Plasma and buffy coat obtained from EDTA tubes will be aliquotted into Yellow top cryo tubes.
  - Plasma and buffy coat obtained from Lithium Heparin tubes will be aliquotted into Green top cryo tubes.
  - Red cells obtained from the EDTA tubes will be aliquotted into Red top cryo tubes.

**Storage:**

Once processed, the Biobank Specimens will be stored at the 45 and Up Study Biobank. Samples will be stored at -80°C, in ultra-low temperature freezers. Back-up systems will be in place to ensure samples are maintained at -80°C in the event of a power failure or other emergency.

All samples stored in the Biobank will be tracked through the Laboratory Information Management System (LIMS), including subsequent retrieval and re-aliquotting of samples. For each tube, the following information must be recorded in the LIMS:

- Tube ID number
- Study ID number
- Sex
- Date of Birth
- Type of blood sample (Plasma, Buffy Coat or Red Cells)
- Anticoagulant used (EDTA, ACD or LiHep)
- Volume collected
- Date of collection
- Box number
- Position number (position in the box)