

BIORESOURCE PAPER

# The Centre for Oncology Education and Research Translation (CONCERT) Biobank

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The CONCERT Biobank was established as an open-access, multiple collection site biorepository designed to collect, process, store, retrieve and disseminate biological samples and health information for research projects following informed consent from participants diagnosed with cancer. Informed consent is obtained prior to surgery by either the nursing, medical or biobank staff. Tissues for biobanking are examined within the diagnostic anatomical pathology department of the participating hospital by qualified pathologists and tissues deemed in excess of diagnostic requirements are stored securely and anonymously by the biobank in anticipation of current and future research needs for broad and as yet unspecified cancer research nationally.

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## (1) Bioresource Overview

### Bioresource citation

Any research work that will **use the presently described bioresource** in journal articles should conform to the CoBRA guideline [5] and be cited as follows:

‘Centre for Oncology Education and Research Translation Biobank (CONCERT), Australia / TCRC / Number of accesses / Date of last access. **[BIORESOURCE]**’

or as follows if the bioresource is **not used** but only referred to: ‘Centre for Oncology Education and Research Translation Biobank (CONCERT), Australia / TCRC / Number of accesses / Date of last access.’

More details at [www.equator-network.org/reporting-guidelines/cobra](http://www.equator-network.org/reporting-guidelines/cobra)

### Project description

The CONCERT Biobank was established and implemented in the South West Sydney and Illawarra Shoalhaven Local Health Districts, NSW, Australia, which previously had lacked any comprehensive cancer biobanking facilities to support their growing translational research programs.

The overarching aim of the CONCERT Biobank is to assist researchers in conducting large, population-based studies investigating the genetic, lifestyle and environmental factors associated with cancer and to aid in building and enabling research in daily clinical practice. This in turn will allow more rapid translation of research findings for the clinical benefit of patients. The CONCERT Biobank is also focussed on developing strategies for the establishment and maintenance of biobanks and

assisting in the implementation of more effective policies and procedures to embed biobanking into routine hospital practices [1].

The CONCERT Biobank policies and procedures have been formed and formulated according to the ISBER *Best Practices for Repositories Guidelines* [2], the OECD *Best Practice Guidelines for Biological Resource Centres*, the National Health and Medical Research Council *Biobanks Information Paper* [3], the Cancer Institute NSW *A Comprehensive Review of Cancer-Related Biobanks in New South Wales Report* and the Australian Breast Cancer Tissue Bank [4] *Best Practice Guidelines*.

### Classification (1)

Human.

### Species

Human.

### Classification (2)

Biological samples and associated data.

### Keywords

Cancer, Biorepository, Biobank.

### Context

#### **Spatial coverage**

The CONCERT Biobank is a non-profit entity, which is part of the CONCERT Translational Cancer Research Centre (TCRC). The CONCERT TCRC is a large multi-institutional consortium of universities (WSU, UNSW, and University of Wollongong), medical research institutes (Ingham Institute for Applied Medical Research and Illawarra Health and Medical Research Institute), hospitals and local health districts (South West Sydney and Illawarra/Shoalhaven), with many collaborative links spanning across NSW.

CONCERT Biobank collection centres include:

- Liverpool Hospital, NSW, Australia
- Bankstown-Lidcombe Hospital, , NSW, Australia
- Campbelltown Hospital, , NSW, Australia
- Braeside/Fairfield Hospital, NSW, Australia
- Camden Hospital, NSW, Australia
- Bowral Hospital, NSW, Australia
- Wollongong Hospital, NSW, Australia
- Wollongong Private Hospital, NSW, Australia
- Strathfield Private Hospital, NSW, Australia
- Sydney Southwest Private Hospital, NSW, Australia

Northern boundary: +/- x.x-33.52, 151.05 (Strathfield)

Southern boundary: +/- x.x-34.29, 150.25 (Bowral)

Eastern boundary: +/- x.x-33.55, 151.02 (Bankstown)

Western boundary: +/- x.x-34.03, 150.40 (Camden)

#### **Temporal coverage**

Start date 01 November 2012 to present; with collection, processing and storage of biospecimens indefinite.

#### **Temporal coverage for accessibility**

Not applicable (N/A)

## (2) Methods

### Steps

- Participants deemed suitable for biobanking are identified by participating clinicians in their consult rooms or through multi-disciplinary team meetings.
- Potential participants are subsequently contacted and informed consent sought.
- If informed consent is obtained, biospecimens, including fresh tumour and normal adjacent tissues, blood and other relevant bodily fluids, are collected at time of surgical resection.
- The fresh surgical specimen is examined within the participating hospital by qualified pathologists and tissues deemed in excess of diagnostic requirements are sampled and stored securely and anonymously by the biobank.
- Demographic, pathological, clinical and biospecimen information are recorded electronically.

All standard work procedures by the CONCERT Biobank have been formulated based on several best practice guidelines, including the ISBER *Best Practices for Repositories Guidelines* [2].

### Stabilization/preservation

Fresh tumour and normal adjacent tissue are stabilized on ice at 4°C before fixation in formalin or snap freezing in liquid nitrogen. Blood specimens and other bodily fluids are stabilized at 4°C before long-term preservation at -80°C or -196°C with the exception of plasma samples which are stabilized in vacutainers of EDTA and stabilized at 4°C prior to long-term preservation.

### Type of long-term preservation

Please see section (3) *Bioresource description, Biospecimen type* for details.

All biospecimens and information are stored securely and anonymously.

### Storage temperature

Please see section (3) *Bioresource description, Biospecimen type* for details.

### Shipping temperature from patient/source to preservation or research use

Biospecimens are transported using temperature-controlled, cold chain solutions. Depending on the biospecimen type to be transported and the transportation logistics, several options may be available including:

- Controlled ambient: +15°C to +25°C
- Refrigerated: +2°C to +8°C
- Frozen: -20°C
- Deep frozen: -70°C – dry ice
- Packed on liquid nitrogen: -196°C

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The CONCERT Biobank arranges packaging and shipping of the biospecimens with the courier, and arranges for the invoice to be sent and paid for by the researcher.

#### Quality assurance measures

The quality assurance measures that have been implemented by the CONCERT Biobank include:

- Implementation of standard work procedures (SWPs)
- Personnel training; documented and updated, if required, on a periodic basis
- Documentation of modifications or revisions of SWPs and risks assessments (RAs)
- Maintenance of records pertaining to biospecimens, equipment, and consumables

The quality control measures implemented by the CONCERT Biobank include:

- Verification of biospecimens by a pathologist, with tumour type, grade and cellular homogeneity routinely reported.
- Validation of processing methods of biospecimens via literature reviews, end user feed-back and/or laboratory quality control results
- Internal audits, including pre-audit checklists

#### Source of associated data

Sources of associated data include:

- Hospital medical and pathology records
- Local health district and NSW Cancer registries
- Attending clinicians consult rooms
- Participants

#### Ethics Statement

Ethics approval (HREC/14/LPOOL/152) was obtained from the South Western Sydney Local Health District HREC, NSW, Australia, 01 November 2012. All collection sites have site specific ethics approvals. Ethics approval for the collection, processing and storage of biospecimens is indefinite.

#### Constraints

Current constraints include the lack of long-term funding.

### (3) Bioresource description

#### Object name

Cancer

#### Bioresource name

The Centre for Oncology Education and Research Translation Biobank.

Bioresource acronym: CONCERT Biobank.

#### Bioresource location

The central site of the CONCERT Biobank is located at the Ingham Institute for Applied Medical Research, 1 Campbell Street, Liverpool, NSW, 2170, Australia, with collection nodes across NSW.

#### Bioresource contact

Dr Nicole Caixeiro: nicole.caixeiro@sswahs.nsw.gov.au

#### Bioresource URL

<https://inghaminstitute.org.au/content/concert-biobank>

#### Identifier used

N/A.

#### Bioresource type

Cancer.

#### Type of sampling

Diseased based.

#### Anatomical site

- Colorectal
- Upper Gastrointestinal
- Head and Neck
- Neurological
- Breast
- Lung
- Prostate

#### Disease status of patients/source

Cancer.

#### Clinical characteristics of patients/source

- Age: all ages
- Gender: males and females
- Treatment information: yes
- Inclusion criteria: ability of participant to give informed consent
- Stage of the disease at time of collection: Biospecimens are collected at the time of surgical resection

#### Size of the bioresource

- Over 500 participants as at 25 September 2015
- Ongoing recruitment of approximately 220 participants per annum
- Collection of biospecimens is ongoing and indefinite

#### Vital state of patients/source

Alive.

#### Clinical diagnosis of patients/source

Cancer.

#### Pathology diagnosis

- All cancer types
- ICD50

#### Control samples

Normal adjacent tissue.

**Biospecimen type**

A summary of the biospecimen characteristics is provided below (**Table 1**).

**Release date**

The date at which biospecimens have been available for applications is 2014.

**Access criteria**

Biospecimens collected by the CONCERT Biobank are made available to researchers on the provision that use of specimens are for scientifically valid and ethically approved research projects.

Researcher access entails search facilities which allow for researchers to search biospecimen type and availability stored in the CONCERT Biobank using a link from the CONCERT TCRC website to the Biobank's database, which is currently still under development. All biospecimens and information are stored securely and de-identified however they are re-identifiable to CONCERT Biobank personnel who have signed confidentially agreements. Search facilities on the database protect all identifiable information of the participant.

Currently, as the CONCERT Biobank is still in the progress of developing and implementing its database, researchers can request the use of biospecimens by contacting the CONCERT Biobank manager through the Ingham Institute for Applied Medical Research's Biobank page, <https://inghaminstitute.org.au/content/concert-biobank>.

Researchers seeking to use CONCERT Biobank specimens are required to formally apply using a prescribed application form. The application form, along with the researcher's institutional Ethical approval for the project, is submitted to the CONCERT Biobank manager who forwards the application to the CONCERT Biobank's scientific advisory committee (SAC) for assessment. The SAC committee rates all

proposals based on its scientific aims, feasibility of study, credentials in type of research, justification for amount of material requested and overall scientific merit. If the application is approved by the SAC then a Material Transfer Agreement (MTA) is issued to the researcher.

An MTA is entered into in order to transfer CONCERT Biobank material to another organisation (commonly another university or research institution) for the purposes of that organisation's own research. The MTA governs the transfer of material, including data, between the organisations and defines the rights and obligations of each in relation to custodianship; use of the biospecimens; and data arising from such use and any modifications or derivatives of the material. The CONCERT Executive Committee reviews all MTAs received by the CONCERT Biobank. No biospecimens are sent until the MTA has been approved by the CONCERT Executive Committee and signed by both organisations. Once receipt of the signed MTA has been received by the CONCERT Biobank, then the biospecimens will be packaged and shipped to the researcher, at the researcher's expense.

**(4) Reuse potential**

The CONCERT Biobank does not request return of biospecimens other than research results. Validated research results arising from the use of biobank specimens such as expression levels of cancer biomarkers or emerging cancer proteins are requested to be reported back to the biobank and are recorded in the database to be made available to future researchers to reference and access.

**Author Roles**

- Nicole J. Caixeiro, Bioresource Manager
- Morteza Aghmesheh, Bioresource Site Curator
- Paul de Souza, Bioresource Creator
- C. Soon Lee, Bioresource Creator and Director

Biospecimen Type	Biospecimen Processing	Number of Aliquots	Size(mm)/Volume (ml)	Storage Type
Tumour and normal adjacent tissue	Fresh frozen tumour and normal adjacent tissue	2–8	Up to 10 mm	–196°C
	Formalin-fixed paraffin embedded	2–4	N/A	21°C
	Haematoxylin and Eosin cryosections	2–4	N/A	21°C
	Tissue arrays	N/A		21°C
Peripheral blood	Whole blood	2	0.5 ml	21°C / –80°C
	Plasma	4	0.5 ml	–80°C
	Serum	4	0.5 ml	–80°C
	Buffy Coat	2	0.5 ml	–196°C
Bodily fluids	Cavitron Ultrasonic Surgical Aspirator (CUSA) fluid	4–6	50 ml	–80°C
	Cerebrospinal fluid	2	0.5 ml	–80°C
Demographic data	N/A	N/A	N/A	N/A
Pathological data				
Clinical data				

**Table 1:** Summary of biospecimen characteristics.

### Competing Interests

The authors declare that they have no competing interests.

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### References

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