The Australian Breast Cancer Tissue Bank (ABCTB)

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The ABCTB was established in 2006 as an open access, not for profit resource dedicated to providing biospecimens and/or data to both national and international research projects in the field of breast cancer. Donors are consented according to standard ethical principles for use of their material for unspecified future research. ABCTB collects fully annotated clinical samples and associated clinical and longitudinal data from donors. Material and data is supplied to research projects.

**Keywords:** breast cancer; biological samples; clinical data; longitudinal data

**Funding Statement:** Current funding: National Health and Medical Research Council of Australia (#633291, from 2009-2014); The National Breast Cancer Foundation (#FG0601 from 2007-2012 & #IF1205 from 2012-2017); The Cancer Institute NSW (#12/RIG/1-16 from 2012-2014).

**Classification (1)**

- Human

**Species**

- Human

**Classification (2)**

Biological samples and associated data.

**Context**

**Spatial coverage**

ABCTB consists of a central management hub located at the Westmead Millennium Institute in New South Wales, Australia, with collection centres and affiliate sites distributed across Australia [1].

**Collection Centres**

- New South Wales
  - Royal North Shore Hospital/Kolling Institute (active)
  - John Hunter Hospital (active)
  - Liverpool Hospital/Ingham Institute (active)
  - Westmead Hospital (active for metastatic cases)
  - St Vincent’s Hospital (not currently recruiting)
  - Port Macquarie (not currently recruiting)
  - Royal Prince Alfred Hospital (not currently recruiting)
- Australian Capital Territory
• Canberra Hospital (active)

**Affiliate Sites**

• Western Australia
  • St John of God Healthcare (active)
• Queensland
  • Brisbane Breast Bank – Royal Brisbane and Women’s Hospital (active)

Northern boundary:
• +/- x.x -27.45, 153.03 (Brisbane)

Southern boundary:
• +/- x.x -35.35, 149.10 (Canberra Hospital)

Eastern boundary:
• +/- x.x -33.82, 151.19 (Royal North Shore Hospital)

Western boundary:
• +/- x.x -31.94, 115.83 (St John of God)

**Temporal coverage**

Start date 01 February 2006 to present, no end date.

**Temporal coverage for accessibility**

N/A

(2) **Methods**

**Steps**

- Donors are recruited and consented in breast cancer clinics at the time of diagnosis of breast cancer. [SOPs are in place for obtaining informed consent; for consent form management; for withdrawal of consent; for confidentiality agreements by staff].

- The ABCTB collects blood, tissue and clinical data from consenting patients.

- Bloods are collected from donors by clinical staff and tissue is collected from surgery via diagnostic anatomical pathology laboratories and only if there is excess tissue that is not required for diagnostic purposes as assessed by a pathologist. [SOPs for blood processing and storage; tissue processing and storage; data entry].

- Clinical data is collected from medical records, pathology reports, cancer registries and clinical databases. [SOPs for data collection and entry: pathology data; surgical details; demographics; clinical history].

- Tissue sections from FFPE blocks are reviewed for tumour content by a qualified pathologist [SOP for pathology review].

- Donor information, specimen details and clinical data is stored in a secure customised SQL (Caisis) database. [SOPs for data management; database operation; data storage and security; and data auditing].

- Longitudinal data is collected on the donors and their clinical outcomes will be followed for ten years.

- A website provides information for researchers and donors.

**Stabilization/preservation**

- EDTA (blood)
- Snap freeze tissue in liquid nitrogen

**Type of long-term preservation**

- Formalin Fixed Paraffin Embedded (FFPE)
- Frozen
- Fresh into media (for specific project requests only)
- Dried blood spot cards

All samples are labelled with a unique code and contain no patient identifiable information. Samples are stored in temperature monitored freezers and tanks that are locked and accessible only by ABCTB employees.

**Storage temperature**

- -80°C (Serum; plasma; whole blood; DNA)
- -196°C (Tissue; white cell buffy coat)
- Room temperature (Blood spot cards; FFPE blocks; TMAs)
- Storage duration: 7 years plus

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

Various from: -190°C (liquid nitrogen), -56°C (on dry ice); 0-4°C (on ice); room temperature (18-25°C).

**Shipping temperature from storage to research use**

- -80°C to -196°C (Tissue)
- -56°C (DNA, blood products)
- Room temperature (FFPE sections)

**Quality assurance measures**

- % tumour content reviewed by pathologists
- RIN for RNA samples
- Control sample on every DNA extraction run
- Participate in external QAP scheme for RNA, DNA and tissue histology
- BRISQ report provided
- Auditing of essential data fields [5]
- Samples collected across all collection nodes follow common SOPs

**Source of associated data**

- Hospital health records both paper and electronic
- Health records from individual specialist’s rooms/clinics
- NSW Cancer registry – via hospital data feeds
- G.P. Surgeries
- Family history via questionnaires
- Death registry

**Ethics statement**

The main ethical multi-site approval for the ABCTB is provided by the Royal Prince Alfred Hospital Zone Ethics Committee in New South Wales, Australia. Protocol No X12-0279 (prev X08-0124) & HERC/08/RPAH/215 – “Australian Breast Cancer Tissue Bank”. Multi-site approval was initiated on 6/08/2008. Prior to this date, collection sites had individual approvals in place. All collection/affiliate sites also have site specific ethical approvals. Samples are intended to be stored indefinitely.
Constraints
Funds supporting the resource are mostly via competitive research grants and of short term duration. Planning for long term operational activities is difficult with lack of financial security.

(3) Bioresource description
Object name
Breast cancer

Biobank name
• Australian Breast Cancer Tissue Bank
• Bioresource acronym: ABCTB

Bioresource location
• Central Management hub based at Westmead Millennium Institute, University of Sydney, Hawkesbury Road, Westmead, NSW 2145, Australia
• Collection nodes across Australia

Bioresource contact
Ms Jane Carpenter: jane.carpenter@sydney.edu.au

Bioresource URL
www.abctb.org.au

Identifier used
N/A

Bioresource type
Breast cancer

Type of sampling
Disease based

Anatomical site
• Breast
• Metastatic lesions

Disease status of patients/source
Breast cancer

Clinical characteristics of patients/source
• Sporadic cases of breast cancer of all ages
• Males and females
• Majority of the biospecimens are collected at the time of the first diagnosis of breast cancer for the donor

Size of the bioresource
• 6,225 donors as at 15 May 2014
• On-going recruitment of 500-600 new donors per annum
• Collection is ongoing to reflect changes in treatment practices over time and has no definite end date

Vital state of patients/source
Alive

Clinical diagnosis of patients/source
Breast cancer

Pathology diagnosis
• All breast cancer sub types
• ICD50

Control samples
Very small numbers of non-breast cancer tissue collected from reduction mammoplasty surgeries.

Biospecimen type
• Frozen tissue: approx. 5mm, 1-2 per donor on 25% of cohort
• FFPE tissue: 1-2 FFPE blocks on 85% of cohort
• Tissue Microarrays: various
• Whole blood: 2 aliquots per donor, 0.5ml each
• Serum: 4 aliquots per donor, 0.5ml each
• Plasma: 4 aliquots per donor, 0.5ml each
• White cell buffy coat: 2 aliquots per donor, 0.3ml each
• Dried blood spot cards: 4 spots per donor
• DNA from blood: 4 vials per donor, 50µl each
• DNA from tissue: processed on a project specific basis
• RNA from tissue: processed on a project specific basis

Release date
Has been open for applications since 2008.

Access criteria
Applications to the resource are initiated by the researcher by submission of an on line Expression of Interest. This is reviewed by the ABCTB and if the material and/or data are available and the project meets ABCTB criteria a full application is invited. The researcher is provided with a log in to complete the application on line, which also allows upload of required documents such as evidence of funding and ethical approvals. Following receipt of a full application, all applications for material and data must be assessed and approved by the ABCTB Access Committee to comply with scientific standards. Independent scientific review is sought for project evaluation.

All applications must have ethical approval for the proposed research and must enter into an MTA with the ABCTB before the material is released [3]. A partial cost recovery mechanism is in place (http://www.abctb.org.au/abctbNew2/Cost_recovery_Schedule_Dec_2010.pdf). At the conclusion of the project, any data generated must be returned to the ABCTB and this is made available for other users.

(4) Reuse potential
Specimens are provided to projects on a non-exclusive basis therefore samples from the same donor may be used in several different projects. If the researcher requires DNA and/or RNA this is extracted by the ABCTB preserving the bulk of the specimen to be available for other research projects.
As a condition of supply of material, the recipient of samples and/or data must agree to return findings to the ABCTB on conclusion of the research purpose. Such data is then available for the use of others.

**Author roles**
- Jane E. Carpenter, Bioresource Manager
- Deborah Marsh, Bioresource Creator
- Mythily Mariasegaram, Bioresource Curator
- Christine L. Clarke, Bioresource Director

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**References**