



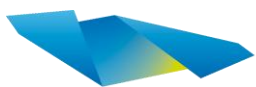
CONCERT

Centre for Oncology Education & Research Translation

THE CENTRE FOR ONCOLOGY EDUCATION AND RESEARCH TRANSLATION (CONCERT) BIOBANK

YEARLY REPORT

JUNE 2016



Ingham Institute
Applied Medical Research



Health
South Western Sydney
Local Health District



Health
Illawarra Shoalhaven
Local Health District

SUMMARY

DEFINITIONS

Case – A case is an individual who has donated cancer biospecimens.

Biospecimen – A specimen of biological material from a case, which includes tumour/normal adjacent tissue, blood and blood products. For example, 1 case may have 20 associated biospecimens.

COLLECTIONS

Total since Operation (November 2012 to June 2016):

- **Seven hundred and fourteen (714)** cases donated tissue and blood to the CONCERT Biobank.
- Of these, **389** cases were Head and Neck Cancers (HNCa) and **178** were Colorectal Cancer (CRC), **73** were Neurological (NRO) and **74** were Breast (BRT) cancers.
- One participant (HNCa) chose to withdraw their consent and their specimens were subsequently destroyed.
- The number of cases collected each year by cancer type is illustrated in Table 1.

Table 1 | Total Number of Cases Collected Each Year by Cancer Type

Collections	2012 (Nov-Dec)	2013	2014	2015	2016 (Jan-May)	TOTAL
HNCa	12	96	104	127	50	389
CRC	2	19	70	65	22	178
Neuro	0	17	19	27	10	73
BRT	0	0	0	55	19	74
TOTALS	14	132	193	275	102	714

DEMOGRAPHICS

- Excluding the BRT cancer cases, there is a fairly even distribution of males to females across all cancers with a ratio of **1:0.80** (Figure 1).
- The majority of cancer cases (**16%**) fall within the age bracket of **70-74** years (Figure 2).

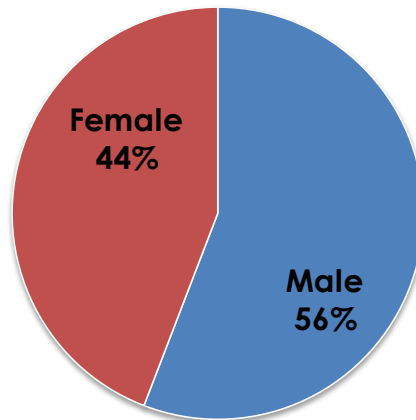


Figure 1 | Gender Distribution Across All Cancers

BIOSPECIMENS

- The CONCERT Biobank inventory exceeds **20,300** biospecimens across all cancers (Table 2 and 3).
- Of these **1,553** are fresh frozen tumour and normal adjacent tissue (Table 2), **8,727** are blood and blood products, **21** are Cavitation Ultrasonic Surgical Aspirator (CUSA), **10** are cerebrospinal fluid (CSF), **337** are paraffin embedded tissue (FFPE), with **996** haematoxylin and eosin (H&E) slides (Table 2).
- Blood specimen types can further be divided into whole blood, plasma, serum and buffy coat (Table 3).

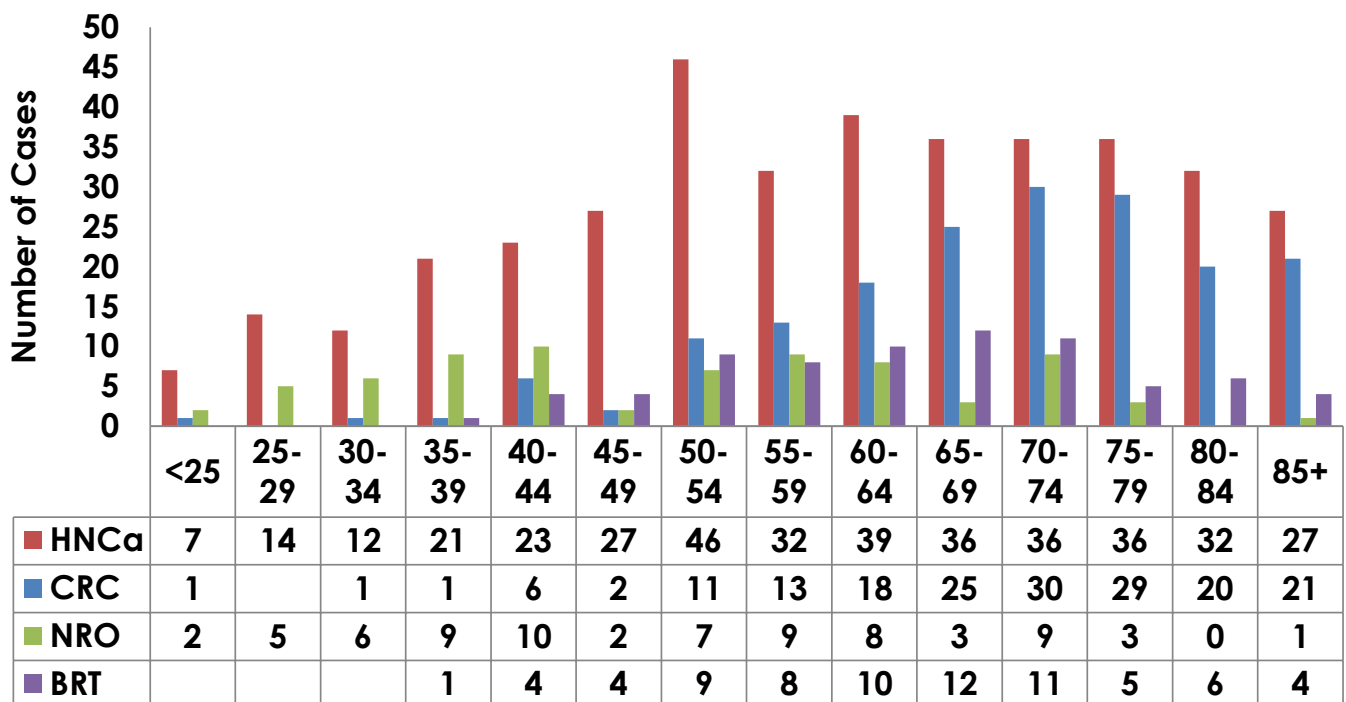


Figure 2 | Age Distribution Across All Cancers

Table 2 | Total Number of Specimens Across All Cancers

SPECIMEN TYPE	TOTALS (n)
Tumour Tissue	1 108
Normal Tissue	445
Blood	8727
CUSA	21
CSF	10
FFPE	337
H&E	996

Table 3 | Total Number of Blood Products Across All Cancers

BLOOD PRODUCT	TOTALS (n)
Whole Blood	1 445
Plasma	2930
Serum	2906
Buffy Coat	1 446

Cancer Specific Biospecimens

HNCa

- Classification of HNCa by site reveals the largest proportion were thyroid followed by cancers of the **oral, parotid** and **neck** (Figure 3).
- Classification of HNCa by histological type reveals the largest proportion were **squamous cell carcinoma** followed by **papillary carcinoma** (Figure 4).
- From 389 cases, the biobank holds 519 aliquots of tumour and normal adjacent tissue, 4661 aliquots of bloods and blood products, 122 FFPE sections and 544 H&E slides (Table 4).

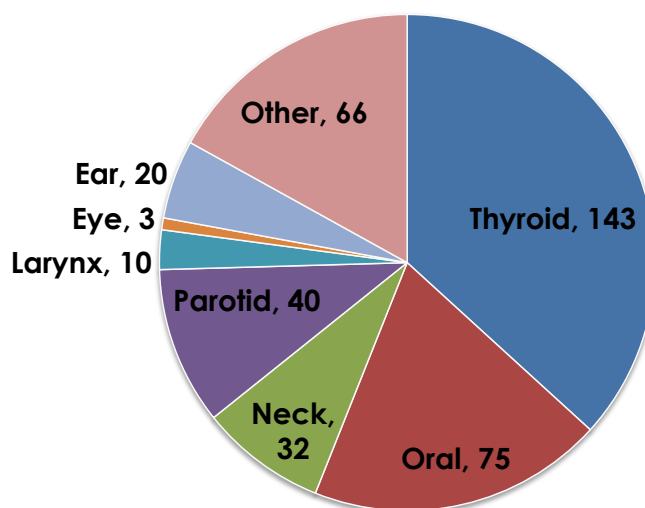


Figure 3 | Number of HNCa Cases by Site

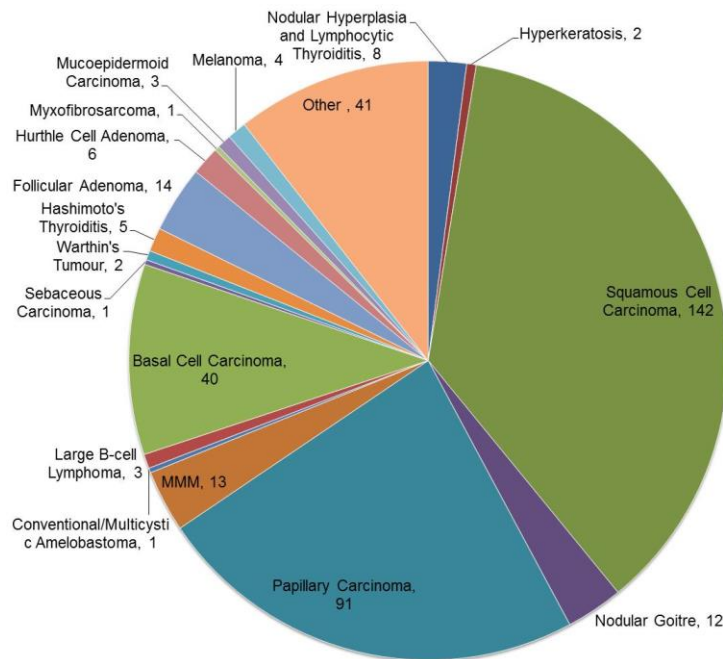


Figure 4 | Number of HNCa Cases by Histological Type

Table 4 | Total Number of Specimens for HNCa

SPECIMEN TYPE	TOTALS (n)
Tumour Tissue	372
Normal Tissue	147
Blood	4661
FFPE	122
H&E	544

CRC

- Classification of CRC by site reveals the largest proportion were located in the **sigmoid colon** followed by the **ascending colon** and rectum (Figure 5).
- Classification of CRC by histological type reveals the largest proportion were **adenocarcinoma** (Figure 6).
- From 178 cases, the biobank holds 708 aliquots of tumour and normal adjacent tissue, 2135 aliquots of bloods and blood products, 189 FFPE sections and 333 H&E slides (Table 5).

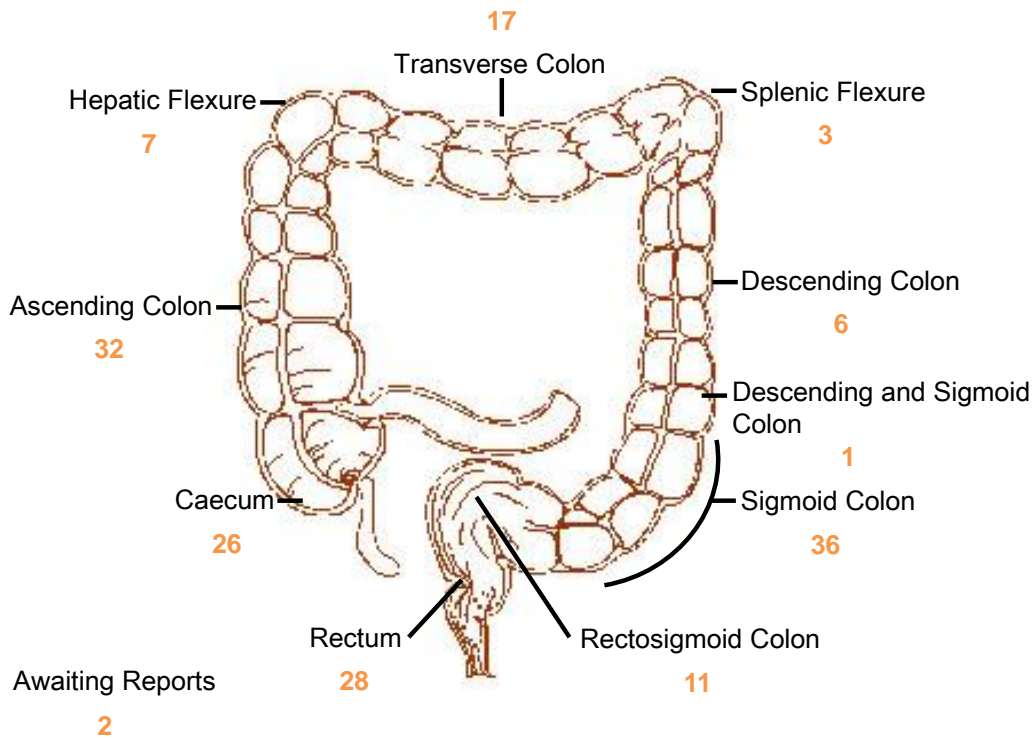


Figure 5 | Number of CRC Cases by Site

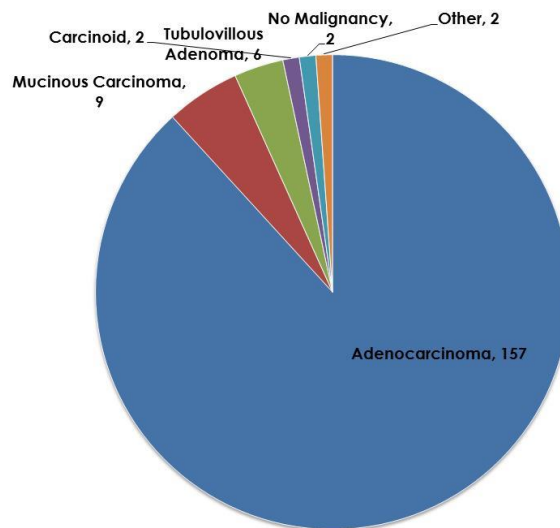


Figure 6 | Number of CRC Cases by Histological Type

Table 5 | Total Number of Specimens for CRC

SPECIMEN TYPE	TOTALS (n)
Tumour Tissue	436
Normal Tissue	272
Blood	2135
FFPE	189
H&E	333

NRO

- Classification of NRO by histological type reveals the largest proportion were **astrocytic tumours** (Table 6).
- From 73 cases, the biobank holds 252 aliquots of tumour tissue, 1044 aliquots of bloods and blood products, 21 CUSA specimens and 10 CSF specimens (Table 7).

Table 6 | Number of NRO Cases by Histological Type

HISTOLOGICAL TYPE	TOTAL (n)
Astrocytic	55
Oligodendrogial	5
Ependymal	1
Neuronal/Neuronal-Glial	1
Embryonal	1
Other	10

Table 7 | Total Number of Specimens for NRO

SPECIMEN TYPE	TOTALS (n)
Tumour Tissue	252
Blood	1044
CUSA	21
CSF	10

BRT

- Classification of BRT by histological type reveals the largest proportion were **infiltrating ductal carcinomas** (Figure 7).
- The majority of BRT cancer cases (59%) occurred in the left breast.
- From 74 cases, the biobank holds 74 aliquots of tumour and normal adjacent tissue, 887 aliquots of bloods and blood products, 26 FFPE sections and 119 H&E slides (Table 8).

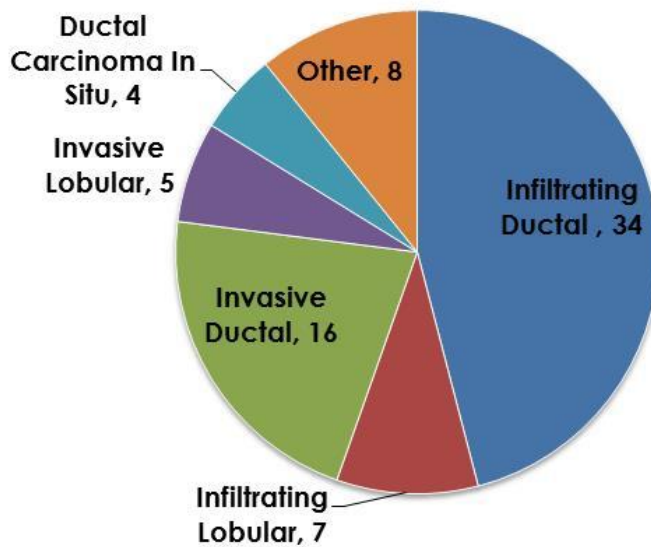


Figure 7 | Number of BRT Cases by Histological Type

Table 8 | Total Number of Specimens for BRT

SPECIMEN TYPE	TOTALS (n)
Tumour Tissue	48
Normal Tissue	26
Blood	887
FFPE	26
H&E	119

CONCERT BIOBANK PUBLICATIONS AND PRESENTATIONS

Publications

- Lai K, Matthews S, Wilmott J, Killingsworth M, Yong JL, Caixeiro NJ, Wykes J, Samakeh A, Forstner D, Niles N, Hong A, Lee CS. High LC3C expression correlates with poor survival in oral cavity squamous cell carcinoma patients (Submitted).
- Lai K, Killingsworth M, Matthews S, Caixeiro NJ, Evangelista C, Wu X, Wykes J, Samakeh A, Forstner D, Niles N, Hong A, Lee CS. Differences in survival outcome between oropharyngeal and oral cavity squamous cell carcinoma in relation to HPV status (Submitted).
- Caixeiro NJ, Morteza A, de Souza P, Lee CS. The Centre for Oncology Education and Research Translation (CONCERT) Biobank. *Open Journal of Bioresources*. 2015 2(1):p.Art.e3. doi:<http://dx.doi.org/10.5334/ojb.ai>
- Caixeiro NJ, Lai K, Lee CS. Quality assessment and preservation of RNA from biobank tissue specimens – A systemic review. *J Clin Pathol*. 2016 Mar;69(3):260-5. doi: 10.1136/jclinpath-2015-203384. Impact Factor 2.92
- Caixeiro NJ, Byun HL, Descallar J, Levesque JV, de Souza P, Lee CS. Health professionals' opinions on supporting a cancer biobank – identification of barriers to combat biobanking pitfalls. *Eur J Hum Genet*. 2015 Sep 2. doi: 10.1038/ejhg.2015.191. Impact Factor 4.35

Presentations

- Invited speaker: The CONCERT Biobank: A comprehensive biorepository enhancing researcher utilisation and access through education initiatives. Children's Cancer Research Unit, The Children's Hospital at Westmead Research Seminar series, 2015.
- Invited speaker: Health professionals' opinions on supporting a cancer biobank. Sustainable Biobanking in the Face of Change, Australasian Biospecimen Network Association, 2015.

CURRENT PROJECTS

- The CONCERT Biobank is assisting **19** cancer research studies (Table 9), which totals over 3,900 specimens recruited to assist in these projects. The CONCERT Biobank has also provided expertise and guidance to researchers on the utility of biospecimens and information and how to apply for ethics approval for studies involving the use of human participants.

Table 9 | List of projects supported by the CONCERT Biobank to date

Project Title - Biobank Aided	Primary Investigator	Department	Year	Cancer Type	Recruitment Numbers	Status
Protein expression analysis in a 'breast oncogenesis progression series' using tissue microarrays and high through put immunohistochemistry	Prof CS Lee	Pathology	2013	Breast	1300	Ongoing
Biomarkers for brain cancer	Prof Paul de Souza	Multi-institutional	2013	Neurological	64	Ongoing
Flagship	A/Prof Afaf Girgis	Psycho-Oncology	2013	CRC	32	Ongoing
Circulating tumour cells in cancer management	Prof Paul de Souza	Multi-institutional	2013	Various	83	Ongoing
Investigation of biomarkers for prostate cancer	Prof CS Lee	Pathology	2014	Prostate	300	Ongoing
Magnetic resonance aided biomarker discovery in rectal cancer	Dr Trang Pham	Radiation Oncology	2014	Rectal	31	Ongoing
Assessment of biomarkers for head and neck cancers	Mr Ken Lai	Pathology	2014	Head and Neck	210	Ongoing
Biomarkers of disease progression, treatment response and survival outcomes in colorectal cancer	Dr Joo-Shik Shin	Pathology	2015	CRC	1250	Ongoing
Analysis of tumour suppressors, SMG1 and ATM, and their role in lymphoma and leukemia	Dr Tara Roberts	Medical Oncology	2015	Lymphoma and Leukemia	42	Ongoing
Pilot study of NAB-Paclitaxel in combination with Capecitabine as second line treatment of advanced biliary cancer	A/Prof Morteza Aghmesheh	Medical Oncology	2015	Biliary	Pending	Ongoing
Understanding the molecular and genetic changes that lead to metastasis in cutaneous SCC	Dr Bruce Ashford	Multi-institutional	2015	Head and Neck	Pending	Ongoing
Personalisation of systemic therapy in gastric cancer: Development of patient-derived gastric cancer cell models for genetic, phenotypic and drug response analysis and investigation of the role of circulating tumour cells and circulating tumour DNA in gastric cancer	Dr Daniel Brungs	Wollongong Hospital	2015	Gastric	Pending	Ongoing
CHANCES - Head and Neck Cancer Information Needs	A/Prof Jonathan Clark	RPAH	2015	Head and Neck	150	Ongoing
Biobanking - patient and healthcare professional attitudes and experiences	Dr Sonia Yip	Sydney Catalyst	2016	All	10	Ongoing
The Dermatology Biobank	Prof Cains	Dermatology	2016	Skin Conditions	N/A	Ethics Pending
PET LABRADOR Study	TROG	Clinical Trials	2016	Breast	N/A	Commencing
Project Title - Biobank Initiated						
Health professionals opinions towards supporting a cancer biobank	Dr Nicole Caixeiro	CONCERT Biobank	2014	All	95	Complete
Health professionals opinions towards supporting a cancer biobank - inter-regional	Dr Nicole Caixeiro	Multi-institutional	2016	All	350	Commencing
Quality assessment and preservation of biobank tissue specimens	Dr Nicole Caixeiro	CONCERT Biobank	2016	All	20	Commencing
TOTALS					3937	

ACKNOWLEDGEMENTS

The CONCERT Biobank would like to acknowledge the participants, surgeons, pathologists, physicians, nurses and other medical staff for their in-kind support of the biobank as well as the support services of the South Western Area Pathology Service (SWAPS). The CONCERT Biobank would also like to acknowledge its funding sources, the Cancer Institute NSW, Western Sydney University and University of New South Wales.

Please visit our website: <http://www.concert.org.au/research/research-capabilities/concert-biobanking>