

CONCERT-Biobank – A Comprehensive Repository Bridging the Gap in Translational Research

Flagship Program This Case Study is Attributed to
Targets & Therapeutics (T1/T2)

Translational Pipeline Focus
T1/T2

Type of Cancer(s)
~Not Site-Specific Cancer

Location(s) Where Research is Based
South West Sydney Local Health District, Illawarra Shoalhaven Local Health District & ACT Health

Summary

Current efforts in cancer research, aimed at understanding the underlying cause and improving the treatment of cancer, rely on the use of high-quality samples. Such samples, including tissue and blood, are a limiting factor in many areas of cancer research as they can be difficult to obtain and once obtained their amount and quality can restrict the number and type of research studies. In order to strengthen translational cancer research into the 1) identification of risk, 2) early detection, 3) sub-classification (including prognostics and predictive biomarkers), and 4) identification of new drug targets and treatments of cancer in South West Sydney, Illawarra/Shoalhaven and ACT communities, a comprehensive Biobank was established. The CONCERT Biobank, established in 2012 in accordance with national and international best practice guidelines (ISBER and OECD), has been providing fresh tumour and normal adjacent tissue, formalin-fixed paraffin embedded sections, blood, cerebrospinal fluid and other relevant bodily fluids to facilitate research into the genetic, lifestyle and environmental factors linked to cancer. The CONCERT Biobank, a NSW Health Pathology Certified Biobank, has supported over 33 cancer research projects, with the dissemination of over 2,000 samples, as well as 4 clinical trials to which 48% of cancer groups applying to access CONCERT Biobank services (collection, processing, storage, tissue microarrays, clinical trial assistance, ethics applications) are external.

The Contribution, Impact or Benefit to Community

Ensuring high sample quality and strengthening the quality of research

The CONCERT Biobank offers cancer researchers across NSW access to high quality, well annotated and validated clinical specimens. It has implemented quality control and assurance programs to ensure samples are treated to stringent protocols which eliminate the impact of pre-analytical factors that can affect sample quality and integrity (Caixeiro et al. 2015). This in turn, attenuates confounding research data as a result of low sample quality and helps ensure research findings are reflective on the in vivo disease state. Ultimately, the

CONCERT Biobank has increased research productivity, strengthened and amalgamated research findings (findings truly reflective of disease state and samples no longer being a limiting factor allowing comparative analysis between different research projects) to help drive rapid improvements in cancer prevention, treatment and survival for cancer patients in NSW. Testament to this, the CONCERT Biobank has collected over 20,000 specimens, including 4,500 for specific research projects from over 2,000 cancer donors. It has supported over 33 cancer research projects, including 4 clinical trials and CONCERT Biobank supported studies have published 16 articles, with 245 citations and a current h-index of 11

(https://scholar.google.com.au/citations?user=1jBy4_IAAAAJ&hl=en). CONCERT Biobank assistance with ethics applications has saved 500 hours/researcher with HREA and SSA applications, amendments to protocols, participant information sheets and consent forms and addition of investigators as well as minimising the time of ethics project approvals from 12 months to 2-3 months.

Promoting best practice, training and education

As one of the few NSW Health Pathology certified Biobank's, the CONCERT Biobank has become one of the leaders in biobanking in NSW, as demonstrated by its pilot studies to reduce barriers to research conduct and translation (Caixeiro et al 2015 and Caixeiro et al 2016). Its strong integration within the Anatomical Pathology departments of SWAPS and SEALS has also led to educational site visits from the NSW Statewide Biobank in order to educate on pathology-integrated biobanking workflows. The CONCERT Biobank was also invited to speak at the TROG 2018 ASM to educate oncologists, radiation therapists, physicists, data managers, clinical trial coordinators and assistants on the use of biobanks and pathology in clinical trials.

References

- ❖ 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.
- ❖ 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.

Contact Person

Name: Dr Nicole Caixeiro, CONCERT Biobank Manager