AUGUST | 2022

BIO-BABBLE

Newsletter of the Australasian Biospecimen Network Association

THE COUNT DOWN TO PERTH IS ON!

Somehow or another, October is right around the corner! Whilst that's a somewhat scary thought, it's also incredibly exciting because it means ABNA's 19th annual conference is almost here!

Biobanking Blue Sky Horizons has an exciting program exploring the diversity and heterogeneity of biobankers and biospecimen scientists represented in ABNA's ever expanding membership. In an age of multi-disciplinary working and a focus on one-health approaches to research, it's more important now than ever to share, listen and understand our interdisciplinary colleagues to enable effective collaboration.

Our international line-up of speakers and workshop facilitators cover vast areas of expertise; from seed banks, to penguins, to rare cancers, virtual samples and endangered species. Integrating new perspectives, our 2022 program will focus on the core principles that unite us as biobankers and biospecimen scientists including consent, innovation, quality control, cryostorage and data management, while showcasing learnings and achievements within varied subdisciplines.

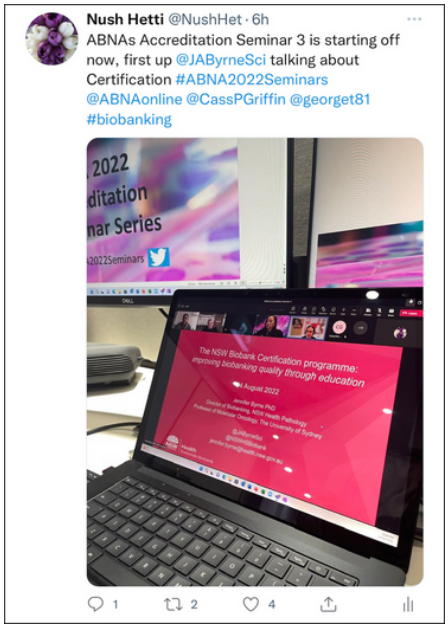
There are also a few new tricks up the conference committee's sleeves including the inaugural 'Elevator Pitch' poster session, Accreditation Seminar Series 4, debates and an engaging panel session on consumer engagement and stakeholder benefit with contributions from active consumer representatives.

We trust you're as excited about the return to face to face conferences as we are and look forward to seeing you in Perth from 19 to 21 October. For more information or to register for the event please visit our **website**.

ABNA 2022 SEMINAR SERIES

In this third virtual seminar, "Certification or Accreditation - which one is right for me?", of the ABNA Accreditation series, Professor Jenny Byrne from NSW Health Statewide Biobank, spoke on certification whilst Gillian Treloar from NATA presented factors involved in gaining accreditation in biobanking.

Professor Byrne emphasised the importance of maintaining a balance between quality and quantity in biobanking and that whilst accreditation can come at a high cost, certification still requires dedicated resources such as staff, time and funding. Gillian described the main difference between certification and accreditation; noting certification as an acknowledgement of compliance against a set of requirements aligned with international standards, while accreditation is an independent third-party recognition (in this case NATA) to have the competence to perform technical activities. Benefits of accreditation range from providing confidence to and assurance to biobanking stakeholders, to risk mitigation, to improved efficiency and reproducibility, as well as having a marketing advantage domestically or internationally.



Ultimately, when answering the question, whether accreditation or certification is right for your biobank, it comes down to the resources available to your biobank. More importantly, resources are required not just in the preparation that goes into achieving certification or accreditation, but also in maintaining the qualification.

Following this thought-provoking session 3, Seminar 4 is to be held at the upcoming Annual Conference in Perth this October. This in-person session will have a practical element - how to take these standards and apply them, how to manage decision making and what do you do next so that participants will have a foundation to work through these questions. We hope to see many of you there.

Thank you to our speakers from the three virtual sessions, Clare Allocca, Dr Lara Mouttham from Seminar 1, the team from Biobanking Victoria - Professor Melissa Southey, Vivien Vasic and Helen Tsimiklis from Seminar 2 and Professor Jennifer Byrne and Gillian Treloar from Seminar 3.

More information about Seminar 4 can be found on the ABNA conference website **HERE**.

Want to hear more about ABNA's up coming opportunities and plans?

ABNA's President and Vice President will be speaking as part of NSW Health Statewide Biobank Seminar Series, 31 August 12-1pm (AEST).

Registration is free for this online event. Visit the **website** for more details.

CSI: BIOBANKING

By Georget Reiche-Miller

We are all familiar with forensic and crime scene television shows such as CSI, NCIS, Cold Case Files and others while there are also documentaries based on real life cases, some of which have gone "cold" and are filed as a "cold case". These types of shows give the general population an insight into what forensic and criminal investigations are like and how crucial a single piece of evidence can be in solving a crime, giving closure to the victims and victims' families and catching the killer or perpetrators. What most people are unaware of is that without biobanking none of this would be possible.

The term biobanking in the sense of forensic science and criminology refers to a collection of:
a) biospecimens collected at crime scenes such as blood, saliva, faeces, urine, semen, tissue, bone, hair, teeth and cells
b) items collected at a crime scene that may have been used or touched by the suspect and may therefore contain DNA material, for example: clothing, weapons, cups/cutlery, cigarettes etc
c) DNA banks containing the individual's genetic material extracted from evidence collected and stored indefinitely for future reference
d) Data banks that securely house data associated with these biospecimens, DNA and fingerprints.

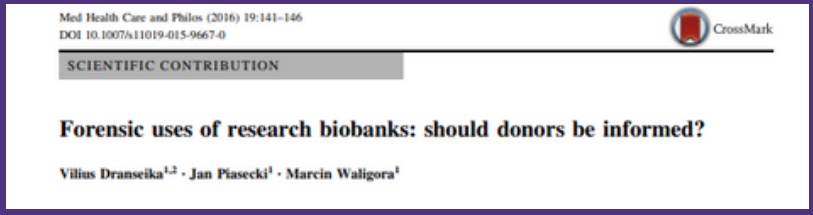
The use of DNA and DNA profiling has been used successfully for testing crime scene samples since 1986 when DNA was first used in a criminal investigation by Dr Alec Jeffreys following on from the invention of polymerase chain reaction (PCR) by Kary Mullins in 1985. Dr Jeffreys used genetic information from the DNA extracted from semen stains collected from 2 rapes and murders that occurred years earlier in Leicestershire, UK. Forensic police collected voluntary samples and connected them with genetic fingerprinting to identify the killer as Colin Pitchfork who was sentenced to life in jail. A documentary on this exemplar case was originally aired in 2015, "Code of a Killer". Then in 1987 DNA evidence was first used in the United States on a Florida rapist, Tommie Lee Andrews: the first person in the U.S. to be convicted of rape because of DNA evidence. Andrews was originally convicted on the basis of 2 rapes; however, further investigations revealed that he was also responsible for as many as 23 other attacks in the wider Orlando area.

Forensic access to non-forensic collections

To add a layer of complexity, many forensic researchers worldwide and sporadic reports have indicated that biospecimen samples collected and stored in biobanks for purely scientific research are in some cases accessed and used for forensic identification. However, "donors" are not always informed that this may be a possibility and have therefore not gone through the correct process of consent.

These samples have been used for a diverse number of forensic purposes not only in criminal and victim identification, but also paternity identification. The first case that was documented was "Stephen Kelly", who recklessly/intentionally passed on HIV through sexual intercourse. The scientific evidence that led to his conviction in Scotland was obtained from an earlier biospecimen sample collected from the researchers under a police warrant (Dyer 2001).

Another worldwide case of forensic access to non-forensic collections were the cases of access to blood samples from the PKU biobank in Sweden that was used to investigate the murder of Swedish foreign minister Anna Lindh in 2003 and the use of PKU data for the identification of victims of the 2004 tsunami. Conflicting arguments have been proposed for and against such practices.


Med Health Care and Philos (2016) 19:141–146
DOI 10.1007/s11019-015-9667-0

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SCIENTIFIC CONTRIBUTION

Forensic uses of research biobanks: should donors be informed?

Vilius Dranseika[1,2] · Jan Piasecki[1] · Marcin Waligora[1]

Since it's first use in 1987, hundreds of cases that had gone “cold” have been solved using DNA evidence resulting not only in the imprisonment of perpetrators but also in the release of those wrongly convicted.

Another way in which hundreds of cold cases have been solved is through the use of DNA sequences from samples submitted to private companies for family tree DNA databases such Ancestry.com and others. Whilst these companies have privacy policies restricting law enforcement’s use of their vast databases, any raw data that is uploaded to GEDmatch which allows DNA to be compared to those submitted through other companies can be used by police to search for relatives of suspects or victims. The ethical part of this has been a topic of debate for some years now and whether or not the users of these services are well informed remains a point of contention.

Right up until last month the oldest case to be solved using DNA technology and forensic genealogy was a 1956 double homicide that took place on the 3rd of January 1956 in the USA.

A young couple, Lloyd Duane Bogle (18) and Patricia Kalitzke (16) were found dead with gunshot wounds to the head. Autopsy revealed that Kalitzke had been sexually assaulted and a semen sample was collected and banked. In 2012 Detective Sgt. Jon Kadner was assigned the case however it wasn’t until 2021 that the killer was identified.

Clippings from the Great Falls Tribune were part of the Cascade County Sheriff's Office investigative file into the 1956 murders of Patricia Kalitzke and Lloyd Duane Bogle. Picture credit: CNN website

A DNA profile of the perpetrator was created using the stored samples and used to search public databases for any potential matches - a process that often results in finding distant relatives, in this case, a cousin. Investigators were able to independently construct a family tree from this cousin's profile and this reverse family tree identified a suspect who had passed away in 2007. His remains had been cremated so the body could not be exhumed for further DNA testing. Authorities next contacted the adult children of the suspect, explained the situation and they donated a sample for DNA analysis which revealed that indeed their father, Kenneth Gould, was the murderer. Detective Kadner was able to make contact with victims' surviving family and give them closure after more than 60 years.

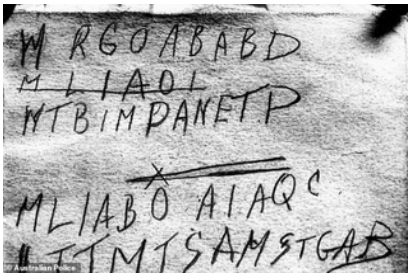
In July 2022 this 60 year record was broken by one of Australias very own cold cases; “The Somerton Man” where the body of a middle aged man was found washed up on Somerton Beach, South Australia on 1st December 1948. For 74 years the identity of this man was unknown and a number of contrasting theories surrounding this man’s identity prevailed.

At the time, the cause of death was suspicious and treated as poisoning, but who administered the poison was never determined. The man had no identification on him, nothing that could link him or trace him back to anything. He was buried in the cemetery in a tomb that read “Here lies the unknown man who was found at Somerton Beach 1st December 1948”.

After a few years the case went cold but was re-opened by Professor Derek Abbott from the University of Adelaide who dedicated decades to solving one of Australia’s unsolved mysteries. In collaboration with American genealogist Colleen Fitzpatrick they used DNA profiling and reverse geneology to identify the victim. Prof. Abbot used strands of the man's hair trapped in a plaster "death" mask made by police in 1948 as its source of DNA. The DNA profile was entered into the genealogical research database GEDmatch that was able to identify distant cousins.

Reverse geneology then allowed them to draw up a family tree of 4000 potential family members and were then able to connect a cousin to the victim’s father and one to the victim’s mother. South Australian Police and Forensic services authorised the body to be exhumed and following this it was later confirmed to be the body of Charles Webb, an electrical engineer from Melbourne.



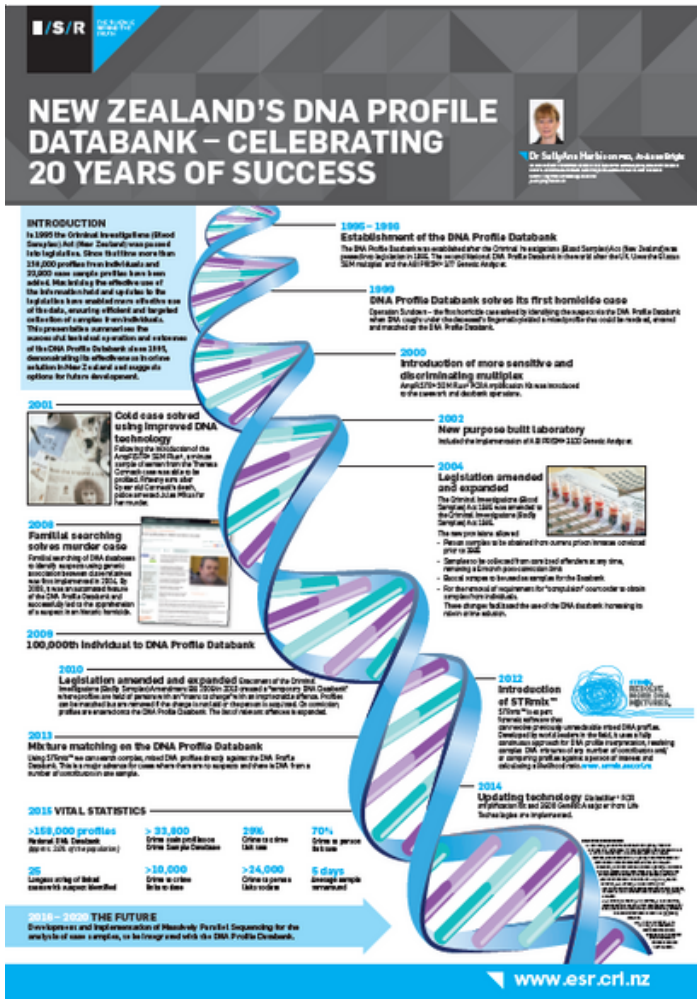


1. The burial of the mysterious Somerton Man on June 14, 1949
2.Plaque on Charles Webb's tomb when we was known only as the Somerton Man. Picture credit: NineNews
3.The coded message found in Charles Webbs pocket which led to some of the wild theories about his identity. Picture credit: Australian Police
4.Forensic Science SA staff, South Australia Police, major crime detectives and staff from the West Terrace cemetery are seen during the exhumation. Picture credit: AAPImage

Biospecimen banks and DNA banks dedicated to criminal investigations are an invaluable resource. In some countries and jurisdictions, a DNA sample is routinely collected from a suspect during the investigation process or even on arrest. Sometimes a court order is required to retrieve a DNA sample from a person of interest.

In 1995, New Zealand became the second country in the world to collect and store DNA profiles in a databank. Since then, forensic scientists and police have used the national DNA Profile Databank (DPD) to solve thousands of crimes. The databank operation involves two databases - the DPD (profiles of individuals) and the Crime Sample Database (profiles from unsolved crimes). By comparing the two, possible suspects can be identified and crimes linked.

The DNA databank is run by Environmental Science and Research (ESR) on behalf of the New Zealand Police, who collect the DNA samples. So far, ESR has been able to match 70% of the DNA profiles from unsolved crimes to individuals profiles on the DNA databank. They have also found that 30% of the DNA samples from unsolved crimes match samples from other crimes.



In Australia as of February 2003, the Commonwealth had established three DNA databases for law enforcement purposes. The National Criminal Investigation DNA Database (NCIDD system) was established in June 2001 to facilitate intra-jurisdictional matching of DNA profiles, and inter-jurisdictional matching of profiles between participating jurisdictions, for law enforcement purposes. The Disaster Victim Identification database (DVI Database) was established in October 2002 to identify the victims of the terrorist bombings in Bali, Indonesia, and other similar overseas incidents. Finally, the Australian Federal Police (AFP) operates its own DNA database for law enforcement purposes.

As with all biobanks the quality and provenance of the stored biospecimen is as important as the ethical considerations associated with that sample.

BBIF 2023 ANNUAL CONFERENCE

Biobank India Foundation (BBIF) has announced their International Biobanking Symposium 2023 Annual Conference & Exhibition will take place 23 -24 February 2023 in Delhi, India. The conference theme this year is Demystifying Biobanking: The Essence of Contemporary Biomedical Research.

Following BBIF's 2022 virtual symposium, the 2023 symposium will return to an in-person event featuring oral and poster abstract presentations, interactive workshops, plenary sessions and roundtable discussions.

BBIF is a not-for-profit organization that promotes biobanking and biobank science in India. It provides a common platform for scientists, biobankers, legal representatives, scientific industry and donors to work on emerging issue around biobanking, cryopreservation and medical research. BBIF works on awareness of biobank science among stakeholders and provides strong support and guidance to new and established biobanks.

BBIF's Scientific Program Committee and the Steering Committee, which include representatives from ABNA and ISBER, are working towards finalising the two day program. Early bird registration is already available and asbtract submission categories and dates are due to be announced soon.

The BBIF International Biobanking Symposium website will be updated as details become available.

5 MIN WITH KATE MERLIN

We approach a different professional in the biobanking arena with the same five questions each month

Kate Merlin
Senior Hospital Scientist
St Vincent's Centre for Applied Medical Research Biorepository
Website: SVHS.org.au

THE QUICK QUESTIONS

Tea or Coffee? Tea
Cats or Dogs? Dogs
Coriander? Yes
Star Trek or Star Wars? Star Wars

1. **How long have you been working in biobanking?**
   24 years - which has taught me the importance of teamwork in my career (ie the fact I would never have made it this far without the team members that I have worked with over the years).
2. **What has been the biggest biobanking challenge you have faced in your career so far?**
   Transferring MS Excel data from multiple large and small sample collections to our own purpose built ORACLE database, only made possible by the vision and financial support of our program leaders and also with the amazing assistance of our database coordinator.
3. **What are you excited about that is happening in your biobank/what is your biobank doing that is new and innovative?**
   Seeing rapid results and genuine collaboration using stored samples for COVID-19 research studies.
4. **What is your one wish as a biobanker?**
   That the majority of biospecimens stored for studies are eventually utilised to improve health outcomes for all.
5. **Three words that best describe your biobanking career:**
   Dedicated, Engaged, Ever-changing