FEBRUARY | 2023

# BIO-BABBLE

Newsletter of the Australasian Biospecimen Network Association



## WELCOME TO 2023!

Cassandra Griffin on behalf of the Bio-Babble Sub-committee


2023, we've arrived! Given it's late February I'll resist the urge to wish everyone a Happy New Year- after all, Seinfeld assures me this is entirely socially unacceptable! Instead, on behalf of the Bio-Babble Sub Committee, we hope you had a wonderful break with your loved ones and are delighted to welcome you all to the first issue of Bio-Babble in what we are sure will be a jam packed year for our community.

2023 will see the delivery of our second Seminar Series, the launch of our Special Interest Groups, roll out of our National Specimen Locator and of course ABNA's 20th Annual Meeting in October!

As in past years, ABNA is committed to ensuring members have ongoing access to the the opportunities and resources of most value to our network. To do this, we need to hear from our members and understand what they'd most like from us so please, if you have thoughts, ideas or suggestions - please do get in touch! We look forward to the year ahead and to working with you for another wonderful year in biobanking and biospecimen science.

## A National Biospecimen Locator

ABNA is excited to announce that the national specimen locator is now ready for data upload! The next phase of implementation will see a template circulated to ABNA members within the next fortnight requesting a minimum data set which can then be uploaded to the locator.

The upload template has been designed to capture broad collection details information with the goal of linking biobanks with users. ABNA will not be involved in the distribution of samples, nor directly involved in communications ensuring that each bank maintains their autonomy and is adherent to their individual governance processes.

We're excited to enter the next phase of implementation and look forward to hearing the feedback of our members! If you have any questions, please don't hesitate to reach out to a member of the ABNA committee!

Australian Genomics

**Virtual Seminar Opportunity** - Thursday 23 Feb 4pm

FinnGen: a large, nationwide biobank project. Join Professor Aarno Palotie from Institute for Molecular Medicine Finland for Australian Genomics' first DNA dialogue seminar.

Further information and registration HERE

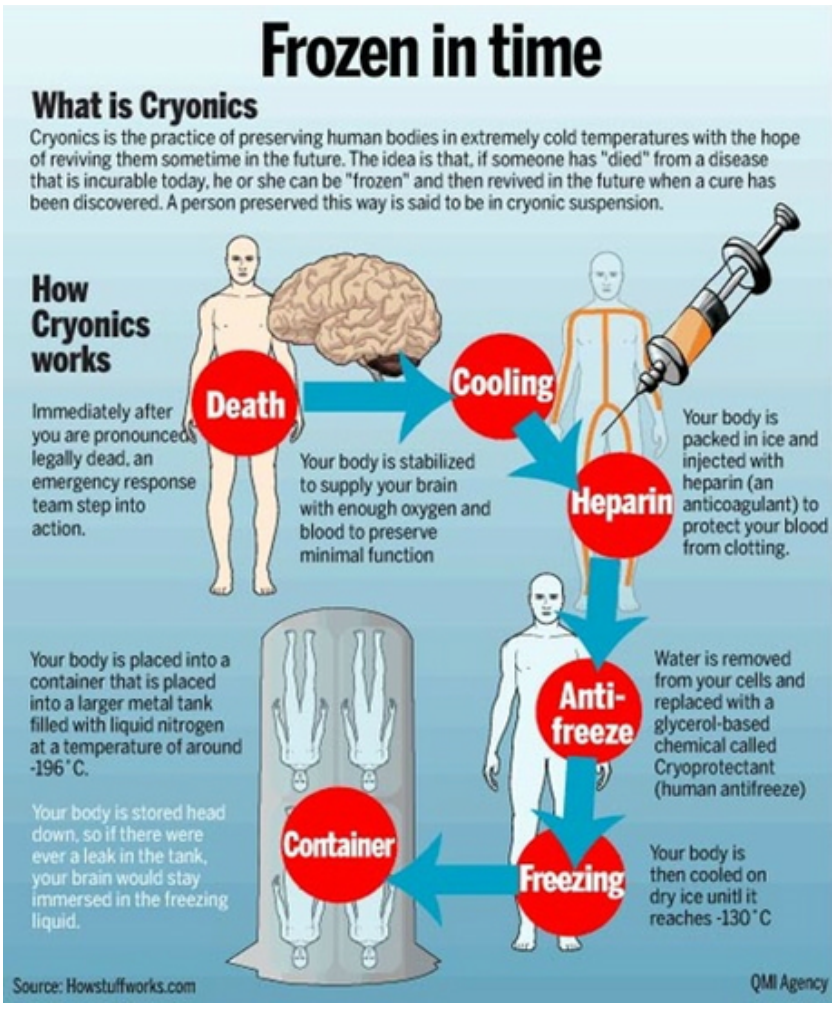
# THE BIOBANKING ICE AGE

By Dr Shirley Wee

Cryostorage may be part and parcel in everyday biobanking of specimens for biomedicine, organ transplantation, regenerative medicine and drug discovery however, advancement in the technique of cryopreservation and its cryoprotective agents may yet pave the way to the future of cryonics. In 1948, cryopreservation was first accidentally discovered in fowl spermatozoa where it survived after freezing to -70°C using glycerol. It was initially applied to human cells in 1954 where sperm was frozen and used later for insemination. We now know this process as part of the in vitro fertilization (IVF) where embryos are also frozen and stored for later use. This process has proven to be so successful that in 2021, the UK Department of Health planned to extend the storage time from 10 years to 55 years in order to ease the restrictions of a 10-year limit can pose on the individual's circumstances (1).

**Cryonics** specifically refers to the cryopreservation of human remains in the hope of possible resurrection with advanced future medicine. However, this practice is often regarded with scepticism amongst the scientific community. Cryonics has its beginning in the 60's in the U.S.A, there were three public organizations that handled or sponsored freezing and patient storage. These companies were met with multiple problems with the main issue being the formation of ice crystals within cells and eventually destroying them, making them impossible to restore in the future. During examination of failed attempts in cryonics; it was noted that the human remains had cracked skin surfaces from the underlying fat and gave the appearance of "paint peeling away from a wall" and fractures were present in almost every organ. A lack of funding from surviving relatives to continue with payments for storage was another major issue contributing to the cryonics effort. (Alcor is the current leading company in cryonics and it requires a minimum suspension funding donation of US$120,000 for whole body suspension). Other problems were storage failures involving capsule failure, dry ice delivery and the upkeep of liquid nitrogen which led to the suspension of the body upside-down in the capsule, to limit thawing effects should there be a leak of liquid nitrogen from the top.


*Image credit: Alcor*



**Neuropreservation** became another option focusing on the cryopreservation of the brain alone with the notion that growing new bodies is simpler than repairing cell by cell or attaching the brain (head) onto a robot or an organic alternative. The question remains whether resuscitation or reanimation is entirely possible.

*Image credit: Raven's Quarter & Esa Luttinen*

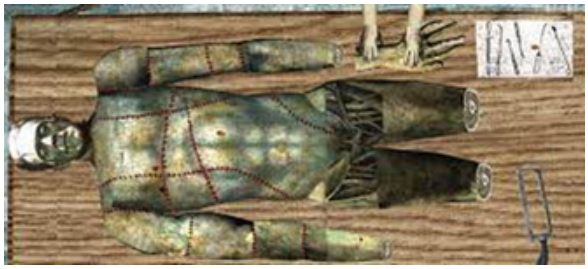
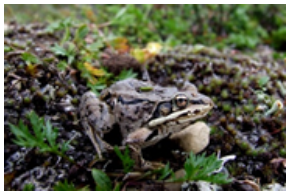


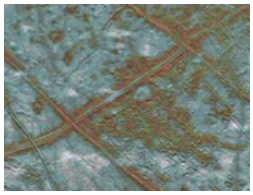
*Image credit: Wordpress.com*

**Reanimation** is not a new concept, stemming from the 1800s where physicist Giovanni Aldini became famous for his spectacular demonstrations of "reanimating" human and animal corpses by stimulating them with powerful electrical shocks although unsuccessfully. Perhaps he was inspired by author, Mary Shelley's story 'Frankenstein'.

In nature, several species can be reanimated after freezing, including painted turtle hatchlings, upis beetles and wood frogs, just to name a few. Most of these species produce specialised antifreeze proteins or cryoprotectant substances that allow them to survive freezing (2).
Antarctic tardigrades (Antarctic tardigrade, Acutuncus antarcticus) that had been frozen solid for more than 30 years has also been brought back to life by researchers in Japan; and has gone on to produce 14 healthy babies. Being frozen caused the tardigrades and eggs to undergo a process known as cryptobiosis, in which a complete shut-down of all metabolic processes occurs, including reproduction, development, and repair (3).
Most impressively, *Herminiimonas glaciel* sp. nov., misleadingly named resurrection bug, (a novel ultramicrobacterium) has been revived from a Greenland ice sheet after 120,000 years (4).







1. *Painted turtle hatchlings (image credit: Oregon Department of Fish & Wildlife, Flickr), 2.Upis beetle (image credit: Vlad Proklov, Flickr), 3. Wood frogs (image credit Travis,S, Flickr), 4. Antarctic tardigrades (image credit: Sciencealert.com), 5. Herminiimonas glaciel (image credit: Newscientist.com).*

Whilst reanimation may hold potential for cryonics, what is to be expected for functionality, specifically of brain function? For decades, *C. elegans* have commonly been cryopreserved at liquid nitrogen temperatures and later revived. In 2015, Vita-more and Barranco demonstrated the retention of long-term memory in vitrified and revived *C. elegans* (5). Although it is known that human brain activity is suspended at temperatures below 18°C, medical literature contains many cases of people who have survived profound hypothermia without permanent brain damage. In one famous example amongst others, Swedish radiologist Anna Bågenholm was trapped under ice during a skiing accident and then resuscitated after being considered clinically dead for more than two hours.

In 2019, Scientists at Yale University claimed to have successfully kept alive the brains of decapitated pigs for 36 hours. Dr. Nenad Sestan and his team experimented on between 100 and 200 pig brains obtained from a slaughterhouse. Using a special apparatus known as BrainEx, they were able to circulate oxygen throughout the brains with a perfusion fluid. Returning the brain to a healthy state, capable of normal activity (6).

Recent successes in transplantations may also contribute to the potential of reanimation where in 2021, Dr Aram Gazarian successfully performed the first double arm and shoulder transplant in the world on Icelander, Guðmundur Felix Grétarsson – seen in photo to pick his nose using his 'new' arm and fingers (7).

*Image credit: Visir & Reddit*

Whether cryonics will become a viable option for human preservation remains questionable with so much 'how?' still unknown or dealt with thoroughly. Issues surrounding the affordability in cryopreservation for decades, whether the human body and brain can be reanimated with function, the reliving of a painful death through reanimation; are only some issues yet to be fully explored and understood. In the meantime, there are those who continue to seek cryopreservation and reanimation, even here in Australia. Southern Cryonics in Holbrook, NSW is a non-profit organisation formed to build and operate Australia's first cryonic storage facility. The facility claims to be able to store up to 40 patients (8). The facility is said to be expecting a demand of 600 suspensions within 100 years' time. Let's hope science will catch up to this ice-breaking topic by then.

# REFERENCES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6. Vrselja, Z., et al., *Restoration of brain circulation and cellular functions hours post-mortem.* Nature, 2019. **568**(7752): p. 336-343.
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8. Canales, S.B. Australia's First Cryonics Lab is Opening But it's a Battle of Faith and Science. 2020; Available from: https://www.gizmodo.com.au/2020/07/australias-first-cryonics-lab-is-opening-but-its-a-battle-of-faith-and-science/.


# 5 MINUTES WITH DR WAYNE NG & DR BIRENDRA KUMAR YADAV

We approach different professionals in the biobanking arena with the same five questions each month, this edition we have the two candidates for ISBER's Director at Large: Indo Pacific Rim

**DR WAYNE NG**
General Manager
Victorian Cancer Biobank Consortium
Melbourne, Australia

**DR BIRENDRA KUMAR YADAV**
Manager, National Liver Disease Biobank
Institute of Liver and Biliary Sciences
New Delhi, India

| WAYNE | QUICK QUESTIONS | BIRENDRA |
|---|---|---|
| Red | Red or white wine? | None for me thanks |
| Mac | Mac or PC? | PC |
| Superman | Batman or Superman? | Superman |
| Harry Potter | Lord of the Rings or Harry Potter? | Harry Potter |

**How long have you been working in biobanking?**

8 years

11 years

**Which advance in science/research do you think has had the most impact on you as a biobanker?**

A simple blood test for colorectal cancer was developed with the support of our biobank since the time of basic science discoveries.

Advances in techniques for preservation of biosamples.

**In retrospect, given the experience you have now, what one piece of advice would you give to yourself at the start of your biobanking career?**

Be open-minded for marrying science and business into your career.

I have vested many years to understand the science of biobanking. I would advise that if someone have decided to start a carrier as biobanker, their study should be inclined towards it from Bachler degree course. They should have degree/certification in biobanking.

**What is the craziest thing you have done to save a sample/s?**

I have been lucky enough in my biobanking roles to not have had to deal with saving samples! I hope I can think on my feet if it does happen.

In 2017, we received a message that our freezer was not working at 12.30 am. My house is 25 km away from biobank, I called my 2 technicians and myself visited biobank at 1 am in the morning. At this stage we did not have back up freezer. We went to a shopkeepers home and bought back dry ice in our car. Dry ice was put in Freezer to save the samples until freezer error was rectified.

**Your career on record: name 3 songs/albums that best tell the story of your biobanking career:**

-Just the way you are - Bruno Mars
-Yellow - Coldplay
-Perfect - Ed Sheeran

-kyu tarasta hai tu bande song - kailesh kher
-INSAAN | A Musical Tribute To Humanity | Hindi Song
-मैं हार नहीं मानूंगा। POETRY BY ATAL BIHARI VAJPAYEE

ISBER members can vote in the 2023 Elections until 4pm AEST/6pm NZST.
A list of candidates and their position statements can be found here **HERE**.

# VIRTUAL ASIA PACIFIC OPEN FORUM

Please join us for a virtual program on Friday, March 3, 12:30 Japan Time, (14.30AEST and 16:30 NZDT) entitled **"Discussing the International Use of Biospecimens and Associated Data"**. This will be an open forum discussion about the Asia Pacific landscape governing the access and sharing of biospecimens and associated data. We will be discussing the variable infrastructure for and familiarity with biobanking across the region and explore the importance of diversity within and representativeness of biospecimen collections. The event is free and open to all interested in promoting the sharing of biospecimens and data in an ethically and socially responsible way.

**Why is this forum being held?**

Despite national and international efforts to come together on recommendations that would ensure diverse, well-characterised samples are collected, handled, used, and shared in ways that consider and secure the patients' rights while also allowing for research and innovation to flourish, the current environment is complex for both patients and researchers to navigate.


With this forum, we are aiming to convene individuals from across the Asia Pacific region who can help us explore the challenge from a broad range of perspectives with the goal of understanding the current status and identifying a path towards strengthening global research with biospecimens in an ethical and socially responsible way.

Discussion points to consider during the Asia Pacific Open Forum will revolve around two main areas:

1. Hurdles & solutions to use of biospecimen and associated data – an Asia- Pacific perspective with discussion from China, Indonesia, Japan, Malaysia and Vietnam as examples
2. Diversity within & representativeness of biospecimens for secondary research, with particular focus on perspectives from the Pacific, California/Korea, India and Japan.

**The Science Policy Think Tank Vision:** An open and independent forum for thoughtful deliberation of key issues and appropriate action in Science Policy as it relates to accelerating innovation for the benefit of patients that results in a strong and influential voice for its members. Importantly, the forum and discussions are intended to focus on subject matters of relevance and impact and reflect a balance of all stakeholder interests.

**The Science Policy Think Tank Mission:** Bring together a diverse, international group with interest in Science Policy as it relates to accelerating innovation for the benefit of patients.

- To determine and share intelligence of the challenges, opportunities and potential gaps
- To learn and build on different perspectives
- To understand if these issues are being addressed appropriately by stakeholders or would benefit from our action
- To also provide a platform to have novel ideas explored or advocated

The Science Policy Think Tank: Biospecimens Open Forum Steering Committee was founded with the coming together of individuals from academia, non-for profits, pharma, biotech and independent consultants with an interest in advancing Science Policy.

We have a wonderful line-up of speakers and moderators. The event is free and in English. Simultaneous translation to and from Japanese will be available. This forum is open and welcomes input from interested parties, including the general public, patients and patient advocacy organizations, ethicists, scientists, colleagues from across the biobanking and clinical trial spectrum, regulatory bodies and professional organisations.

**THE OPEN FORUM IS HOSTED BY:**


Click **HERE** for the agenda and speaker information. **Register now**.

**CO-HOSTS:**

RIKEN IMS isber INTERNATIONAL SOCIETY FOR BIOLOGICAL AND ENVIRONMENTAL REPOSITORIES MRCT MULTI-REGIONAL CLINICAL TRIALS THE MRCT CENTER of BRIGHAM AND WOMEN'S HOSPITAL and HARVARD ROPES&GRAY


## Register now to attend the ISBER 2023 Annual Meeting!

Early Bird Deadline: February 25 AEST - Register now

**Meeting Theme**

Biobanking science and practice is a multidisciplinary system integrated with many dynamic fields, including but not limited to, biobanking research, technology, management, policy, regulation, economics, industry, politics, security, quality, and ethical-religious-legal-cultural-social issues. Interaction and communication among the boundaries of these fields are critical and indispensable for the biobanking success and this is central to the theme of the ISBER 2023 Annual Meeting - Come as You Are: Building Biobanking Bridges. Biobanking is shaping the scientific journey in a new world. Be part of the discussion.

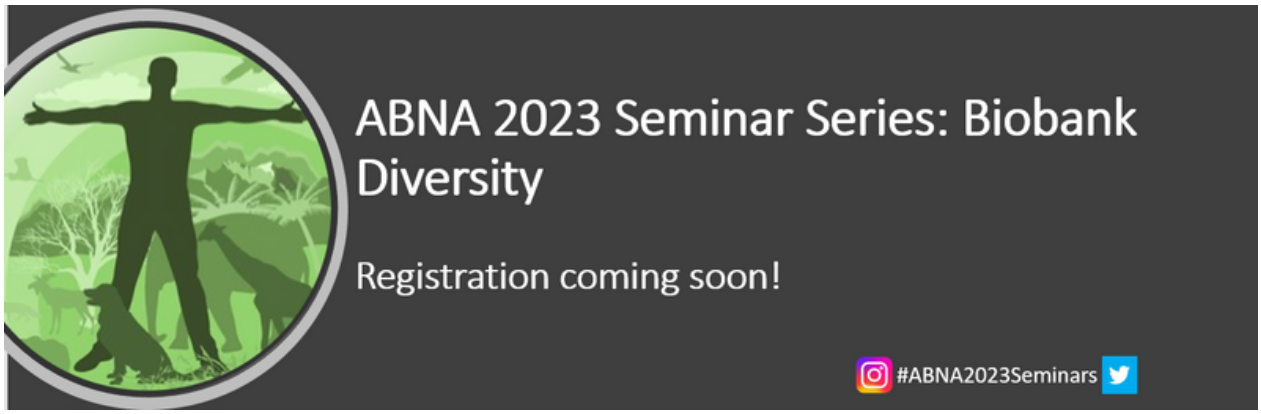
**Meeting Format:**

The meeting will be held in-person in Seattle USA. For those who are unable to travel, a virtual component of the meeting will take please from June 6 - 7. More information

## Are we Up to Date?

Do you have publications you'd like to share with your peers? ABNA is updating our website including our links to recent publications from our members and colleagues. If you have a biobanking or biospecimen related publication you'd like listed on the ABNA website please let us know!

ABNA is also updating our membership lists including our online member biobanks - is your bank listed? if not, please let us know!




If you have any suggestions for a short article for Bio-Babble, please contact: abna.biobabble@gmail.com
Content deadline for March edition: 24.03.23

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