JUNE | 2023

BIO-BABBLE

Newsletter of the Australasian Biospecimen Network Association

WELCOME TO JUNE!

The half way point, we're here! June saw the second of our 2023 seminar series and we'd like to thank all three of our speakers Anusha Hettiaratchi, Chris Gorman and Izabela Piotrowska for their insights and contributions to what was a well received session. Our final virtual seminar will be held 5 September and will lead in to our in-person session at ABNA's 20th Annual Meeting.

Speaking of which, registration is now open for Biobanking on Record! To register for the meeting and secure a spot at our anniversary event please visit our conference website for details of venue, speakers and workshops. This year will include a range of diverse sessions, panel discussions and workshops as well as the return of biobanker speed dating and abstract elevator pitches. Already we are seeing strong support from our industry and trade partners and we are excited to for the collaborations and networking that are sure to result.

HAVE YOUR SAY!

As we move into the second half of 2023 the ABNA committee is looking for member input and feedback on the following topics;

ABNA 2024 Annual Meeting

In 2024 Australia will host the ISBER Annual meeting, set to occur in Melbourne in April. This is an exciting opportunity for ABNA members to engage with international biobankers and to attend a global biobanking meeting without international travel costs. Appreciating that conference travel may be limited in a post-pandemic world, ABNA are investigating options for the 2024 ABNA Annual Meeting that will best meet the needs of our membership. To have your say on the format you'd like to see for ABNA's Annual Conference in 2024 please share your preferences through the following link

ABNA Cost-Recovery Market Survey

Cost-recovery continues to be a challenge for many biobankers and ABNA has received a number of requests for assistance with standardised pricing and mapping of cost-recovery schemes between institutions. We understand that business plans and cost recovery schedules can vary widely but in an attempt to characterise the biobanking 'market' ABNA has produced a summary of basic biobanking services against which we are asking members to list their fees. We appreciate that this is highly individualised and that not all services will apply to all banks. We also appreciate the need for anonymity and discretion and as such, no data will be published in an identifiable way.

To participate, please complete your responses in the spreadsheet attached to your Biobabble email

5 MIN WITH A BIOBANKER

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

This month we spoke to Dr Gareth Bicknell, General Manager of the Human Biomaterials Resource Centre, University of Birmingham, UK

THE QUICK QUESTIONS

Red or white wine?

Red. *But obviously it has to be white with the seafood! Southern Hemisphere please, and I'll have a few B&Cs for afterwards.*

Mac or PC?

Mac

Batman or Superman?

Batman*. Hmm. A goody-goody who ignores the rules of physics? Or a psychotic antihero who serves up what's coming to those who need it (and buys off the rules of physics with technology)? No contest! (I must be compensating for all that daytime ethical behaviour...)*

But what light through yonder window breaks? 'Tis Star-Lord and Thor from a different universe...

Lord of the Rings or Harry Potter?

LOTR. *No Balrog, you shall not pass. You don't have consent to procure that hobbit tissue.*

How long have you been working in biobanking?

Since 2011 (generic research biobanking), or since 1998 (specific research collection and therapeutics).

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

Genomics and digital spatial profiling - and not just because these techniques dominate what researchers want to do with our samples. The ability to link previously-unlinked diseases and conditions, combined with tailored therapies, is already having an impact, and it will get more impactful as AIs start to look at the existing data, design new therapies, and run new clinical trials.

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?

Do what you think is the right thing to do, stay true to your principles, and remember that there is more than one way to write an SOP! You can't control everything at once, and not everyone finds "rigidly defined areas of uncertainty"* easy to navigate, so be pragmatic and be prepared to explain it all again. And again.

*Thank you, Douglas Adams, for one of the most useful phrases of all time. Another reason to buy the "Hitchhikers Guide to the Galaxy" over the "Encyclopaedia Galactica".

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

Tough question. Readers, take your pick:

Option 1: working 24h non-stop in a clean-room to isolate Islets of Langerhans for a transplant, only for the surgeon to decide he didn't want them after 4 tedious viability recounts.

Option 2: explaining to a Bereavement Officer what they had to do, so that they could explain it back to me, so that I could then give informed consent to my mother's sarcoma going to a biobank, rather than to a crematorium with the rest of her. RIP Mum.

Option 3: having to shut down every father-of-three feeling I had, so that I could personally remove the organs and tissues from a foetus for research, in accordance with his parents' deepest wishes. I did talk to him while I was doing it, though, and I thanked him afterwards, so that he had dignity and involvement with the process. We ensured that the rest of him went to a specialist crematorium. RIP buddy.

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

Another tough one, because I'm more into melodies and harmonies than words (cf Frankie Goes to Hollywood and "Relax": for years I thought the line was "Hit me with your medicine beads"...)

"Promise" by Voyager (yes, Eurovision fans, *that* Promise by *that* Voyager)

"Dark Departure" by Biggi Hilmars

"Always Look on the Bright Side of Life" by Python (Monty)

VENOM BANKS
CREEPY, CRAWLY, SLITHERING ... THERAPIES?

By Dr Georget Reaiche-Miller

When we hear the word venom, some might immediately think of the Marvel character, a symbiotic organism from another planet. However, venom referred to in this context is a toxin produced by an animal that is delivered to the victim through a bite, sting, or by touch. Envenomation can not only result in a very painful and uncomfortable experience but in loss of a limb by amputation or even a very painful death. Australia has over 66 venomous animal species ranging from snakes, spiders, insects and even marine animals, some of which have the deadliest venom in the world. However, Australia is only ranked the 3rd most venomous country in the world, behind Mexico (80) and Brazil (79). A worldwide study in 2019 showed that more than 63,000 people died from snakebites alone, with only 2 deaths recorded in Australia as opposed to 51,000 deaths in India. Whereas it is estimated that over 1000 people die of snake bites each year in Papua New Guinea. This is due to the availability of antivenom.

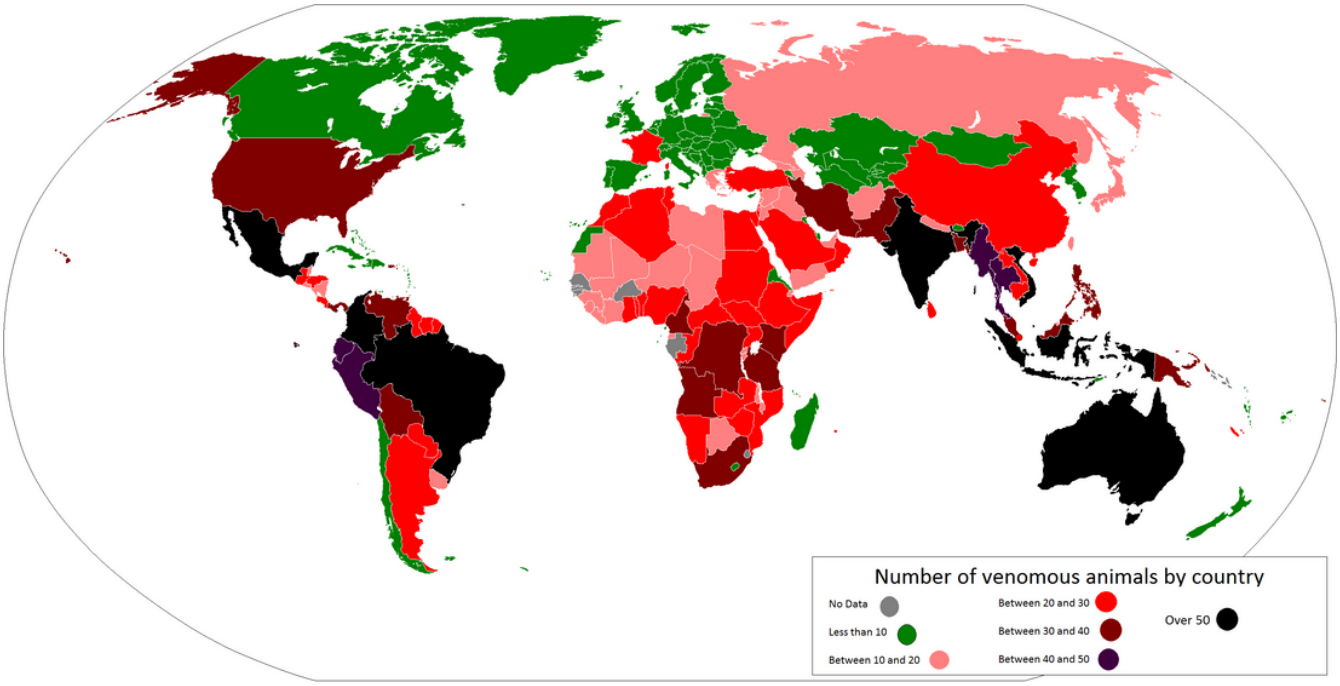

Image credit: https://brilliantmaps.com/venomous-animals/#more-763.

Antivenom, most commonly known as antivenin, is an antibody based medicine that neutralises a particular toxin or venom that if administered within 6 hours of envenomation it can successfully stop severe damage and even death. The first snake antivenom was developed by French scientist Albert Calmette against the venom of the Cobra in 1895. However, it was 30 years later that an American company H. K. Mulford Company of Philadelphia partnered with a Brazilian antivenom developer, Dr. Afriano do Amaral of the Antivenin Institute of America to develop a licence and start the venture of making antivenom available to the market. Mulford's initial antivenom product (Antivenin Nearctic Crotalidae) was to treat bites of North American vipers, including copperheads and the infamous rattlesnakes. The Smithsonian museum has a collection exhibiting the history of antivenom production and new serum therapy displaying one of the very first specimens of Antivenin Nearctic Crotalidae from the Mulford Company.

Currently the majority of antivenom production targets envenomation from snakes, spiders, scorpions and a very limited selection of marine culprits. These antivenom are polyclonal antibody therapies derived from the plasma of hyperimmunised animals such as horses and rabbits. Whilst extremely effective, these can also cause severe hypersensitivity reactions, allergies and serum sickness in individuals at risk of requiring a second dose of antivenom later in life. New technologies to reduce these risks include the effective use of human monoclonal antibodies as antivenom that neutralise animal toxins.

Venom and antivenom collections around the world

There are multiple venom banks in all continents around the world, but there are some that really stand out!

Colombia: Universidad Nacional de Colombia in collaboration with the National Health Institute have developed a snake collection to preserve over 270 species in order to update their antivenom bank thus no longer relying on supplies from, Brazil or Costa Rica. Part of a successful approach to make antivenom more readily available.

The Arachnid Venom Bank: The University of the Sunshine Coast is home to the arachnid venom bank. This is the largest venom collection in the world which houses more than 700 different venoms from spiders and scorpions. Commercial suppliers only offer about 20% of the venoms in this collection meaning that 80% of these venoms can only be accessed directly from the arachnid venom bank.

Florida Antivenom Bank: Recently renamed to The Miami-Dade Fire Rescue Antivenin Bank was established in 2001 and has the most extensive antivenom collection against 211 species worldwide including snakes, spiders, scorpions and stonefish.

Costa Rica: Instituto Clodomiro Picado, Universidad de Costa Rica, is one of the world's leading manufacturers of snake antivenom, and the only one in Central America. Established in 1970, housing 110 horses injected periodically with multiple types of snake venom for local production of antivenom which is distributed to areas such as USA, South America, South East Asia and Papua New Guinea.

Australian Reptile Park: The Australian Reptile Park in NSW has two extensive venom programs a snake venom program established in 1960s and a spider venom program established in 1981. The snake venom program currently houses around 250 venomous snakes. These are milked on a fortnightly basis and they are responsible for the sole supply of snake venom for antivenom production in the country. They currently distribute 2500 vials of snake antivenom around Australia each year. The spider venom program is home to over 2,000 spiders from baby spiderlings to full grown adult specimens. These are milked on a weekly schedule for antivenom production which has resulted in a reduction of deaths due to funnel web spider bites to zero since its introduction.

Venom collections as pharmaceutical and therapeutical tools

Arachnid venom bank: The largest venom collection in the world, University of the Sunshine Coast: The arachnid venom bank, being the largest venom collection in the world, houses more than 700 different venoms from spiders and scorpions. Dr Volker Herzig leads the research into pesticides derived from spider venom. Caterpillars are a big problem in agriculture due to their ability to consume a large amount plant matter in a short period of time. Dr Herzig most recent studies are focused in isolating toxins that able to cause paralysis or death in the caterpillars whilst not affecting the bees that pollinate the crops. Dr Herzig leads the research into anti-parasitic properties of venom for the treatment of sheep, cattle and even freeing bees of varroa mites.

Antivenom to black widow spider bites has been available since the 1930s. These vials were produced in the mid-20th century. Image credit: National Museum of American History.

1927 Mulford advertisement proclaims the company's clear pride at being granted the first license to produce and sell antivenom in the United States. Image credit: The Journal of the Florida Medical Association, Inc., August 1927, Vol. XIV, No. 21.

Venom Evolution Laboratory – University of Queensland: Dr Bryan Fry leads a research group that works with a large collection of snake venom and genetic information to understand the evolution of venom. Dr Fry's team utilises their bank for turning toxins to therapies, not only for the development of new antivenom technologies but also potential treatments for serious human diseases such as chronic pain, blood-clotting disorders and even cancer. In an interview with Australian Geographic Dr Fry admitted that in the process of collecting material for the venom bank he has "been bitten 27 times by venomous creatures, mostly snakes on land and box jellyfish and stingrays at sea". He has also had 23 broken bones and 400 stitches, has been concussed three times and once fractured his spine in three places, after which he spent months in hospital relearning how to walk. Now that is dedication!

Victorian Venom Bank collaboration: A joint venture between the Arthur Rylah Institute for Environmental Research, the Australian Venom Research Unit (University of Melbourne) and Museum Victoria in order to establish a collection of whole venomous terrestrial and marine animals, their tissue and their venoms at the Museum. The motive of this collection is to develop a resource that would enrich the knowledge and understanding of these species and their venoms for use in public health, drug discovery, and biodiversity management and conservation biology.

Milking the venom of a pit viper. Image credit: Camilla Carvalho/Instituto Butantan.

So… as much as we love (or not) these creepy, crawly, slithering species lets not forget there is a lot their venom has to offer … and remember "we are never more than three feet away from a spider!"

ABNA ACHIEVEMENT IN AUSTRALASIAN BIOBANKING AWARD

To coincide with ABNAs 20th Annual Meeting we are launching the inaugural Achievement in Australasian Biobanking Award. The award will be presented at this years Annual Meeting on the Gold Coast.

This award is designed for current ABNA members to recognize another member, past or present, who has contributed and/or continues to contribute to the Australasian biobanking community. Nominations must be submitted using the official form by 30 July.

Nominees can include biobankers, clinicians, pathologists, zoologists, herbarium managers and/or researchers who have demonstrated ABNA's aims to

- support of Australasian biobanking
- promote ethically sound high quality specimens for research
- promote the benefits of biobanking
- enhance knowledge amongst the biobanking community

Nominations are now open and can be submitted **HERE**

THE FINE PRINT

As part of the nomination process, you will need to provide:

- a description of your reasons for nominating the individual
- a description of the nominees' contributions in support of the nomination

Only active ABNA members can be nominated for this award and the submissions will be judged by the current ABNA Management Committee and will include an independent observer.
Only one nomination per ABNA member will be allowed.
Judging will be a merit-based comparison of the nominees' achievements and their alignment with ABNA's aims.
Current members of the ABNA Management Committee will not be eligible for nomination.
Current members of ABNA committees may not nominate personnel affiliated with their member biobank.
Only nominations received on the official nomination form will be considered.
No nominations will be accepted outside the nomination period.

If you have any suggestions for a short article for Bio-Babble, please contact: abna.biobabble@gmail.com
Content deadline for July edition: 21.07.23

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