

BIO-BABBLE



Newsletter of the Australasian Biospecimen Network Association

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ABNA CONFERENCE UPDATES

Early Bird registration

A reminder that Early Bird rates will be available until July 1st 2022. Complete your registration [HERE](#) before this date to receive in the Member, Non-Member and Student Early Bird rates.

Workshops

This year ABNA will have three workshops that are included with conference registration:

Workshop 1: Accreditation Seminar 4

Workshop 2: Dressing Your Biobank for Success

Workshop 3: Data Management & Governance

Workshops will be held on Wednesday 19 Oct, with Workshops 2 & 3 running concurrently – make sure you indicate at the time of registration which ones you will be attending.

Networking Dinner

The ABNA Conference Organising Committee hopes all delegates will be able to attend the Networking Dinner event to be held on Thursday 20 Oct at La Capannina which is located right on the stunning Scarborough Beach. La Capannina has a relaxed and friendly atmosphere, with stunning views out over the Indian Ocean and a menu to match. It has been a long time between drinks for ABNA members and we hope you will use this opportunity to socialise with your colleagues, including ABNA's invited speakers and sponsors. You can add a ticket to this event through the registration portal, please remember to add in any dietary considerations. Additional tickets to the Networking Dinner are available, please contact ABNA directly on info@abna.org.au

ABNA 19TH ANNUAL CONFERENCE

Biobanking – Blue Sky Horizons

19 – 21 October 2022

Rendezvous Hotel Perth Scarborough, Western Australia

[CLICK HERE FOR CONFERENCE WEBSITE](#)

5 MINUTES WITH DR CHRIS GORMAN & DR JENNIE HUI

We approach different professionals in the biobanking arena with the same five questions each month, this edition we have 2 Perth members of ABNA's 2022 Conference Organising Committee



DR CHRIS GORMAN

Coordinator
BioSpecimen Services
Telethon Kids Institute

DR JENNIE HUI

Director
[Busselton Health Study](#)



CHRIS

Coffee
Cats
Yes
Star Wars

QUICK QUESTIONS

Tea or Coffee?
Cats or Dogs?
Coriander: Yes or No?
Star Trek or Star Wars?

JENNIE

Tea
Dogs
Yes
Star Wars

How long have you been working in biobanking?

9 years

Since 2002

Three words that best describe your biobanking career?

Partnerships, Diverse, International

Diverse, Educational, Honoured

What has been the biggest biobanking challenge you have faced in your career so far?

Designing and implementing paediatric sample collections in under-resourced settings where infrastructure is limited. A key to the success and usage of those collections was to ensure that the international teams were driven to store samples that are of high quality, well annotated and fit-for-purpose.

Obtaining continuous and long term funding to support core activities critical for the maintenance of the scientific quality of our longitudinal study.

What are you excited about that is happening in your biobank/what is your biobank doing that is new and innovative?

We are excited about the rapidly expanding and diverse breadth of scientific collaborations involving BioSpecs. While standardisation is a pillar of our operations, we developed a fully flexible and tailored model that makes it convenient for researchers to have their collections conform to International Best Practices and validated protocols.

The use of our data for established national and international collaborative research, including participation in a number of large international genetic consortia. The unique resource created by the Busselton Health Study since 1966 allows researchers to efficiently investigate origins of disease and provide important data on common chronic (and costly) conditions, their risk factors and their outcomes. Our biobank stands ready to address new questions related to general health, such as the recent COVID-19 epidemic.

What is your one wish as a biobanker?

Long-term State and Federal funding to support biobanking infrastructure.

Two wishes

1. All data & specimens collected will be put to good use, not just collected, stored and forgotten.
2. Freezers that will never break down!!

MICROBIOME BANKING

One person's waste – a biobankers treasure

A healthy gut has a diverse range of microbes that help us digest the food we eat, produce special nutrients, and regulate our mood and immune system. Disruptions to our gut microbiome called dysbiosis is [linked](#) to a range of chronic diseases. A growing number of experimental and computational approaches are illuminating the “microbial dark matter” and uncovering the integral role of commensal microbes in human health. Through this work, it is now clear that the human microbiome presents great potential as a therapeutic target for a plethora of diseases.

BiomeBank's mission is to discover and develop new microbiome-based therapies that will treat a number of chronic diseases with unmet medical need.



Their team of translational microbiome experts have developed a unique platform which combines the capabilities of machine learning and microbiology to inform microbiome drug discovery and development. They currently supply a donor derived microbiome-based therapy used by doctors and hospitals to treat recurrent *Clostridioides difficile* (*C.difficile*) infections.

In partnership with world-leading organisations running large-phased clinical studies, BiomeBank is building a pipeline of microbiome-based therapies to treat diseases ranging from recurrent *C.difficile* infection, to Ulcerative Colitis and Crohn's disease.

In a randomised clinical trial published in JAMA, BiomeBank's Chief Medical Officer Dr Samuel Costello and team demonstrated that Faecal Microbial Transplantation (FMT) can induce clinical remission in patients with mild to moderate Ulcerative Colitis. A recent study in Lancet further demonstrated the role of microbiome-based therapies in treating ulcerative colitis (Haifer et al. 2022 Lancet).

Revolutionary faecal transplants are the latest new treatment option being trialed in people living with Parkinson's to help manage their debilitating symptoms by replenishing their healthy gut bacteria. The trial is the result of an exciting collaboration between BiomeBank, the Departments of Neurology, Nuclear Medicine and Gastroenterology within the Royal Adelaide and Queen Elizabeth hospitals; and The Hospital Research Foundation Group.

BiomeBank runs a Stool Donation Program, the healthy microbial communities collected are used to make donor derived microbiome-based therapies to treat people with recurrent *C.difficile* infection. Potential donors are able to confirm their eligibility on-line and following a clinical assessment are given an 8 week window where multiple samples are taken for the stool bank.

"A growing number of experimental and computational approaches are illuminating the “microbial dark matter” and uncovering the integral role of commensal microbes in human health. Through this work, it is now clear that the human microbiome presents great potential as a therapeutic target for a plethora of diseases, including inflammatory bowel disease, diabetes and obesity."

Young, R. B., Marcelino, V. R., Chonwerawong, M., Gulliver, E. L., & Forster, S. C. (2021). Key Technologies for Progressing Discovery of Microbiome-Based Medicines. *Frontiers in microbiology*, 12, 685935.
<https://doi.org/10.3389/fmicb.2021.685935>



BiomeBank's donor-derived microbiome-based therapy involves transplanting a complex community microbes (the whole ecosystem) with the aim of restoring the gut microbial ecology to treat disease. BiomeBank's second-generation microbiome-based therapies have been cultured from a human gut and cultivated in bioreactors. They've been chosen for the specific purpose of replacing specific function in the gut.

Clinical studies have repeatedly demonstrated that FMT can effectively treat recurrent *C.difficile* infection, a condition which causes severe diarrhoea and is becoming more common due to the widespread use of antibiotics.

This method of treatment has been shown to prevent recurrent infection in 81% – 96% of patients with minimal side effects. It has also been shown to be superior to treatment of the infection with antibiotics alone, the current standard of care.

BiomeBank is developing second generation microbiome-based therapies that replicate the bacterial complexity seen in faecal microbiome transplant while also containing target bacterial strains which carry important function for treating disease.

It is expected that this next generation microbiome-based therapy will be manufactured in bioreactors, freeze-dried, and encapsulated for global distribution. This will recreate and improve upon the efficacy seen in donor microbiome-based therapies, while creating a more consistent product that is not reliant on donor material.

In January 2022 BiomeBank signed a four-year collaborative agreement with Hudson Institute to translate current and future microbiome research into microbial therapies. This includes a recent deal granting BiomeBank access to important research on how the microbiota could treat paediatric inflammatory bowel disease, which is unique because the research used culturing and high-resolution microbial analysis of the colon rather than stool samples.

BiomeBank's website also seeks to educate by providing resources for patients, written in lay terms explaining not only the therapies but also background information on the microbiome.



World Microbiome Day | 27th June

World Microbiome Day celebrates all things microbial, all around the world. The theme for World Microbiome Day 2022 is "Celebration of The Microbial World".

This awareness day seeks to introduce international microbiome researchers and microbiome-literate professionals to the public to raise awareness of the vibrant and diverse world of microbes. World Microbiome Day invites the public and industry professionals to share their thoughts and activities with the microbiome community. On 27 June each year, they all come together to share our passion and knowledge about microbiomes and their value to humanity and the planet and increase microbiome literacy in society.

Together microbiomes are actively contributing to clean environments, sustaining food systems, mitigating climate change and keeping people healthy #Microbiomes4life

Discover the diverse world of microbes...

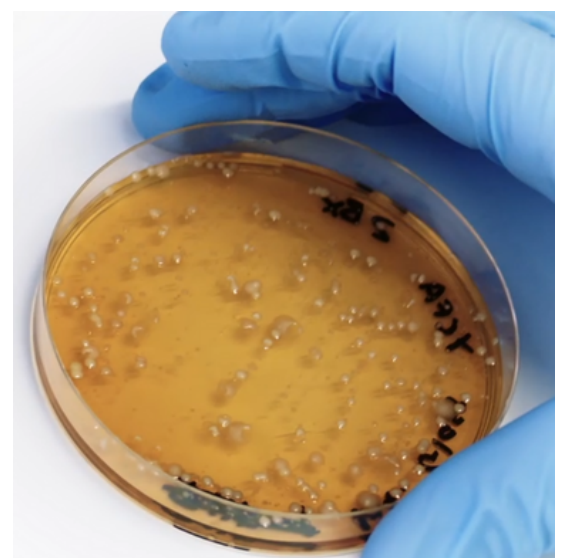


Image credit: www.biomebank.com

PRESERVING THE BIODIVERSITY OF THE AMAZON RAINFOREST

by Georget Reaiche-Miller

The Amazon Rainforest commonly referred to as the Amazon Jungle or the Amazonia, is the largest rainforest in the world representing over half of our planet's remaining rainforests. The Amazon Biome is located in South America covering an area of approximately 6,900,000 sq km of which 5,800,000 sq km is rainforest. It spans across 9 countries; Brazil - where 60% of the rainforest resides, Bolivia, Colombia, Ecuador, French Guiana, Guyana, Suriname and Venezuela. It is home to 400 indigenous tribes, some of whom have made contact with the outside world and some who still remain uncontacted.



The Amazon Rainforest is understood to be the most biodiverse region in the world although the exact number of identified species varies amongst researchers. It is estimated to be home to; 2.5 million insect species! 40,000 species of plants, 16,000 species of trees, over 500 species mammals of which 90 are primates, 428 amphibian species (one of which is the blue poison dart frog) 387 reptile species of which 138 are snakes alone (the largest one being the Anaconda), 2,200 species of fish including the flesh eating red piranha and over 1,200 species of birds. 1 in 5 of the world's bird and fish species are found in the Amazon Rainforest and Rivers, including the Amazon River Dolphin or Pink Dolphin.



Unfortunately, it is estimated that more than 10,000 species of plants and animals are at high risk of extinction with at least 50 species already listed as endangered. The destruction of the Amazon Rainforest occurs mainly by deforestation with 35% of it already been deforested or irreversibly damaged.

For decades, the future of the Amazon has separated people with two main opposing views; the first, focused on world economy and the financial benefit of exploiting the region for resources, agriculture and mining; the second, focused on the pure health benefit of the rainforest such as absorption of CO₂, rain production and global climate regulation. Biopreservation of the Amazon Rainforest, its people and the species within is critical for the Earth's health and survival. A number of Biobanking projects are underway to avoid getting to a point of no return. One of these is the [The Fiocruz Biological Collection](#) which includes seed, plant and fungal collections, local rainforest and tropical disease pathogen banks and another is the most recent local project, the Amazonia 4.0 project (see box on next page).

The Fiocruz Biological Collection was established in the early 1900s by a group of physicians in search of a better understanding of the local flora, fauna and tropical diseases affecting the native tribes as well as the general population living close the rainforest. As the areas around the rainforest become populated, the risk of tropical diseases spilling over increases. Presently, The Fiocruz Biological Collection is made up of 33 biorepositories containing over 6 million specimens of bacteria, fungi, helminths, arthropods, protozoa, molluscs, plants and seeds for both medical and environmental significance. Although the original goal of the collection was for epidemiological investigations, today, the fundamental role of the Fiocruz collection is to increase the knowledge for the successful conservation of the Amazon's biodiversity. Did you know that a single teaspoon of soil from the amazon is home to more than 400 species of fungus?

One aspect that sets Fiocruz collection apart from other biorepositories is that the samples are collected over 2 centuries hence are able to show a time stamp on the effect and impact the human-made changes through deforestation, population and mining has had on the Amazon Rainforest. The Fiocruz Biological Collection plays an essential role in the characterisation, storage and supply for conservation, re-habilitation and restoration of the rainforest as well development of scientific research, technology and innovation.

Strategic measures have been put in place to value and acknowledge the Biological Collections:

- Hiring and training human resources to work with the Biological Collections
- Provision of specific budget resources for Biological Collections
- Implementation of Quality Management System
- Standardisation of service forms used by the Biological Collections
- Harmonisation of procedures for importing and exporting biological materials
- Adequacy to the domestic and international legislation on Access to Genetic Heritage and Benefit-Sharing
- Digitisation of specimens and data from the collections
- Visibility of the Biological Collections

Amazonia 4.0 Project

The Amazonia 4.0 project aims to bring scientific research, technology and innovation locally with a third point of view that brings economy and biodiversity; an inclusive bioeconomy. Amazonia 4.0 will elaborate on traditional ways of sample collection and data storage whilst using a novel approach of linking respectful and sustainable exploitation, protection of the ecosystem and Amazon peoples with technology for a “green economy”. The project commenced in 2020 during the COVID-19 pandemic and it is still in the early stages.



A prototype of the laboratory factories that will be brought to the Amazon in 2022. Credit: Daniel Mira/NOUS Comunicação Consciente.

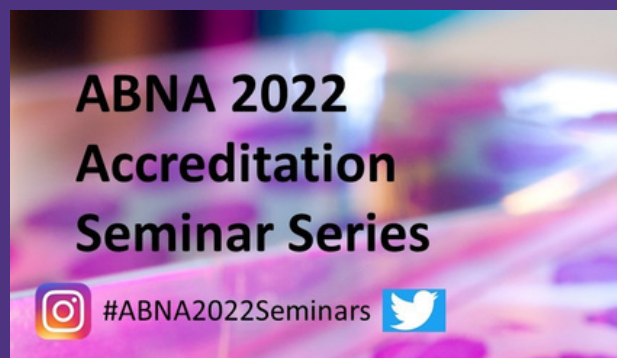
The overall aim of the project is to develop a strong and collaborative infrastructure for sample collection, storage, processing and distribution of samples and the DNA associated data.

The project will focus on training of the local communities for their knowledge and ownership of the land and to install mini-factories for sustainable products from the rainforest. Some of the products which are in extensive use/deforestation include: Acai, the ucuhiba tree, Camu-Camu (which has 1,888 mg/100 g of vitamin C, whilst oranges only contain 53 mg/100 g!) Thousand of Amazon plants contain enzymes, antibiotics, and fungicides that can be synthesized and translated into medicinal products. The Amazon 4.0 project proposed system is expected to stimulate the local economy via the tokenization of biodiversity-related information. This will in turn enhance the protection of the Amazon Rainforest biodiversity with the aid of the local communities. At the same time it will create a rich data repository that is useful for future rehabilitation and restoration, academic research and for industrial and commercial purposes.

ABNA ACCREDITATION SEMINAR 3

24 August, 12pm

This month saw Seminar 2 delivered by Professor Melissa Southey, Vivien Vasic and Helen Tsimiklis the Director, Quality Manager and Biorepository Manager of Biobanking Victoria, respectively. Providing real world experience undertaking the accreditation process the seminar afforded attendees practical examples of challenges and opportunities associated with the process. ABNA would like to extend a huge thank you to Melissa, Vivien and Helen.



Seminar 3 will focus on a comparison of biobank accreditation and certification, featuring presentations from the Professor Jenny Byrne, NSW Statewide Biobank, and NATA's Gillian Treloar. Following what we're sure will be a thought provoking session we will be seeking feedback from our members on the direction you'd like ABNA to take for Seminar 4. Held as part of our annual meeting, Seminar 4 is designed to answer any remaining questions and foster discussion of the core points raised during the previous sessions. If you have an idea or suggestion for the program, please get in touch at info@abna.org.au



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HOW GOOD ARE YOUR LAB METHODS?

Find out with IBBL's 2022 Biospecimen Proficiency Testing program!

Registrations for IBBL's 2022 Biospecimen Proficiency Testing (PT) programme are now open.

The Biospecimen PT program allows laboratories to verify and benchmark their performance. You can assess the accuracy and precision of your biospecimen characterisation methods (DNA quantification and purity, RNA integrity, RNA quantification and purity, Cell viability, Tissue histology) or the efficiency of your processing/extraction methods (DNA/RNA from whole blood, FFPE cells or frozen tissue, microbial DNA extraction from stool or saliva, cfDNA extraction from whole blood, Viable PBMC isolation).

To find out more or check the full program, go to www.ibbl.lu/pt. If you have any question, please contact ISBERPT@ibbl.lu.

Registration closes on the 31st of August, 2022.

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

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