Brain Matters

Using Our Brains Donor Program
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THE UNIVERSITY OF SYDNEY

From the Director, Professor Greg Sutherland

It's always a pleasure to discuss the year that was with our most important stakeholders – the UoB donors and their families. The BTRC had a great year publishing lots of articles on brain banking and attending three international meetings. Our first meeting, held in Melbourne in April, was the annual congress of the International Biobanking Organisation, ISBER. Brain banking is a niche area of biobanking, so there was a lot to learn about practices and protocols, particularly in evolving areas of big data being generated in the clinic or subsequently from the tissue we supplied to researchers. Julia Stevens gave an excellent talk on the results of a recent survey we ran on public knowledge about brain donation in Australia, the results of which you can read about on page 3.

In Melbourne, I conducted a workshop on our idea of a virtual international brain bank to gather feedback from delegates on interoperability between banks in different countries. The virtual brain bank was a solution devised by A/Prof Markus Hofer and I, to promote research into rare brain diseases particularly those affecting children. Brain Bank Connect is a database that allows researchers to search brain bank inventories globally to see what human tissue is available, and hopefully find enough donors to perform quality research. Markus and I also hosted a webinar with Childhood Dementia Initiative, the national advocacy group for these diseases in Australia. We discussed how the initiative can fast-track research on these diseases that generally receive little attention. A big moment for me in 2024 was when my student and BTRC team member, Caine Smith, graduated with his PhD. Caine is an expert in a technique called mass spectrometry and is a key person in the comprehensive characterisation of our tissue before it goes out to researchers.

The next international meeting was the Research Society on Alcoholism (RSA) annual meeting held in Minneapolis for 2024 – the home of Target and formerly of the singer, Prince. On the way to Minneapolis, I called on a research collaborator, Oscar Harari, who recently shifted to Ohio State University in Columbus. Oscar is an expert in computational biology and is working with us to establish an exciting new technology for human brain tissue called spatial transcriptomics. Our role has been to improve the initial imaging of the tissue using a technique called multiplex immunofluorescence. As you will see from Figure 1. it is now possible to get images that display all the different brain cells simultaneously, which are as informative as they are exquisite.

At the RSA meeting each year, Julia and I catch up with many researchers who use BTRC tissue and it's always a pleasure to hear their positive feedback. The area of alcohol use disorder and addictions in general, is an extremely complex part of mental health research and our Australian tissue is facilitating discoveries from researchers all around the world. In September the whole BTRC team attended a second international meeting in Melbourne – the World Congress of Alcohol and Addictions. This was a great opportunity to host many researchers that we only ever see in the US at RSA. BTRC presented work on the full pipeline of brain banking from recruitment right through to new imaging techniques. Prof Yunlong Liu from Indiana University and Dr Leon Coleman from the University of North Carolina in Chapel Hill joined us back at the Charles Perkins Centre for a symposium on 'Alcohol and the Brain'.

At BTRC we are always trying to raise awareness of brain donation and how valuable this gift is towards solving different brain diseases. As UoB donors you may have been in contact with Isabelle Greenway, our donor co-ordinator. Look out for her posts across social media for fun facts about the brain and recent research findings. You may also spot a series of ads, as we seek to grow the UoB program. On behalf of my team, thank you for your continued support and I wish you all a prosperous and healthy 2025.

Kindest regards,
Greg

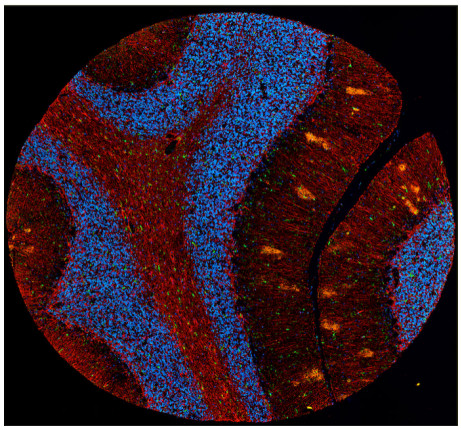


Figure 1. Multitarget Imaging of the human brain*. This multi-stained image shows a 2mm in diameter region of the brain called the cerebellum from a patient with Alzheimer's disease (AD). The cerebellum is composed of three layers, the medulla and molecular layer (red) and the granular layer (blue). The hallmark amyloid plaques of AD are visible in the molecular layer (orange). Viewing all the different brain cells and pathologies in the same section simultaneously has been a major step forward in understanding how diseases like AD affect the brain. This is the basis of findings new ways to treat affected patients. Work performed by Mr H-T Nguyen-Hao.*

A Year of Academic Conferences

2024 has been an incredible year of academic engagement, collaboration, and learning with team members attending three major conferences. Each event provided valuable insights, strengthened our networks, and allowed us to showcase our research to an international audience.

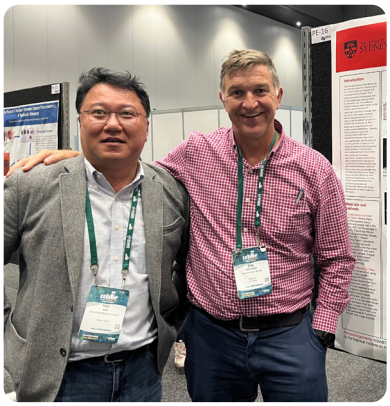
ISBER, Melbourne

In April, the International Society for Biological and Environmental Repositories (ISBER) held its annual meeting in Melbourne, marking the beginning of our conference season. ISBER is the only international meeting highlighting innovations in biobanking and the management of biological samples, offering us valuable insights to improve our practices. Greg and Julia attended on behalf of the BTRC, where Greg presented a workshop to establish greater international cooperation between brain banks. Julia also presented the results of a recent study looking into public opinions on brain donation (see *Research focus* on page 3).

RSA, Minneapolis

The Research Society on Alcohol (RSA) conference in Minneapolis, United States last June, provided a unique perspective on global challenges in alcohol research. From thought-provoking keynote addresses to dynamic poster sessions, RSA emphasised the importance of multidisciplinary approaches to tackling alcohol-related issues.

Greg and Julia presented posters showcasing how BTRC supports research into alcohol use. Engaging with an international audience was a privilege that brought renewed focus and inspiration to our work.



ISBRA, Melbourne

Rounding out the year, the International Society for Biomedical Research on Alcoholism (ISBRA) conference took place in September and was also held in Melbourne. Having this prestigious event hosted in Australia allowed most of our team could attend.

The conference brought together leading experts in alcohol-related research, offering a platform to explore cutting-edge advancements and discuss pressing issues within the field. Greg was straight to work on the first day of the meeting, giving a talk on recent findings related to alcohol-related brain damage. Julia, Caine, Dhiraj and Isabelle presented our latest findings through posters, all of which were met with engaging questions and feedback. The collective experience of attending ISBRA fostered a sense of unity and pride within our group, as we shared the spotlight and learned from world-class experts in our field.

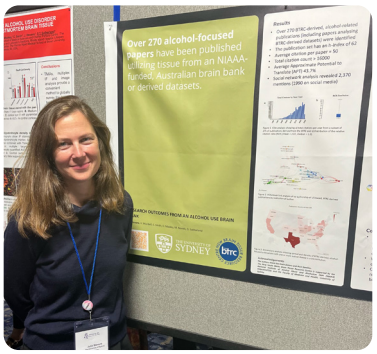


Image (Top): The BTRC team at ISBRA in Melbourne. From left to right: Julia Stevens, Isabelle Greenway, Greg Sutherland, Dhiraj Maskey and Caine Smith.
Image (Middle): At ISBER, Greg met with Prof Heon Seok, the director of the Korean Brain Bank.
Image (Bottom): Julia presenting research outcomes from the BTRC at RSA in Minneapolis.

Research focus: Community Perceptions on Brain Donation

Prior to her departure in 2023, Ali Sweeney conducted a study exploring public attitudes toward brain donation for medical research. In March 2024, this study was published in *Biopreservation and Biobanking*, which highlighted both significant opportunities and challenges in raising awareness about this important cause.

Brain donation provides tissue that is essential for research studies that unlock the mysteries of the brain and lead to new treatments. The need for this precious resource is greater than ever as the global prevalence of neurological conditions rises. Unlike organ donation for transplantation, brain donation participation remains low, and many misconceptions surround it. 225 people from the Australian general public who are not registered as brain donors, were surveyed to uncover their perceptions on, barriers to, and ways we may be able to encourage brain donation.

One of the most striking findings was the lack of awareness surrounding brain donation. While 75% of participants were registered organ donors for transplantation, 50% believed that the brain was included in this process. Only 45% of participants were aware it is possible to donate their brain for research at all.

We were encouraged, however, by the overwhelming support for brain donation once survey participants understood it better, with 84% of participants expressing positive attitudes toward the idea. This shows that with clear and accessible information, many Australians are willing to register as donors.

Three key barriers were identified that may deter potential donors:

1. **Lack of Information**: Many participants did not know how the process works or its importance to research.
2. **Family Considerations**: Concerns about how their decision might affect loved ones or funeral arrangements were common.
3. **Procedural Uncertainty**: Questions about logistics, timing, and medical procedures created hesitancy

The results of our study highlight the need to improve public awareness of brain donation. By providing clear, accessible information and encouraging open discussions with families, we can address many of the concerns this study uncovered. In light of this, we plan to collaborate with other organisations and develop resources that make the process transparent and approachable for everyone. Through these actions we will work towards making brain donation as widely understood as organ donation.

To read the full article online visit: pubmed.ncbi.nlm.nih.gov/38457650/.
Get in touch if you would like to find out how to help raise awareness of brain donation in your community.

Recent Publications

The BTRC has contributed to 25 publications over the last year alone. These studies span across a broad range of topics including Alcohol Use Disorder, Alzheimer's disease, and Parkinson's Disease to name a few.

Below are a few examples of research outputs from this year. These studies were undertaken by the researchers both locally and internationally.

- "Phosphatidylethanol in post-mortem brain: Correlation with blood alcohol concentration and alcohol use disorder." Smith, C. C., et al., (2024). Published in *Alcohol*.
- "A systematic review and meta-analysis on the transcriptomic signatures in alcohol use disorder" Friske, M. M., et al., (2025). Published in *Mol Psychiatry*.
- "Increased Neuronal Nitric Oxide Synthase in Alzheimer's Disease Mediates Spontaneous Calcium Signaling and Divergent Glutamatergic Calcium Responses." Balez et al. (2024) Published in *Antioxid Redox Signal*

All work and some play

Image: The BTRC team took home silver in the Faculty of Medicine and Health Winter Olympics.

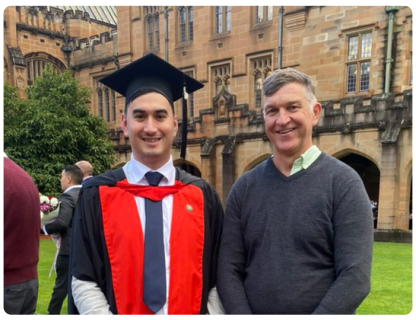


Image: In May, Dr. Caine Smith graduated from his PhD with Greg and the rest of the team there to support him.

Welcome Isabelle

In March 2024, Isabelle joined the team as the new Using Our Brains Donor Program Co-ordinator. Isabelle has a background in Psychology and has previously worked in mental health in the UK.

Annual update 2025

This year's annual update is attached to this newsletter, either electronically (if you are receiving this by email) or in paper form (if this was posted to you). Please make sure to fill this in and send this back to us. Don't forget to list your next-of-kin's details in the appropriate field (even if you have previously done so). If your next-of-kin has changed, we will need them to complete an authorisation form either online or by post.

If you would like to receive your next update via a different mode (either electronically or via post), please let us know using the tick-box option on the final page of your Annual Update form. The information you provide through this questionnaire is of great value to our research, and your donation when the time comes. We really appreciate the time and effort taken to complete your form and send it back to us.

Recruitment 2025

If you would like a poster or brochures for your workplace, social or community group to advertise the Using our Brains donor program, please contact us.

Similarly, if you would like Greg to present to your workplace, social or community group please contact us via the details below.

Connect with us

For more updates about the team, our work and the field of neuroscience, find us on Facebook and Instagram (@usingourbrains) or scan the QR codes below:

Facebook: *Instagram:*

A Special Thanks

The NSW Brain Tissue Resource Centre would like to extend our heartfelt gratitude to each of the researchers and research groups who have collaborated with the BTRC, or utilised tissue from the brain bank in their studies over the past year.

The collective dedication to groundbreaking research continues to advance our understanding of neuroscience and provide hope for the future. We are proud to support your important work and look forward to continuing to push the boundaries of science together.

In Memoriam

The Using our Brains Donor Program would like to acknowledge the generosity shown by our donors and their families.

It is an act of great foresight and kindness to give at a time of loss, so that others may be helped in the future. To the families of donors that have passed away this year, the Using Our Brains Donor Program would like to extend our sincere sympathy and gratitude.

Over the years, friends and families of donors have given memorial donations to the Using our Brains Donor Program in lieu of flowers. If you would like to donate to our research program, please contact us for details.

For more information

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In the event of a donor's death, please contact our 24-hour pager service: 1800 088 533
This number should **only be used to notify us the death of a donor**.