



From the Director, Professor Jillian Kril:

2018 has been an exciting and rewarding year for the BTRC as we have celebrated a number of remarkable achievements. Deputy Director, Greg Sutherland, was promoted to Associate Professor in recognition of his work with the BTRC and his leadership role in teaching, especially in the Sydney Medical Program. Donna Sheedy received a Vice Chancellor's Award for Research Excellence in recognition of her 20+ years of support for research through the management of the BTRC. I extend my heartiest congratulations to both Greg and Donna for their achievements.

In February we hosted a visit from a number of internationally-recognised researchers from USA. We used this opportunity to host a seminar entitled "Alcohol abuse: Susceptibilities and Protective Factors" in which both our visitors and local experts presented their research findings. Around 50 people attended the event,

including clinicians, researchers and students, which was a resounding success.

Pleasingly, I can also report that funding for the BTRC and associated donor program, Using our Brains, was renewed for a further five years by the US government's funding agency the National Institute of Alcohol Abuse and Alcoholism (NIAAA). This ongoing funding is, in part, due to the outstanding research conducted by investigators from around the world, some examples of which are included in this newsletter.

I hope you will enjoy reading about some of what we have been doing in the past year. As always, this work is only possible because of the generosity of donors and their families, something we are extremely grateful for. As 2018 comes quickly to an end I wish you and your families a safe and happy holiday season and a prosperous 2019.



Professor Jillian Kril
Director - NSW Brain Tissue
Resource Centre

Change of address, email or update of medical information

Please remember to update us if you change your address or email. Also, if you have had any significant changes to your medical history, please contact us and we can update our database.

Awards

SOAR Fellowship Award 2019

Associate Professor Greg Sutherland, Scientific Director BTRC, has been awarded a Sydney Research Accelerator (SOAR) Fellowship Award. Greg is interested in understanding the factors causing unhealthy brain ageing and cognitive decline. Diets high in protein and fat can modify brain activity and this may be related to changes in the gut microbiome. He will be looking at how 'Western' diets affect cognition by exploring

both human population data and the gut microbiome, metabolic profiles and brain structures of mice fed on these diets.

Vice Chancellor's Award for outstanding contribution to research excellence

In July this year, we were all delighted to learn that Ms. Donna Sheedy, Manager NSW Brain Tissue Research Centre, was selected to receive this award for her outstanding contribution to research excellence.



Donna Sheedy
Receiving Award from Vice Chancellor Dr Michael Spence

Seminar – Alcohol abuse: Susceptibilities and Protective Factors

The visit to Sydney by Professor Fulton Crews, Director of the Bowles Center for Alcohol Studies at the University of North Carolina, and Drs Cindy Elhers and Dave Gilder from the Scripps Institute in La Jolla California presented the opportunity to bring together researchers with an interest in the effects of alcohol on the brain.



From page left to page right:
Fulton Crews, Jillian Kril, Greta Berg, Cindy Elhers, David Gilder.

Dr Crews described findings from both animal studies and tissues obtained from the BTRC that demonstrate how onset of drinking in early life results in lasting damage to the brain, most notably to the brain's immune system.

This theme of risky adolescent drinking was extended by Dr Elhers in her research in American Indian teens, while Dr Gilder and Professor Maree Teesson, from University of NSW, described their research on prevention strategies to curb teen drinking

in American Indian and Australian school children, respectively. Professor Kate Conigrave and colleagues from the University of Sydney described their work in reducing harmful alcohol use among Aboriginal and Torres Strait Islander peoples while Dr Lauren Monds, also from University of Sydney, outlined her approach to treatment of alcohol-induced cognitive impairment. These talks stimulated much discussion and helped forge links between researchers here and in USA.

Research highlights

A recent paper published in the prestigious journal “Science” has shed light on the longstanding question of why some people abstain from alcohol, or drink only moderately, while others become addicted and continue to drink despite negative consequences of their drinking.

In a study performed in collaboration between researchers from Sweden and USA rats were given the choice of drinking alcohol or a sweetened solution. Over time most of the rats stopped choosing alcohol and instead chose the sweetened drink, but around 15% continued to choose alcohol, even when the experience was made unpleasant for them. This behaviour was found to correlate with lower expression of a gene involved in inhibition of brain signalling, called GAT-3. When the researchers mimicked this decrease in GAT-3 expression in the rats that preferred the sweetened drink, they changed to preferring alcohol.

Of particular interest is the discovery that a similar decrease in GAT-3 expression is seen in the brains of humans with a history of alcoholism. This latter research was performed by researchers from the University of Texas at Austin using tissues obtained from the BTRC.

This exciting research opens up the possibility for the development of drug therapies aimed at correcting the GAT-3 deficit.

- Augier et al, “A molecular mechanism for choosing alcohol over an alternative reward”. *Science*, 22 June 2018.

<http://science.sciencemag.org/content/360/6395/1321>

Donation enables the advancement of medical research to understand, treat and cure disease

Staff profile

Julia Stevens, Research Officer NSW BTRC



What is your background and how long have you worked at BTRC?

I have a Bachelor of Biotechnology and have previously worked in Parkinson’s disease research and at a DNA biobanking facility. I have worked at the BTRC for close to ten years.

What are the most rewarding aspects of working with BTRC?

Over the years I have really enjoyed helping donors and their families fulfil their wishes to become brain donors. Brain donation is an incredibly generous act so it is very rewarding to be able help members of the community contribute to brain research in such a personal way. It is also great to see all of the positive outcomes from research projects that have been facilitated by the BTRC.

Why do you think research into brain diseases is important?

Human brain research is vital to gaining a greater understanding of the changes that occur in the brain at a biological level. The findings of this research play a crucial part in the development of treatments and cures of these debilitating conditions, which in turn helps the community lead healthier, happier lives.

Brain cognition and lifestyle

Optimising Brain Health

Cognitive abilities tend to decline as we age, especially executive function. Executive function is the ability to plan and execute your goals and is responsible for –

- Attention
- Organising & planning
- Initiating tasks and remaining focused
- Regulating emotions
- Keeping track of what you are doing

How to improve executive function –

- Dividing tasks into small parts
- Make lists
- Manage your time well – estimate how long each activity will take (including potential problems that could arise from each task)
- Teach yourself something new
- Play some kind of competitive sport or board games such as chess
- Brain training games

We are currently running web-based cognition testing. This testing covers episodic memory, attention and executive function.

If you would like to take part in this project, please contact Toni McCrossin (see below).

Using our Brains recruitment drive

We are currently undertaking further research into alcohol effects on the brain and trying to understand the addiction process better.

Disorders associated with alcohol use are a significant cause of morbidity and ill health with over 5500 Australians dying each year from alcohol related illnesses.

If you know anyone interested in the development of new treatment strategies, better management modalities and who may be interested in donating their brain for neuroscience research through our ‘Using our Brains’ donor program please contact Toni McCrossin (see below).

Next year we are also looking at scheduling community information presentations to various social clubs around Sydney. If your club would be interested in hosting one of these presentations, please contact Toni McCrossin (see below).

In Memoriam

The Using our Brains Donor Program would like to acknowledge the generosity shown by our donors and donor 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 died this year, the Using our Brains Donor Program would like to extend its 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

Editor: Toni McCrossin
NSW Brain Tissue Resource Centre
Using our Brains Donor Program
Charles Perkins Centre,
D17 | Level 6 West | The University of Sydney NSW | 2006
02 9351 2410
medicine.uob@sydney.edu.au
sydney.edu.au/medicine/pathology/btrc/