FLOREY RESEARCHERS DEVELOP NEW INSULIN COMPOUND
**Out and about**

1. **Leading minds from the Florey and Orygen Youth Health** came together to discuss how evidence-based research and clinical care together can transform the way we support those living with mental illness.

2. **Board member Lyndsey Cattermole AM, Prof Julie Bernhardt AM and Prof Steven Petrou** celebrated 5 years of the ‘Women in Science Parkville Precinct’ initiative. Born at the Florey, the initiative supports women in science to lead and excel.

3. **Big and small supporters from the Florey’s Motor Neurone Disease Lab** attended MND Victoria’s Walk to D’Feet MND event in Melbourne.

4. **Florey researchers** shared their findings at the Australasian Neuroscience Conference in Adelaide. Among those attending were Elysa Carr, Dr Sarah Gordon and Holly Melland from our Presynaptic Physiology Lab and Dr Phil Ryan who received an award for his research in fluid neural circuitry.

5. **Prof Fred Mendelsohn AO** presented his named award to student Caio Seguin in recognition of his outstanding achievement in neuroscience at the Melbourne Brain Symposium hosted at the Florey.

6. **The Florey’s Huntington’s Disease research group** swapped their lab coats for formal gear at Huntington’s Victoria Gala Ball.

7. **Prof Trevor Kilpatrick** inspired attendees at the Victorian Clinical Science Symposium with his presentation of how clinical scientists can use their expertise to inform research, and research results to inform patient care.

8. Recruitment of stroke patients to the AVERT DOSE study made national news. These volunteers will help us to investigate the best model for early mobility rehabilitation for people who have had a stroke.

9. **Prof Vincent Thijs, Prof Chris Reid and Prof Andrew Lawrence** were among Florey representatives who attended the ‘Celebrating Victorian Medical Research’ event at Parliament House.

10. **Prof Alan Connelly**, not just the Head but heart of imaging at the Florey, provided his final scientific presentation to the International Society for Magnetic Resonance in Medicine. We wish Prof Connelly all the best in retirement.

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**Director’s Report**

In this issue of *Brain Matters*, you’ll read about a promising discovery that could improve the clinical delivery of insulin for people living with diabetes, new information that describes how the brain responds to food that is high in sugar or fat, and how we’re improving our understanding about how we may be able to better diagnose and treat dementia.

These impactful findings have all taken place in the last three months – a busy and productive time for our researchers!

In writing my column though, I wanted to share with you two actions featured in this issue which may be less obvious at a glance but are no less meaningful.

Many of you will know Emeritus Professor Fred Mendelsohn AO as an esteemed researcher of the chemistry of neural communication, for his role in the Nobel Prize winning International Campaign to Abolish Nuclear Weapons (ICAN), and of course as a former Director of the Florey. Many of you will also know Dr Marelyn Wintour-Coghlan AO, a pioneering fetal physiologist with an enviable international reputation, recognised globally for her outstanding contributions to women’s equality by providing an example to thousands of medical science students, and of course long-term contributor to many positive activities at the Florey both in her capacity as a researcher as well as wife to Professor John Coghlan AO, a former Director of the Florey.

I recently had the opportunity to join with so many others at the Florey in taking inspiration from the continued contributions of both Professor Mendelsohn pictured on page 2 presenting the Mendelsohn Student award to an outstanding neuroscience student, and Dr Wintour-Coghlan whose findings are still influencing current research projects. The impact of their ongoing influence at the Florey is not easily articulated, but I know that their intellectual input continues to ripple through the minds of our early career researchers.

It is a genuine pleasure to share this issue of *Brain Matters* with you, and reflect on the history of the impact that researchers at the Florey have made to the world’s understanding of how the brain works, and what we can do to improve things for those affected by brain diseases or disorders.

Thank you for your ongoing support, I look forward to continuing to share our work with you.

*Steve*

Professor Steven Petrou PhD FAHMS
Director, Florey Institute of Neuroscience and Mental Health
New insulin compound could improve therapy and cost in diabetes

In a promising discovery that could improve the clinical delivery of insulin for people living with diabetes, an international research team led by Associate Professor Akhter Hossain have developed a new form of insulin.

The team successfully created a novel compound called ‘glycoinsulin’ that demonstrates the same glucose-lowering effects as insulin in preclinical studies without forming fibrils.

Fibrils can arise when insulin compounds aggregate together forming clumps and pose serious risk in blocking the delivery of insulin for people who use an insulin pump. A/Professor Hossain says glycoinsulin could present a promising solution.

“Not only did our research demonstrate that glycoinsulin does not form fibrils, even at high temperature and concentration, but also that it is more stable in human serum than native insulin. Together these findings present glycoinsulin as an excellent candidate for use in insulin pumps and as a way to improve the shelf life of insulin products,” said A/Professor Hossain.

Over 25,000 people in Australia use insulin pumps as part of their diabetes management.

To reduce the risk of fibrils, insulin pump infusion sets are replaced every 24-72 hours which can cause significant patient burden and medicine wastage. In the USA alone, more than US$1 billion could be saved per year if insulin expiry increased from two to six days.

Professor John Wade who co-led the research commented on the research’s landmark success. “Typically, making structural changes to insulin causes destabilisation and inactivation but we were able to successfully retain the natural shape of glycoinsulin. Excitingly, it shows near-native binding to insulin receptors in both lab and animal studies.”

The team now aim to streamline the manufacturing of glycoinsulin so it can be further investigated in clinical studies.

Diabetes Australia CEO, Professor Greg Johnson, welcomed the research saying it had the potential to make life easier for people living with diabetes who use insulin pumps.

“It is nearly 100 years since the discovery of insulin and it’s very exciting that we see new discoveries for insulin, and insulin-like molecules, that have the potential to ease the day to day burden and cost for people with diabetes” he said.
Is the brain addicted to junk food?

Dr Robyn Brown was one of Australia’s leading brain experts who recently attended the Australasian Neuroscience Society scientific meeting in Adelaide to share her latest research on the effects of food on the brain.

Her intriguing work examined the addictive effects of junk food, demonstrating that food high in sugar and fat can act on the brain’s reward circuitry to promote craving and intake, similar to addiction.

“Interestingly, our recent research in animal models shows that female brains appear more susceptible than male brains to emotional triggers that lead to overconsumption of junk food,” said Dr Brown.

“We are now pursuing this important health area with further research looking at what is happening in the brain during stress-induced binge eating and exactly what causes this behaviour.”

On the shoulders of giants

For Florey alumnus Professor Marelyn Wintour-Coghlan AO, a recent move of residence prompted a donation of memorabilia to the Florey as well as an opportunity to reflect on a highly successful 48 years in science.

A pioneering fetal physiologist, among her many achievements, Professor Wintour-Coghlan was the first in the world to show that when sheep foetuses were exposed to high levels of the hormone cortisol in pregnancy, they developed high blood pressure and kidney dysfunction later in life. This seminal finding implied that diet, health and environment of the mother can affect future wellbeing of her children.

Dr Terence Pang, who leads the current transgenerational research at the Florey, said the scientific impact of this finding has been enormous.

“The research of Professor Wintour-Coghlan was ahead of her time. Her discovery that maternal mental health can have implication on the physical health of a child fundamentally changed our understanding of epigenetics and inheritance. With her inspiring work as a foundation, we are just beginning to learn how paternal mental health can have similar consequences for the next generation.”

Donating a medal which commemorated her retirement, Professor Wintour-Coghlan said she enjoyed her time at the Florey.

“I never took a sabbatical, because I couldn’t do my work better anywhere else.”
Moving forward in dementia research

The Florey’s researchers are continuing to make strides in the way that dementia is understood and potentially treated by identifying novel treatment targets.

Dr Matthew Pase from the Florey has recently published two sets of findings in dementia. The first compared different classes of blood pressure-lowering medications in a large patient cohort of 31,000 people and discovered that the use of anti-hypertensive medication may reduce the risk of dementia.

“We found that people with high blood pressure who took anti-hypertensive medications lowered their risk of developing dementia by between 12-16% compared to those who weren’t on blood pressure treatments,” Dr Pase explains.

Co-Head of the Florey’s dementia research, Professor Amy Brodtmann, says this was the biggest study of its kind to report these findings.

“These results further add to our understanding of the link between dementia and cardiovascular factors,” said Prof Brodtmann.

“They should encourage people to actively manage their blood pressure as it may also add benefit in reducing their risk of dementia.”

In a second piece of research, Dr Pase identified an inflammatory marker called sCD14 that could be used as a biomarker to assess a person’s risk of dementia.

“We looked at blood samples and dementia diagnosis of 4,700 participants over the following decade and observed that people with higher blood levels of sCD14 also appeared to have a higher risk of dementia,” explained Dr Pase.

He says there is a growing recognition of the role of inflammation in neurodegenerative diseases, such as dementia, and that tremendous progress was being made in the development of targeted biomarkers for dementia.

“Did any of this research sound familiar? You might have heard one of our dementia researchers being interviewed on ABC Radio, Channel 9 News, 3AW or elsewhere. If you want to keep up with the news as it happens, follow us at www.facebook.com/TheFlorey"
Meet Nola Wilmot
our new Bequest and Advancement Executive

What is one of your proudest moments as a fundraiser?
I think it would have to be when a donor of many years finally told me they had extended their support to the charity with a significant gift in their Will. I felt so pleased that they felt comfortable enough to tell me as they were a very private person.

How did you first learn about the Florey?
My volunteer work with the Fundraising Institute of Australia meant that I met a number of Florey staff members over the years. Through these contacts I became aware of the standing, history and integrity of the Florey. When I was offered the opportunity to work here, I had no hesitation in accepting.

How long have you been involved in fundraising?
I’ve worked in gifts in Wills for many years now. I took on my first role as a bequest officer at the Australian Conservation Foundation (ACF) just after finishing maternity leave when my first child was born. My eldest, Yolanda, has graduated from university so I will let you all work out the maths as to exactly how long I’ve been in the sector!

What has been your favourite project at the Florey thus far?
I’ve loved learning about the intriguing world of epigenetics since joining the Institute. I had no idea that something traumatic that has happened to a parent could have intergenerational impact.

Do you have a message for our supporters?
I love to meet people and hear their stories. I am happy to visit, call or have a cup of tea with anyone considering leaving a gift in their Will to the Florey. I find it inspiring and humbling. I’ve seen people take great pleasure and comfort in supporting a loved charity through their Will. Even a small bequest will give an incredible boost to the Florey’s work. It can really make such a tangible difference!

What are three words to describe the Florey?
Innovative, extraordinary and fascinating!

Our thoughts continue to be with all of our supporters, staff and students who were affected by the bushfires over summer.
As an institute deeply concerned with mental health, we know that the impact of these bushfires is likely to continue for some time. In order to show our solidarity to all those affected, the Florey held morning teas across its Austin and Parkville campuses in January. We were overwhelmed and grateful for the incredible collection of morning tea items both baked and bought, donated by staff and students with proceeds from the mornings teas being donated to our partner organisations who will be providing focused mental health support to those directly affected by the bushfires.
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☐ I would like more information about making automatic regular donations.
☐ I would like updates on brain research   ☐ by mail   ☐ by email
☐ I have left a gift in my Will to the Florey
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Card number: 

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Other ways to donate:

• Call our free call credit card donation line on 1800 063 693
• Fax your donation to us on (03) 9035 3107
• Online at www.florey.edu.au
• Send your donation to The Florey Institute of Neuroscience & Mental Health, Reply Paid 83037, 30 Royal Parade, Parkville, VIC 3052

Thank you for your valuable support. All donations over $2 are tax deductible.

Please let us know if you wish to change any of your personal details, contact preferences, or opt out, using any of the above contact methods. The Florey Institute of Neuroscience & Mental Health records information about its supporters that includes address and donation details, and is used solely by the institute but is not sold, traded or passed on to any third parties.
2020 Public Lectures

We are currently planning our 2020 Public Lecture Schedule.

Keep up to date with all our Public Lectures and research news by visiting the Florey website and following us on social media.

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Florey Institute of Neuroscience and Mental Health

Donor Appreciation Event 2019

A big thank you to our supporters, bequeasters and Brains Trust members who attended our end of year Donor Appreciation Event in November 2019 at the Dax Centre. We were delighted that so many donors were able to join us for an afternoon of enlightening science led by our Director, Professor Steven Petrou, Professor Clive May and Dr Yugeesh Lankadeva who presented the Florey’s latest developments in cardiovascular research.

Find out more about our Brains Trust and special supporter events, by contacting Alison Smith on 03 9035 5893.

Judy Overbeek, Lorraine and John Bates enjoy a refreshment at the Donor Appreciation Event.

2020 Public Lectures:


Between 9 September 2019 and 6 February 2020 we also gratefully acknowledge the following:

Donations in memory of:

- Joan Bennett | Hector De Paoli | Pamela Denholm | Abe Dorevitch | Evelyn and Keith Drew | John Fielder | Ronald Fraser

- Garry Graham | Audrey Hill | Deb Hodges | Luke Jackman | Bernard Kelly | Llew Lancaster | Jock Lee

- Barrington Mather | John Walter Roberts | Margaret Robson | Laurie Scott | Shane Trewin | Lynne Truscott

- Karen Inge | Monica Holland | Kate Joel | Francesca Hargrave | Paringa Estate

In kind support:

- Bass & Flinders Distillery
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- Flinders Sourdough

For more information contact communications@florey.edu.au

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