

# the NeuRA magazine

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## *NeuRA Forward:* tackling brain health challenges and embracing opportunities



**DEMENTIA  
RISING:  
how research  
is creating  
change**

### **PLUS:**

- *Intranasal insulin delivers delirium treatment hope*
- *Five minutes with Professor Andrew Rice*
- *Understanding advances in Alzheimer's treatments*



**A new year brings an opportunity to pause and reflect on our achievements, as well as set course for the year ahead.**

NeuRA's researchers have been working to improve brain health and tackle its challenges for many years. We've seen significant achievements and members of our team are global experts in many areas. With our new research strategy, *NeuRA Forward 2025–30*, we're looking at continuing this good work and, also, positioning NeuRA to tackle emerging challenges and opportunities.

The prevalence of brain and mental health conditions is rapidly increasing. This is a significant challenge, but one that our researchers are well-placed to help tackle. Our research strategy reiterates our role in improving brain health from pre-birth to ageing, including supporting better diagnosis, treatment and even prevention.

We recognise the importance of building partnerships and collaborations to support our research and increase our impact. It brings together different perspectives and ideas, increases inspiration, generates new ideas, enables resources to be shared and expands our research. We have announced several partnerships in recent months and look forward to continuing to build these and other relationships that support our research.

We share more details about our new strategy and how it came to be in this edition of The NeuRA Magazine. It reflects many of the interests that you, our supporters, have shared with us and we hope you will see the impact we make by implementing this. We thank you for your ongoing support, which enables our scientists to continue to make life-changing discoveries.

Warm regards,

A handwritten signature in blue ink that reads 'Matthew Kiernan'.

**Professor Matthew Kiernan AM**  
CEO, NeuRA (Neuroscience Research Australia)



**Above:** Find out about our new research strategy, *NeuRA Forward 2025–2030*.

## Welcome to our first edition of the NeuRA Magazine for 2026!

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***We're pleased to share the latest updates and research news from NeuRA.***

In this edition's feature, we speak with NeuRA CEO, Professor Matthew Kiernan AM, and Research Director, Dr Angus Henderson, about our new research strategy, *NeuRA Forward 2025–30*. Find out how it was developed, the missions that will shape our priorities and how it's being implemented.

Dementia is now Australia's leading cause of death and cases are predicted to continue to grow. We speak to our researchers about their work to increase our understanding of the condition, modifiable risk factors and emerging treatments. We also find out about the new treatments available for Alzheimer's disease in our 'Ask a Researcher' column.

Also in this issue, we look at how our researchers identified intranasal insulin as a potential delirium treatment and new schizophrenia research that may lead to improved treatment options.

We hope you enjoy these stories and look forward to your feedback. •

## Schizophrenia: Blood vessel health and inflammation affect new cell development

There may be a new therapeutic direction for schizophrenia after a new study revealed impacts of inflammation, blood vessel changes and reduced new neuron growth in a key brain region.

The study led by NeuRA Research Fellow, Dr Hayley North, with support from senior author, Professor Cyndi Shannon Weickert, examined three important processes that had often been studied separately: inflammation, blood vessel changes and reduced new neuron growth in the brain's subependymal zone (SEZ).

"We found for people with schizophrenia who have high levels of brain inflammation, there are clear changes in blood vessels," Dr North said.

"These changes include more markers of vessel activation and growth, more signs of immune cell traffic and fewer signs of newborn neurons.

"It's as if the 'garden beds' for growing new brain cells are being disturbed by potentially leaky and overworked blood vessels."

This research, published in *Schizophrenia Bulletin*, paves the way for targeted therapeutic strategies aimed at mitigating inflammation, preserving blood-brain barrier integrity and supporting new neuron growth in schizophrenia.

Dr North said the research also raised further important questions about the causal relationships between inflammation, blood vessel changes and neuron development, while highlighting the importance of studying sub-groups and different regions of the brain. •



Dr Hayley North.



Dr Anita Nitchingham.

## Intranasal insulin delivers delirium treatment hope

Researchers from NeuRA and the Prince of Wales Hospital have identified intranasal insulin as a potential new treatment for delirium.

Delirium is a sudden onset of confusion and drowsiness that affects 130,000 people each year – up to 25% of hospitalised older people – and while it can have many complications, there are no medications for prevention and treatment on general hospital wards.

Geriatrician and NeuRA researcher, Dr Anita Nitchingham, said the study found intranasal insulin led to a faster recovery and reduced time spent in hospital.

"This study provides the first real step toward solving a 2500-year mystery, showing intranasal insulin is safe and feasible, and provides the evidence base we need to go to larger trials," she said.

"The next step is to test intranasal insulin in larger, multi-centre trials to confirm whether it improves delirium outcomes across the health system and also to explore if it could be used to prevent delirium in high-risk patients." •



# **NeuRA Forward sets course for increased impact**

*A strategy that builds on strengths and embraces opportunities.*

**B**rain and mental health challenges are accelerating across the lifespan creating new and pressing community concerns. At the same time, healthcare is shifting toward precision and prevention. NeuRA's new research strategy addresses those concerns and embraces the emerging opportunities.

"Our research strategy, *NeuRA Forward 2025–2030*, is designed to tackle the brain health challenges that shape our lives," said NeuRA CEO, Professor Matthew Kiernan AM.

"The strategy is built on three key missions that are bold, ambitious goals, but it also outlines how we will pursue them and measure our success. It sets out a clear path towards clinical translation

and ongoing real impact for our research."

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**"It ensures that both NeuRA's relevance and impact will be profound and anchored to the needs of the communities we serve."**

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The missions are to (1) Protect brain health across the lifespan and prevent loss of function; (2) Maximise brain function via the development of precision, science-based strategies that prevent loss of function and protect quality of life; and (3) Advance precision brain diagnostics using

neuroscience, genomics, artificial intelligence and data-driven tools to detect problems earlier and predict health outcomes to enable personalised care.

"NeuRA's researchers are undertaking world-leading research in many areas, and these missions provide an opportunity to ensure we continue to conduct impactful research that tackles the current challenges in brain and mental health," Prof Kiernan said.

"Under Mission 1, you'll find our work on prevention, lifestyle and risk factors, while Mission 2 encompasses treatment and disease management.

"Mission 3 is about embracing precision diagnostics, including the opportunities offered by emerging technologies and the changes in healthcare."



**NeuRA Research Director, Dr Angus Henderson, is leading implementation of *NeuRA Forward 2025-2030*.**

The new strategy was developed following consultation workshops, input from research groups and guidance from external experts whose work intersects with NeuRA's, such as representatives from UNSW and the South Eastern Sydney Local Health District.

NeuRA Research Director, Dr Angus Henderson, who commenced in 2025, is now working with researchers, staff and partners to implement the strategy.

"This strategy will ensure that NeuRA's expertise and impact are being focused to tackle both current and emerging challenges," Dr Henderson said.

"I'm pleased to be working with our researchers to implement the strategy, building collaboration between research groups and with our partners.

"We're positioning our current research within the new missions, but also identifying new opportunities and projects to ensure NeuRA can continue to deliver world-class, impactful research." •

**NeuRA's new research strategy looks at tackling the brain challenges that shape our lives, with three key missions:**

### **Mission 1: Protecting Brain Health Across The Lifespan**

Brain health is shaped from the earliest stages of life, and can be disrupted at any point by injury, disease or social determinants. From neurodevelopmental conditions and rare neurological disorders in childhood, to cognitive decline and dementia in ageing, many individuals live with unmet needs across their lifespan. While these challenges often go unrecognised or untreated, many aspects of brain health are shaped by modifiable risk factors that can be targeted to support early intervention and prevention. NeuRA is protecting and supporting brain health at every stage of life and working to prevent loss of function wherever possible.

### **Mission 2: Maximising Brain Function**

Declining brain health from ageing, neurological disease, or mental health conditions often leads to loss of mobility, chronic pain, and reduced independence. NeuRA is committed to leading the development of precision, science-based strategies that prevent loss of function and protect quality of life. Our goal is to keep people active, safe, and thriving in the environments where they live and age.

### **Mission 3: Advancing Precision Brain Diagnostics**

Despite advances in neuroscience, most brain and mental health care remains generalised and reactive. Conditions such as dementia, neurodegeneration, Parkinson's disease, motor neurone disease and mental health disorders are often diagnosed too late and managed with one-size-fits-all approaches. We need to find smarter, more personalised solutions based on individual biology, clinical risk and lived context. NeuRA is leading a new era of precision brain health using neuroscience, genomics, artificial intelligence (AI) and data-driven tools to detect problems earlier, and predict health outcomes to enable personalised care.



Professor  
Matthew  
Kiernan AM  
with Tim and  
Megan Jones  
(also on cover).

## DEMENIA'S RISE: how research is tackling risk and improving lives

Dementia is now Australia's leading cause of death, thrusting the issue out of the dark and into the spotlight.

The work of NeuRA researchers has become more vital, in helping better understand the condition, improve diagnosis, enhance quality of life for people living with dementia and develop new treatments. However, NeuRA CEO and Institute Director, Professor Matthew Kiernan AM, said there is so much more we all need to do.

**"We need to change the way we think and act about dementia – we need to talk about it, understand it and embrace the strategies we now know can slow, reduce the severity or even prevent many cases," he said.**

"For too long dementia has been something we just don't want to think about, but the truth is it's not just an old person's disease, it's not untreatable and it's not an inevitable part of ageing.

"Researchers and clinicians are increasing our understanding of neurodegeneration and why cases of dementia are increasing, but also hunting for therapies and cures."

Identifying 14 modifiable risk factors that contribute to dementia risk has been a vital step in helping people understand they can act in their lives that will have real impact.

"Research suggests that 45 per cent of dementia cases may be preventable if we address those 14 modifiable risk factors," Prof Kiernan said.

"We need to help people understand that by tackling areas such as depression, obesity, hypertension, diabetes, hearing loss, social isolation and sleep disturbances we can help lower our risk of developing dementia."

Cognitive health and dementia risk assessment tool, CogDrisk, developed by NeuRA's Professor Kaarin Anstey supports people to do just that and more than 200,000 people have now visited her site to complete the assessment or find out more.

"CogDrisk is a self-assessment tool to help people understand their likelihood of developing dementia later in life, based on the answers they provide to a series of health and lifestyle questions," Prof Anstey said.

"On completion, people receive a profile of their risk and protective factors that can help them reduce their risk of developing dementia. For people aged 40 years and above, they will also get a risk score based on the latest evidence.

"We hope it will support people to take action or make adjustments in their lives that help reduce their dementia risk."

People who are concerned about their risk of developing dementia can also take their CogDrisk data to their GP, which can assist with earlier diagnosis.

Prof Kiernan said diagnosis and treatment are improving, which is assisting in giving people earlier interventions, more options and more control over living with dementia.

"NeuRA is working with industry in pursuit of a blood test that will signal the earliest stages of dementia, years or decades before the external signs are obvious," he said.

"New treatments are being developed to delay the onset of dementia, a few of which are now available for some patients. We've been trialling some of them for years here at NeuRA with promising results, but delivering those drugs to large numbers of patients will take investment from State and Federal Governments in hospitals and workforce."

Alongside this, the way we live with dementia is also changing. Researchers are looking at how we can 'live well' with dementia, building capacity for supported decision making, reducing dementia stigma and more.

"With dementia cases continuing to rise, we all need to be talking about dementia and thinking about the ways we can tackle this challenge," Prof Kiernan said.

"Dementia can affect anyone, but we can take steps to reduce our personal risk and support those living with dementia." •



Professor Kaarin Anstey developed the CogDrisk risk assessment tool that is helping people understand their likelihood of developing dementia.

## 5 MINUTES with Professor Andrew Rice



### Left:

NeuRA's Professor James McAuley with Professor Andrew Rice, who is president of the IASP.

“ Pain affects so many people, and our work has the potential to have real impact for them. ”

*Professor Andrew Rice is Professor of Pain Research at Imperial College London, and President of the International Association for the Study of Pain (IASP) with more than 40 years' experience.*

*Professor Rice collaborates with NeuRA's pain researchers on projects evaluating current pain treatments. Last year he visited NeuRA to speak about cannabis and cannabinoid analgesia.*

### You've dedicated your career to pain research. What is it about this area that captured your interest?

Pain research is complex and not easy but it's stunningly interesting science with new ideas and concepts. It's collaborative and interdisciplinary. Pain affects so many people, and our work has the potential to have real impact for them.

After a chance meeting with a patient that sparked my interest in this space, I was supported by early greats in the pain space, Patrick Wall and Steve McMahon. I'm pleased that we've increased our knowledge about pain and its treatments, but I'm not sure we've translated that into better treatments for patients.

### Cannabis and cannabinoid analgesia make headlines and offer hope, but what is the evidence for benefit and harm?

Medical or medicinal cannabis, medicinal cannabis extracts and synthetic cannabinoids have all offered hope to people with chronic pain. However, after considering the research the International Association for the Study of Pain doesn't endorse cannabinoids for general use for pain relief.

The research found that while preclinical studies and anecdotal reports support the hypothesis, clinical data has shown a lack of efficacy, potential harms, knowledge gaps, bypassing of regulatory systems and conflicts of interest.

However, the door isn't closed on this. We just need more rigorous and robust research to better understand any potential benefits and harms. I think it's also worth noting that for some people, for example those in end-of-life care, there may be benefit and without concerns about risk of harm.

### What's next for pain research internationally?

There's never a full stop in science. Pain is complicated and we have more to research.

We need to improve treatment options and look at integrated options, such as those including behavioural interventions. We have a responsibility to look at medications that are pushed for pain management that are low value care with significant side effects, like ketamine, and review what treatments are really working. We need to work with people who have lived experience with pain. •



## Ask a Researcher



**NeuRA researcher,  
Associate Professor  
Emma Devenney, explains  
the recent advances in  
Alzheimer's treatments.**

**New treatments have been approved for people with Alzheimer's disease in Australia. We discussed the developments with Associate Professor Emma Devenney, who is an Alzheimer's disease researcher at NeuRA, National Health and Medical Research Council (NHMRC) early career Fellow, Conjoint Appointment at UNSW Sydney and honorary neurologist with the South Eastern Sydney Local Health District.**

**Q: We have seen two new Alzheimer's treatments approved by the Therapeutic Goods Administration in the past year. How do these medications help people with Alzheimer's?**

**A:** Lecanemab and Donanemab have been approved for people in the earliest stages of Alzheimer's disease. These medications have been shown to slow the progression of symptoms, and they are highly effective at removing amyloid plaques from the brain. These can be used alongside established medications that are currently subsidised under the Pharmaceutical Benefits Scheme (PBS).

**Q: How important are these approvals likely to be for Australian patients?**

**A:** These new treatments are the first disease modifying therapies to be approved and have the potential to slow disease progression by approximately 35% for some patients. However, these are not going to be an option for all patients yet, as they are not currently available under the PBS, which means they are expensive, and there are also strict eligibility criteria to access these medications.

Currently there are two classes of drugs available that have a modest impact on symptoms available on the PBS. These are drugs for symptomatic management including cholinesterase inhibitors such as Donepezil and NMDAR antagonists such as memantine. People should discuss what's best for them and their individual circumstances with their treating doctors.

**Q: There are other emerging treatments for Alzheimer's. What do we need to know about current research?**

**A:** There is research underway to develop new medications and also looking at repurposing medications for other conditions that may have benefits. Research underway at NeuRA and elsewhere is looking to improve diagnosis, treatment and even prevention. •

## Include NeuRA in your Will

Including a gift to NeuRA in your Will is a powerful way to accelerate research that will transform people's lives. A gift of just 1% of your estate will allow us to deliver world-first clinical trials, effective treatments, early interventions and crucial research that we simply could not do otherwise.

With your gift, we will help people lead happier and healthier lives for longer and we will shape the future of neurological wellness for generations to come.



**NeuRA's Philanthropy Team is available to help you to organise a gift in your Will and keep you up to date with NeuRA's research.**

**Please feel free to phone us on 02 9399 1093 or email [bequests@neura.edu.au](mailto:bequests@neura.edu.au)**



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