ISSUE 6 WINTER 2023

DISCOVERY

Message from the Executive Director

Medical research conducted at WIMR is recognised as innovative, impactful, translational and transformative. Many of our Centre Directors and Lab Heads are global leaders in their fields and our focus on scientific excellence is unwavering.

WIMR actively promotes and celebrates scientific excellence, and recently I was delighted to present the Westmead Institute Scientific Excellence (WISE) Awards. Each year, prizes are awarded for the best original research published in a peer reviewed journal during the previous calendar year.

This year, research teams were recognised for their outstanding work, with research projects spanning COVID-19, kidney disease, HIV and liver disease.

Each of these projects were published in leading scientific journals including *Nature Communications, Journal of Virology, American Journal of Transplantation, Advanced Science* and *EbioMedicine.* I offer my hearty congratulations to all the WISE Award recipients.

This research would not have happened without the ongoing dedication from WIMR's research and support teams. As always, they have provided outstanding technical advice and expertise to all our research groups and they ensure that all WIMR researchers have access to the latest technically advanced equipment within our core facilities.

Despite challenging times for the Australian medical research community, WIMR's pioneering researchers continue to make life-saving discoveries that have global impact. Over a long period of time they have "punched above their weight" in global comparisons, despite having only a fraction of the resources that are available to overseas institutions.

Ongoing funding continues to be a primary challenge for the Australian medical research and innovation sector. This means that philanthropic and community support is more vital than ever.

Philanthropic support not only eases some financial pressure on research teams, it also encourages innovation and scientific excellence. It is vital for funding promising projects that are in the very early stages and are not yet eligible for Government funding.

Donations are also crucial for the purchase of essential equipment and technology that is not eligible for Government funding.

Importantly, philanthropic support provides opportunities for early to mid-career researchers – our future research leaders – who have limited opportunities for Government grants and struggle to secure funding for their groundbreaking work. Helping these researchers is an investment in our future and our children's future.

As the end of financial year approaches, I offer you a personal thanks for your support of WIMR, and for recognising the life-changing and life-saving potential of medical research.

Wishing you good health,
Professor Philip O'Connell

Cover Image

A 3D rendered image of Neuron cell network showing interconnected neurons with electrical pulses.

WIMR in the News

Beating the odds: Identifying the factors that influence ovarian cancer survival

A recent study identified key factors that influence long-term survival in those with ovarian cancer. The findings revealed that survivors with certain gene alterations linked to DNA repair experienced greater sensitivity to chemotherapy and lower drug resistance. Additionally, these survivors exhibited stronger immune responses. The study also showed that patients with BRCA1-altered tumours fell into three groups, and those in one group who smoked had a lower survival rate.

Scientists find a way to heal scars caused by heart attacks

A team of researchers has developed a method to restore the elasticity of damaged heart tissue after a heart attack. Their preclinical studies show that a single injection of tropoelastin into the heart wall can help the heart muscle regain its elasticity and function, similar to before the heart attack. Additionally, tropoelastin was found to decrease scar size and increase its elastin content, resulting in a less stiff scar.

Creating phosphate imbalance could stop lethal fungi in their tracks

A new study conducted by WIMR researchers has found that maintaining a balanced level of phosphate in fungi is crucial for causing deadly infections in humans' blood, brain, and lungs. The team is optimistic that by disrupting the fungi's ability to achieve the right phosphate balance, they can prevent fungal infections and pave the way for the development of new antifungal drugs.

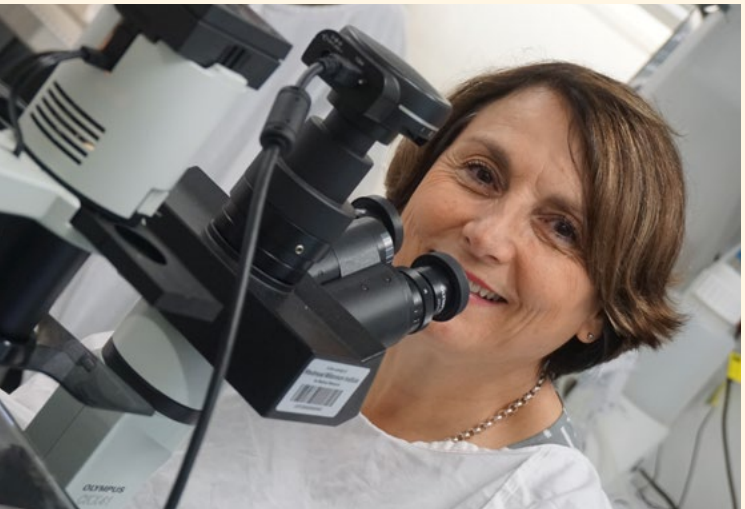
WIMR's phosphate research team.

Researcher Awards

Congratulations to Professor Natasha Rogers

WIMR's Natasha Rogers was recently promoted to Professor by Sydney University's Faculty of Medicine and Health.

Professor Natasha Rogers is Deputy Director of WIMR's Centre for Transplant and Renal Research and leads the Kidney Injury Research Group, as well as being a Transplant Nephrologist at Westmead Hospital. This promotion recognises and celebrates academic excellence and Professor Rogers' contribution to her field of research.



Professor Ann DeFazio honoured with the Order of Australia

Congratulations to Professor Anna DeFazio who has been recognised as a Member of the Order of Australia (AM) in the Australia Day Honours List. Professor DeFazio is the Director of WIMR's Centre for Cancer Research, and the Order of Australia has been awarded for her "significant service to medicine, particularly cancer research."

(Left to Right) Genevieve Bellamy, Deekshitha Dhulipati and Professor David Gottlieb.

A close bond sparks the gift of hope

It was 1998 when Genevieve Bellamy's doctor said the word no one wants to hear: Leukemia.

While the news was difficult for Genevieve, her family were equally shattered by the diagnosis. In particular, Genevieve's late aunts, Monica and Genevieve.

"Monica and Genevieve were doting aunts to my three brothers and me. They did not have children, so they treated us like their own," says Genevieve.

Throughout her rigorous treatment, Genevieve's loving aunts tried everything to make her life as easy as possible. They delivered delicious treats, stylish hats when she began to lose her hair, as well as praying for her recovery.

In 1999, Genevieve's life was changed again, this time for the better, when she received a successful bone marrow transplant, performed by WIMR's Professor David Gottlieb and Westmead Hospital's Professor Ken Bradstock. Genevieve's younger brother Michael was her donor.

(Left to right) Genevieve and Monica James.

Monica and Genevieve were delighted by this success and, as a result, became regular donors to The Westmead Millennium Institute (as WIMR was then known).

Genevieve's successful Leukemia battle motivated Monica and Genevieve to leave a bequest in their Wills to support cancer research at WIMR, specifically Leukemia.

Monica's and Genevieve's bequest will be used by Professor David Gottlieb to support one of his PhD students, Deekshitha Dhulipati, who will be conducting life-saving Leukemia research.

Deekshitha said, "Research is generally grant-based and highly competitive, so support like this is vital. It allows us to continue our work that has the potential to benefit so many people."

Genevieve says:

> "I hope that my aunts' bequest will contribute to finding a cure for cancer, especially Leukemia, and that my journey perhaps provides comfort and inspiration to others."

Leaving a gift in your Will is a wonderful way to honour your loved ones and to leave an outstanding legacy that will impact millions of people around the world.

If you would like more information about leaving a gift to medical research at WIMR in your Will, please contact **Hilary May Black at WIMR on 02 8627 3027 or email hilary.mayblack@wimr.org.au**

Dad's diagnosis put glaucoma in this researcher's sights

"My dad's eyesight deteriorated very quickly. He lost vision completely in one eye, and eventually had very little vision in the other. The diagnosis was glaucoma."

This devastating diagnosis for a young father in India led his daughter, Dr Ushasree Pattamatta to dedicate her career to improving outcomes for glaucoma patients.

Dr Pattamatta is a Postdoctoral Research Scientist in WIMR's Centre for Vision Research. She recalls that her father was diagnosed at the time she was born.

"The diagnosis of glaucoma was a difficult time for my dad and my mother who were raising a very young child, but they got by," Dr Pattamatta says.

Glaucoma is hereditary, and Dr Pattamatta says she is vigilant about her eye health, having yearly checks to ensure that she is not developing glaucoma.

A love of science and fascination with its potential to treat common medical issues was the impetus for Dr Pattamatta's career choice. Given her strong family connection, she was very keen that her work would improve outcomes for glaucoma patients.

Specifically, Dr Pattamatta's research interests are two-fold. One is to understand the cellular mechanisms of glaucoma which causes retinal cell death. The other is to help to heal surgical scars in order to prevent vision loss.

When glaucoma exists, eye pressure increases. Current treatment methods like medicated eye drops and surgery aim to reduce this pressure. Surgery is highly effective, but it can sometime result in over-healing of the scar left behind. The consequence of this scarring is often vision loss.

Dr Pattamatta says:

"Its potential for glaucoma is two-fold. One is that we believe it helps to protect retinal cells so that they don't die due to glaucoma. The other is to reduce scarring following glaucoma surgery. We believe this drug has the potential to both protect and modulate healing."

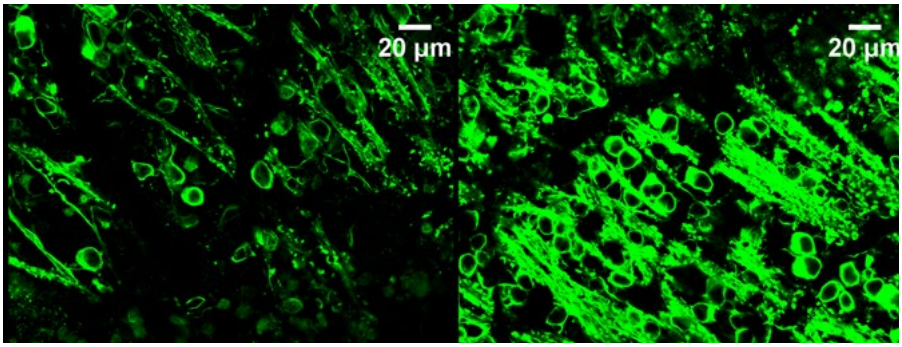
> **"My current research is looking at an FDA-approved drug called Irbesartan. It is a commonly prescribed medication to lower blood pressure. We are trying to re-purpose this drug for the treatment of glaucoma."**

The potential for this research is astounding, when you consider that approximately 111.8 million people will be living with glaucoma by 2040.[1]

Dr Pattamatta and her team hope that, by the end of this year they will submit a human ethics approval application. Pending that approval, clinical trials could possibly begin next year.

"If everything goes smoothly, we hope the drug may be ready to be used to treat glaucoma patients in the next five years."

Dr Pattamatta and WIMR sincerely thank The Neil and Norma Hill Foundation whose incredible support is driving this groundbreaking research.



Retinal ganglion cells at four days, treated with placebo (left), and treated with Irbesartan (right).

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7769798/#:~:text=An%20estimated%2057.5%20million%20people,of%202.2%25%20%5B7%5D.

WIMR Out and About

Way In Network Mother's Day Luncheon

WIMR was a proud beneficiary at this year's Way In Network Mother's Day Charity Luncheon. The event included a tasty lunch at XOPP restaurant in Darling Harbour, a performance featuring traditional Chinese instruments, and a tea ceremony presentation. The Way In Network are strong supporters of WIMR and at this event they were fundraising specifically for our Scientific Platforms. The funds raised will be used to acquire a high-speed Imaging Cell Sorter, a vital piece of cutting-edge equipment that will accelerate our search for new treatments and cures.

We extend our heartfelt gratitude to Way In Network for organising this amazing event. We are delighted too that The Australian Chinese Medical Association (ACMA) and The Australian Chinese Jockey Club (ACJC) are also actively fundraising to help purchase the new Imaging Cell Sorter this year. We are very grateful for their support.

(Left to right) Anton Bourtsev, Rita Bourtsev, Faith Tan, June He, Eugenia Lieu, Daisy Lam, Elsa Shum, Dr Maggie Wang, Annie Tang, Professor Philip O'Connell, Linda Wong, Florence Chau, Linda Tang, Brenda Liu, Lisa Harris, Queeny Ho, Rosanna Ng and Jessie Xiao.

Teal We Find a Cure

Monica Matak Evans led the 'Teal We Find a Cure' fundraiser, which raised funds for ovarian cancer research at WIMR, headed by Professor Anna DeFazio AM. It was heartening to witness so many coming together to support this crucial cause. Ovarian cancer is a field that demands attention, and events like this play a vital role in funding research that will result in improved survival rates. Special thanks to Monica Matak Evans for coordinating this event and to everyone who supported this initiative.

Abal Bank Brunch

The Abal Bank Brunch was recently held at the Grounds of Eveleigh by Abal Bank Australia. Attendees were treated to a unique culinary experience. Nicola Tuck, Head of WIMR Foundation, Associate Professor Eddy Kizana, and Dr Melad Farraha also attended the event.

Thanks to the generosity of attendees and support from Abal Bank, the event raised more than $60,000 for WIMR's world-leading heart research. We want to express our gratitude to Abal Bank Australia, Raghida Younes, and the team for including WIMR in this spectacular event.

(Left to right) Dr Melad Farraha, Associate Professor Eddy Kizana and Salim Nicholas from Dasco and the President of the Australian Lebanese Chamber of Commerce.

GIANT Steps for Research

WIMR is delighted to be a GIANTS Community Partner in 2023. Together, we are committed to shining a light on health and wellbeing, not only in Western Sydney, but around Australia and globally.

Through the partnership we hope to raise awareness of the life-saving research being done at WIMR and raise vital funds to support our work.

Since partnering with GWS GIANTS, we've learnt that in one AFL game, a player will travel about 13.5 kilometres. That gave us an idea...

The first initiative as part of this special partnership was born – GIANT Steps for Research.

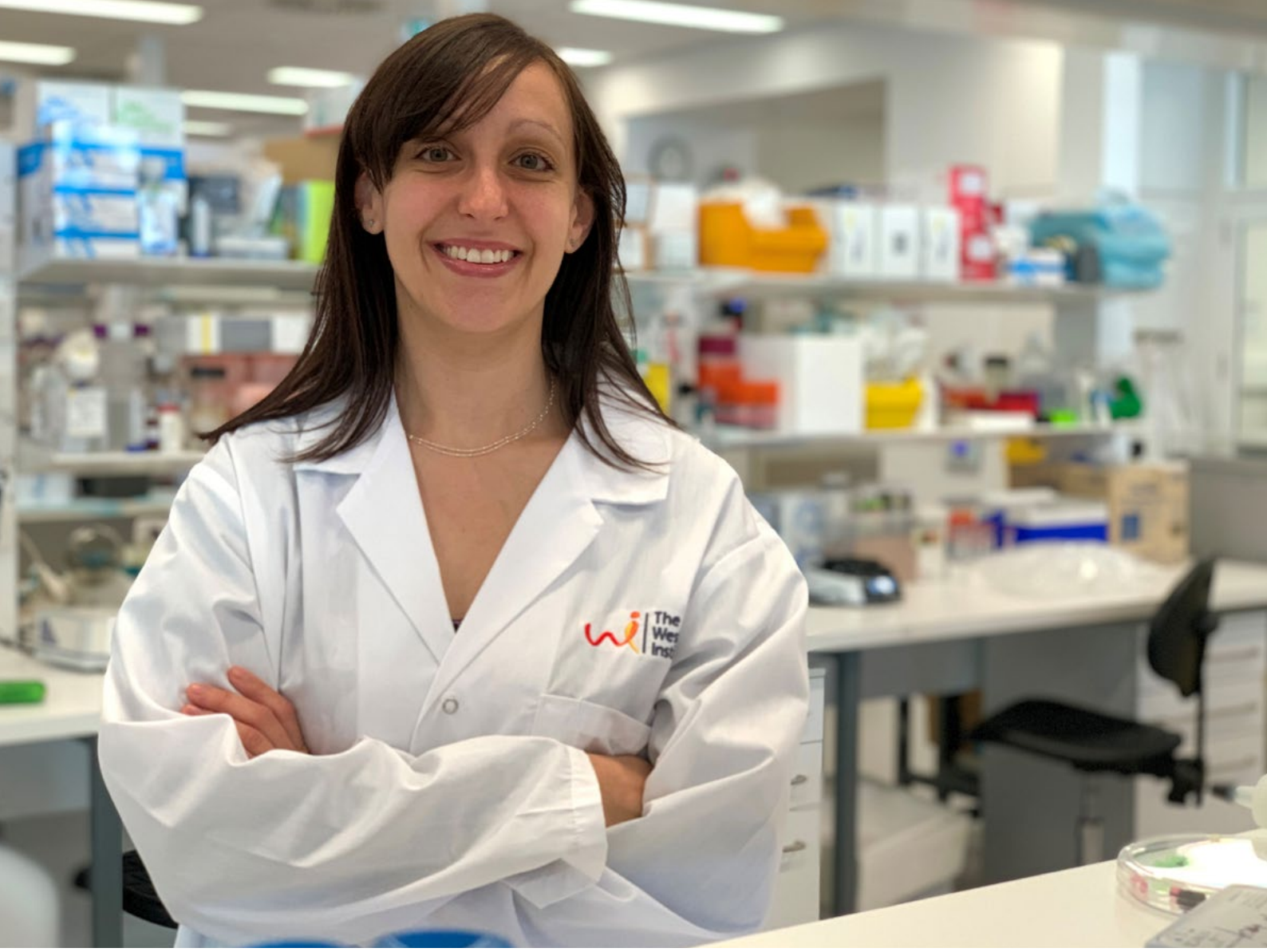
Walk, run or roll 13.5 kilometres in the month of June to help the brilliant scientists at WIMR to continue making breakthroughs in some of the biggest health issues affecting our community. Conditions such as diabetes, cancer, heart disease, mental health and obesity.

Would you like to take GIANT Steps for Research?

Simply commit to walk, run or roll a minimum of 13.5 kilometres in the month of June – it can be all on one day or spread throughout the month – and ask your family, friends and colleagues to sponsor you. When you hit your milestones, you'll receive some great rewards such as two tickets to a game!

Take a GIANT step by signing up to help improve your health, and the health of people in Australia and around the world through life-saving research.

Sign up now at **giantstepsforresearch.wimr.org.au** or simply make a donation to help save lives. (Campaign runs 1 June to 30 June 2023).



Preventing Alzheimer's disease

The global prevalence of dementia is estimated to be more than 55 million and increases by an additional 10 million every year.[1] Alzheimer's disease is the leading cause of dementia.[2]

Throughout her studies, Dr Caitlin Finney noticed a potential limitation in existing approaches to Alzheimer's disease.

"We know that mutations in several genes are the cause of Familial Alzheimer's disease (also known as early onset Alzheimer's disease – where diagnosis occurs before the age of 60).

Late onset Alzheimer's disease (usually diagnosed after the age of 65) is the most common form, making up more than 95% of cases. However, there is no real understanding of the genetics of late onset Alzheimer's disease.

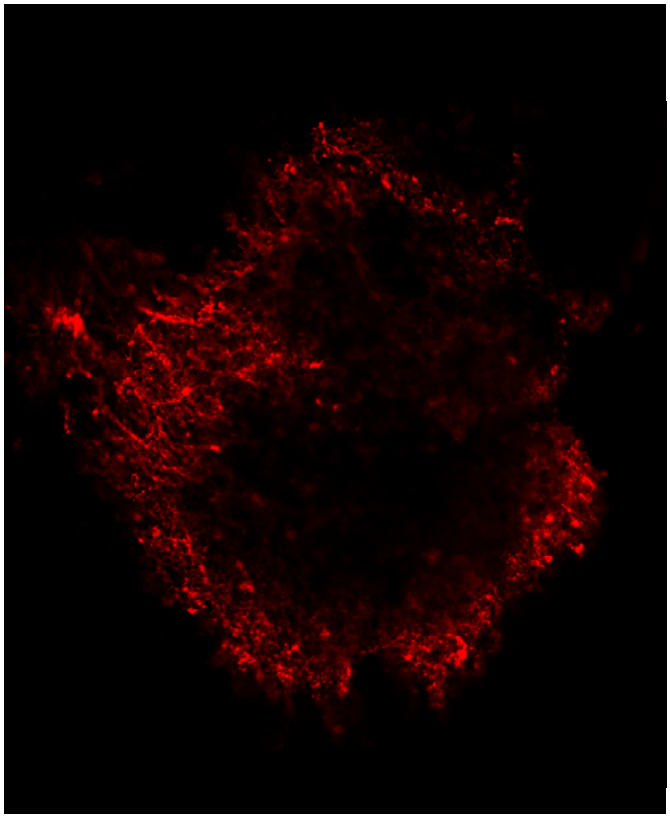
The problem, as Dr Finney saw it, was that models for late onset Alzheimer's had also been developed around these specific genes. This might account for the high failure rate for existing treatments.

So, Dr Finney decided to go right back to the beginning.

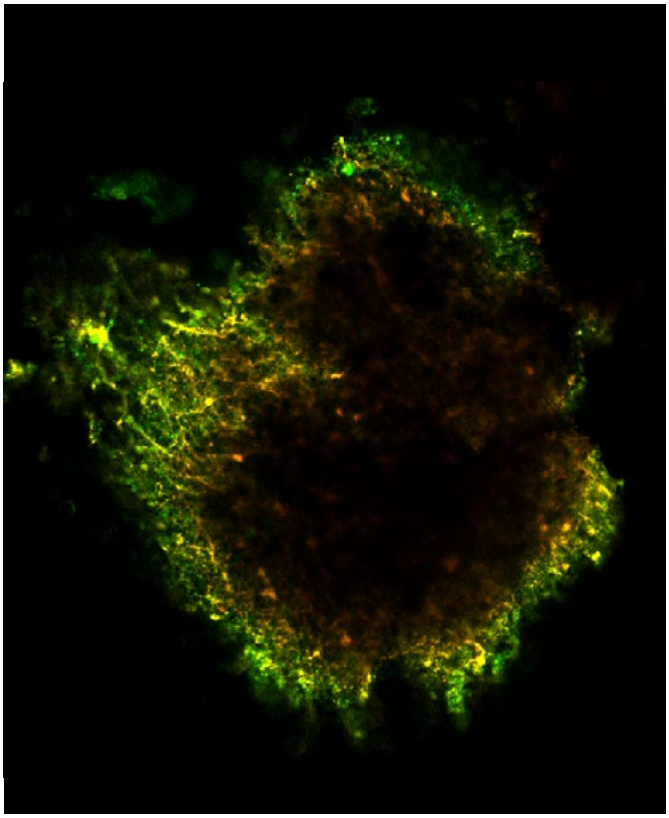
"I pretended that I didn't know anything about Alzheimer's disease and asked myself, "where would I start?" I would start with patients."

Dr Finney scoured public access data sets and looked at gene data from almost 1,000 people – half had Alzheimer's disease and half did not. With collaborators, she used machine learning to see if they could predict who did and did not have Alzheimer's disease.

Dr Finney's research identified a gene found in mitochondria (responsible for energy in our cells), and two mutations that are linked to this particular gene.



Hyperphosphorylated tau is one of the hallmark symptoms of Alzheimer's disease.



An overlay of hallmark pathology with the gene ATP5H that Dr Finney is currently working on.

In collaboration with one of the largest NIH-funded Alzheimer's clinics in the US, Dr Finney has been able to access genetic data of around 500 patients. Analysis of this data has shown that quite a few had these two genetic mutations. In fact, the mutations were three times higher in the Alzheimer's disease cohort than in the general population.

In groundbreaking work, Dr Finney and her team are collecting skin samples from these patients and turning them into stem cells here at WIMR. The stem cells are then used to produce three of the most common cells in the brain – neurons, astrocytes and microglia.

"We combine these three types of cells together to form 3D brain structures. Essentially, they are mini brains in a dish," says Dr Finney.

"We are looking at how the genetic mutations we have identified affect these mini 3D structures. We expect to see that Alzheimer's disease will form.

> **From there, we will try to identify any biological cause for these mutations. If we can do this, we can work to develop drugs that target the development of these mutations and stop them from occurring. This would be a very personalised treatment with the potential to benefit a significant number of people around the world with late onset Alzheimer's disease.**

Dr Finney and WIMR are incredibly grateful to The Neil and Norma Hill Foundation for seed funding that was used to generate preliminary data for this study. Dr Finney says that additional funding applications are in progress, but securing ongoing funding is essential to ensure the continuation of this important research.

1. https://www.who.int/news-room/fact-sheets/detail/dementia
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3405821/

Outstanding medical research requires exceptional people like YOU

At WIMR, we don't just research one disease. We research many of the most common serious diseases impacting society today, including COVID-19, HIV, diabetes, cancers, heart, kidney and liver issues, neurological disorders, deadly viruses and antibiotic resistance.

As you will see in this and previous issues of *Discovery*, the world-leading researchers at WIMR work collaboratively and are determined. They thrive on solving medical challenges. With your help, we are developing the preventions, treatments and cures of tomorrow.

This June, every gift, large or small, helps save lives.

Donate today at www.wimr.org.au

Helping YOU pass family recipes on to the next generation

Events at WIMR

Corporate Breakfast

WIMR was delighted to welcome its corporate partners and special guests to a breakfast, hosted by Deloitte in its beautiful Parramatta office. Melissa Doyle led a discussion with Irene Deutsch, Managing Director and Co-Owner of Fairfax & Roberts, one of WIMR's outstanding partners. Irene Deutsch spoke about her career and the importance of giving back, which she attributes particularly to her father.

WIMR was also thrilled to announce a new partnership with GWS GIANTS. GIANTS COO James Avery spoke about the alignment between the GIANTS' commitment to health and wellbeing in Western Sydney and beyond and WIMR's pioneering research.

(Left to right) Irene Deutsch (Fairfax & Roberts), Prof Philip O'Connell (WIMR), Melissa Doyle, James Avery (GIANTS) and Maryanne Graham (Chair of the WIMR Foundation Advisory Board).

Guests at Discovery Partners High Tea.

Discovery Partners High Tea

WIMR hosted its Discovery Partners Annual High Tea as a way of showing appreciation to the supporters who have committed to leaving a gift in their Will to support the researchers at WIMR. The High Tea featured an update about Precision Medicine initiatives at WIMR from Executive Director Professor Philip O'Connell. Special guest speaker Professor Sarah Palmer, Co-Director of the Centre for Virus Research, shared her inspiring career journey and current research projects combatting HIV/AIDS and COVID-19.

Guest performances from opera singers Sarah Cherlin and Sam Elmi were a highlight of the afternoon. The event provided an excellent opportunity for our Discovery Partners to interact with WIMR's exceptional researchers, learn more about the value of their contribution, and the future of medical research.

Special thanks to our sponsors Stuart Alexander & Co. and Aesop.

International Women's Day

WIMR celebrated International Women's Day in style with a special guest speaker and morning tea. The event recognised and celebrated all the talented and dedicated women who are an integral part of the WIMR team.

A special guest speaker, Abbi Church, a paramedic and a NRLW player for the Parramatta Eels shared her story and discussed some of the challenges she has faced in both her careers, and the inspiration and determination that has helped her to achieve her goals.

(Left to right) Nicola Tuck, Melinda Brazzill, Abbi Church, Prof Philip O'Connell and Melinda Holder.

Outstanding research requires exceptional people

You don't have to be a medical researcher to make a difference.

Support WIMR today to help improve treatments, prevent, and cure some of the most serious health issues affecting Australians and people around the world.

Visit our website to donate now.
Simply hover your phone over the QR code or visit **wimr.org.au**

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I would like to receive information and occasional updates from WIMR.

☐ Yes, via email please

☐ Yes, via mail please

☐ No thank you. Please do not send me any regular correspondence.

I would like to donate the following amount to help fund vital breakthroughs at WIMR:

☐ $25 ☐ $50 ☐ $100 ☐ $250 ☐ $500

Another amount: $ _____

☐ I would like to make this a regular, monthly donation.

Donations of $2 or more are tax deductible.

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Medical Research Foundation
PO Box 412
Westmead NSW 2145
Australia

Ph: 02 8627 3000
Website: wimr.org.au
ABN 90 141 847 634

To find out how your support can make a difference, contact the WIMR Foundation team at development@wimr.org.au or phone 02 8627 3000.

A gift in your Will, "in memoriam", and in celebration of special events are wonderful ways to support our life-changing research here at WIMR.

Contact our Gifts in Wills Manager on (02) 8627 3027
Email: hilary.mayblack@wimr.org.au

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