It's a pleasure to provide you with the Florey's latest annual report. I'm pleased to inform you that 2019 was tremendously successful for the Florey.

As a friend of the Florey, you'll no doubt know that it is an organisation that makes a positive and significant impact for individuals, families and communities. In 2019 as we sought to develop a new strategic plan for the institute, it was clear that the Florey's core mission remained critically important - we aim to advance humanity through brain and mind science.

Our new five year strategic plan outlines a refreshed vision for how we achieve this ambitious aim. It charts a bold and ambitious direction, allowing the Florey to remain competitive, innovative and unique. This year's annual report provides examples of the strategic plan in action and I'm sure you'll agree that it makes for inspiring reading.

In terms of the Florey's financials, I'm very pleased to let you know that 2019 was a successful year. I'd like to thank everyone who contributed to this, including our generous donors whose support was at a record level. We appreciate your generosity and support of vital medical research. I'd particularly like to thank the Dowd family for their wonderful support over many years. As initiators of the Florey Future Fund, throughout 2019 the Dowd family continued to provide support, inspiration and friendship to our researchers.

I'd also like to thank all of our partners throughout the year, many of whom you'll see mentioned throughout the report. I'd like to particularly thank the University of Melbourne whose strengthened partnership has been appreciated.

A successful year is always the result of the hard work and dedication of many people. To all of our staff and students, my colleagues on the Florey Board and our valued partners and donors, I wish to thank you. It is your commitment, innovation and passion which has driven the success of the Florey this year.

I hope you enjoy reading this year's annual report, and reading more about the inspiring work underway at the Florey.

From the Chairman,
Mr Harold Mitchell AC

In 2019 as we embarked on developing a new plan for the Florey's future, we also reflected back on the past.

In 1941, Howard Florey took the existing discovery of penicillin and through research and translation turned it into a form that could be delivered to patients. In the process he changed millions of lives by providing treatment to people who would otherwise have died or continued to suffer terribly, if not for penicillin.

This example is what drives us at the Florey Institute of Neuroscience and Mental Health. In much the same way that we all know someone whose life has been changed by penicillin, we also all know someone who has been affected by at least one of the conditions that is studied at the Florey. We know through the example of our namesake that we can, and will, make a difference to the lives of people living with terrible diseases and disorders that affect the brain and mind.

Our new strategic plan provides us with a solid foundation on which to change lives through research, translation, partnerships and most importantly through empowering people. As you'll read on the following pages, we've been hard at work on innovative and excellent research, developing new partnerships and strengthening existing ones, and making sure our staff, students and members of our community are supported to fulfil their potential. I would like to take this opportunity to acknowledge and thank our dedicated researchers, staff and students whose skills, commitment and dedication are the driving force behind the Florey's success in 2019. I also extend my sincere thanks to the Florey’s Board of Directors for their support and guidance. Finally, the Florey could not have achieved the wonderful outcomes that we have this year without the support of our generous donors, our partners in industry, academia and beyond, and the assistance of the Australian and Victorian State Governments. Thank you all.

I look forward to keeping you updated on the exciting and productive activities occurring at the Florey, as we seek to solve the greatest brain and mind challenges of our generation.

From the Director,
Professor Steven Petrou
An innovator in brain research

The Florey’s research and innovations in discovery and clinical neuroscience translate to public value outcomes. Our work helps to improve the quality of life of individuals and their families. It increases their ability to live full and happy lives where they are empowered to participate in society and the economy. Our work transforms the way we assess population health to prevent or treat diseases of the brain and mind providing lasting economic and societal impacts.

The Florey believes that true innovation brings together information, expertise and methods to create something new. We can access multidisciplinary clinical and community platforms and researchers to position ourselves as a global leader in neuroscience and psychiatric research including where these vast fields intersect. Collaboration with our research partners, stakeholders, industry and patient advocacy groups will be key to success as an innovator. Our research outcomes and discoveries will enrich people’s lives and influence the future in positive and meaningful ways.

The foundation for our success

The Florey seeks to advance humanity through brain and mind science. The three pillars of our strategic plan for 2019 – 2023 outline how we work to understand, prevent, diagnose and treat conditions of the brain and mind.

An innovator in brain research

We enable ingenuity and visionary thinking to reveal the inner workings of the brain.

A hub for enriching partnerships

We unite people, ideas and organisations to solve complex problems that transform society.

A place for empowering people

We are an inspiring, public-good organisation with a deep commitment to diversity, equality, respect and integrity.

What we’re doing

Bringing together our multidisciplinary talent to open up new research opportunities.

Expanding our translation of scientific discoveries to improve health and wellbeing outcomes.

Forging a coalition of neuroscience, neurology, psychiatry and other partners to lead the creation of innovative solutions.

Developing our commercial acumen to deliver impactful research that contributes to economic growth.

Building awareness of the Florey’s research and the positive impacts we make in individual lives and within communities.
Professor Ashley Bush is optimistic that the puzzle of dementia will one day be solved. “As dementia researchers, we are very focussed on our goal,” said the co-head of the Florey’s dementia research theme and Director of the Melbourne Dementia Research Centre.

“Our current investigations aim to slow the rate of deterioration that occurs in dementia as early in the disease process as possible.”

“Beyond that, we hope to be able to stop the onset of dementia completely and even find a way to reverse it,” added Prof Bush.

During 2019, incredible advances have been happening at the Florey in the way that dementia is understood and could potentially be treated.

The work of Dr Matthew Pase and team identified an inflammatory marker called sCD14 that could potentially be used as a novel biomarker to assess a person’s risk of developing dementia. Dr Pase discussed the findings.

“When we looked at blood samples and dementia diagnosis of 4700 participants over a decade, we observed that people with higher blood levels of sCD14 also appeared to have a higher risk of dementia.”

“Our goal with this work is to improve early detection for dementia so that changes can be made before someone develops the disease,” he added.

In another study, Dr Pase and colleagues compared blood pressure medications in a global cohort of 31 000 people. He discovered that the use of any of the classes of anti-hypertensive medication were shown to reduce dementia risk.

“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 explained.

Professor Amy Brodtmann, co-head of the Florey’s dementia research, acknowledged the significance of this work saying it is the biggest study of its kind to report these findings.

“These results add to our ever-increasing understanding of the link between dementia and cardiovascular factors. I hope people are encouraged by this work to actively manage their blood pressure as these results suggest doing so may also reduce their risk of dementia,” said Prof Brodtmann.

She added, “I often get asked what people can do to lower their change of developing dementia and, in addition to managing your blood pressure, the answer is there’s a lot you can do.”

Get mentally active!

Social and mental stimulation is essential for brain health. This is more than sitting at home doing a sudoku puzzle – engage and interact with people as much as possible. Enrolling in an online course, learning a new language or instrument, or volunteering in your community are some ideas. The list is endless!

Get mentally active!

See you doctor regularly to get several key things checked; your blood pressure, your hearing and your blood glucose levels for diabetes. Importantly, take your doctor’s advice regarding treatment. Whilst most people may not find wearing a hearing aid ideal, hearing loss can contribute to social isolation which poorly affects brain health.

Get lean!

Obesity, hypertension and diabetes are all risk factors for dementia. Being in your healthy weight range can substantially lower your chance of developing the disease. Even achieving small weight loss goals at a time can make a big difference. Every bit counts.

Get fit!

The Heart Foundation recommends 150 minutes of moderate physical activity each week. That’s 30 minutes a day, 5 times per week of huff-and-puff exercise vigorous enough to break a sweat. Find something you love doing. On top of that, balance and resistance exercise, like yoga, tai chi or using weights, is needed to build and sustain muscle. All-in-all, keeping fit can help achieve a healthy body mass to lower your risk of developing dementia.

An innovator in brain research

Steps you can take to reduce your dementia risk

Tips from Professor Amy Brodtmann:

Get checked!

See you doctor regularly to get several key things checked; your blood pressure, your hearing and your blood glucose levels for diabetes. Importantly, take your doctor’s advice regarding treatment. Whilst most people may not find wearing a hearing aid ideal, hearing loss can contribute to social isolation which poorly affects brain health.

Get lean!

Obesity, hypertension and diabetes are all risk factors for dementia. Being in your healthy weight range can substantially lower your chance of developing the disease. Even achieving small weight loss goals at a time can make a big difference. Every bit counts.

Get fit!

The Heart Foundation recommends 150 minutes of moderate physical activity each week. That’s 30 minutes a day, 5 times per week of huff-and-puff exercise vigorous enough to break a sweat. Find something you love doing. On top of that, balance and resistance exercise, like yoga, tai chi or using weights, is needed to build and sustain muscle. All-in-all, keeping fit can help achieve a healthy body mass to lower your risk of developing dementia.

Get mentally active!

Social and mental stimulation is essential for brain health. This is more than sitting at home doing a sudoku puzzle – engage and interact with people as much as possible. Enrolling in an online course, learning a new language or instrument, or volunteering in your community are some ideas. The list is endless!

Getting involved in the Florey’s research through Public Lectures and events is a great way to tick both boxes of keeping socially and mentally stimulated.
In it for the long game

When it comes to research, it’s important to be in it for the long game,” says Professor Andrew Lawrence, Head of the Florey’s Mental Health Research, speaking about his work in substance use and addiction.

Professor Lawrence has been studying the brain mechanisms that underlie alcohol use disorder for over 16 years. His team were the first in the world to publish evidence on the role of a peptide system in the brain – known as the orexin system – in driving relapse to seek and consume alcohol, and know the serious unmet medical need for people who struggle with addiction.

“Over 155,000 Australians are hospitalised each year from alcohol use disorder,” said Professor Lawrence.

“The orexin system demonstrates just how complicated addiction can be. We know that the chronic intake of alcohol greatly disrupts sleep and wake patterns which, in turn, can drive the brain to further seek and consume alcohol,” said Professor Lawrence.

Suvorexant is understood to block the binding of orexin in parts of the brain involved in addiction. The drug also targets the amygdala, a brain region associated with mood disorders, including depression and anxiety.

Associate Professor Yvonne Bonomo, Head of St. Vincent’s Addiction Department, is overseeing the trial in Hospital.

“We are examining sleep measures in trial participants, as well as looking at alcohol withdrawal symptoms and ongoing alcohol use,” explained A/Prof Bonomo.

In the double blinded study, participants will receive either Suvorexant or placebo treatment daily for 7-10 days in hospital before continuing treatment for up to six months with regular follow up.

The success of the study could see the drug trialled in larger populations and other forms of substance abuse.

“It has taken more than 15 years to get from discovery to this trial, which we believe will have a dramatic impact for people living with alcohol use disorder,” said Professor Lawrence.
Meet Professor Anne-Louise Ponsonby

Public health physician.
Epidemiology research pioneer.
Head of the Florey’s Developing Brain research division.

Renowned for her expertise in molecular epidemiology, Professor Anne-Louise Ponsonby is on a mission to better prevent chronic disease and mental health disorders. Her research tackles population-scale questions by investigating and building evidence on disease-contributing factors and understanding how they interplay in different diseases. This field of research, known as epidemiology, means her skills can combine with other research fields to investigate brain disorders and healthy development of brain structure and function.

Professor Ponsonby is investigating key issues including possible adverse impact of modern chemical exposure on brain development, child disorders such as autism, and how environments can contribute to multiple sclerosis onset and progression. Her goal is to not only generate new evidence in these disease areas but also contribute to better preventative activities at an individual and population level.

Her work so far has contributed to the way that researchers and health practitioners understand, treat and prevent conditions in many disease areas. It has informed Australian and international public health policies and preventative guidelines bringing benefit to people across the globe.

Professor Ponsonby demonstrates the power that epidemiological studies bring to understanding disease and converting research knowledge to primary disease prevention.

In her investigations, Professor Ponsonby looks into the combined effects of environmental factors, underlying molecular pathways, genetics and the effectiveness of preventative interventions. Her approach transforms research into health outcomes.

Safe sleeping in Sudden Infant Death Syndrome

The pioneering research that Professor Ponsonby was a part of in Sudden Infant Death Syndrome (SIDS) has lasting impacts today. She was Co-Principal Investigator of a large birth cohort study of over 10,000 infants which generated new knowledge and guidelines for SIDS, including findings on safe sleeping positions and environments. In 2013, the Australian Bureau of Statistics marked a decline in SIDS incidence rates by 80% following these recommendations between 1990 and 2012.

Vitamin D and sun exposure in Multiple Sclerosis

Professor Ponsonby has contributed to studies building evidence for the association between higher vitamin D levels and reduced risk of subsequent multiple sclerosis. This new key understanding was used to update international guidelines on vitamin D and sun exposure for people with multiple sclerosis or people at risk of developing the disease. Further to this research, clinical trials are in progress pursing this area of investigation.

Optimising early environment to reduce food allergy

The establishment of research evidence on infant nutrition and food allergy by Professor Ponsonby helped contribute to the update of Australian and international infant feeding guidelines. She is pursuing additional research in infant nutrition aiming to identify healthy gut microbes that may benefit the immune system in pregnant women and infants.

Have you ever seen a brainbow?

This beautiful tractography image was taken by Dr Thijs Dhollander from the Florey’s advanced MRI development group. This technique, combining diffusion MRI and tractography, doesn’t just take pretty pictures. It’s also an important clinical tool for doctors showing nerve fibre pathways throughout the brain to help visualise nerve tracks and avoid damage to important areas of the brain during surgery.
When you have over 600 of the best and brightest minds working together to improve lives through brain research, it is bound to spark ideas. The Florey’s newly established Enterprise and Innovation office seeks to help researchers to move the ideas they have in the lab or clinic, through to industry partners who can collaborate or fund further development of these into new therapeutics, trials and other outcomes for the community.

Head of Enterprise and Innovation, Michelle Goldsmith, says the strength of the Florey’s discovery science and pre-clinical research, in addition to clinical expertise, provides a strong platform for translating discoveries for clinical application and benefit. "The Florey is committed to maximising the impact of its research from a clinical and economic perspective. The novel scientific discoveries made at the Florey, strong support of Governments and local talent mean it’s a great place to collaborate to solve some of our greatest health challenges.” She added, “So if you’re interested, get in touch – we’re open for discussions!”

Charlotte Weld-Blundell has been a highly successful one. Not only have they improved the pipeline of projects which will attract industry interest, speed up processing times of preparing and reviewing legal agreements, but they’ve also worked with a research team to attract up to $15 million of tranche funding for an exciting epilepsy project.

The team has also turned their attention to Florey Think Tanks, short workshops which bring together expertise and perspective from different groups at the Florey. Convening these great minds to consider the big questions like the most promising approaches to develop neurotherapeutics has already led to interesting ideas with four new opportunities now being pursued. Watch this space!

The Florey’s open for business

A hub for enriching partnerships

It takes many minds working together to produce cutting edge research, discoveries and innovations. The Florey is a major hub for neuroscience and mental health research. We recognise that we are stronger together and need to maximise our impact through innovative partnerships and collaborations to drive shared outcomes.

The Florey is located on the doorstep of multidisciplinary, world class researchers and cutting edge modern clinical and research platforms which we must deeply engage to maximise the potential leverage they provide. We are also the beneficiaries of a stable geopolitical environment making us a premier place to work, discover and invest. Our governments and communities have high expectations. We must listen to the challenges they face and use our capability as experts, researchers and advocates to bring together solutions unlimited by traditional roles and organisational structures. This will be an intrinsic part of sustaining our position as an independent medical research institute and enabling diversification of our revenue streams.

We are living in a time of increasing globalisation which brings challenges as we compete for brilliant people, research excellence and industry investments. It also brings opportunities for us to establish our international reputation for excellence, lead and be part of pioneering international collaborations in brain and mind research.

What we’re doing

- Strengthening our partnerships with organisations, universities and health services underpinned by a shared research vision and expectations.
- Empowering patient and carer communities, advocacy groups and the broader community as key partners who articulate research needs and expectations.
- Partnering with government to shape the forward research agenda, informed by our understanding of the brain and mind challenges most important to communities.
- Brokering commercial partnerships.
- Growing our local and international reputation for excellence to attract the best and brightest people and partnerships.
Global collaboration brings stroke trial to thousands of patients

Patients around the world will be able to take part in a novel stroke rehabilitation trial that aims to reduce disability after stroke. Partnering with over 50 hospitals in Australia and internationally, the Florey’s AVERT Early Rehabilitation Research Group brought the study to life in 2019.

The trial, named AVERT DOSE, expects to recruit more than 2500 participants in Australia, New Zealand, United Kingdom, Ireland, India, Brazil, Singapore and Malaysia.

It was made possible through strong partnerships between the Florey, international investigators and hospital staff, united in making a difference to the lives of people and their families who experience stroke.

At the helm of the trial is the Florey’s Professor Julie Bernhardt, a world leader in stroke rehabilitation.

“We are so pleased to partner with hospitals around the world in this trial because we believe the results will inform best practise for stroke rehabilitation on an international level,” said Professor Bernhardt.

“Stroke is a major cause of severe adult disability worldwide, yet there is no high-quality evidence about the best therapy to provide in the early recovery phase after a stroke,” explained Prof Bernhardt. Prof Bernhardt and her team conceived the innovative, adaptive study design of AVERT DOSE. The design ensures that patient outcomes help direct new participants into treatment arms showing the most promise as the trial continues. This means that there is direct benefit for patients who are involved.

“We know that exercise and rehabilitation interventions after stroke can make a big difference to a person’s outcome,” Prof Bernhardt said.

“The trial will help determine a safe and effective rehabilitation program for patients with both mild or moderate stroke severity in the early stages after their stroke.”

In a collaborative treatment approach, researchers, physiotherapists and nurses work together to deliver four different mobility therapies to patients within 48 hours of stroke, and care continues over two weeks or until the patient is discharged from hospital.

The study also involves additional research investigations looking at genetics, brain imaging, cognition, and other information that will improve our understanding of stroke and how best to treat it.
In the fight against MND together

In Australia, two people are diagnosed with Motor Neurone Disease (MND) each day and more than 2,500 people are living with the disease. The team at the Florey are continuing the fight against MND by leading investigations to utilise precision medicine to profile patients, develop therapeutic candidates, and bring possible treatments to clinical trials.

In 2019, the Florey was awarded significant funding from FightMND to pursue four world-first research projects.

FightMND Research Director, Dr Bec Sheean, shared why the ongoing research partnership between the Florey and FightMND is so important.

“At FightMND, our goal is to facilitate and fast-track the translation of new discoveries into promising new treatments for MND.”

“Researchers play a critical role in the fight against MND, and we are excited to continue our partnership with the Florey and support these innovative projects and outstanding researchers to improve outcomes for this devastating disease,” said Dr Sheean.

The Florey team continue their ground-breaking work to address important gaps in MND research and bring potential treatments to light using frontier science.

“We are grateful to FightMND and the amazing generosity of its supporters for helping us to carry out these vital studies which we hope, in turn, will deliver benefits back to people living with MND and their families,” said Associate Professor Brad Turner.

In announcing the funding for new projects, FightMND CEO, Jamie Howden, said that early and potentially positive signs from clinical trials and drug development are already being seen from research projects underway.

**Associate Professor Brad Turner, Head of the Florey’s Motor Neuron Disease Laboratory, is leading a $2M national Precision Medicine Program for MND that seeks to profile MND patients. The genetic, molecular and metabolic makeup of 150 Australians with MND will be studied for the first time, generating biological signatures or ‘barcodes’ which can group MND patients and guide them to the most appropriate clinical trial.**

**Associate Professor Lachlan Thompson, Head of the Florey’s Neurogenesis and Neural Transplantation Laboratory and his team are investigating the benefits of stem cell therapy in MND with a view to advance pathways for a stem cell clinical trial.**

**Dr Fazel Shabanpoor, recently awarded the Inaugural FightMND Mid-Career Research Fellowship, aims to develop potential new MND treatments that prevent the accumulation of toxic substances in motor neurons and improve the ability of a motor neuron to clear the toxic substances it produces.**

**Dr Mouna Haidar and colleagues are creating a new model which replicates core features of random MND, the most common form of the disease, to allow testing of potential treatments that may slow the progression or cure the disease.**

Images on the left:

Top: Fight MND Co-founder Neale Daniher, A/Prof Brad Turner and Florey Director Prof Steve Petrou at the 2019 Big Freeze event.

Bottom Left: The Florey MND team show their support at the 2019 Big Freeze event with (L-R) Dr Samantha Barton, Ted Wang, A/Prof Brad Turner, Stefano Frausin, A/Prof Lachlan Thompson and FightMND Research Director Dr Bec Sheean.

Bottom Right: A/Prof Brad Turner, Neale Daniher and Dr Bec Sheean discuss the precision medicine program at the Florey. Photo: Jake Nowakowski, Herald Sun.
The Florey has farewelled an old friend, with the retirement and decommissioning of the 4.7T small animal MRI scanner that has been hard at work for over 20 years.

The machine was retired after running thousands of scans which improved understanding of how the brain is affected by conditions including dementia, stroke, epilepsy, traumatic brain injury and multiple sclerosis, as well as contributing to studies of brain development. The decision to retire the scanner came as it was unable to compete with new higher field systems.

Associate Professor Leigh Johnston, former Head of the Animal MRI facility, said retiring the scanner came with mixed emotions.

“The 4.7T Bruker MRI scanner was a beautiful piece of technology that was integral to the careers of many neuroscientists, physicists and engineers over the years,” said A/Prof Johnston.

“Like learning to drive on a manual car, working with the 4.7T accessed the fundamentals of MRI in a way that fully automated modern systems perhaps obscure. Repetitive manual operations such as gas refills will not, however, be missed!”

Like all legends, the scanner has a colourful history. In 1999, funds for the project were raised through the Japan-Australia Gala Ball in the presence of distinguished guests including Their Imperial Highnesses Prince and Princess Tomohito of Mikasa and His Imperial Highness Prince Katsura, then Premier of Victoria The Hon. Steve Bracks, Mr Ballieu Myer and Mr Buck Myers.

In his speech launching the scanner’s operations in 2000, Mr Charles Goode AC, then President of the Howard Florey Institute commented that it “has already drawn together a number of world renowned scientists undertaking neuroscience research and it will no doubt attract other scientists.”

This proved to be the case with images being produced by the scanner being referenced in hundreds of scientific papers.

“The machine has a long history of bringing people together to work on different topics. The retirement was no different.”

Benny Gregersen, Florey Facilities Manager

The Florey’s facilities manager, Benny Gregersen, said the task of decommissioning the machine required many people working together. With walls and ceilings in parts up to 70mm thick solid steel this was a complex removal that took patience and skill.

“I’d like to thank David Wright from the Florey and A/Prof Leigh Johnston from University of Melbourne who oversaw the initial pack up and decommissioning as well as the venting of the liquid helium, Arete for their construction services, and a special mention to Christian Wesley from Greenspace for removal and recycling of the components.”

The Florey would like to thank our philanthropic donors including the Ian Potter Foundation and Mr Charles Goode AC, community donors, and the Victorian State Government, Australian Research Council and National Health and Medical Research Council for enabling purchase of the machine in 1999 and its ongoing maintenance. While there are no immediate plans to replace the scanner, pre-clinical imaging will continue with locally available scanners.
A place for empowering people

The Florey’s staff and students are the bedrock of our research and success and have a strong commitment to excellence and integrity. We want everyone at the Florey to feel inspired by and connected to our collective vision and mission.

We have wonderful people who demonstrate enormous collective strength, and as a cohesive and connected organisation we are greater than the sum of our individual parts. We strive for a profound and positive impact on the local and global community. However, inspiration and ‘fire in the belly’ starts with individuals and it is the way we work that will empower our people to have great dreams and do outstanding things.

Our future focus starts with an unwavering commitment to diversity and inclusion and a desire to provide a place of tremendous opportunity for everyone.

What we’re doing

- Attracting, developing and retaining the best and brightest people.
- Embedding shared values and behaviours that support and empower our people.
- Enhancing equality and diversity to ensure that the Florey is a great place to study and build a career.
- Enabling the cross-pollination of ideas and experiences that underpin wonderful research outcomes.
Changing lives

2020 marks the six-year anniversary of the pioneering brain surgery that changed Rachel Vella’s life by completely controlling her epilepsy and freeing her from the seizures that dominated her life as a teenager.

Rachel Vella and Professor Graeme Jackson, Head of the Florey’s Imaging and Epilepsy Laboratory and Leader of the Australian Epilepsy Project team, are now on a mission to bring access to these life-changing technologies to all Australians living with epilepsy through a nationwide network of community hubs. The Australian Epilepsy Project is bidding for up to $100m as part of the Medical Research Future Fund which, if successful, would be the single biggest investment in epilepsy ever in Australia.

Within the first five years of operation, it’s estimated that the Australian Epilepsy Project would be able to deliver faster and more accurate advice about diagnosis and treatment options to over 5,000 Australians with epilepsy and their treating neurologists. The result of this would be immense, leading to fewer seizures, fewer deaths and better quality of life.

From the age of 14, I experienced recurrent, convulsive seizures that began totally out of the blue. Every morning when I woke up it felt like I’d run a marathon. I couldn’t get up for school and when I did make it into the classroom, I couldn’t take anything in. Seizures took over my life.

I spent four years being told I was ‘untreatable’. Medication couldn’t control my seizures and it had so many side effects. My parents and I were desperate for answers as my quality of life really wasn’t good. It’s frightening to think of what would not make a difference at all.

When I first met Rachel, she’d tried every available treatment for her epilepsy. A colleague at the Royal Children’s Hospital suspected a focal brain abnormality was causing her seizures, but he needed proof. He hoped the advanced MRI scanner and analytic technologies we have here at the Florey could help.

Our specialised imaging capability can produce remarkable images of the brain – both its function and structure. From those images, one of our researchers identified a tiny part of Rachel’s brain in the region that controls language – barely 7mm – that had abnormal functional connections and was likely where her seizures were originating.

With an identified target, surgery to remove that tiny area became an option. However, the bit we wanted to get at was in a spot that is hard to precisely identify during surgery.

The surgery I had at the Austin Hospital went for almost 6 hours, involving 34 doctors, surgeons and nurses. Straight away I felt like a different person - in a good way. I’d always withdrawn into myself to try and stop my seizures, and so I’d often just stop talking. But after the surgery I was suddenly able to react and respond much more quickly. It was the first time I felt like I could just be myself.

I’ve been seizure-free ever since. I’ve moved out of home. I’m able to drive and I’m working as a primary school teacher. None of this would have been possible without this surgery.

The problem was, this is unbelievably hard to do! No one at that stage thought it was possible without this surgery.

Rachel had the tiniest operation we’ve ever done at the Austin – unbelievably tiny. And it completely cured her. To look at her now and to see what she’s out there achieving shows why linking research with clinical treatment is so important.

It can’t have been an easy decision for Rachel or her family to consider our proposal, knowing we were doing this kind of limited surgery for the first time. They placed enormous trust in us.

As a result, however, we not only changed the lives of Rachel and her family, but also of many other Australians who may benefit from similar treatments.

“Rachel’s story is an example of the science that should be available to all people with epilepsy, but that only very few currently have access to. With the right investment, we can change this. It’s my life’s goal and I know the Australian Epilepsy Project can make it a reality.”

Professor Graeme Jackson
Lead Researcher

If we’d performed a bigger surgery to make sure we removed it all, there was a risk it could result in severe language deficits. So, we really needed to be able to pinpoint the area and remove just that tiny sliver with absolute precision. The problem was, this is unbelievably hard to do! No one at that stage thought routine surgery could remove just this tiny bit and no more.

To solve this problem we painstakingly mapped all the veins and small blood vessels in Rachel’s brain to create a 3D map that could guide the Austin’s surgical team to this precise spot.

You can help make the Australian Epilepsy Project a reality by visiting www.epilepsyproject.org.au to find out more, and sign the digital supporter’s board.
Over 19 students who conducted their research at the Florey graduated in 2019, providing a new crop of enthusiastic young scientists. But what does it mean to be a Florey student? Our PhD students asked themselves this question last year, and generated a list of Florey Graduate Student Attributes that encompassed that very question.

The framework defines the attributes and experiences which provide a unique ‘Florey experience’ in addition to the training they receive from their host university.

The Florey’s Graduate Research Committee chair, Associate Professor David Abbott, commended the student group on putting together a carefully considered and thoughtful framework.

“The Florey’s graduate research program is nurturing the next generation of world-leading scientists. The attributes help ensure we continue to provide a fulfilling all-round educational experience, relevant to successful long-term career paths in academia and industry,” said Associate Professor Abbott.

“The Florey and our partner universities offer a wealth of potential professional development activities and experiences, beyond a student’s research project. Defining desired outcome attributes helps students to plan their candidature to best benefit from these opportunities.”

2019 SOFI education officer and PhD student, Ruby Lipson-Smith, said that undertaking a PhD at the Florey has been an incredibly rewarding experience.

“My PhD research is in stroke rehabilitation and environmental psychology and I study how the physical environment of rehabilitation facilities might impact how people recover after they have had a stroke. I’m interested in a career in research, and I’m also keen to investigate what I can contribute in the world of health policy and government,” said Ms Lipson-Smith.

“The process of developing the attributes in consultation with staff and graduate students in the ‘Students of the Florey Institute’ committee confirmed to me that graduate students have a lot to offer beyond their field of expertise and our transferable skills. Hopefully the attributes will help graduate students to recognise these skills and be able to communicate them to potential employers.”

The Florey Graduate Student Attributes framework is designed to be a living document, allowing for updates every 4 years to ensure that it remains relevant to the leading neuroscience and mental health sector.

**Florey Graduate Student Attributes**

1. Understanding of the ethical, legal, social and civic responsibility as a researcher and scientist.
2. Confidence in the ability, knowledge and skills related to the research discipline.
3. Understanding of how skills and knowledge are relevant in a variety of contexts.
4. Preparedness to collaborate, resolve conflicts, lead and manage teams, and be respectful of others.
6. Ability to maintain a flexible and creative mindset to promptly identify problems and to find resolutions: both initiating projects and being a constructive participator.
7. Confidence in the ability to communicate knowledge to scientific audiences and the general public.
8. Empathy for people affected by neurological or mental illness – those with a diagnosis, their families and their careers.
When Katherine Lim and Shanshan Li started to discuss their career paths, they quickly realised that they developed a wide variety of skills during their time as research assistants at the Florey. Despite working in different labs, Ms Lim and Ms Li realised they had similar experiences in providing assistance through every part of a research project – from lab based work, project management and even contributing to grants preparation. It was this realisation that led them to create the new group Florey Research Assistants (FloRA).

The Florey Postdoctoral Association had a memorable 2019 expanding their professional networks and building collaborations with scientific and clinical leaders across the world. Having liaised with senior academics to organise and promote six events, this group of early career researchers say they feel empowered and well positioned for career development and progression. Florey Postdoctoral Association co-chair, Dr Sharon Kramer, said that working together eased the transition from seeing senior academics as the experts, to now seeing them as experts and collaborators.

"After finishing your PhD you need to find the confidence to build and expand your own network. Once you get over the initial awkwardness, you quickly realise that in general people are very generous with their time and ideas," Dr Kramer said.

Make up almost 20% of the Florey’s workforce, research assistants come from many different backgrounds and can have different career paths ahead. The duo say there’s been enormous benefit in sharing and discussing their experiences.

"Being a research assistant is such a rewarding multi-dimensional career. Even within the research community at the Florey, there is such diversity, with some people only starting their careers in science and others who have been here for over 30 years. Being a research assistant means you’re constantly learning and to have a platform to share that knowledge with others in the research assistant community is very empowering," said Ms Li.

The newly established FloRA committee will be focusing on providing professional development and networking activities for all Florey Research assistants participate in during 2020.

"It was reassuring to realise that when you speak to other early and mid-career researchers and even senior researchers, you’re not the only one, everyone has the same struggles. I think it is important to understand that leading and learning is part of science. Our group has been able to learn from current leaders and also share our experience with the next generation through contact with Florey students."

The Florey's postdoctoral fellows also gained valuable experience through travel awards provided by generous donors. These awards provide early career researchers with the opportunity to present their work at an international scientific conference, linking them with experts across the world.

Co-chair of Florey Postdoctoral Association and winner of the Austin Health CEO’s Award for Clinical Research in 2019, Dr Laura Bird, said that travel awards enable early career researchers to expand their network with international researchers.

"At conferences, I can build networks with my peers in the field from all different career stages and further my intellectual development. Now that I’ve completed my PhD, I am trying to propel my academic career," said Dr Bird.
"It was an enormous privilege to undertake a PhD at the Florey," Mark says. These days, Mark is Chairman of the Caledonia Investments funds management group, a company he co-founded back in 1992. Caledonia is a global investment management firm that aims to achieve high returns over a long-term timeframe. It focuses on deep, fundamental research and high conviction investing.

In 2019, Mark nominated the Florey as a beneficiary of Hearts and Minds Investments Limited (HM1). HM1 is a new investment company that offers shareholders a concentrated portfolio of the highest conviction ideas from leading fund managers, one of which is Caledonia. HM1’s donations, made every six months, are designed to encourage the development of medicines and to drive a new generation of medical research in Australia.

"Neuroscience is an area that the world really needs to focus on," said Mark. "Any investor will think very carefully about where they want their money to go. This initiative isn’t a band-aid. This aims at big ideas, prevention and ways we can have far-reaching effects on human health. It’s almost at the stage that if we don’t fund brain research now and wait 20 years, we’ll look back and think ‘oh, that was a mistake. If only we’d done something at the time’.

Dr Mark Nelson looks back at his time as a student at the Florey with great fondness. Studying neuroscience and applied physiology, Mark was overwhelmed to be surrounded by internationally renowned geneticists and other specialists.

Congratulations to all of the 2019 Florey PhD and Masters graduates. Graduation from these courses is recognition of the significant and original contributions that you have made to human knowledge through your research.

Performing Lainie Chait, also known as Electro Girl, provided our staff and students with a personal exploration of her experience living with epilepsy at one of the Florey’s innovation events. Florey staff member, Karen Barclay Moss, recounted the performance as “an electrifying, informative and moving first-hand account about living with epilepsy.”

A fascinating presentation of research in our 2019 public lecture was by Dr Terrance Pang, speaking about how life experiences and environmental factors could modify behaviour across generations.

Professional development offered to research and support service staff in 2019 included our annual mentoring program, ‘We Flourish’ leadership training and more.

Our enthusiastic staff and students welcomed scientists of the future at the Florey’s 2019 Open Day for graduate student recruitment.

Eight-year-old scout Daniel Harris provided funds and inspiration to us all when he held a school bake sale in honour of his late nanny Alison Milhavet who passed away in 2019 after a difficult battle with Multiple System Atrophy.

A record year

From the Chair of the Florey Foundation Council, Mr Ross Oakley OAM

Thank you to all our donors who gave generously and provided a record level of support to the Florey in 2019.

On behalf of the Florey’s 600 scientists, I would like to extend a massive thank you to each and every one of you for your ongoing commitment and support. Your gifts support research into debilitating diseases that indiscriminately strike Australians at different life stages.

Thanks to you, Florey scientists are studying the developing, maturing, and aging brain to tackle these diseases. As an organisation, we are inspired by the fact that our donors also represent an amazingly diverse group of Australians of all ages who are committed to our cause. We wanted to highlight two stories among the many exceptional contributions made by our donors in 2019.

Eight-year-old scout Daniel Harris at his school bake sale

A rare neurodegenerative disorder, Multiple System Atrophy, affects the nervous system and movement. The Florey’s Parkinson’s Disease Research Laboratory is conducting research on understanding the basic cellular functions and the changes in cells that can result from the disorder.

Like us, Daniel’s mother, Nicole, was naturally very proud of her son’s efforts.

“He chose to donate the proceeds he raised to the Florey Institute in order to help people like his nanny. He was very happy with his first ever fundraising effort and his contribution. I am too, it’s a great feat for an eight-year-old!”, said Nicole.
**Financial Snapshot**

<table>
<thead>
<tr>
<th>INCOME</th>
<th>2019</th>
<th>$M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grants</td>
<td>45.2</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>18.7</td>
<td></td>
</tr>
<tr>
<td>Philanthropy</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>Total Income</td>
<td>85.5</td>
<td></td>
</tr>
</tbody>
</table>

| EXPENDITURE | | |
| Salary and wages | 45.5 |
| Other research expenditure | 25.2 |
| Depreciation and amortisation | 3.6 |
| Other items (non-cash) | (0.3) |
| Total Expenses | 74.0 |

| SURPLUS / (DEFICIT) | 11.5 |

| FINANCIAL POSITION | DEC 2019 |
| Current assets | 62.9 |
| Non-current assets | 62.2 |
| Total assets | 125.1 |
| Liabilities | 13.9 |
| NET ASSETS | 111.2 |

| SOURCES OF INCOME | 2019 | $M |
| Government | 38.6 |
| Commercial | 18.7 |
| Philanthropy | 13.0 |
| Peer review grants | 6.6 |
| Investment | 1.4 |
| Other | 7.2 |
| TOTAL | 85.5 |

| INVESTMENTS | DEC 2019 | $M |
| Available-for-sale investments | 30.1 |
| Term deposits | 13.6 |
| Cash-at-bank | 8.5 |
| TOTAL | 52.2 |
Our Impact

115 Countries in which the Florey has been referenced

18 PhD and 1 masters Completed by students of the Florey department

848 Scientific papers published by Florey researchers

14,950 Mentions of the Florey on social media

25 Schools that the Florey engaged with

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The Florey inspired me to continue my passion within science and motivated me to explore the diverse research and career possibilities.”

Kimia Mehrkanoon

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“The Florey inspired me to continue my passion within science and motivated me to explore the diverse research and career possibilities.”

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“When the Florey inspired me to continue my passion within science and motivated me to explore the diverse research and career possibilities.”

Kimia Mehrkanoon

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams

“Truly admire the work done by the Florey Institute and appreciate the Tuesday lectures.”

Glenys Pianta, Florey donor

“The workings of the brain are so intricate and mysterious – it is a privilege to be let in on the various journeys of discovery which is the essence of the Florey!”

Margo Garnon-Williams, Florey bequestor

“I’m really impressed with the ongoing work all at Florey are doing. Thank you.”

Jenny Tatchell, Florey donor

“Thank you for keeping up the fight so many people have already lost. Absolutely incredible job and all from our own very Aussies!”

Samantha Alford

“Well done ladies, great inspiration for young girls!!”

Fiona Adams
The Florey Institute of Neuroscience and Mental Health is the largest brain research centre in the Southern hemisphere specialising in diseases of the brain and mind. Over 4.7 million Australians each year are directly affected by the illnesses we study. We are a world leader in discovery science, imaging technologies, clinical trials, population studies, data analytics and more. Our scientists share a common goal – to improve the lives of people through our brain and mind research.

We study:

— Addiction  
— Alzheimer’s disease  
— Anxiety  
— Autism  
— Bipolar disorder  
— Cardiovascular disease  
— Concussion  
— Depression  
— Epilepsy  
— Huntington’s disease  
— Motor neurone disease  
— Multiple sclerosis  
— Parkinson’s disease  
— Schizophrenia  
— Stroke  
— Traumatic brain and spinal cord injury

There are many ways you can help to fund our research.

— Give today.  
— Pledge over time – join our Brains Trust.  
— Plan for the future – make a gift in your will.

Phone: 1800 063 693  
Email: fundraising@florey.edu.au  
Online: florey.edu.au  
Post: The Florey  
Reply Paid 83037  
30 Royal Parade, Parkville VIC 3052

Donations to the Florey Institute of Neuroscience and Mental Health of $2 or more are fully tax deductible.

To request copies of our annual report, please email:  
fundraising@florey.edu.au

The Florey Institute of Neuroscience and Mental Health acknowledges the traditional owners of this land, the people of the Wurundjeri people and the Kulin Nations. We pay our respects to their elders, past and present.