

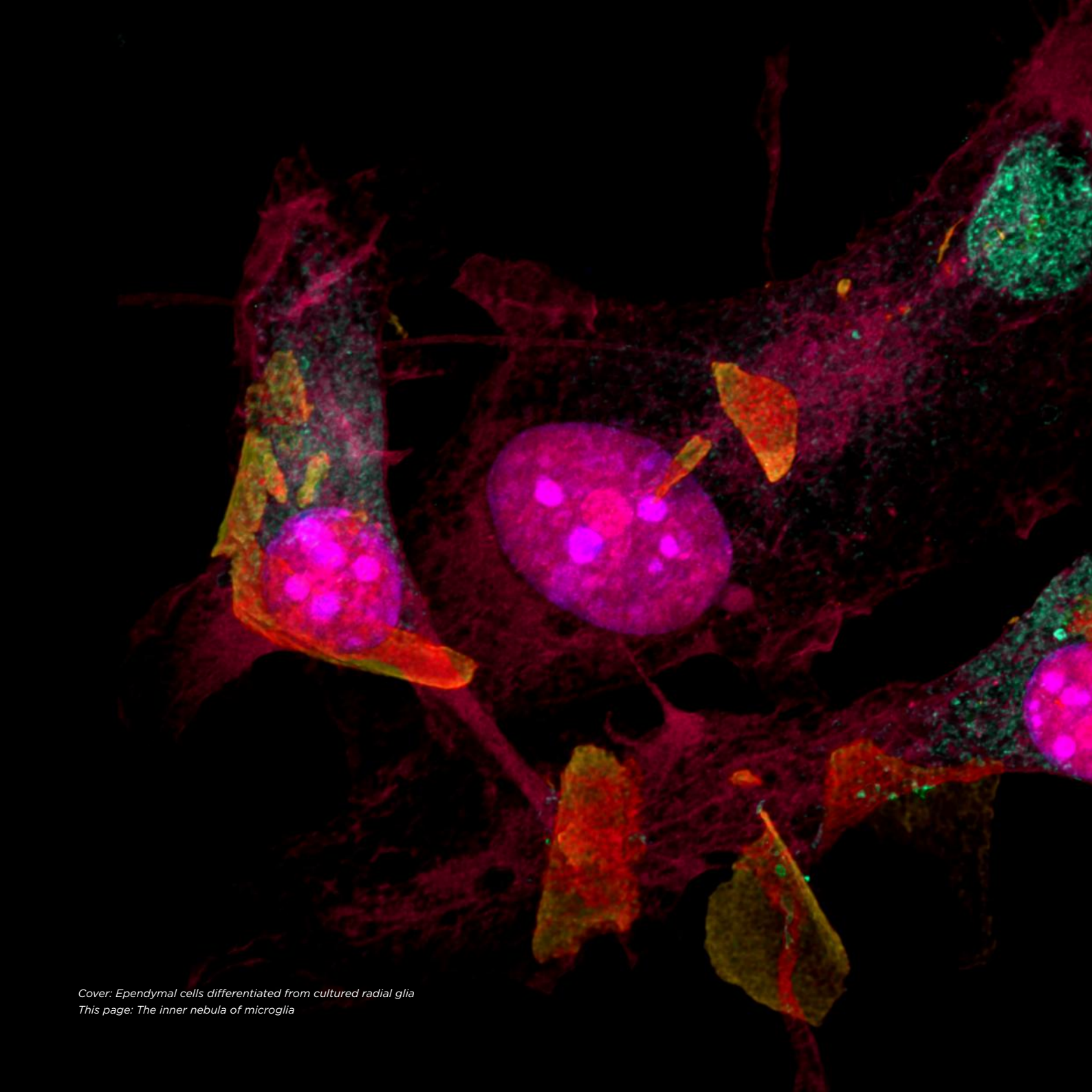
Queensland Brain Institute

Discovering the brain. Changing lives.

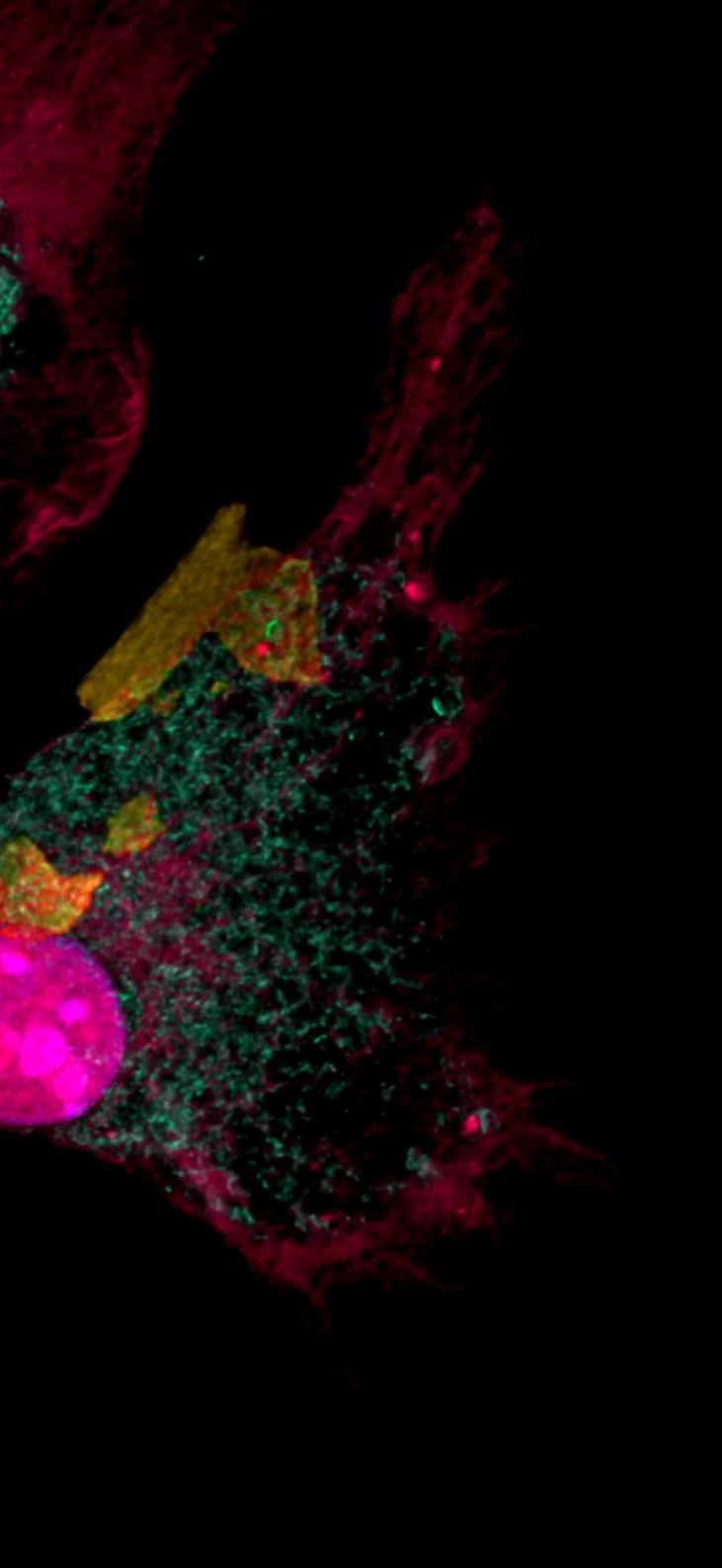


THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

CREATE CHANGE



Cover: Ependymal cells differentiated from cultured radial glia
This page: The inner nebula of microglia



The Queensland Brain Institute (QBI) at The University of Queensland was established in 2003: created with the generous support of Chuck Feeney through The Atlantic Philanthropies and bolstered by the visionary leadership of founding Director, Emeritus Professor Perry Bartlett AO. Along with the support of many esteemed benefactors who have followed in their wake, QBI has flourished to become one of the world's leading neuroscience institutes. Every day, our researchers uncover more about the brain — the wondrous, complex and mysterious organ that makes us who we are.

A message from Jeff Maclean – Chair, QBI Advisory Board

At the Queensland Brain Institute, we are excited by the infinite possibilities of the brain.

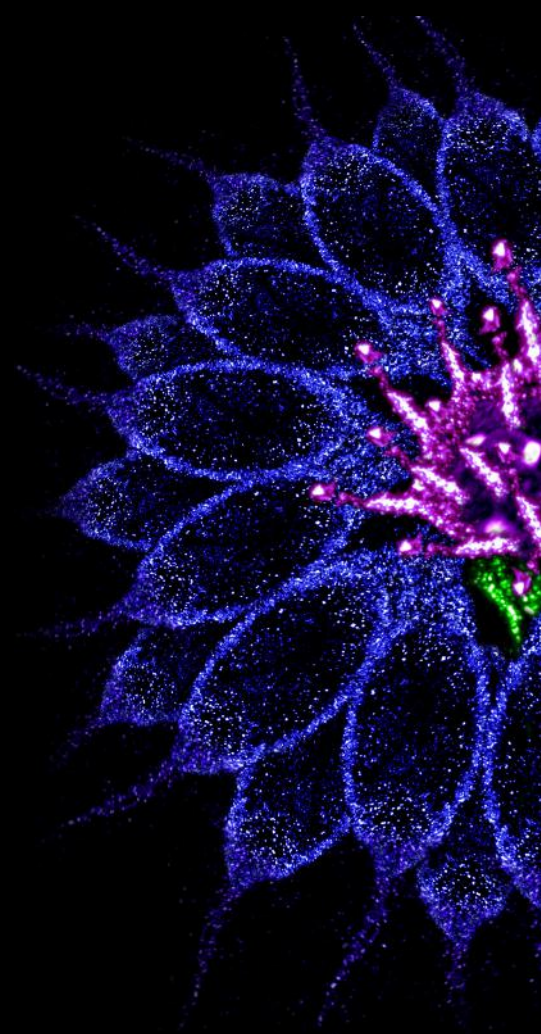
QBI's research drives paradigm-shifting innovation. The talented team advances work from discovery to translation, and encompassing molecules, synapses, circuits, behaviour, and brain injuries and disorders.

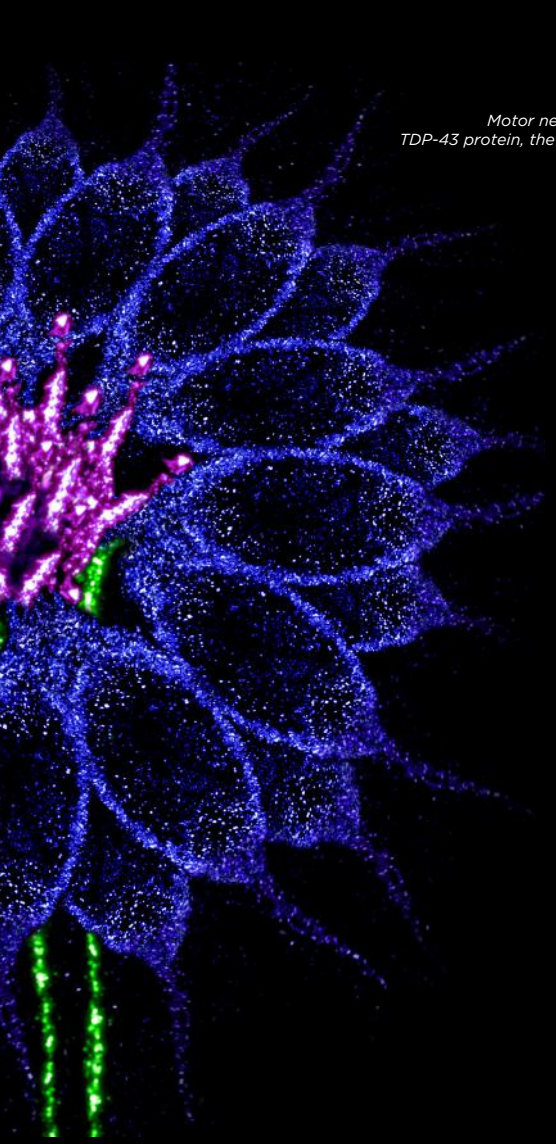
QBI's discovery of ultrasound discovery to treat Alzheimer's disease and the EphA4 clinical trials progressing a new treatment for motor neurone disease are only two examples of how fundamental research is providing new approaches to tackle major brain health challenges, with potential benefits worldwide.

A sustainable platform for discovery is vital for QBI's continued scientific success. We've come a long way, but there is still much to learn about this complex organ.



“A bold ambition to do things differently drives QBI neuroscientists to push the boundaries of discovery and translational research.”





*Motor neurons expressing
TDP-43 protein, the hallmark of MND*

Please consider partnering with QBI to help reduce the impact and cost of brain disease and disorder.

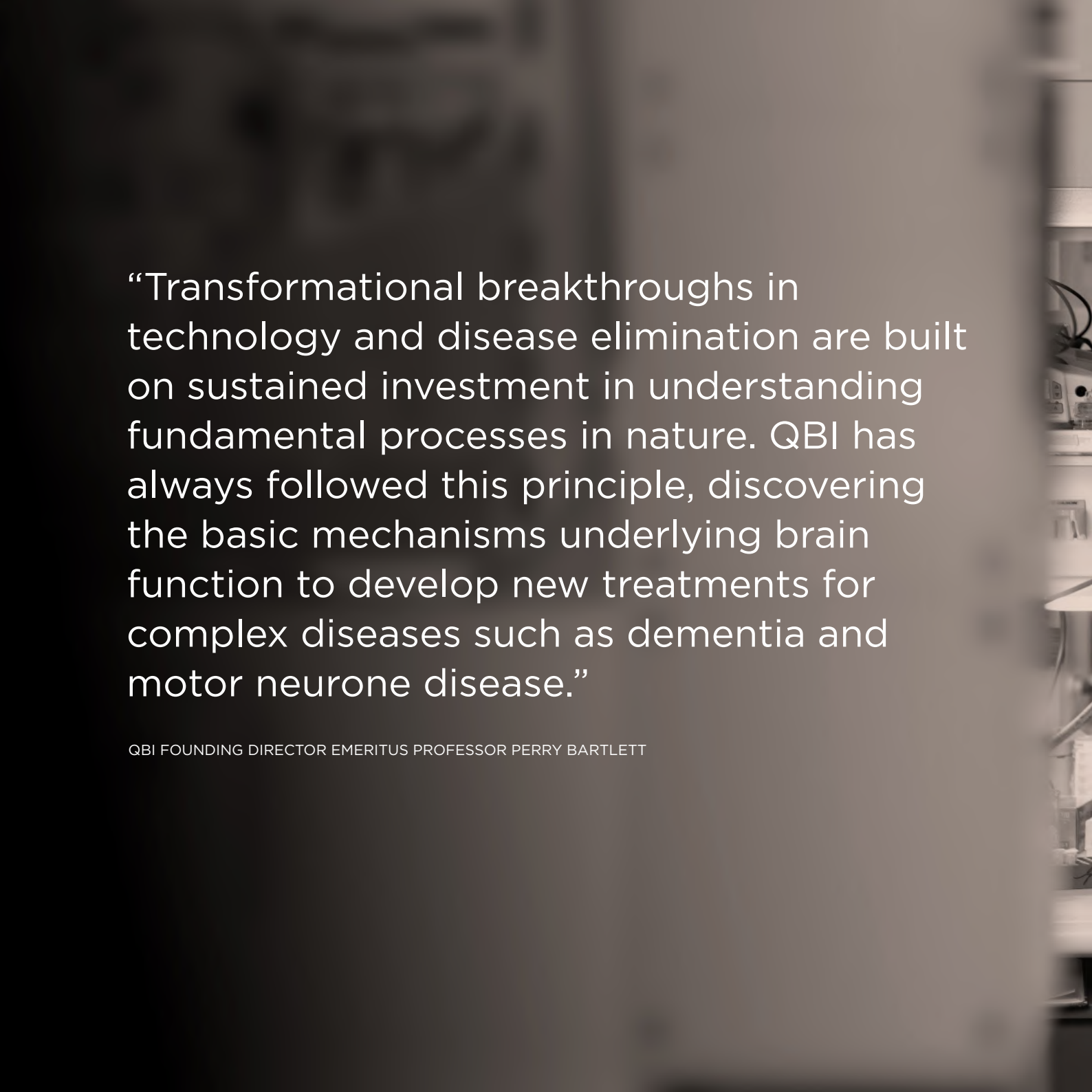
Through your generosity, we can accelerate new ideas that lead to scientific breakthroughs, support young researchers, progress early-stage, transformative projects, generate new medical technologies, and advance clinical trials. Your contribution will have a significant impact, inspiring both our scientists and the people who their discoveries may help.

QBI's bold ambition to do things differently drives neuroscientists to push the boundaries in research. I invite you to support our remarkable journey.

Jeff Maclean Chair, QBI Advisory Board

Our mission

Unlocking the mysteries of the brain to generate new knowledge, understand learning and memory, and develop new technologies to improve lives, and diagnose and treat brain disease and improve mental health.



“Transformational breakthroughs in technology and disease elimination are built on sustained investment in understanding fundamental processes in nature. QBI has always followed this principle, discovering the basic mechanisms underlying brain function to develop new treatments for complex diseases such as dementia and motor neurone disease.”

QBI FOUNDING DIRECTOR EMERITUS PROFESSOR PERRY BARTLETT



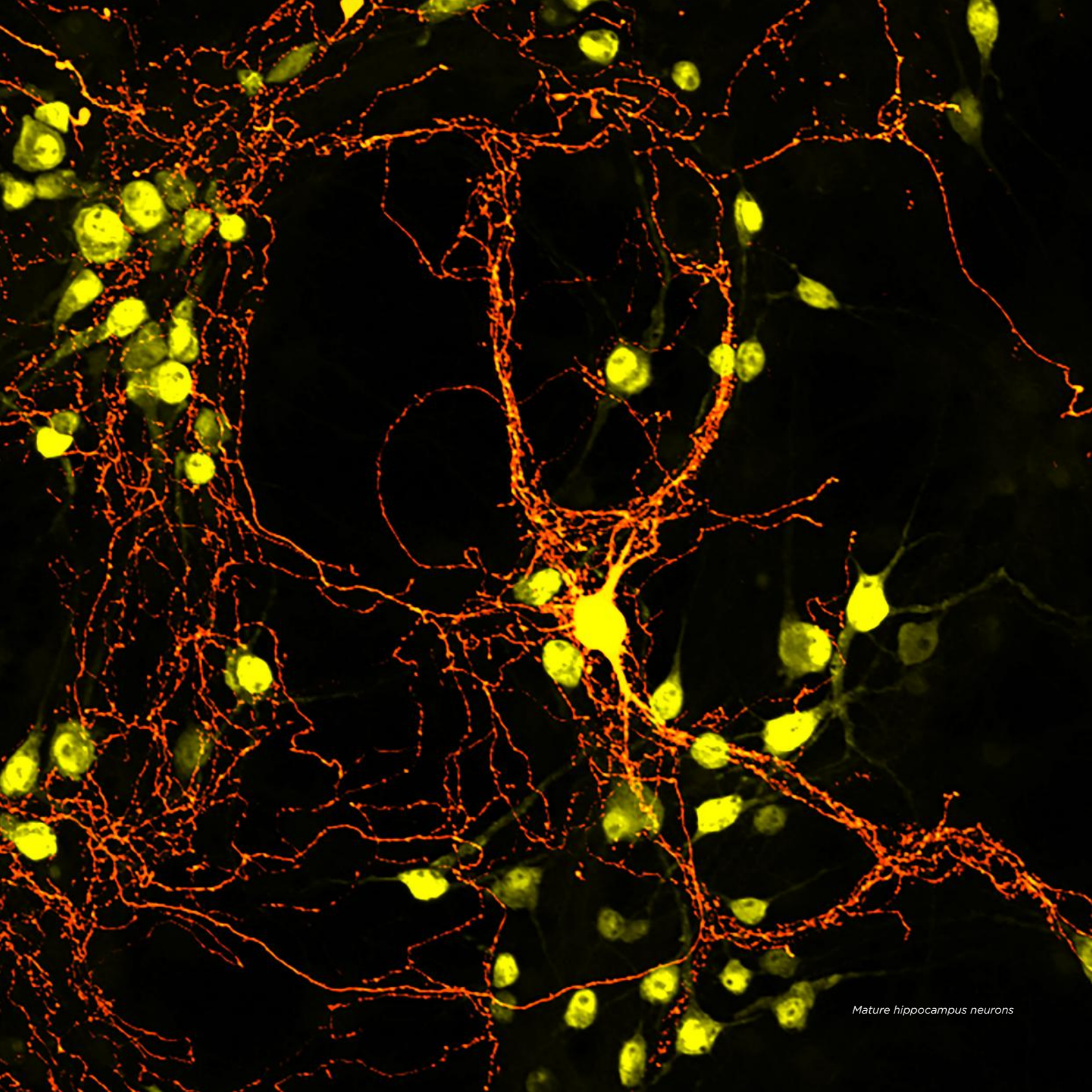
Queensland Brain Institute

The brain, a marvel of nature, is an extraordinary and awe-inspiring organ, intricately designed to house the very essence of human thought and consciousness. Like an uncharted territory, it holds vast expanses of knowledge and potential, much of which remains undiscovered.

Similar to the mysteries of space, there is so much we have yet to comprehend about this enigmatic organ. The more we explore and question its workings, the more it unravels, revealing its profound complexity and leaving us with a multitude of unanswered questions. The brain's capacity to process information, form

memories, and generate consciousness is a testament to its remarkable capabilities. It is a perpetual source of wonder, forever urging us to delve deeper into its boundless depths, in an ongoing quest for understanding and awe.

QBI's discovery science is the essential first step in creating pathways out of neurological disease – pathways towards real hope. There is no way forward without this kind of fundamental research, and without the continuing support of QBI's generous benefactors.



Mature hippocampus neurons

Our impact

QBI scientists devote their careers to understanding brain function and to progressing high-quality research. Their work is exemplified in five key areas:

Dementia and Ageing

We recognise that dementia is one of society's most pressing health problems. QBI is home to more than 100 world-leading dementia experts in our Clem Jones Centre for Ageing Dementia Research. Our scientists are focused on translating QBI's enhanced knowledge of ageing and dementia research into clinical treatments and interventions that will make an enormous difference to the lives of those living with dementia and their loved ones.

Brain Injury

Monitoring how our brain responds to damage and how it recovers will help inform new diagnostic tools for brain injuries, and more personalised therapies. Our work spans basic science through clinical translation, across the full trajectory of brain injury – from diagnosis through acute care, treatment, rehabilitation and community integration.

Brain Development and Plasticity

Knowing how our brains are built and learn from experience will promote life-long cognitive health and develop a new generation of therapeutics to treat neurological disease. We are leading major discoveries in neuroplasticity, and advancing knowledge of how we treat brain disorders such as stroke, Parkinson's and motor neurone disease.

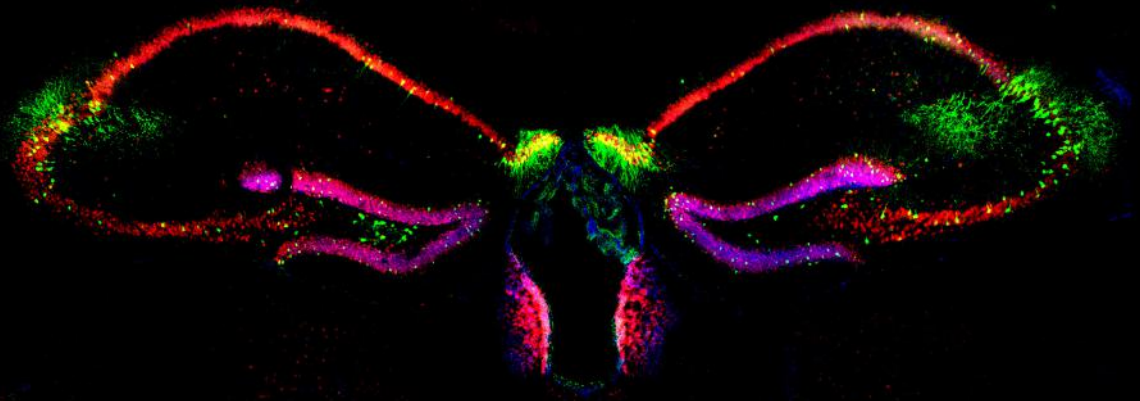
Mental Health

Improving our understanding of brain function and malfunction will inform revolutionary new therapeutics to combat the neurological and mental health illnesses that increasingly affect both our young and ageing population. Our researchers are uncovering new insights behind a range of mental health conditions, including anxiety and depression, Post Traumatic Stress Disorder, addiction, schizophrenia, and Autism Spectrum Disorder.

Cognition and Behaviour

Explaining how our brains produce thoughts, actions and emotions will help us understand the levers that control higher brain functions, such as cognition, learning and memory. Our work examines how we think about thinking, how we take in and process information, and how we can do that more efficiently.

The hippocampus of an adult mouse lights up with viral and jellyfish neurons



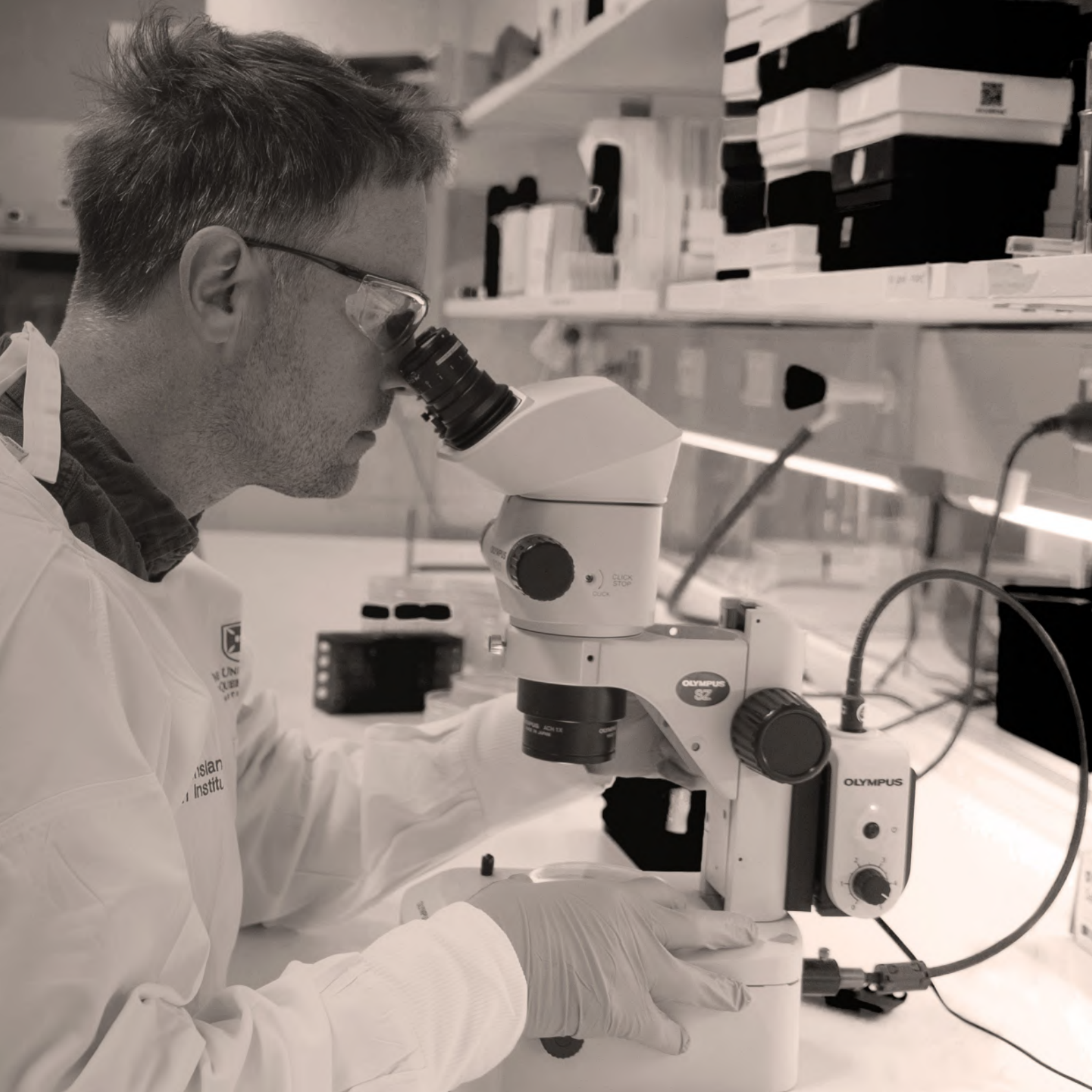
“The human brain has limitless opportunity for discovery. Curiosity and the thrill of uncovering a hidden piece of nature that has been billions of years in the making is incredibly motivating.”

PROFESSOR STEVEN ZURYN
EPIGENETICS AND MITOCHONDRIA BIOLOGY LABORATORY

“My research focuses on understanding how individual cells work. Within each cell is a tiny universe and we still do not fully understand most of the fundamental aspects of this. The next frontier is to understand the microscopic mechanics of each individual brain cell. By focusing on the building blocks, we can transform our understanding of the brain and prolong neuronal function in the face of disease.”

PROFESSOR STEVEN ZURYN EPIGENETICS AND
MITOCHONDRIA BIOLOGY LABORATORY





Research highlights

Our researchers undertake fundamental research with the aim of building a pipeline of discoveries that are then translated into clinical treatments. Here are some current examples.

Dementia

We are developing an innovative therapeutic ultrasound approach to target dementia, with clinical trials underway. The objective of this study is the development of a non-invasive and portable ultrasound therapy to treat Alzheimer's disease and other brain disorders in outpatient settings.

Ageing

We are uncovering new insights into the benefits of exercise on ageing and cognition. After conducting one of the largest and most comprehensive longitudinal studies of its kind, our researchers have tracked a large cohort of 65-85-year-old healthy individuals, five years post-study.

Motor neurone disease

Clinical trials are underway on a novel drug for humans that has the potential to block EphA4 preventing the progression of motor neurone disease (MND). Ultimately, the goal is to prevent or slow the disease by protecting motor neurons from dying, leading to a longer and better quality of life for people living with MND.

Stroke

We are actively investigating rehabilitation after stroke, studying how stroke disrupts cognition and behaviour to improve quality of life. This research has informed clinical diagnoses and early intervention to help aid recovery.

Parkinson's Disease

Our researchers are using deep brain stimulation to deliver electrical currents to specific brain regions to control a targeted function, such as movement. This stimulation evokes control over the neural activity, allowing QBI researchers and practitioners to treat conditions such as Parkinson's and mental health disorders, including obsessive compulsive disorder, with extraordinary results.

Concussion

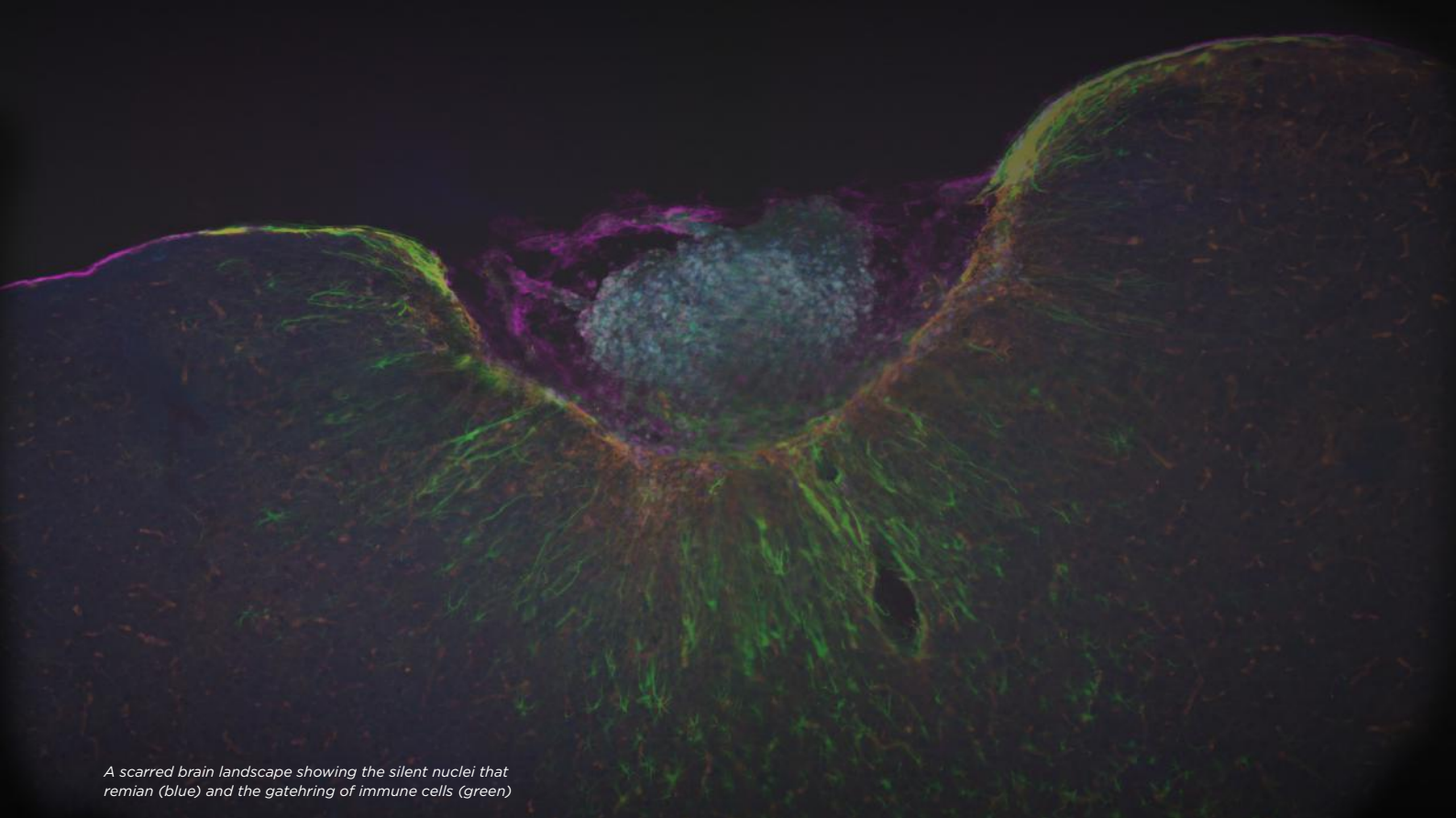
We aim to develop a blood biomarker that will detect the severity of a concussion in a unique study partnering with World Rugby, Rugby Australia, Qscan, Trajan and Sonic Health. The study aims to improve the accuracy of concussion diagnoses and the reliability of return-to-play decisions.

Autism

Neuronal activity is clearly different in the brains of people living with Autism Spectrum Disorder, but we lack information about how neurons change their activity. Our researchers are studying early neuronal changes to better understand the early signs of impairment and its impact on neurodevelopmental disorders.

Attention

We are conducting world-first research into the trajectory of attention in the adolescent brain (ages 13 -19) to gain a greater understanding of how attention, thinking and decision-making develops across adolescence.



A scarred brain landscape showing the silent nuclei that remain (blue) and the gatehring of immune cells (green)

“We are combining cognitive neuroscience and clinical neuropsychology approaches to improve our understanding of how strokes impact brain function. As a scientist, this field is particularly exciting for me because it combines the multidisciplinary expertise of clinicians and researchers to expand our understanding of how the brain works in stroke survivors.”

DR MARGARET MOORE, MATTINGLEY LABORATORY

“We are exploring why some brains remain resilient to memory loss in ageing while others become vulnerable to dementia. By combining fundamental neuroscience with therapeutic discovery, we hope to develop new treatments that help the brain preserve memory, adapt to change, and maintain healthy connections in ageing and dementia. We are focusing on a remarkable group of compounds from the Lion’s Mane mushroom, which can stimulate natural growth factors that help brain cells survive, connect, and function.”

DR SEVANNAH STEEVES, MEUNIER LABORATORY





A brighter future than imagined

Philanthropic donations give QBI researchers the ability to deliver impactful research that pushes the frontiers of knowledge. Gifts to UQ's Queensland Brain Institute are tax deductible and 100% of every donation goes to the nominated research or project. There are many ways to create change and support QBI's brain research.

Cash gift

Gifts of cash are among the most valuable forms of support as they enable QBI to meet its priority needs.

Corporate giving

Corporate gifts can be made to support research areas and specific funds to support researchers. Many companies offer employees a matching gift benefit that doubles the contribution to QBI through workplace giving programs or regular payroll deductions.

Gift in Will

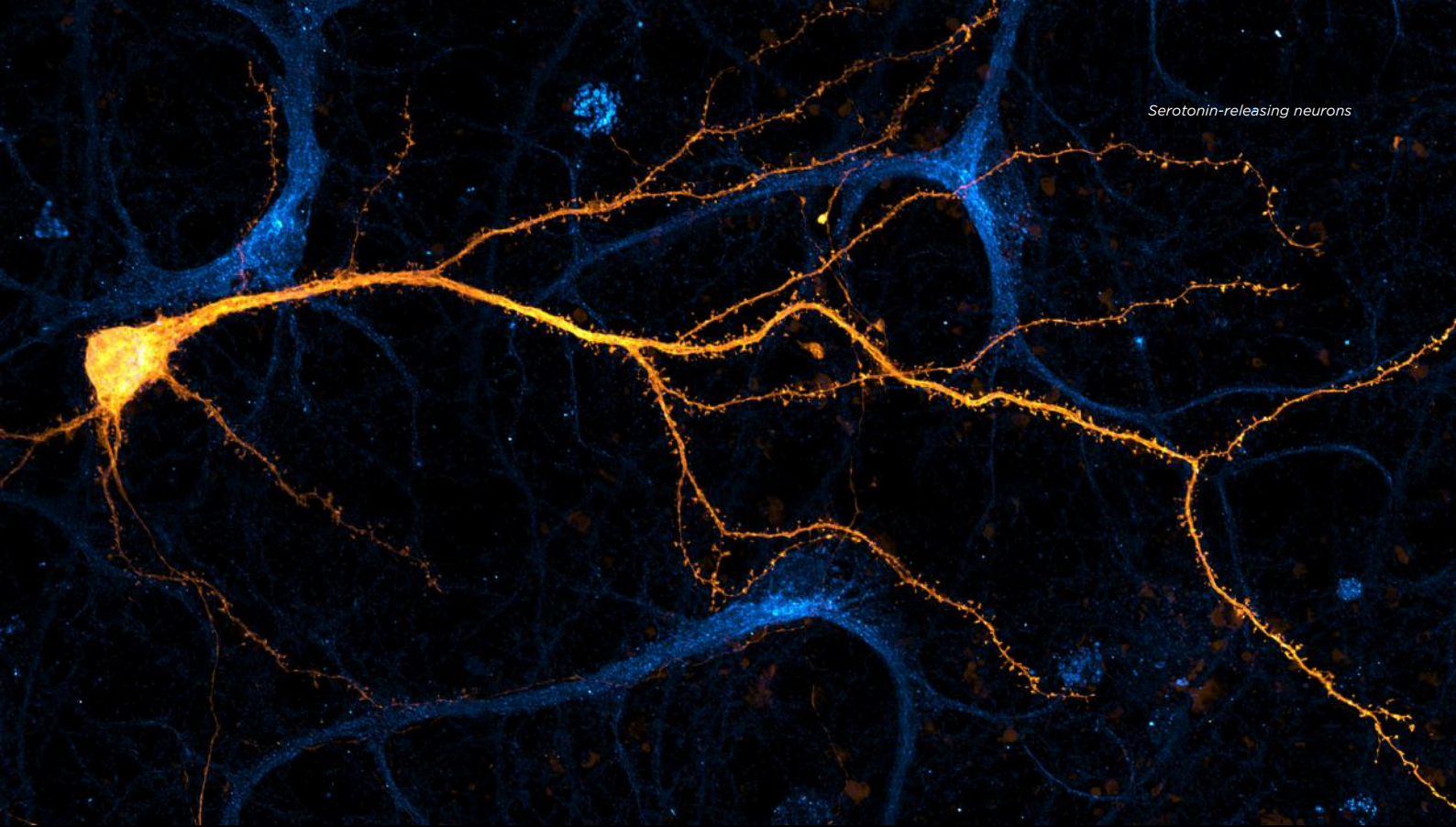
Establish a legacy by leaving a gift in Will. These gifts have transformational impact and make a lasting difference to the priority needs of the future while helping to reduce the amount of your taxable estate.

Gift in memory

A special way to honour a loved one is by offering friends and family the opportunity to make a memorial donation to QBI to celebrate their life.

Fundraise

Get involved, have a great time, and fundraise for QBI. Involve your friends, family and colleagues in your fundraising. You may like to set a personal challenge or host a special event to raise money and support QBI's research. The opportunities are endless.

A fluorescence micrograph showing a dense network of neurons. The neurons are stained with two different dyes: one in bright yellow and another in blue. The yellow-stained neurons are more prominent, with a large cell body on the left and numerous branching processes extending across the field. The blue-stained neurons form a more intricate, web-like pattern in the background. The overall appearance is that of a complex neural circuit.

Serotonin-releasing neurons

“There’s so much about the brain we don’t know, and we hope our involvement with QBI increases our understanding of what really is the most complex organ in the universe.”

GARRY AND GAYE WAUGH.

The Clem Jones Foundation

Before, during, and after his record term as Lord Mayor of Brisbane from 1961 to 1975, the late Dr Clem Jones AO was a successful businessman, an active community leader, and generous philanthropist.

Clem's wife and former Lady Mayoress, Sylvia Jones, was an active partner in his career and shared a passion for helping those in need and supporting initiatives they believed would benefit current and future generations.

Their visionary philanthropic efforts in so many fields are typified by the work of the Queensland Brain Institute exploring the treatment of Alzheimer's disease.

The directions Clem left before his passing in 2007 saw the Clem Jones Foundation place significant emphasis on pursuing such research and the decision by his trustees to help establish the Clem Jones Centre for Ageing Dementia Research at QBI in 2012.

Most importantly, the Foundation's initial and continued support has helped attract and leverage contributions from other private, philanthropic and government sources that have massively multiplied available research funding.

“Through the Foundation's long-term support, Clem and Sylvia Jones would be justifiably proud of the world-leading work of the Clem Jones Centre for Ageing Dementia Research. The promising results achieved so far have the potential to be further advanced by QBI's team of talented and dedicated researchers.”

PETER JOHNSTONE, CHIEF EXECUTIVE OFFICER, THE CLEM JONES FOUNDATION



Nurture research excellence

Partner with QBI to help solve the major neurological health challenges facing society. You can choose to support discovery research or specific studies targeting the clinical signs of disease, disorder, and injury.

Brain Research Endowment Fund

The QBI Brain Research Endowment Fund supports our scientists to push the boundaries of discovery. When you give to this fund, your gift is invested across a diversified portfolio managed by external specialists, with oversight by the UQ Executive. As the value of the fund grows through new gifts and investment returns, so does the annual distribution — and the impact of your gift.

Disease

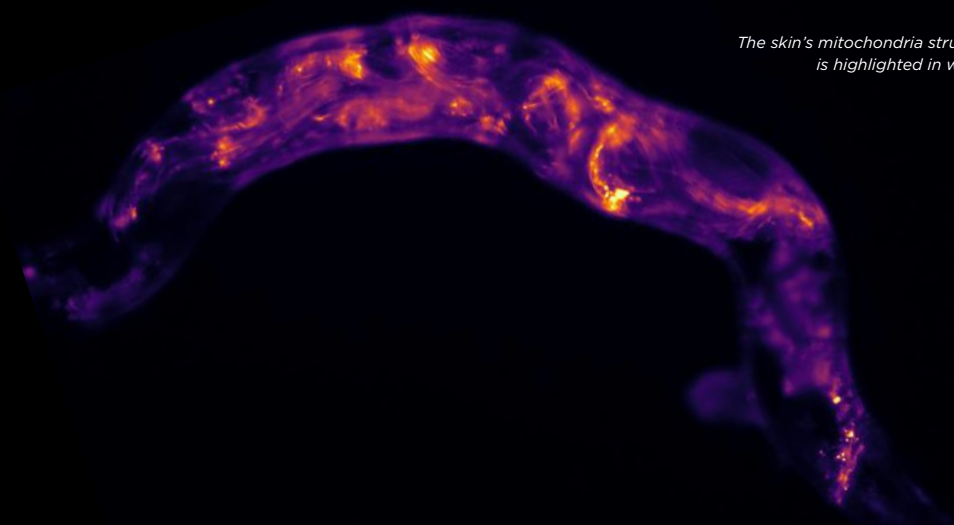
In partnership with industry, QBI is investigating the core mechanisms of brain function and disease. The quality and diversity of research being undertaken is outstanding and QBI has achieved some major scientific milestones with innovative research being taken to clinical trials. If there is an area of research that resonates with you, you can choose to support a disorder, laboratory or project.

Fellowships

A fellowship can support an outstanding early and mid-career researcher at QBI, ensuring they can make discoveries that will improve lives. Many QBI researchers who have been awarded fellowships have made advances in fundamental neuroscience and in diseases such as ageing dementia, motor neurone disease, stroke, depression, schizophrenia, and concussion.

Scholarships

An exciting way to support QBI's work is through funding a scholarship. Scholarships support high-achieving PhD students with their research, providing them with the opportunity to focus on the science.

A glowing worm, likely a nematode, is shown against a black background. The worm's body is illuminated with a purple and orange glow, highlighting its internal structure, specifically the mitochondria in its skin. The worm is curved, and the glowing areas are concentrated in the mid-section and tail region.

*The skin's mitochondria structure
is highlighted in worms*

“I believe my support for UQ’s Queensland Brain Institute’s dementia research contributes to potentially changing lives worldwide. QBI scientists combine passion and dedication with world-leading science in the challenge to change the course of dementia now and for future generations. Understanding the complexities of the human brain will progress the scientific research and hopefully offer treatments to combat dementia.”

MRS KAY BRYAN OAM

“Everything we do, every thought we’ve ever had, is produced by the human brain. But exactly how it operates remains one of the biggest unsolved mysteries, and it seems the more we probe its secrets, the more surprises we find.”

PROFESSOR NEIL DEGRASSE TYSON, ASTROPHYSICIST AND SCIENTIST



CREATE CHANGE

The QBI team will be in touch to discuss how we can partner through philanthropy:

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