

Queensland Brain Institute undertakes life-changing research with the aim of building a pipeline of discoveries that are then translated into clinical treatments.

**Here's a snapshot of our work in 2022:**



**330 papers  
published**

**41 neuroscience  
seminars**



**6 human trials**

**35 grants worth  
\$12.8M**

**\$3.2M  
in philanthropy**

# Areas of research



**Brain injury**



**Cognition and behaviour**



**Brain development**



**Mental health**



**Ageing and dementia**

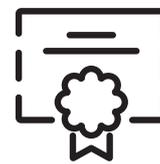


**33** laboratories



**250+** researchers

**110+**  
HDR students

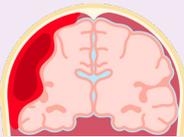


**8** new fellowships

## 2022 Research highlights



### Brain injury



Associate Professor Fatima Nasrallah's study will identify a biomarker that accurately reflects how the brain responds to and recovers from concussion to inform diagnosis and treatment.



Professor Gail Robinson's stroke research aims to improve cognitive assessment tests used to evaluate survivors in the acute phase following stroke.



Dr Matilde Balbi's lab is using different brain stimulation techniques to reduce the loss of brain cells after a stroke to minimise post-stroke behavioural deficits.



Dr Tara Walker's lab harnesses the regenerative potential of adult neurogenesis to replace neurons lost during ageing or following brain injury.



### Cognition and behaviour

Research in the Mattingley lab aims to understand how people use attention to prioritise both sensory information and internal thought processes.



The Anggono lab researches the molecular mechanisms underlying the trafficking of glutamate receptors, which help the brain to encode, store and retrieve information during learning and memory.

The Bredy lab discovered a new gene while investigating the genome's response to trauma, which could be key to extinguishing fear-related memories for people struggling with PTSD and phobias.



Dr Margreet Ridder of the Sah lab focuses on movement-specific neuronal connections in the brain with the aim of developing new ways of treating disorders like Parkinson's disease.

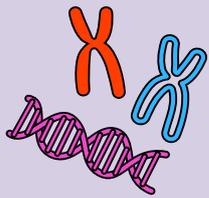


# 2022 Research highlights



## Brain development

The Thorpe group studied more than 900 childcare centres across Queensland and found that children in disadvantaged communities often go hungry when they attend early education and childcare centres.



The Cooper lab studies a network of ASD genes that plays a central role in the embryonic brain. Their research revealed that these genes are essential for synapse formation between neurons in the developing brain.



## Mental health

Recent studies by the Eyles' lab have shown that developmental alterations in offspring gut microbiome caused by maternal vitamin D deficiency produce social interaction deficits.



Professor John McGrath led a study showing how costly mental health disorders are for society. The study showed that having a mental health disorder lowers people's earning ability and increases their healthcare costs.



The Tye lab is investigating how the 'decision' to persist in exerting effort for a reward is encoded in the brain and affected by stress, with the aim of uncovering the neural mechanisms through which stress modifies neural activity.



## Ageing and dementia

Dr Adam Walker's lab is working to uncover new research on TPD43, a key component driving the progression of MND.



Dr Pranesh Padmanabhan discovered novel cellular hot spots of a potentially toxic protein, providing new insight into how key proteins like Tau impair neuronal function in Alzheimer's.



The Hilliard lab identified that the enzyme ADM-4 is an essential protein regulating the molecular glue, or fusogen, needed for nerve repair.



Professor Fred Meunier and Dr Ramon Martinez-Marmol revealed that the clean up of cellular protein clumps could prevent the onset of certain dementias.



The Coulson lab found a causal relationship between a lack of oxygen to the brain during sleep and Alzheimer's disease in mice.



**6 human trials** were in progress in **2022**

- Scanning ultrasound for Alzheimer's
- MND drug clinical trial
- Healthy ageing and exercise trial
- DBS for Parkinson's trial
- Concussion diagnosis study
- Neuropsychological studies

# 2022 HIGHLIGHTS

- The trial of scanning ultrasound treatment for Alzheimer's disease began.

- Eight QBI researchers secured NHMRC Ideas Grants for projects that contribute to the improvement of human health.

- The Clem Jones Centre for Ageing Dementia Research celebrated its 10th anniversary.

- Four QBI researchers received ARC Discovery Projects worth more than \$2million to amplify our knowledge of the brain.

- QBI researchers were winners in the Queensland Bionics Challenge for projects that will help those affected by brain injury.

- QBI awarded goa Community Partnership grant to raise awareness about dementia.

- QBI hosted the inaugural UQ Ideas Forum, bringing school students into the research world as they engaged with institute directors.

- The Ageing Dementia Research Association was established to enhance the visibility of dementia research.

