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# Stroke

The challenge to restore the  
brain to improve stroke recovery

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Queensland Brain Institute

**QBI**

Stroke Recovery  
Laboratories



# RESEARCH

## Building a better future

- UQ is a world-class university
- QBI is a leader in neuroscience
- QBI's Stroke Recovery Laboratories focus on neuroplasticity



Dr Steven Zuryn, Stafford Fox Senior Research Fellow and a member of the QBI Stroke Recovery Laboratories Research Team.

The University of Queensland (UQ) is a leading research intensive university with world-class facilities and expertise.

UQ is championing neuroscience research, with the primary aim of understanding the fundamental mechanisms of brain function at all levels, from development to function and disease. At UQ, this is being addressed by researchers at a number of research centres including the Queensland Brain Institute (QBI), which houses dedicated research facilities focused on understanding brain function through a multifaceted approach.

QBI is a world leader in neuroscience working to understand the fundamental mechanisms, circuits, and functions in both the healthy and diseased brain. Through collaborations with clinicians and commercial partners, basic research findings are applied to develop new therapeutic approaches to combat diseases in which brain function has failed or is compromised. Currently, this includes the creation of the Stroke Recovery Laboratories Project.

QBI's excellence in the field of neuroscience played a key role in UQ attaining the highest possible score of 5, well above world standard, in the 2010, 2012 and 2015 Excellence in Research for Australia (ERA) reviews. UQ is one of only two universities in Australia to achieve this.

One of QBI's priorities is investigating treatments to maximize recovery for stroke survivors, which will have far-reaching social, economic, and health impacts.

QBI's high calibre facilities and world class stroke researchers are building solid foundations for discovery in the area of neuroplasticity.

QBI has developed the Stroke Recovery Laboratories to focus on various components of neuroplasticity, neuroprotection, neurogenesis, neuroinflammation and neuroimaging.

The pieces of the puzzle have been identified and the journey is underway. Research to date is highly promising, and the risk of non-delivery of results is low, but the impact of making a huge difference to stroke survivors' lives is significant.

# STROKE

## The facts

- Worldwide, there are 62 million stroke survivors
- In Australia, 50 000 people suffer stroke annually
- \$54 billion cost of stroke to the health system per annum
- Stroke research attracts less than 4% of government funding

Globally, the World Health Organisation estimates that there are at least 62 million stroke survivors. Disability-adjusted life years (DALYs) are used as an estimate of the number of years of healthy life that are lost as a direct result of a disease and it has been calculated that stroke costs a staggering 49 million DALYs annually on a global scale.

In Australia, 50 000 people suffer a stroke each year, leaving them with physical and mental disabilities that create an enormous emotional, social, and financial burden on families and our community.

Currently, there are nearly half a million stroke survivors in this country who, through key research, could have an improved long-term outlook and quality of life, reducing the load on their carers and families.

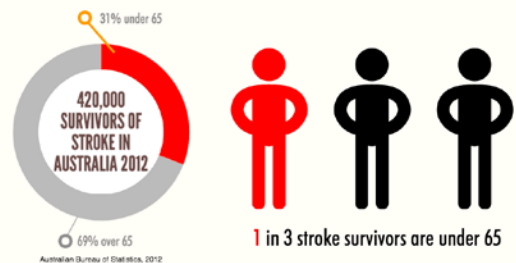
The physical and mental consequences of stroke include paralysis and motor function deficits, problems with language and speech, vision loss, memory and cognitive impairments, social isolation, dependency, job loss, and depression.

The cost to the healthcare system is substantial, with an estimated \$54 billion (in 2012) including direct financial costs (\$5 billion), lost productivity, welfare payments and loss of tax revenue.

Stroke is common, is not always preventable and can happen to anyone at anytime. It is not just a disease of the older generation. One third of all stroke survivors in Australia are under the age of 65.

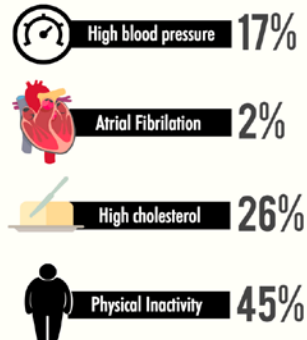
Valuable research into possible new treatments for stroke are not reaching their full potential as stroke research has attracted less than 4% of the highly competitive funding available through the National Health and Medical Research Council (NHMRC) in recent years.

## ARE YOU AT RISK?



### WHO IS AT RISK?

#### BY PERCENTAGE OF POPULATION



**BUT...  
STROKE  
CAN  
STRIKE  
ANYONE  
AT  
ANY TIME**

Visit [www.qbi.uq.edu.au](http://www.qbi.uq.edu.au)  
for more information



Addressing the growing problem of stroke, and supporting the crucial research at QBI's Stroke Recovery Laboratories, will create a more positive and worthwhile future for not only Australian stroke survivors, but also the 62 million stroke survivors around the world.

# NEUROPLASTICITY

## Building recovery

The driving focus of QBI's Stroke Recovery Laboratories will be to investigate treatments that stimulate neuroplasticity – the capacity of neurons and neural networks in the brain to change their connections and behaviour – to enable functional recovery after stroke. Professor Bartlett will provide oversight across the research to be undertaken at the Stroke Recovery Laboratories.

Improved recovery for stroke survivors will be achieved by focusing on four main areas of research related to neuroplasticity following stroke:

- **Neuroprotection** – investigating mechanisms and strategies to protect against neuronal injury or degeneration and as a result limiting the effects of stroke and facilitating effective recovery
- **Neurogenesis** – stimulating the growth and development of neurons (brain cells) to improve learning
- **Neuroinflammation** – altering the brain's environment to promote plasticity
- **Neuroimaging and attention** – investigating a new brain imaging approach to better understand the brain systems involved in attention and to develop an effective treatment for attention deficits after stroke in the long term.

QBI is perfectly positioned to advance our understanding of stroke and make huge inroads into how well survivors recover from stroke. QBI has a robust plan of specifically selected research areas to optimise results and

maximise the success of the project. The key is to create conditions conducive to repair and use the brain's own regenerative capacity by focusing on neuroplasticity.

The co-ordinated team of QBI's high-calibre researchers, in conjunction with state-of-the-art facilities and inspiring leadership, provides a strong approach based on good science. This is your opportunity to play a role in making change happen and invest in quality medical research that has strong potential for improving future outcomes for stroke survivors based on results to date.

Visit the Queensland Brain Institute: [qbi.uq.edu.au](http://qbi.uq.edu.au) or donate here: [qbi.uq.edu.au/how-support-qbi](http://qbi.uq.edu.au/how-support-qbi)

## Neuroplasticity



*in support of*  
**Stroke Research**  
*being conducted at*  
**The Queensland Brain Institute**

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