

# KEEPING OUR BRIGHTEST MINDS IN SOUTH AUSTRALIA



# NRF

NeuroSurgical Research Foundation



Dr Adam Wells funded by NRF Abbie Simpson Clinical Fellowship

Keeping the best and brightest minds in South Australia has long been the State's biggest issue.

In a move to address this imbalance, the NeuroSurgical Research Foundation (NRF), has recently appointed Dr Adam Wells as the next Abbie Simpson Clinical Fellow, a position jointly funded by the NRF and the University of Adelaide (UA).

An Adelaide boy, he grew up in the western suburbs, knowing from an early age that he wanted to be a doctor. Graduating from high school with top marks, Adam said, "I was lucky enough to have a strong cohort of friends who were bright and who saw the opportunities that came with education. A few of them went to university, which was very much against the grain at that time."

Early on in his medical training, Adam developed an interest in surgery, sparked by his lecturer Professor Nigel Jones. He approached Professor Jones looking for research opportunities and through a research elective, undertook a project with him; thereafter catching the research bug.

Adam completed a year under Professor Jones' supervision, investigating spinal cord injury. He was subsequently accepted into the Australasian Neurosurgical Training Program;

*"His long term vision now is to establish a Clinical Neurosurgical Research Facility"*

one of only ten candidates accepted each year in Australasia. Following this, he approached the NRF for funding for a single year of research, which turned into three. This resulted in the completion of his PhD.

Adam's training has taken him interstate (Hobart and Perth) as well as overseas to Cambridge. Before returning to Adelaide he was approached about a position as a Senior Clinical Lecturer with the UA.

Adam credits the support of his wife, who is trained as a dietitian, with his flourishing career. "She's a wonderful mother, very supportive of me and the family. She had to put her career on the backburner and I take my hat off to her for that."

His long term vision now is to establish a Clinical Neurosurgical Research Facility. His plans include developing a trauma bank that would result in better outcomes for patients. With several specific research projects proposed under the UA and Royal Adelaide Hospital's (RAH) Neurosurgical Research Laboratory, the hope is to establish a South Australian Neurosurgery Register. This will be ground-breaking; enabling retrospective and prospective analysis of clinical interventions in Neurosurgery.

The conditions on which Adam wishes to focus his research are: traumatic brain injury, stroke and brain tumours. "If we can capture the physiological data and the outcomes and then match them with the pathological data (blood samples), then in the next 10, 20 or 30 years, we will have a world-class storage facility of tissue samples matched up to the physiology", he said.

Adam believes these projects and the establishment of the Register will significantly lift the profile of South Australian Neurosurgical Research within Australia and internationally. This will lead to a greater understanding of

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## TRAUMATIC BRAIN INJURY (TBI) STATS



**10 million TBI injuries per year worldwide**



**Australian TBI facts: Over 340,000 living with a TBI**



**Over 170,000 are profoundly disabled from a TBI**



**TBI Leading cause of death under 45 years of age**



**Hospitalisation of TBI patients costs \$184 million per year**



**Annual cost \$8.6 billion to community**



**Males twice as likely to suffer a TBI**

# TRAUMATIC BRAIN INJURY RESEARCH

## DIARY DATE NOTICE

**NRF AGM 2019**  
**WEDNESDAY**  
**25TH SEPTEMBER 11AM**  
**AT UNIVERSITY OF ADELAIDE**

## CHARACTERISING GUT ALTERATIONS FOLLOWING TRAUMATIC BRAIN INJURY

### PROJECT SUMMARY:

Traumatic brain injury (TBI) is the leading cause of death in individuals under the age of 45 years and survivors are often left with long-term disability. In particular, patients with post-TBI gastrointestinal dysfunction have increased morbidity and longer periods of hospitalisation. Therefore, treatment modalities targeting prevention of gastrointestinal dysfunction have important clinical implications. In the current study we will characterise both the time course and nature of gastrointestinal disturbances following trauma. As such, this study will evaluate the extent of gastrointestinal disturbances, including gut injury, increased permeability and alterations in inflammatory mediators, that occur following moderate traumatic brain injury. This may lead to the identification of novel therapeutic targets to reduce gastrointestinal complications and improve TBI patient quality of life.

**RESEARCH FUNDED BY:**  
NRF Annual Research Donations

### CHIEF INVESTIGATOR TEAM



**Assoc Prof Stuart Brierley**  
Mathew Flinders Fellow in  
Gastrointestinal Neuroscience  
Flinders University



**Assoc Professor Renee Turner**  
NRF Director of Neurosurgical  
Research University of Adelaide



**Rebecca Dowden**  
(Masters Student)

## KEEPING OUR BRIGHTEST MINDS IN SOUTH AUSTRALIA CONT.

what happens in trauma patients - an area where there are so many unknowns.

“We don’t know why some people do well and some people don’t in trauma”, Adam said. “by measuring and monitoring what’s happening to patients before, during and after trauma, and by capturing this data and matching it to the pathology, we’ll be in a better position to solve some of these unknowns.”

Having Adam back in the State is a coup for the NRF, as neurosurgeons with research backgrounds are very rare. He’s one of the few neurosurgeons to embrace academic scholarship, having obtained a PhD to compliment his Bachelor of Medical Science and MBBS.

“Now that my training is complete, my greatest honour will be to work as a consultant Neurosurgeon at the Royal Adelaide Hospital, to continue the great tradition of Neurosurgical

Research within South Australia, and to help train the next generation of young Neurosurgeons that pass through the halls of the Royal Adelaide Hospital.”

Wells continues, “there is a great and unique opportunity within South Australia to further our Neurosurgical knowledge, in no small part due to the extremely talented Neuroscience researchers and Neurosurgeons, and the wonderful support we receive from the Neurosurgical Research Foundation. Every action, big or small, adds to the collective Neurosurgical knowledge and experience, right here in South Australia. With a new hospital and research facility we really are right at the forefront of the future of Neurosurgery, it’s an exciting time to be involved in Neurosurgical Research!”

Renee Capps and James Litt External Relations Branch  
The University of Adelaide.



## DEVELOPING TMS-EEG INDICES OF FUNCTIONAL AND PHYSIOLOGICAL DEFICIT FOLLOWING MILD TRAUMATIC BRAIN INJURY

### PROJECT SUMMARY:

Mild traumatic brain injury (mTBI) is one of the most common forms of acquired brain injury, affecting millions of people around the world every year. Although once considered a short-lived injury, the potential long-term side effects of mTBI are now being increasingly recognised. Despite this, the physiological mechanisms contributing to these deficits are largely unknown, placing considerable limitations on how mTBIs

are handled clinically. Using advanced neuroimaging techniques, my work aims to better understand how mTBI changes the brain, and how these changes result in ongoing functional deficits. This will allow us to develop markers of injury that can be used to track recovery from mTBI, and may eventually facilitate the design of interventions to reduce the burden of ongoing symptoms.

**RESEARCH FUNDED BY:** NRF Annual Research Donations

### CHIEF INVESTIGATOR



**Dr George Opie**  
PhD, NHMRC Early Career Fellow,  
Discipline of Physiology,  
The University of Adelaide

## CONCUSSION RESEARCH: DEVELOPING IMAGING BIOMARKERS THAT PREDICT PRE-FRONTAL CORTEX DEFICITS FOLLOWING CONCUSSIVE INSULTS IN ADOLESCENCE.

### PROJECT SUMMARY:

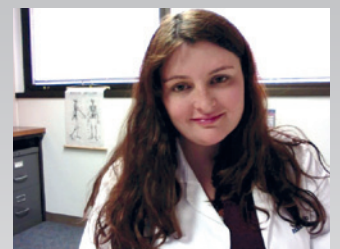
Traumatic brain injury (TBI) is common during childhood and adolescence, with most injuries classified as mild (concussions), but these can still have long-lasting consequences. Indeed, the paediatric population take longer to recover from concussive insults than adults and report higher rates of impulsivity, attention deficits and cognitive impairment post-injury. This longer recovery may relate to ongoing brain development in this population. In particular the pre-frontal cortex which continues to mature into early adulthood is important for the development of executive functions which control judgement, planning, impulsivity, and working memory.

As such the age of onset of a concussion may interrupt the normal maturation

processes within this region leading to ongoing impairment of executive functions. This project aims to investigate whether the age at which a concussive impact occurs can have differential effects on the development of the pre-frontal cortex. This will be through examination of effects on executive function in adulthood- by examining impulsivity, working memory and judgement and linking this to changes in the key neurotransmitter systems within this region of the brain. Importantly this will be linked to magnetic resonance imaging (MRI) measures that will identify whether there are any signature alterations that can be linked to persistent behavioural changes.

**RESEARCH FUNDED BY:** NRF Paediatric Research Fund

### CHIEF INVESTIGATOR TEAM



**Dr. Lyndsey Collins-Praino**  
Senior Lecturer, Discipline  
of Anatomy and Pathology,  
University of Adelaide



**Dr Frances Corrigan**  
Senior Lecturer, Division of  
Health Sciences, University of  
South Australia

## NRF TEAM NEURO IN THE CITY TO BAY

SUNDAY 15<sup>TH</sup> SEPTEMBER 2019

**START TRAINING NOW.  
REGISTRATIONS OPEN SOON.**



# DONALD SIMPSON | MEMORIAL DINNER

18.04.27 – 22.05.18

Recognising Professor Donald Simpson AO contributions to Neurosurgery,  
Neurosurgical Research and the NeuroSurgical Research Foundation.



On Friday 2nd November the Neurosurgical Research Foundation hosted a dinner at the National Wine Centre to recognise the contributions of Professor Donald Simpson to Neurosurgery, neurosurgical research and the NRF.

The guests included the Honourable Hieu Van Le AC Governor of South Australia and Mrs Van Le, 140 friends and colleagues and members of the Simpson family.

His Excellency spoke with great feeling of his and his wife's history as boat people, their arrival in Adelaide in 1975 and their welcome by members of the Indo-Chinese Refugee Association of which Donald Simpson was a founder and first president. He spoke of Donald's conviction and passion and the high regard in which he and ICRA were held by the Indochinese refugees.

Several of Donald's former colleagues spoke of aspects of his career, of interests which they shared and personal memories:

- Brian North - succeeded Donald as President of the NRF
- Gavin Fabinyi - neurosurgeon from Melbourne
- Ken Clezy - first resident department of neurosurgery RAH 1956
- Elizabeth Lewis - paediatric neurosurgeon and long-term friend
- David David - craniofacial surgeon from Adelaide
- Annabel Carney - physician in the Spina Bifida unit ACH
- Jack McLean - former head of the Road Accident Research Unit
- Carolyn Hewson - former patron of the NRF

Each speaker spoke with affection, recalling the warmth of their friendship, Donald's humanity and humility, his great learning, wisdom and wit and his dedication to research. His vision was that the complex neurosurgical illnesses would only be solved by dedicated clinicians backed with solid scientifically based research. His diverse interests in medicine were also acknowledged including his love of history, specifically medical history, his love of books and his constant searching for knowledge. All speakers affirmed Ken Clezy's conclusion that we are unlikely to see his like again.

A silent auction was conducted encompassing books and commemorative items generously donated by the Simpson family. The dinner resulted in raising \$12,000 to further neurosurgical research.

Prof Peter Reilly AO (full article is available at [www.nrf.com.au](http://www.nrf.com.au))

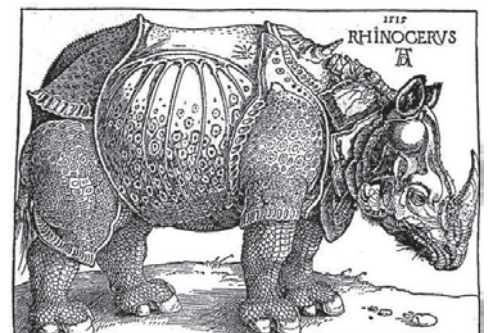


Photo Kate Simpson, The Honourable Hieu Van Le AC, Jane Simpson



Back Row: Mr Don Donlan, The Honourable Hieu Van Le AC, Prof Robert Vink AM, Mr Alan Down.

Front Row: Ms Penny Bowen, The Honourable Catherine Branson AC, Ms Carolyn Hewson AO, Dr Oana Maftei



DONALD SIMPSON'S BOOK

Donald's Bookplate which was in all his books raffled and auction at the event