NRF

NeuroSurgical Research Foundation

2018/2019 Annual Report

NeuroSurgical Research Foundation

MISSION STATEMENT & BOARD MEMBERS

BOARD MEMBERS 2018/19

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ADVISORY MEMBERS 2018/19

The Hon Catherine Branson AC	Patron
Assoc Prof Renée Turner	NRF Director of Neurosurgical Research
Prof Peter Reilly AO	Scientific Committee
Dr Frances Corrigan	Scientific Committee

MISSION STATEMENT

To promote, foster, develop and assist the study of all matters related to neurosurgery.

To encourage, stimulate and aid research and investigation into such matters and to stimulate public interest in neurosurgery.

To cooperate with other organisations in neurosurgical work and research.

To encourage Post-Graduate medical study in neurosurgery.

To assist the NRF Chair of Neurosurgery.

To raise funds for the above purposes.

Patron's Report

THE HON CATHERINE BRANSON AC

I am honoured to have served as Patron of the NeuroSurgical Research Foundation since 2014. For personal reasons I have decided to stand down as Patron and thus this will be my final Patron's Report.

I would like to note that this Annual Report is the tenth that has been designed pro-bono by Jessica Anderson. Jessica came to the NRF in 2006 as a volunteer graphic designer. She has generously provided invaluable assistance to the Foundation ever since - with technology enabling her to maintain her valuable contribution even after she left Australia to live first in Canada and now in the United States of America.

Of course, the important role that the NRF plays is only possible because of the wonderful generosity of many individuals. These individuals include its donors; its President and other Board members; its tireless Executive Officer, Ginta Orchard; and those who work with Ginta, including as volunteers, to support the work of the Foundation. I extend my warmest thanks to you all.

As I wrote in my first report:

> *It is not easy to think of a more important area of medical research than research into the cause, diagnosis, prevention and treatment of diseases, injuries and malfunctions of the brain, spine and the nerves. Nearly every family in Australia is likely at some time to find itself, as mine certainly has, a beneficiary of research in these areas*

I leave the role of Patron of the NRF confident that it will continue to flourish and that it will play an even greater role in the future as a funder of vital medical research.

The Hon Catherine Branson AC
Patron

President's Report
PROF ROBERT VINK AM

The objective of the NeuroSurgical Research Foundation is to fund research into the cause, diagnosis, prevention and treatment of disease or malfunction of the brain, spine and nerves. To this end, the Foundation has had a particularly successful year that has seen a number of researchers at South Australia's three major Universities supported to undertake world-class research that is relevant to neurosurgery today.

These research projects included aspects of traumatic brain injury (Dr George Opie, UoA; Assoc. Prof. Stuart Brierley, Flinders; Dr Frances Corrigan and Ms Lola Kaukas, UniSA), paediatric concussion (Dr Lyndsey Collins-Praino, UoA with Dr Frances Corrigan, UniSA), paediatric chemotherapy (Dr Alexandra Whittaker, UoA) neurodegeneration including Parkinson's Disease (Dr Lyndsey Collins-Praino, UoA), glioblastoma (Dr Melinda Tea, UniSA; Dr Lisa Ebert, UniSA), brain tumour drug delivery (Dr Briony Gliddon, UniSA), and brain tumour organoids (Dr Guillermo Gomez, UniSA). Also, the Abbie Simpson Clinical Fellowship funds were awarded to Dr Adam Wells (UoA) to support his clinical research projects over the next 3 years. What was particularly heartening over the last 12 months was the number and diversity of applications for funding that were received. Indeed, this growth in applications has seen the need to expand our scientific committee, which under the chairmanship of Dr Glenn McCulloch now includes Prof. Matthew McDonald, Dr Cindy Molloy, Prof. Peter Reilly, Assoc. Prof. Renée Turner and Dr Frances Corrigan. Moreover, to meet the demand, the NRF now has two funding rounds per year, with the board reaffirming its commitment to provide as many high-quality, innovative projects as possible with seed funding. In this way, we hope to maximise the chance that excellent projects such as these will attract future major funding. I sincerely thank the Scientific Committee for all the tremendous work they do in diligently assessing so many funding applications throughout the year, and in ensuring that only world-class research projects receive funding.

The NRF also works with other philanthropic organisations to bring high quality neurosurgical research projects to their attention. In this respect, we were delighted to see that the James and Diana Ramsay Foundation have chosen to support two projects put forward by the NRF, namely a project entitled "Targeting inflammation to prevent brain swelling following paediatric head injury" by Dr Frances Corrigan (UniSA), Assoc. Prof. Renée Turner (UoA) and Dr Amal Abou-Hamden (WCH) for $214,500 over 3 years, and another entitled "The evolution of decision-making impairment in Parkinson's Disease: Prediction and prevention" by Assoc. Prof. Lyndsey Collins-Praino (UoA) for $219,685 over 3 years. In association with the Coopers Brewery Foundation, the NRF was also successful in raising $142,400 at their Coopers Brewery annual Golf Day to be donated to support stroke research (Assoc. Prof. Renée Turner, UoA). The Coopers Foundation have been long term supporters of the NRF and it is gratifying to see this strong partnership continuing. Finally, the Wilkins Family Foundation chose to again donate funds towards clinical equipment for Dr Stephen Santoreneous (WCH) and for collaborative clinical TBI/stroke research being undertaken by Dr Adam Wells (UoA), Assoc. Prof. Renée Turner (UoA) and Dr Frances Corrigan (UniSA). These generous donations from our philanthropic partners were received after the formal close of the NRF financial year and will appear in next year's financial reports.

Last year, the NRF provided funds for the creation of an NRF Chair of Brain Tumour Research at the University of South Australia, with that research to be located in the new UniSA Cancer Research Institute at the western end of North Terrace. We are proud to announce that Prof. Stuart Pitson was the successful applicant and has been awarded the title of “NRF Chair of Brain Tumour Research” for a period of 3 years. Previously appointed NRF Chairs have proven highly successful in placing South Australian neurosurgical research in the spotlight by attracting external research funds, publishing extensively in international journals, and more importantly, training over twenty PhD and Masters qualified neuroscientists who have expanded the base of neurosurgical research. We certainly look forward to the impact that Prof. Pitson’s appointment will have on South Australian brain tumour research now and into the future.

In addition to overseeing fund-raising and research support activities over the last 12 months, the NRF board has been quite busy developing an operational strategy for the Foundation moving forward. A planning session on this topic was held in March with several notable outcomes including focussing our research donation strategy, formalising how the newly created research investment fund will operate, and agreeing on a staffing strategy. With the increasing importance of our digital presence, we will accordingly appoint a part time Communications and Marketing Officer who is expected to commence in the second half of 2019.

The next few months will also see some changes in board personnel as our Patron Cathy Branson AC, our Treasurer Mel Zerner and board member James Litt all retire from the board. Each of them has made important contributions to the NRF, with James playing a particularly notable role with respect the SAPOL “Ride like Crazy” partnership, Cathy having improved so many aspects of our board governance procedures over her 5 years as patron, and Mel having so skillfully steered our finances for most of his 20 years on the board. Mel, in particular, was a key strategic voice on the NRF board executive and will be sorely missed. Thank you all for your invaluable contributions and I sincerely hope to still see you at future NRF events as time permits. Tim Neill, whose family has had a long association with the NRF, was approached to join the board as Treasurer and has graciously accepted the invitation. Our discussions regarding a potential Patron will continue until someone suitable is identified and appointed.

Being a member of the NRF board is a big commitment and requires the member to donate their time and expertise to the NRF, and to be an ambassador for the Foundation. I am fortunate to be the President when we have such a capable and dedicated board working so hard for the NRF. I sincerely thank each of the members for their ongoing contribution. I also will take this opportunity to thank all our donors, supporters and partners because without you, the NRF would not be able to achieve its important mission of supporting world-class neurosurgical research. There is no question in my mind that your support saves lives.

Professor Robert Vink AM
President

NRF Director of NeuroSurgical Research

ASSOCIATE PROF RENEÉ TURNER

The 2018/2019 year has been a very busy time for the Translational Neuropathology Laboratory. As always, we have a great team of students driving the laboratory forward through their hard work on a diverse range of projects.

New Honours students that have joined the lab are:

Shannon Stuckey	The role of neuroinflammation in delayed neurodegeneration post-stroke.
Kavi Sivasankar	Studying brain changes and cognition following spinal cord injury.
Freshta Rahimi	Alterations in dopamine function following juvenile concussion.
Miriam Dodd	The prevention of alpha-synuclein transmission in Parkinson's disease.
Katherine Turner	Fyn kinase inhibition as a novel treatment for depression in Parkinson's disease.

We have new PhD students, who have commenced their studies in 2019:

Isabella Bilecki	Investigating changes in the blood-brain barrier, in healthy ageing and following stroke, with a particular emphasis on the role of pericytes.
Christine Gayen	Examining the efficacy of duraplasty as a surgical treatment for spinal cord injury.

Our continuing PhD students are also making excellent progress:

Annabel Sorby-Adams	Currently working with a research group at the University of Cambridge (UK) on cognition in neurodegenerative disease and will return to the lab in 2020 to wrap up her PhD studies.
Jessica Sharkey	Characterising the injury profile that occurs following both mild and moderate-severe traumatic brain injury in a clinically-relevant pre-clinical model, to inform development of novel treatment strategies.
Bianca Guglietti	Concurrently working on pre-clinical and clinical studies examining the role that fyn kinase and microglia play in neuroinflammation in Parkinson's Disease.

We also congratulate Alina Arulsamy who is graduating next month with her PhD and Krystal Iacopetta on her Masters completion! We wish them both all the best as they embark on their careers!

Our 3 senior researchers returned from maternity leave in 2018, myself Dr Lyndsey Collins-Praino and Dr Anna Leonard. Despite the challenges of raising the next generation of Team Neuro, the laboratory has maintained productivity in terms of publication output and conference presentations. In particular, publications have been in a number of international journals including: Behaviour Brain Research, Frontiers in Neuroscience, Brain Behaviour Immunity and American Journal of Physiology, amongst many others.

Members of the group have delivered conference presentations, including invited talks, at a number of national and international scientific meetings including: Australasian Neuroscience Meeting (Brisbane), National Neurotrauma Symposium (Adelaide), Symposium for Western Australian Neuroscience (Perth), International Symposium for Cerebral Blood Flow and Metabolism (Yokohama, Japan) and National Neurotrauma (Pittsburgh, USA).

Senior members of the laboratory have also established new research collaborations with research groups at: The University of Otago (New Zealand) and The University of Lübeck (Germany), Women's And Children's Hospital (SA), St Vincent's Hospital (VIC) and The University of Melbourne (VIC). The team has also brought in a number of external research grants, in particular we congratulate Dr Lyndsey Collins-Praino for being awarded a coveted Australian Research Council grant, in addition to a Brain Foundation grant in collaboration with Dr Anna Leonard. These are excellent achievements in a challenging funding environment. Such research collaborations, presentations and publications highlight the novel and innovative research conducted by the team.

The research progress and achievements by the group would not have been possible without your support as donors to the NRF, so thank you once again for your continued support of the NRF.

Associate Prof Renee Turner
NRF Director of NeuroSurgical Research

NRF FELLOWSHIP RESEARCH

These projects are funded by NRF perpetual fellowships.

Jointly Funded: Abbie Simpson Clinical Fellowship & University of Adelaide 3 years
Researcher Name: Dr Adam Wells
Research Title: Developing a trauma bank at Royal Adelaide Hospital

Developing a trauma bank that would result in better outcomes for patients, with several specific research projects proposed under the University of Adelaide 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. To Capture the physiological data and the outcomes and then match them with the pathological data

NRF Paediatric Research Fund: University of Adelaide & Uni SA
Researchers: Dr Lyndsey Collins Praino & Dr Frances Corrigan
Title: Developing imaging biomarkers that predict pre-frontal cortex deficits following concussive insults in adolescence.

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. 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.

Executive Officer's Report
GINTA ORCHARD

Thank you to you all our NRF Supporters, without you we would not be funding over $1million in neurosurgical life-saving research! Thank you to everyone who donated, volunteered and organised a fundraiser.

I would like to take the opportunity to highlight some of the specific amazing contributions:

I would like to thank everyone who has fundraised for the NRF. You are all amazing and inspirational and it is a pleasure to work with you all in different ventures. You can find a list of the 2018/2019 Community Fundraisers on page 17.

Office Team: Our team here at the NRF is growing and I thank the team who have worked in the office this year. Administrative support Kerry and Matiss who process all your valuable donations and generate the receipts. Kat and Allys who have come on board to help with marketing, social media and events especially during my illness. Thank you to this team for all your hard work.

Volunteers: I have a very special Thank You to all the volunteers who have helped at events and in the office this year. Their assistance is critical in the NRF success:

NRF Brain Tumour Dinner: Allys, Brittany, David, Ellen, George, Kahla, Kat, Kate, Kathryn, Markus, Matiss, Matthew, Max, Melissa, Robin, Saatvik and Stacey.

City to Bay: Alina, Allys, Anna, Bella, James, Kerry, Rebecca, Rosemary, Tom and Will.

Donald Simpson Memorial Dinner: Daniel, Dasith, David, Di, Jasmine, Kat, Kerry, Markus and Matiss.

Onto next year I encourage you all to please continue supporting the NRF you can see yourself first hand on the 5 pages enclosed in this annual report the world-class research your support enabled the NRF to fund this year. Please continue to donate, sign up and join us or host your very own unique fundraiser, I look forward to you joining us soon.

To keep in touch with up-to-date research stories, latest event information, and fundraisers, I encourage you all to join us on social media, become my friend on Facebook at Ginta Orchard NRF and Like the Neurosurgical Research Foundation Facebook page or follow us on Twitter.

Ginta Orchard
Executive Officer

NRF Brain Tumour Dinner May
Back Row: Allys, George, Brittany, Robin, Kat, Ginta, Melissa, Kate, Stacey, Matiss, Ellen, Kahla
Bottom Row: Kathryn, Max, Matthew and Saatvik.

Donald Simpson Memorial Dinner November
Back Row: Daniel, Matiss, Kat, Wendy and Kerry.
Front Row: Di, David and Ginta.

NRF PRESENTATION GALA DINNER

Many thanks to the donors sponsors and guests, we raised over $90,000 on the night.

Maria Santoreneous, Leslie Robb, Renee Santoreneous and Stephen Santoreneous

Cherrie Adams and Lucinda Gregory

Anna Leonard, Robert Vink and Renee Turner

Glenn McCulloch - NRF, Cosi (Andrew) Costello and Allan Evans - Uni SA

Kat, Kathryn, Kate, Melissa and Stacey

Kat, Kathryn and Cosi

MANY THANKS TO THE DONORS, SPONSORS & GUESTS. WE RAISED OVER $90,000 ON THE NIGHT.

The evening saw the NRF donate $1million to the University of South Australia to establish the NRF Chair of Brain Tumour Research. In addition, guests enjoyed assisting the Foundation through fundraising and a silent auction.

Special thanks to the following:

VOLUNTEERS

Kat Nehme
Allys Todd
Brittany Vincent
Kahla Parsons
Ellen Muster
Kate Mallia
Kathryn Mullen
Max, Saatvik & Matthew
Matiss Reinhards
Melissa Cantley
Robin Walden
Stacey Collins
George Chahhoud

GUEST SPEAKERS

Cherrie Adams
Jenny Tocaciu
Prof Stuart Pitson
Dr Glenn McCulloch
Prof Allan Evans
Prof Robert Vink

ENERTAINMENT

MC: Cosi Costello
BAND: SA Police Band
DJ: LisaD

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Calvary
DR JONES & PARTNERS MEDICAL IMAGING
PATRICK of COONAWARRA
Coopers
PEREGRINE

BRAIN TUMOUR RESEARCH

Funded by NRF, South Australia will lead gold standard research through testing to improve lethal brain tumour treatments with Prof Stuart Pitson – the inaugural NRF Brain Tumour Research Chair and support cutting-edge brain cancer research through the Chris Adams Research Grant.

> *We have developed important relationships with neurosurgeons and glioblastoma patients in order to capture tumour samples for our living biobank and catalogue the different ways the disease is expressed.*

Prof Stuart Pitson - The Inaugural NRF Brain Tumour Research Chair

Through the new NRF Chair in Brain Tumour Research at University of South Australia, Adelaide will become the launchpad for a new personalised approach for glioblastoma treatments – the most lethal form of brain cancer. Funded by a $1 million donation from the NeuroSurgical Research Foundation (NRF), the first three year tenure for the Chair will be held by Professor Stuart Pitson, a global leader in brain tumour research. “Our aim for the Chair position is to create a large living glioblastoma biobank that we can use to develop and test new therapies to more effectively treat and ultimately kill the disease.” Highly invasive and difficult to treat, glioblastoma kills more adults than any other brain tumour and takes more young lives than any other disease. Gains for these patients from new treatment efforts remains stubbornly low in comparison to other cancers – with little change over the past 30 years. Professor Pitson leads a team that has made some important discoveries in glioblastoma, including highly promising new drug targets that could suppress the tumour’s growth and block its ability to resist treatment. “We have developed important relationships with neurosurgeons and glioblastoma patients in order to capture tumour samples for our living biobank and catalogue the different ways the disease is expressed. “We then grow these different types of glioblastoma in the laboratory, and in advanced pre-clinical models we have developed, we can identify what treatments will likely give the best outcome for patients. “The model we use is by far the best system for pre-clinical evaluation of glioblastoma drugs. And yet, around the world there are very few systems like this that exist to be used in glioblastoma. As setting up these models is complex and requires considerable resources, Professor Pitson’s lab will become an important hub in Australia for this testing for both research and patient treatment options. The project will help fast-track the translation of research into clinics and give glioblastoma patients a better chance at survival.

Chris Adams Research Grant supports cutting-edge brain cancer research.

The inaugural Chris Adams UniSA Research Grant has been awarded to support vital brain cancer research anticipated to create a new immunotherapy for adult and child brain cancers. The grant honours the life of Chris Adams, a UniSA graduate, who was diagnosed with a brain tumour in 2015 and passed away that year, aged 26. Strong Enough To Live (SETL) raised $120,000 to support the grant which will be awarded each year to an early career researcher working in a field of high quality brain tumour research. The inaugural grant has been awarded to Dr Tessa Gargett – an early career researcher who is working to translate an effective melanoma immunotherapy to adult and child brain cancers. In Dr Gargett’s lab studies, the treatment has effectively killed glioblastoma and diffuse intrinsic pontine glioma (DIPG) cell lines in vitro. “Our lab specialises in developing novel immune-based therapies that stimulate the immune system to attack and kill cancer,” says Dr Gargett. “We have had some success trialling a targeted CAR-T cell therapy in melanoma patients.” Once safety is confirmed, the next step will be to trial the therapy in patients.

Image L-R: Glenn McCulloch – NRF Vice-President, Dr Tessa Gargett, Cherrie Adams - Strong Enough to Live, Marty Adams - Strong Enough to Live, Ginta Orchard NRF Executive Officer

BRAIN TUMOUR RESEARCH

Uni SA – Centre for Cancer Biology – Pathology SA

Researcher: **Dr Melinda Tea** ***$29,959***

Title: Developing a comprehensive glioblastoma brain tumour resource for testing new and existing brain tumour therapies

Project: Glioblastoma (GBM) is the most commonly diagnosed malignant brain tumour in adults, affecting approximately 1000 Australian adults annually. With very few treatment options available, it is a highly fatal cancer with a median survival of less than 15 months and less than 5% survival after 5 years. Our goal is to generate a well characterised bank of GBM brain cancer cells, derived from patient tumour tissue, growing in the laboratory and in animals. These cells will provide a powerful resource for GBM research, both locally and nationally, which may lead to improved therapies for these devastating brain tumours.

Researcher: **Dr Lisa Ebert** ***$30,000***

Title: Arming a patient's immune system to treat aggressive brain cancer

Project: Glioblastoma (GBM) is a highly aggressive form of brain cancer. Most patients only survive for around 15 months after diagnosis, and there have been no significant improvements to treatment for more than 10 years. Here, we aim to develop a new and highly targeted treatment for GBM using Chimeric Antigen Receptor (CAR)-T cells. This type of therapy uses a patient's own immune system to attack their cancer cells and has shown remarkable success in treating some types of leukaemia. Our new data suggests that we may now be able to adapt this approach to treat GBM.

Researcher: **Dr Briony Gliddon** ***$30,000***

Title: A new approach to deliver drugs to brain tumours

Project: The blood-brain barrier is a major impediment to the treatment of brain tumours. Many drugs that may otherwise have potent anti-brain tumour properties, cannot cross the blood-brain barrier, and thus are ineffectual as brain tumour therapeutics. This proposal builds on recent findings that FTY720, an approved drug for the treatment of multiple sclerosis, can cause short term opening of the blood-brain barrier. Thus, we propose to examine the potential re-purposing of FTY720 to allow the entry of existing anti-cancer drugs across the blood-brain barrier and into brain tumours. Successful outcomes will, therefore, provide new therapeutic strategies to treat brain tumours.

Researcher: **Dr Guillermo A. Gomez** ***$30,000***

Title: Region-specific brain organoids for rapid and personalised pre-clinical test of treatments for Glioblastoma

Project: Glioblastoma (GBM) prognosis and treatment is profoundly affected by its anatomic location. Given the importance of tumour location and the microenvironment in GBM progression, there is an urgent need for the development of in-vitro models that facilitate the analysis of brain tumours in a more physiologically and relevant 3D setting. For this we will develop engineered synthetic hydrogel platforms to grow region specific human brain organoids to precisely model GBM progression in patient's brain anatomical microenvironment. This will permit us to screen for drugs that stop tumour growth and invasion and identify the genes and pathways that drive these processes.

NEUROSURGICAL RESEARCH

Traumatic Brain Injury, Cancer, Stroke and Neurodegeneration

Researcher: Assoc Prof Stuart Brierley Flinders University $24,812

Title: Characterising gut alterations following traumatic brain injury

Project: 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.

Researcher: Dr Alexandra Whittaker - University of Adelaide $29,615

Title: Inflaming the Brain: Chemotherapy effects on cognitive function in child cancer survivors

Project: For children who survive childhood cancer, the burden continues, with up to 70% of survivors experiencing chemotherapy-induced cognitive impairment (CICI). CICI impairs attention, and memory, which profoundly impacts academic and social performance, as well as quality of life. To date, the brain changes that give rise to these impairments are unknown. In this study we will determine whether a specific type of inflammation in the brain contributes to CICI development over an acute and chronic time course. The results will facilitate development of targeted therapies for prevention of CICI, in addition to informing clinical assessment protocols and survivorship care plans.

Researchers: Dr Lyndsey Collins-Praino, Assoc Prof Renee Turner & Isabella Bilecki PhD Student - University of Adelaide $27,552

Title: The role of pericytes in delayed post-stroke neurodegeneration

Project: Secondary neurodegeneration and the underlying mechanisms of this delayed neuronal loss remain poorly understood. Pericytes are known to be involved in the early injury pathways following stroke; however, they may also contribute to delayed neurodegeneration given their roles in maintaining blood-brain barrier structure, transport, controlling blood flow, driving new cell growth and formation of new blood vessels. Despite this, no studies have investigated the contribution of pericyte changes to secondary neurodegeneration post-stroke. Accordingly, this study seeks to further understand what drives secondary neurodegeneration and whether pericytes are key contributors to post-stroke neurodegeneration. Specifically, we will examine the course of pericyte changes following stroke and determine alterations in key neurodegenerative and neuroinflammatory markers.

NEUROSURGICAL RESEARCH

Traumatic Brain Injury, Cancer, Stroke and Neurodegeneration

Researcher: Ms Lola Kaukas PhD Student - Uni SA $30,000

Title: Identifying biomarkers to predict outcome following traumatic brain injury

Project: Traumatic brain injury (TBI) encompasses pathophysiological changes known as secondary injury processes that often lead to worsened prognosis and outcome. To date there is no reliable methodology to predict which patients may deteriorate acutely following TBI. This project aims to investigate the immediate inflammatory response to TBI, via cerebral microdialysis, which allows direct sampling of the fluid within the brain to determine if alterations in the expression of any proteins within the inflammatory response predict the later development of brain swelling. The ability to identify these patients earlier, allows therapeutic intervention to begin which may prevent these deleterious outcomes.

Researcher: Dr George Opie - University of Adelaide $30,000

Title: Developing TMS-EEG indices of functional and physiological deficit following mild traumatic brain injury

Project: 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 longterm 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.

Researchers: Dr Lyndsey Collins-Praino, Dr Andrew Care - University of Adelaide & Macquarie University $29,886

Title: "Cage fighting" for Parkinson's Disease: How can we prevent the spread of abnormal proteins?

Project: A major contributor to the spread of Parkinson's disease throughout the brain is the transmission of an abnormally folded protein, called alpha synuclein, from brain cell to brain cell. The aim of this project is to pioneer a novel technology to target this alpha synuclein within the extracellular space and clear it from the brain. This may help to stop the brain transmission of alpha synuclein, halting the spread of the disease, and leading to a disease-modifying treatment strategy for PD.

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AMBASSADORS
BENEFACTORS

NRF Life Members

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Brian North AO
Richard Campbell
Carolyn Hewson AO
Robert Searcy
Richard Fewster
Robert Neill

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Simon Fahey
Patrick of Coonawarra
David Hemmy
Strong Enough To Live

DONALD SIMPSON MEMORIAL DINNER

18.04.27 - 22.05.18

Recognising Professor Donald Simpson AO and his 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, 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:

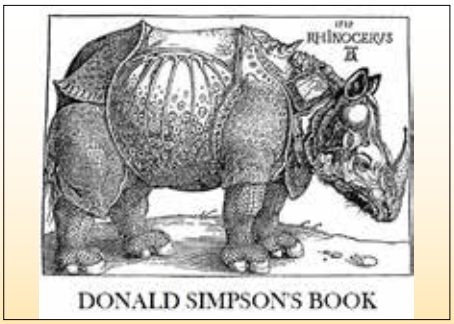
Brian North	succeeded Donald as President of the NRF
Gavin Fabinyi	neurosurgeon from Melbourne
Ken Clezy	first resident department of neurosurgery RAH 1956
Elizabeth Lewis	paediatric neurosurgeon and long-term friend
David David	craniofacial surgeon from Adelaide
Annabel Carney	physician in the Spina 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.

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

Back Row: Mr Don Donlan, The Hon Hieu Van Le AC, Prof Robert Vink AM, Mr Alan Down.
Front Row: Ms Penny Bowen, The Hon Catherine Branson AC, Ms Carolyn Hewson AO, Dr Oana Maftei



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

HOW TO SUPPORT NRF

The objective of the foundation is directed towards funding research into the cause, diagnosis, prevention and treatment of disease or malfunction of the brain, spine and nerves and it is through the generosity of our supporters that we are able to continue this life saving work.

DONATIONS AND REGULAR MONTHLY PAYMENTS

The NRF relies on your generosity to continue to support vital neurological and neurosurgical research and to be able to donate equipment for both research and treatment.

Regular monthly donations are a great way to spread your giving throughout the year, and an annual statement summarising your donations will be delivered to you.

One-off donations and regular monthly donations can be made either online, at **www.nrf.com.au**, by clicking the "Donate Now" button, or by completing the enclosed form.

GIFTS IN WILLS

Looking for a way to make your final wishes really count? Consider leaving a gift in your Will to the NeuroSurgical Research Foundation.

To leave a gift in your Will to the Foundation, contact your solicitor, who will advise you of the required documentation. The correct full name to be listed in your Will should read NeuroSurgical Research Foundation.

We wish to thank Thomas James Ashton, Ronald Graham Dalip and Gunther Alfred Friese for leaving a Gift in their Will to the NeuroSurgical Research Foundation over the last 5 years. These contributions enabled the NRF to establish the $1million NRF Chair of Brain Tumour Research.

IN MEMORIAM DONATIONS

In memoriam gifts are donations that may be made in lieu of sending flowers, or in memory of a loved friend, relative, or colleague. They are a positive and thoughtful way to honour the memory of a loved one. Family members are notified of all donors, and gifts are receipted and acknowledged promptly.

The NRF wishes to acknowledge the following In Memoriam donations received from families and friends in memory of their loved ones:

Christopher Adams
Catherine Denton
Amanda Maiolo
Joylene Neddermeyer
Mark Brenton Standley
Dean Bowman
Nicholas Diakomichalis
Tina McBain
Eve Nowakowski
Kat Broderick (O'Brien)
Dianne Dutton
Kim Morris
Hannah Philbey
Patricia Davies
Tom Gross
Carolyn Edith Moule
Donald Simpson

IN CELEBRATION DONATIONS

Next time you're celebrating a birthday, anniversary, engagement, or special event, why not ask friends and family to skip presents and donate to lifesaving research instead.

The NRF wishes to acknowledge the following In Celebration donation received this year:

Prue Astley

GREY MAY 2018

Grey Matters Brain Tumour Research fundraisers. Thank You!

Hannah organised a fundraiser in May 2018. Hannah was a celebrated and dedicated brain cancer fundraiser who unfortunately lost her battle with brain cancer in July 2019. We will continue to fund brain cancer research until no more lives are lost.

Lucinda, Cherrie and Marty manned a stall during Grey May at Pasadena Shopping Centre

Give 15 for Glioblastoma Research: Ginta, Kerry and Stuart pledged the funds they saved from giving up 15 things to help us turn 15 months into 15 years!

Hannah Philbey

Lucinda Gregory & Marty Adams

COMMUNITY FUNDRAISING

2018-2019. Thank You!

Tina McBain & Angels Softball Club Tina, Paul and the Angels Softball Club organised brain cancer fundraisers. Tina was a dedicated brain cancer fundraiser who unfortunately lost her battle with brain cancer in June 2019. We will continue to fund brain cancer research until no more lives are lost.

Adelaide Marathon Marco, Lily, Amanda & Matt all took part in the Adelaide Marathon raising funds for vascular conditions.

Jayne – Raised money for brain cancer research by cutting her long hair.

Boomer Babes Life is a fun space for women over 50...sharing lives, thoughts, passion and fun ideas! Jaynie organising monthly **Bubbles Brunch & Business** catchups, raising money for NRF brain tumour research in 2018 & 2019

Tina & Paul McBain

Angels Softball Club

Marco & Lily

Jayne

Ginta Orchard, Melinda Tea & Jaynie Morris-Riggs

FINANCIAL STATEMENT

for the year ended 31st March 2019

The NeuroSurgical Research Foundation Incorporated Statement of Comprehensive Income	NOTE	2018 $	2019 $
INCOME			
Donations and Fundraising	2	367,227	894,217
TOTAL INCOME		**367,227**	**894,217**
LESS EXPENSES			
Research Grant Expenditure	4	(366,491)	(1,189,126)
SURPLUS/ (DEFICIT) RESEARCH FUND		**736**	**(294,909)**
INCOME – INVESTMENT FUND			
Investment Income		243,375	294,846
Membership		---	700
TOTAL INCOME		**243,375**	**295,546**
LESS EXPENSES			
Administrative Expenses	3	(149,888)	(154,001)
TOTAL EXPENSES		**149,888**	**154,001**
SURPLUS – INVESTMENT FUND		**93,487**	**141,545**
SURPLUS/ (DEFICIT) FOR THE YEAR		**94,223**	**(153,364)**

NOTE 4 RESEARCH GRANTS

NRF Chair of NeuroSurgical Research SCI / TBI	31,592	54,812
NRF Chair of NeuroSurgical Research Neurodegeneration	29,417	57,438
Brain Tumour Research University SA	57,334	101,559
Brain Tumour Research Flinders Brain Tumour Bank	41,600	---
Paediatric Research Women's and Children's Hospital	73,200	---
Paediatric Research University SA	20,580	29,615
University SA Chris Adams Scholarship	832	---
University SA – NRF Brain Tumour Chair	94,221	905,779
University SA – TBI	---	30,000
Grants – Unallocated	17,715	9,923
	366,491	**1,189,126**

The NeuroSurgical Research Foundation Incorporated Statement of Financial Position	NOTE	2018 $	2019 $
CURRENT ASSETS			
Cash and Cash Equivalents		125,483	81,439
Inventories		500	500
Sundry Debtors & Prepayments		16,161	3,292
TOTAL CURRENT ASSETS		**142,144**	**85,231**
NON-CURRENT ASSETS			
Office Equipment and Computer Software		1,423	1,201
Managed Investment		4,532,596	4,310,417
TOTAL NON-CURRENT ASSETS		**4,534,019**	**4,311,618**
TOTAL ASSETS		**4,676,163**	**4,396,849**
CURRENT LIABILITIES			
Payables		(317,654)	(197,092)
Provisions		(6,965)	(4,902)
TOTAL CURRENT LIABILITIES		**(324,619)**	**(201,994)**
NON-CURRENT LIABILITIES			
Provisions		(13,264)	(9,939)
TOTAL LIABILITIES		**(337,883)**	**(211,933)**
NET ASSETS		**4,338,280**	**4,184,916**
TOTAL ACCUMULATED FUNDS	5	**4,338,280**	**4,184,916**

The NeuroSurgical Research Foundation Incorporated Statement of Changes in Accumulated Funds	NOTE	2018 $	2019 $
ACCUMULATED FUNDS – CORPUS		3,903,647	4,141,545
ACCUMULATED FUNDS – RESEARCH		434,633	43,371
TOTAL ACCUMULATED FUNDS	**5**	**4,338,280**	**4,184,916**

NOTE 5 ACCUMULATED FUNDS

	Investment Fund	Research Fund	Total
Balance 31/03/2017	3,903,647	340,410	4,244,057
Surplus/(Deficit) Allocation	---	94,223	94,223
Balance 31/03/2018	**3,903,647**	**434,633**	**4,338,280**
Transfer	96,353	(96,353)	---
Surplus/Allocation	141,545	(294,909)	(153,364)
Balance 31/03/2019	**4,141,545**	**43,371**	**4,184,916**

These pages are extracts from the Audited Financial Statement. If you require a full set of the Financial Statement, please contact Ginta Orchard - Hon Secretary by either phone (08) 8371 0771 or email ginta.orchard@nrf.com.au.

Thank you to William Buck for pro-bono audit services.

CITY TO BAY 2018

NRF Team Neuro Raises $29,980 for life saving NeuroSurgical Research!

Sunday Mail PRESENTS WESTPAC CITY TO BAY

DR JONES & PARTNERS MEDICAL IMAGING

$29,980 raised for life saving neurosurgical research!

Ollie & Tyson

Team Wilkins

Dasith

Team Patrick

Thank you to our fundraisers & supporters including:

- Aldgate Vet
- Ally & Lili
- Dasith
- Dr Jones and Partners
- Marissa
- Michael
- Ollie & Tyson
- Strong Enough to Live & Lucinda
- Team Patrick
- Team Wilkins
- Tumournators
- UniSA

Thank you to all of our wonderful participants, sponsors, volunteers and friends in this year's City to Bay! NRF Team Neuro looked fantastic and everyone did an outstanding job raising funds and awareness for NRF research. Everyone has their own personal connection and story behind taking part in the event ranging from brain tumour survivors, researchers, medical staff and those competing in memory of someone lost. All raising much needed funds for improved treatments, extended life expectancy and ultimately cures for neurosurgical conditions.

Over the past 7 years, NRF Team Neuro comprises of over 690 team members and has already raised in excess of **$250,000** for life saving and life changing neurosurgical research. Thank you to NRF Team Neuro!

Tumournators

Strong Enough to Live & Lucinda

Uni SA

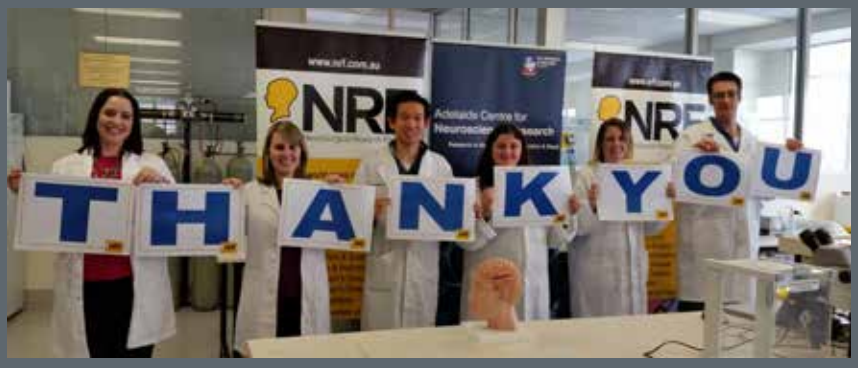
Ally & Lili

Michael

NRF

NeuroSurgical Research Foundation

The objective of the Foundation is directed towards research into the cause, diagnosis, prevention and treatment of disease or malfunction of the brain, spine and nervous system.



NeuroSurgical Research Foundation
Executive Officer: Ginta Orchard
PO Box 698, North Adelaide SA 5006
Phone: (08) 8371 0771
Mobile: 0419 844511
Email: info@nrf.com.au
Website & Online Donations: www.nrf.com.au