



NRF







NeuroSurgical Research Foundation



*NRF - celebrating 50 Years of
ground-breaking research*

Annual Report 2013/14

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 Neurosurgical Research
-  To raise funds for the above purposes

BOARD MEMBERS 2013-2014

Dr Brian North AO	President
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From our Patron



I am honoured to have been invited to succeed Carolyn Hewson AO as the Patron of the NRF. After 24 years' of service to the NRF in this role, Carolyn will, I know, be sorely missed. I undertake to do what I can during my time as Patron to emulate her many and substantial contributions to the Foundation.

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. This might be, for example, because a child requires urgent attention for a congenital abnormality, a teenager suffers a traumatic head injury, an adult suffers from spinal problems or an older family member contracts Parkinson's disease - or for any number of other reasons.

It was for this reason truly visionary for Dr Trevor Dinning to establish the NRF in 1963. The strong leadership of the Foundation since that time has made the NRF a significant contributor to the cutting-edge research in neurosurgery being undertaken at the University of Adelaide and elsewhere. Over its life the NRF has provided over \$5.4 million to neurosurgical research including providing a permanent endowment of \$1.8 million for the NRF Chair of Neurosurgical Research at the University of Adelaide and \$1.3 million for the Abbie Simpson Clinical Fellowship.



By becoming Patron of the NRF I know that I join a wonderful team committed to the vision of Dr Trevor Dinning. That team includes the Council Members led so well by Dr Brian North AO; the hard-working Executive Officer, Ginta Orchard; the NRF's loyal membership base and its enthusiastic volunteers; and also the skilled and committed researchers, including Masters and PhD students, whose important work is the very reason for existence of this most important charity.

As the NRF celebrates its fiftieth year, the dedicated support of this great team gives me confidence that the NRF's impressive contributions to neurosurgical research will continue for many more years to benefit all South Australians; indeed, to benefit all humanity.

A handwritten signature in cursive script.

The Honourable Catherine Branson QC
Patron



Dr Brian North introduced The Honourable Catherine Branson QC as the new Patron of the NRF



His Excellency the Governor, Rear Admiral Kevin Scarce AC CSC RANR awarded Carolyn Hewson AO with NRF Life Membership at Government House in recognition of her 24 years as Patron and thanked Carolyn for her dedicated service

AWARDS & RECOGNITIONS - NRF 2014 GOVERNMENT HOUSE

The awards presented recognised key supporters, volunteers and donors who have been actively involved with the NRF, especially many individual and corporate donors and supporters of the 50th Celebrations. These awards were presented at Government House by His Excellency Rear Admiral Kevin Scarce AC, CSC, RANR.

The supporters acknowledged and awards presented were:

 **Friend of the Foundation was awarded to the following organisations for generous donations:**

James & Diana Ramsay Foundation SA Police

 **Major Benefactor was awarded to the following individuals for generous donations:**

Barbara Kelley & Family Richard Turner Rosemary Waterman

 **Benefactor was awarded to the following individuals for generous donations:**

Simon Fahey Phil Harris Ann Middleton

 **Major Corporate Benefactor was awarded to the following companies for generous donations:**

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Medtronic Peter Lehmann Wines

 **Corporate Benefactor was awarded to the following companies for generous donations:**

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Coopers Brewery
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Dr Jones & Partners
Phil Wooding



Rosemary Waterman



Barbara Kelley



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Simon Fahey



Harvey Foundation
Trevor Harrison

CHANGING OF THE GUARD

NRF Professor of Neurosurgical Research - After ten years of outstanding research leadership, Professor Robert Vink has moved on from his Chair as NRF Professor of Neurosurgical Research at the University of Adelaide; he is now Pro Vice Chancellor at University of South Australia. Fortunately, he continues his NRF research role by supervising the large team of postgraduate scientists, PhD graduates and honours students. Professor Vink remains an active and valued member of the NRF Board. The NRF, in partnership with the University of Adelaide, now has the time to find a worthy successor to Professor Vink and the Executive Committee has started this search.

NRF Patron - Ms. Carolyn Hewson AO has been a highly effective and popular Patron for over 24 years. Her enthusiasm for the NRF has been amazing despite demanding roles as a Director of several leading Australian companies, such as BHP. Thank you Carolyn for being such a valued friend and Patron of the Foundation. The NRF is now fortunate to have the Honourable Catherine Branson QC to succeed Carolyn. Catherine is a former Federal Court Judge, President of the Australian Human Rights Commission and is now an Adjunct Professor at the University of Adelaide Law School. We welcome her to our Foundation.



Dr Trevor Dinning founded the NRF in 1963 with support of his colleague, Professor Donald Simpson. At that time, Australia was backward in neurosurgery terms when compared to the USA and Europe, particularly when it came to research activity. Driven by generous donations, the NRF plays an important role in making Australia a leader in neuroscience research. The NRF donated \$1.89 million to the University of Adelaide to fund the NRF Chair of Neurosurgical Research in 2004. Since then, there has been an explosion of research involving both PhD and Honours students targeting such diverse conditions as brain tumour, stroke, subarachnoid haemorrhage, brain injury and Parkinson's disease. Other major projects include the Abbie Simpson Fellowship to support clinical (i.e. bedside) research and more recently, an initiative to establish a research unit at the Women's and Children's Hospital to advance knowledge in paediatric neurosurgical conditions. In May 2013, the Foundation celebrated 50 years of achievement with a Gala Dinner at the Entertainment Centre. This highly successful event highlighted our current research activity with presentations from Professor Robert Vink and Professor Marcus Stoodley from Macquarie University, who is a past recipient of research funding from the NRF. I thank the supporters, members, staff and volunteers who organised the Gala Dinner, particularly Carolyn Hewson who was the MC. The celebration resulted in over \$102,000 for research funding.

Another notable achievement has been the creation of an investment pool that in the future could be used to support the Foundation's annual operating expenses and potentially provide additional research funding. Our goal is to one day assure our donors that 100% of their donations will be used for research.

We continue to expand our use of social media and on-line donor sites such as Everyday Hero. Recently we introduced "GiveMatcher" as an on-line website that will match, with some limitations, donations made to the NRF. Fundraising of this type is quickly becoming a significant source of donations for the NRF.

The NRF is fortunate to have dedicated men and women from our community who donate their time and advise the Foundation in the business of fundraising. I wish to record the diligence, expertise and hard work by all Board members. Our Patron, Catherine Branson has joined the NRF team and is helping with sound advice and leadership.

Many volunteers help with the preparation of newsletters, functions, publicity material and so on. I wish to make special mention of Ginta Orchard, our Executive Officer for her enthusiasm, hard work, and guidance. To all of you who have assisted the Foundation, a very big thank you.

In conclusion, the Foundation has had an active and productive year with an increase in both the scale and quality of research funded by the NRF. This productivity is particularly evident in funding basic scientific research. I am confident that the NRF is fulfilling the objectives set out in our Constitution "to encourage, stimulate and aid research and investigation into all matters related to neurosurgery".

Brian North

Dr Brian North AO

President



The 2013/14 year marked another year of outstanding progress in the neurosurgical research program, notable for its new international collaborations, student performances, and new grant and publication successes.

Those who qualified for their PhDs in the last 12 months were Adam Wells and Levon Gabrielian. Adam, who is the first neurosurgical trainee to complete a PhD in our laboratory, developed and characterised a new model of stroke that he hopes will facilitate the clinical translation of novel therapeutic interventions. Under the primary supervision of Dr Renée Turner, head of the translational stroke group in the lab, Adam developed a large animal model of middle cerebral artery occlusion and demonstrated that the radiological and pathophysiological responses in this model closely mimic that seen in humans, particularly with respect to the development of cerebral oedema and elevated ICP. Dr Turner has since used the model to explore novel ICP interventions in stroke and has recently initiated a productive research collaboration with the only other group in the world using a similar model, that of Prof. Johannes Boltze in Germany. This collaboration has the potential to make significant inroads into the management of stroke, and is one to watch in the future.

For his PhD, Levon characterised the temporal changes in ICP and brain oxygenation following traumatic brain injury in two different experimental models of brain trauma. Having established the best model for future studies, Levon then investigated several different pharmacologic strategies for ICP reduction following traumatic brain injury, establishing that targeting the substance P receptor is more effective than common clinical pharmacological strategies used today. This represents the first major advance in pharmacological approaches to raised ICP in decades and has the potential to revolutionise clinical management of severely injured TBI patients. Clinical trials examining the new interventions are scheduled to start in the next 12 months.

Our honours students performed very well last year, with Stephanie Plummer, Kelly McAteer and Stefan Court-Kowalski all receiving 1st class awards in recognition of their outstanding efforts. All three students subsequently applied for and were granted candidatures into the PhD program, receiving scholarships from the federal government, University and NRF, respectively. Stefan's candidature is unique in that he is enrolled concurrently in a medical degree and a PhD, the first case of this being approved by the University of Adelaide. It is so unusual, that no scholarship category existed to fund his PhD stipend and a new one had to be created. Fortunately, the NRF board voted to support Stefan's studies, another example of how the NRF supports our best young scientists when no other organisation can. Stefan will be focusing on the role of aquaporin water channels in brain tumour progression, while Kelly will be examining interventional strategies in chronic traumatic encephalopathy. Stephanie will continue to focus her studies on identifying and testing the protective regions of the amyloid precursor protein under the primary supervision of A/Prof. Corinna van den Heuvel.

Another notable achievement amongst the students was Fiona Bright receiving a Rivers Gift Foundation grant to spend one year at Harvard University in Boston pursuing her PhD studies in Sudden Infant Death Syndrome (SIDS). Fiona is studying respiratory control in early development and its implications in SIDS under the primary supervision of Prof. Roger Byard. Her preliminary results were very impressive and attracted the attention of our colleagues at Harvard who have now entered into a research collaboration with our own research team. Fiona has now been at Harvard for the last few months and is absolutely loving the research intensive atmosphere in one of the world's best Universities. We look forward to her return early next year along with the new techniques she will undoubtedly be bringing back with her.



Dr Renée Turner



Dr Adam Wells



Dr Levon Gabrielian



Dr Anna Leonard

We should also note that one of our postdoctoral fellows, Dr Anna Leonard has been awarded a research fellowship to spend a year at the University of Alabama characterising a porcine model of spinal cord injury. Anna's research focusses on spinal cord swelling after injury and the year in the USA will allow her to pursue her research in a novel model that better replicates many of the features of human spinal cord injury, as well as making research connections that will underpin future collaborative research.

The fact that we have been able to establish these international collaborations confirm the high regard in which our research is currently held and the research talent of the staff and students who make up the neurosurgical research laboratory. Highlighting this, we were successful at attracting almost \$0.5 million of funding from the NHMRC for our research into chronic traumatic encephalopathy (CTE), the condition thought to be caused by repeated concussion and recently gaining significant media attention. Our findings in this area are so significant that the Boston CTE group, who discovered the condition, had me present our findings to their research leaders in Boston who have now linked to our drug discovery research program. Further evidence of this high regard is the number of publications that have been produced by the team over the last 12 months, with notable publications appearing in the Journal of Neurotrauma, Neuroscience, PloS one, Anti-cancer Drugs and Spinal Cord, amongst other international journals. Several conference presentations at both national and international conferences were made by members of the research team, including at the Hobart Symposium on Neural Injury and Regeneration, the Australian Neuroscience Society meeting in Adelaide and the International Neurotrauma Symposium in Budapest. Moreover, many of the team were involved in the organisation of the Australian Neuroscience Society meeting in January and we will be hosting the Australian Annual Symposium on Neural Injury and Regeneration later this year.

You can see that the last 12 months has seen us establish a number of international collaborations with some of the world's foremost research groups. These collaborations will make us even more competitive for research funding in what is rapidly becoming a very difficult financial environment to pursue research. Given the increasingly difficult funding environment, we cannot overstate the importance of our research sponsors. We were delighted to be named as a 2015 funding recipient of the SAPOL "Ride like Crazy" program. This funding has been absolutely critical for us not only in establishing a brain tumour research program, but in training the two PhD graduates who have subsequently been employed in major labs in Paris and San Francisco, as well as the ongoing training of our two current cancer research PhD students, Kimberley Mander and Stefan Court-Kowalski. This research has gained a lot of international attention and we are indebted to SAPOL for facilitating this research. Other donor funding from the NRF has been applied to research in stroke, subarachnoid haemorrhage, spinal cord injury and traumatic brain injury during the last 12 months. You will hear about some of these exciting research stories from the students at this year's AGM. Of course, you as donors are critical to the ability of the NRF to support our research, which attracts and trains some of our best students to undertake neurosurgical and related research, as well as subsequently dedicate their future careers to this pursuit. Without the support from you, we would be unable to undertake this world leading research.

Finally, I know many of you like to also hear about significant personal events in the lab. Well it has been a very exciting year for the lab with no less than 4 births (congratulations to Emma, Frances, Diana and my wife Oana). Christmas lab celebrations just seem to get bigger every year. Perhaps we should look into the fertility powers of the water in the lab!

Again, thank you for your generous support of the NRF, and I hope you get as much satisfaction out of the lab's success as we, the researchers do.



Professor Robert Vink

Chair of Neurosurgical Research



PhD Stephanie Plummer



PhD Kimberly Mander



PhD Fiona Bright



PhD Kelly McAteer



PhD Stefan Court-Kowalski



FUNDED BY JAMES & DIANA RAMSAY FOUNDATION

Over the past 2 years we collected clinical data on all children with neurosurgical conditions admitted to Department of Neurosurgery at the Women's and Children's Hospital. We conducted research to develop and validate simple and objective tools to assess children with neurosurgical disorders.

This work enhances our ability to care for these children by looking at treatment outcomes and will be able to assist with clinical trials in paediatric neurosurgery to advance knowledge, and improve outcomes of neurosurgical treatment. We examined an area of high priority in hydrocephalus research, specifically shunt infections.

This project aims to improve our understanding of the causes of shunt infections and thus the development of strategies to minimise the risk of such infections. We also studied the demographics and recovery of paediatric patients who suffered head injuries.

This data will be used as a basis for addressing head injury awareness and education in the community and allow us to contribute to child safety and have a positive influence on the prevention of severe head injuries. Our target is to collect new knowledge, translate research findings into protocols and clinical practice and improve quality of life and health outcomes. This is certainly relevant to the vision of NRF of fostering research in the areas of causes, diagnosis, prevention and treatment of disease, injuries or malfunction of the brain, spine and nerves.

Dr Amal Abou-Hamden

Neurosurgeon



James & Diana Ramsay Foundation thanked for donations to Paediatric Research

The NRF is extremely grateful to the James & Diana Ramsay Foundation for providing funding to establish the paediatric database.



Australian Executor Trustees Paediatric Research Grant

Australian Executor Trustees allocated a \$5,000 grant to the Paediatric Appeal from their annual discretionary charitable trusts. Australians are known for their generous spirit of giving and support of worthwhile causes. Australian Executor Trustees has been helping people give back to the community for over 130 years.



Allison, Ryan with daughter Lilli



General Manager Kerry de Lorme
James & Diana Ramsay Foundation

Executive Officer's Report



Your continued generous support and donations resulted in a total of \$538,864 raised for neurosurgical research in the past year. These donations ensure that the NRF can fund neurosurgical and neurological research specifically in the areas of brain tumours, stroke, traumatic brain injury and paediatric conditions.

Your support enables the research team to continue developing techniques and drugs that are now progressing from the laboratory to clinical trials.

Thank you to our dedicated volunteers

I am privileged to work with a fine group of volunteers, without who we could not achieve our successful outcomes. Thank you to this team for their hard work. I particularly wish to thank my family who support me at all events, in the office and fundraising; my husband David daughter Selga, son Markus and parents Ints & Margota. Also for my many friends who are part of this integral team, Robin, Liz, Di, Kat and Jessica.



City to Bay: David, Markus and Lorne

Ride Like Crazy: Doug, Toni, Di, Claudia, Robin, Steve and Hetty

50th Gala Celebrations: Carolyn, Di, Kat, Julia, Robin, Ann H, Ints and Margota

Office: Ann F, Ann H, Robin, Liz and Selga

Design materials: Tavik, Joshua and Jessica

Our 2013 -2014 dedicated fundraisers

We have an ever growing number of people taking on sponsored challenges and organising fundraising events for the NRF. Thank you to the following people who together this year raised over \$9,000. I invite you to consider organising a fundraising event or joining us in the City to Bay or Ride Like Crazy.

Chloe "Chloe's Curls for Cancer" - Chloe raised over \$2,000 from this event. Chloe along with a number of fellow school mates cut their pony tails and donated them to make wigs for women and children who have lost their hair from cancer treatment.

Jordan , Laura , Ella and Brigie for raising over \$4,000 through Ride Like Crazy.

Linda "La Grande Classique run in Paris" along with a cake stall at Bunnings raised over \$1,750.

Kristin organised a "Lego" movie night raising over \$1,250.

To learn more about sharing a celebration or organising an online fundraising event, please go to the NRF website and click on 'Fundraising Now' to learn how.

Please join me and the Neurosurgical Research Foundation on Facebook & Twitter for up to date stories, information and events.

Ginta Orchard
Executive Office



Find us on Facebook or Twitter



David, Markus & Lorne



Toni, Di & Robin



Chloe



Linda

Many thanks to all the donors who supported the 50th celebration and appeal; over \$100,000 was raised to continue neurosurgical research. Without these individuals and company donations and sponsorships this event would not have been such a great success.

DIAMOND SPONSOR



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AUCTION PRIZE DONORS - AUCTIONED BY PHIL HARRIS

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