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# NRF

NeuroSurgical Research Foundation

SPRING

## World Class Research at NRF AGM



*The neuroscience research team, led by internationally renowned Professor Robert Vink, continues its world-class neuroscience research thanks to the support of the NRF*

As reported at the 2013 AGM, the neuroscience research team, led by internationally renowned Professor Robert Vink, continues its world-class neuroscience research thanks to the support of the NRF. The research priority is to find long-term solutions for everyday life-threatening conditions including traumatic brain injury, spinal cord injury, brain swelling, concussion, stroke, brain tumours and paediatric conditions. A summary of some of these research projects was presented at the meeting, and follows below.



Concussion is increasingly recognised as a problem particularly in athletes with repeated concussions recently linked to the development of neurodegeneration. Honours Student *Kelly McAteer* is examining the problems and long-term effects caused by concussion. Her target is to stop neurodegeneration caused by concussion so that people affected by concussion and particularly athletes can continue living normal productive lives as they progress to retirement.



In patients with Traumatic Brain Injury (TBI), brain swelling poses a critical threat, accounting not only for up to 50% of all deaths, but also for a major proportion of disability in survivors. It has been proven that magnesium levels are severely reduced after TBI, but simply giving magnesium does not seem to increase levels in the injured brain. Master of Medical Science Student *Diana Sabiti* researching ways to aid magnesium in crossing through the blood brain barrier, increasing brain levels and thereby reducing life threatening swelling.



Raised intracranial pressure after Stroke restricts blood flow to the brain and causes cell swelling and death. Oxygen in the blood is essential for survival, and the longer the brain is deprived of oxygen, the greater the amount of damage caused by a stroke. *Dr Adam Wells*, Neurosurgical Trainee has developed a clinically relevant model that reproduces many of the features of human stroke, and will facilitate the development of treatments that will relieve intracranial pressure. Relieving the pressure in the brain caused by stroke is the key to survival.



Brain Swelling as a result of Stroke is the leading cause of death and permanent disability in stroke victims. Stroke opens the flood gates that allow fluids from the blood to enter the brain causing the life threatening swelling. *Dr Renee Turner* is investigating a drug that seals up these leaky blood vessels and stops the brain from swelling. By using our newly developed stroke model, we hope to see this research translated from the laboratory into clinical trials.



Finally, subarachnoid haemorrhage is a life-threatening condition that results from a ruptured aneurysm. However, cerebral vasospasm is the major killer for people who have survived the aneurysm and associated haemorrhage. *Dr Tom Morris*, Neurosurgical Trainee is looking at what the body does to heal itself and how we could facilitate this process.

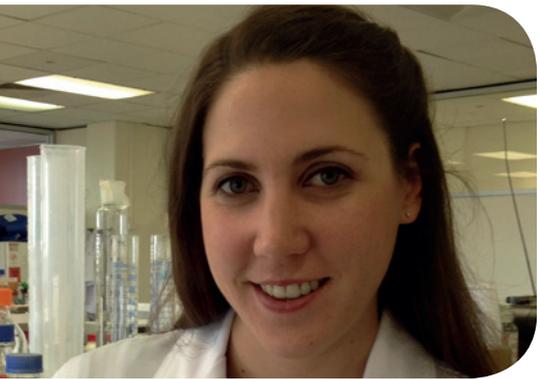
It is only through your donations that the research team can continue to develop techniques and drugs that are now progressing from the laboratory to clinical trials, hopefully resulting in lifesaving treatments.



# CITY TO BAY 2013 - NRF Team Neuro



*This team of Researchers and Neurosurgeons are not only leading the way in the laboratory but they also took up the challenge and joined NRF Team Neuro. Funds raised from their participation will go towards continuing vital research. Thanks to these amazing doctors and researchers; Jessica Borbasi, Kimberley Mander, Fiona Bright, Dr Elizabeth Harford-Wright, Dr Anna Leonard.*



Dr Anna Leonard's research focuses on **Spinal Cord Injury** (SCI). This devastating and debilitating injury commonly affects individuals in the prime of their life and often results in permanent disability, and at present there is no effective treatment for it. Following traumatic SCI, there is an increase in fluid within the spinal cord tissue causing it to swell thus resulting in further

tissue damage and greater functional deficits. Anna's research is focused on developing a treatment that can reduce this swelling. One possible target is a water channel protein called aquaporin 4, and Anna is assessing whether application of an AQP4 modulator (which can open or close these channels) can reduce spinal cord swelling and improve functional outcome.



**Sudden Infant Death Syndrome** (SIDS) is a devastating and unexpected event and is one of the most significant causes of post neonatal mortality in developed countries. PhD student, Fiona Bright's research aims to further the understanding of the

pathophysiology and pathogenesis of SIDS. In particular, research is investigating the roles of neurotransmitters serotonin (5-HT) and substance P (SP) in the control of respiratory drive in the juvenile brainstem, during the period of vulnerability.



Dr Amal Abou-Hamden (neurosurgeon), is the leading Paediatric Researcher. **Paediatric Research** is aimed at ensuring the best possible outcomes are achieved for children with neurosurgical conditions in South Australia. By setting up a database of all children with diseases of the brain and spinal cord, we lead the nation in improving quality of care for children with these conditions. The outcomes of treatment are assessed objectively using clinically valid and

reliable outcome scores in a prospective manner and are analysed regularly. This allows early identification of trends of treatment outcomes and can be acted upon promptly should any change be required. By presenting our results at Australian meetings, we aim to encourage other units around the country to follow. This will allow further collaborations at national and international levels. Funded by the James and Diana Ramsay Foundation.



Stefan Court-Kowalski is researching the **effects of mobile phone irradiation on the brain**. With billions of people worldwide making regular use of mobile phone technology, a clear understanding of the health implications of exposure is very important and widely relevant.

Conditions affecting the nervous system ranging from exposures to mobile phone irradiation, diseases like Alzheimer's and Parkinson's, brain tumours, haemorrhages, and many more are amongst the most devastating and difficult to predict or treat. Research in this area will help us all.

# RIDE LIKE CRAZY

## Sunday 19 Jan 2014

### Event Information!

Ride Like Crazy 2014 is raising funds to fight cancer. Since 2010, this event has attracted over 8,000 riders and raised a staggering \$640,000!

#### COURSE INFORMATION:

Full distance	107.05 km
Short-cut route	90.82 km
Half distance	51.24 km

Register by 4th November 2013 if you would like a jersey to wear on the day of the ride!

#### ENTRY FEES:

Adult	\$110 all distances
Child	\$55 all distances
Woodside transfer:	\$15

# RIDE LIKE CRAZY

Proudly supported by the South Australia Police

## Ride Like Crazy Dinner, Friday 17th Jan 2014

### Event Information!

The 'Cycling Greats Dinner' will be held at the Adelaide Entertainment Centre commencing at 6.30pm

Tickets \$130 per person, includes a 3 course meal with wine and beer package

Toe tapping entertainment provided by the Police Band.

**For more information on the RLC events:**

**Website:** [www.ridelikecrazy.com](http://www.ridelikecrazy.com)

**Email:** [ridelikecrazy@police.sa.gov.au](mailto:ridelikecrazy@police.sa.gov.au)

# Brain Tumour Research funded by SAPOL Ride Like Crazy



Dr Elizabeth Harford-Wright

In Australia, one person dies from a brain tumour every eight hours. As brain tumour patients tend to have a poor prognosis, investigation of new therapies is vital. New Brain Tumour Research has identified a potential treatment that may halt the growth of brain tumours.

This study has been one of the first to demonstrate that a neuropeptide named substance P is substantially increased in brain tumours and that this increase might be driving tumour growth. Indeed, administration of a drug that blocks the actions of substance P was found to decrease brain tumour cell growth, research by Dr Elizabeth Harford-Wright Postdoctoral Research Officer.

Kimberley Mander is looking at improved treatments so the diagnosis of brain metastases will no longer be considered a death sentence. Melanoma is 10 times more common in Australia than other countries and is the cancer that primarily kills young men and women. The spread of melanoma cancer cells to the brain is recognised as a detrimental extension of the primary disease and is often more fatal than the primary diagnosis. A key event in the development of secondary brain tumours is the migration of cancer cells through the blood-brain barrier. Further investigation of this process has the potential to lead to improved treatment strategies as well as interventions aimed at limiting or preventing the spread of cancer to the brain.



Photo Grant Stevens SA Police,  
Kimberley Mander, Prof Robert Vink.



# Thank you to this special group of people and their donors for helping to raise \$32,000 for neurosurgical research.

*In addition to researchers and neurosurgeons, the City to Bay NRF Team Neuro was comprised of patients, friends and family whose lives have all been touched by a neurosurgical condition, some patients were fortunate enough to take part in the event. They share their personal stories with us:*



*Caitlin and Nat:* “Like so many others, our Mum, Erica, is our hero. Eight years ago our mum was diagnosed with a brain tumour. After surgery, the all clear was given and remained that way for 4.5 years. Now we face it again with a different tumour. Our dream, aside from having a happy healthy mum, is that we can raise money for the Neurosurgical Research Foundation so no other family has to go through what we have”.



*(left) Team Patrick:* “Our team of 20 are running and walking in memory of Patrick Tocaciu who lost his battle with brain cancer in 2013”.



*(left) Ally's daughter* who is now 19 months had neurosurgery when she was 17 weeks old and she sees how important it is that neurosurgical research is to discover new cures for neurological disorders and to improve on the current technology available. “We are very fortunate that we have a happy healthy little girl”.

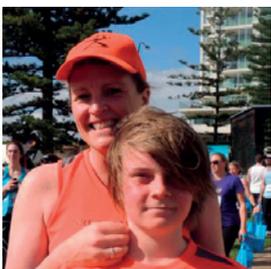


*(left) Natalia:* 6 years ago Natalia was diagnosed with a brain tumour. “It was an extremely scary and surreal experience, I know that I am fortunate to be here and to have the support and care of my family, my beautiful friends, especially my husband. We have two amazing boys, Fynn and Archie. Unfortunately, it was discovered that my tumour has returned. I currently live from 3 monthly MRI's to the next - my life is truly wonderful and happy, regardless of the tumours”.



*Aussie Farmers Direct* (above) raised \$500 at the event.

*Dr Jones & Partners,* staff (left) participated raising over \$2,000.



*(left) Patrick and Marg:* “Earlier this year Aunty Anne had brain surgery on her brain - she is now okay because of the very clever doctors. We joined the team to make a difference”.

*(right) Henrietta:* Celebrating one year on from lifesaving neurosurgery. Henrietta and her family have all joined the team.



## NRF Team Neuro Sponsors



*Team Mot* took on the challenge to raise money for Brain Tumour Research. Team members included Cheryl and Ed (right), Tom, Hayley, Lucy and friends.

