

RESEARCH ROUNDUP continued...

through unexpected mechanisms, quite different to previous concepts. They have shown that excitotoxicity is absolutely dependent on an innate immune response. This has implications that could link apparently unrelated processes in SCI.

Dr Ruitenberg will be adding to our understanding of the inflammatory response by exploring the recruitment of macrophage precursors, i.e. monocytes, their differentiation and function in SCI.

All in all the news from Australia and around the world continues to be heartening and every day we get closer to defining which combination of therapies will give us the result we are all working towards.



DIARISE

Connections 2012 from research to community

13th August 2012 at the Bayside Grand Hall - Sydney Convention and Exhibition Centre

Connections 2012 brings together researchers, clinicians, allied health professionals, decision makers and the community in a single interactive forum to discuss the future of spinal cord injury research Down Under.

This conference builds on the "Making Connections: NSW Premier's Forum" attended by the late Christopher Reeve in 2003 and the "Re:Connections Forum" in 2006. In addition to Australian experts there will be three international speakers including Matthew Reeve, son of the late Christopher Reeve and Member of the Board of Directors, Christopher & Dana Reeve Foundation.



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DR MARC RUITENBERG JOINS OUR SEARCH FOR A CURE

SpinalCure Australia has awarded a prestigious Career Development Fellowship to Dr Marc Ruitenberg, a lecturer in Neuroanatomy & Neuroscience at the School of Biomedical Sciences and Affiliate Research Fellow at The University of Queensland. This award is being funded in partnership with the University of Queensland for the 2012-2015 period.

Dr Ruitenberg received his research training in the Neuroregeneration Laboratory of Professor Joost Verhaagen at the Netherlands Institute for Neurosciences in Amsterdam. Following the award of his PhD in 2003, he moved to Australia where he continued his research into nervous system injury and repair strategies.

Much of the research work we have funded recently, including work by Dr David Brown and Dr Bryce Vissel, has involved the role of inflammation in spinal cord injury (see Research Roundup page 3). There is overwhelming evidence that the induction of inflammation after spinal cord injury is harmful although it is increasingly recognised that certain aspects of the inflammatory response are also necessary for tissue repair. Dr. Ruitenberg's current research is also involved with the inflammatory response and aims to advance our understanding of which aspects of the inflammatory process worsen injury outcomes.

The award of this Fellowship is a major boost to the research activities in his lab and will accelerate the development of better treatment options for spinal cord injury.

Dr Ruitenberg explains that generating these insights is critical for the development of new and effective anti-inflammatory therapies that can improve recovery. He is concentrating the research efforts of his laboratory on the innate immune system because of the dominant role that it is thought to play in the inflammatory pathology associated with spinal cord injury. His laboratory is also actively involved in the development of ultra-high field magnetic resonance imaging (MRI) techniques to aid better translation of promising research findings from the laboratory bench to the clinic.

"The award of this Fellowship is a major boost to the research activities in his lab and will accelerate the development of better treatment options for spinal cord injury" he said.



Dr Marc Ruitenberg

NEW ONLINE

Staying up to date with the latest in research and SCA news has never been easier.

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SpinalCure Australia's quest for a cure for paralysis caused by spinal cord injury is greatly assisted by your generous support

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RESEARCH SHOWCASE BOASTS SUCCESS

Late February, Sydney saw a NSW Research Showcase encompassing all the competitive spinal research that has been funded by the NSW Government from 2003–10. In that time, 21 researchers received support from the Fund, covering research into many aspects of spinal cord injury and the allied fields of motor neurone disease and multiple sclerosis.

SpinalCure Australia can take credit for playing a major part in this research happening through its lobbying efforts resulting in the Making Connections Forum in 2003; securing a funding commitment from former Premier Carr and, with its participation on the Committee selecting the most promising research. SpinalCure's scientific director, Professor Perry Bartlett, head of QBI chaired the research committee from 2004-10 and was deputised by SCA's current Chair, Joanna Knott.

The NSW Spinal Cord Injury and Related Neurological Conditions Fund included \$10.9 million to promote biomedical research into spinal injury and other related neurological conditions.

In 2007, a further \$11.2 million was committed over four years, and four years later an additional \$2.9 million was

committed for 2011/12, bringing the NSW Government's total commitment to research in spinal cord injury and related neurological conditions to more than \$22 million since 2003.

According to Dr Antonio Penna, Acting Director, Office for Medical Research, NSW Ministry of Health, the research chosen dealt with some of the most complex and intricate processes in the human body.

To date some outcomes of this work include an estimated 170 articles in peer reviewed journals with numerous manuscripts; 2 books and 13 chapters submitted in preparation; 262 national and international presentations, and 77 national and international collaborations. It has also trained 79 Honours, MSc and PhD students and mentored 35 Postdoctoral Fellows.

The Fund has also been used to establish quality research infrastructure to facilitate effective research into spinal cord injury and related neurological conditions. In addition, The Spinal Cord Injury Network (SCIN) was seed funded in 2008 out of this Fund to bring together researchers,

clinicians, people with spinal cord injury and other key stakeholders.

Dr Penna said that an additional funding of \$0.6 million was provided by the NSW Government to help establish Australian BioResources – a state-of-the-art facility for the breeding and holding of lines of genetically modified mice that underpin progress in modern medical research. These colonies are critical for progress in research across all health priority areas, including spinal cord injury and related neurological conditions.

Said Dr Penna, the Fund has become a catalyst to encourage new researchers to the field and led to further funding from granting bodies such as the National Health and Medical Research Council (NHMRC).

“The cumulative knowledge gained from this program has significantly increased the understanding of spinal cord injury and related neurological conditions. Some of these advancements will help move the field closer to a cure.”

SpinalCure and its supporters can take pride in its involvement with this Fund which covered researchers at the Garvan, Kollings Institute, Neuroscience Research Australia & Universities of Sydney & NSW.

RESEARCH ROUNDUP

The approaches researchers are taking to finding an effective therapy for spinal cord injury are diverse and fascinating and over the last few months we have seen advances on several fronts.

One approach involves the creation of physical structures to aid and guide nerve regrowth. In exciting recent news we heard that InVivo Therapeutics are getting close to taking their biopolymer scaffolding treatment for acute SCI to clinical trial. The scaffolds provide structural support to a damaged spinal cord in order to spare tissue from scarring and aid regrowth.

Stem cell based approaches continue to make headlines. Researchers at the Max Planck Institute in Germany have successfully reprogrammed skin cells directly into multipotent neuronal stem cells avoiding the pluripotent stage and its risk of creating tumors. Japanese researchers have shown that when rats with severe SCI were transplanted with human dental pulp stem cells they showed marked recovery of hind limb function.

Non invasive drug therapies are also in the news. For example a team from the University of Tokyo have shown that a drug normally used for the treatment of

MS helped mice with spinal cord injuries recover some motor function.

Other news has been simply surprising but no less welcome! Two papers have been published recently on intermittent hypoxia (or oxygen deprivation), both showing a strong link to nerve restoration in chronic SCIs.

After traumatic spinal cord injury white blood cells migrate from the blood to the site of injury to help repair the damage. During this process, called inflammation, white cells have the capacity to help neurons survive or they may kill them resulting in worsening disability. Also, inflammatory processes may retard new nerve growth and lead to scarring blocking the way for new connections. The inflammatory response is not only seen in acute injuries but also in chronic sites of SCI.

“The human body often shows remarkable resilience in its ability to repair itself after injury. Paradoxically, it can sometimes brutally damage it, especially in relation to inflammation of the nervous system.” Dr David Brown

In all approaches discussed above it will be vital to understand this Jekyll and Hyde nature of inflammation and consequently we at SCA have sponsored three outstanding researchers who are all trying to further our understanding of this process: Dr David Brown from the Laboratory of Neuroinflammation at St Vincent's Hospital, Dr Bryce Vissel at the Garvan Institute and our new Fellowship recipient Dr Marc Ruitenber from The University of Queensland.

Dr Brown's research, recently published in the Journal of Neuroscience, has shown that one protein, *CEBPD*, made by key white cells during inflammation teaches other inflammatory cells how to respond to immune induced nervous system damage.

Preventing the production of *CEBPD* by these cells lets them tell other cells to be more protective of neurons and prevents their loss and should thus reduce the damage to the spinal cord.

A great deal of evidence implicates a process called “excitotoxicity” as a cause of nerve cell loss in numerous conditions including SCI. Dr Vissel's team has discovered that excitotoxicity occurs

continued overleaf...

THE 2ND ANNUAL OSCARS LUNCHEON

Close to one hundred SpinalCure supporters gathered in the ballroom at Establishment in George Street Sydney for our annual glitz and glam event “The Oscars Luncheon”. Glamorous frocks worthy of the red carpet were in abundance making the prize for the “Best Dressed” a very difficult choice. Acting as impartial judges, Establishment staff gave the award to Theresa Collignon whose elegant black and white gown and fine hat made a bold Hepburnesque statement.

Good food, fine wine and raucous conversation meant that few people were actually watching the Academy Awards as they played out on the big screen at the end of the ballroom. A diligent few kept a record of winners and eventually named Jennifer Jordan victor in the “winner's predictions” competition.

In keeping with the Hollywood theme the prize pool was topped by a beautiful pair of gold and diamond earrings donated by Pandora and taken home by lucky raffle winner Helen Maguire. Other prizes included a Fitness First gym membership, beauty

products from Black Chicken, tickets for the Belvoir Theatre, Dendy and Palace Cinema, a stack of CDs from Sony Music and a case of fine wine from Grapescape Wines.

A big thank you goes to our band of volunteer helpers and to the companies who so generously donated our prizes. Thank you also to the staff of Establishment for the excellent fare and impeccable service.



Supporters L to R: Kathryn Taaffe, Jennifer Wilkie, Megan Kingham (MC), Juliana Celcer, Robyn Smith, Tina McDonald, and Mary-Lynne Mackertich

SUPPORTER SPOTLIGHT

Profield Foundation

From the cold and dispassionate marble and glass edifice of the Sydney office tower stepping into Profield's offices is something of a culture shock. Suddenly enveloped in antiques, oil paintings and memorabilia the sense of history and pride in the family heritage is palpable and a welcome relief from the indifference on the other side of the door.

There works Michael Field - great grandson of the founding father of the family business and current Chairman of the Foundation.

The philanthropic foundation was established on the wishes of Michael's late Aunt, Heather Proctor who, on her passing in 1994, left her estate for the “betterment of human beings”. Heather was the eldest of 5 children from a family with extensive farming interests in New South Wales. It is the family's deep history in the iconic Australian pastoral industry that is so evident in the office decor.

Heather married Geoffrey Proctor in 1953. As a Shell executive, Geoffrey's career saw them living in Singapore for several years—returning to Australia in the late 1950s.

The devastating loss of their only child, Belinda, in 1988 was a tragedy which Heather could understandably never reconcile. Belinda had returned to her hotel to rest after scuba diving and passed away in her sleep, possibly from decompression sickness.

In accordance with Heather's wishes Profield Foundation concentrates on funding medical research, children's health and health related causes.

We at SpinalCure are extremely grateful for Profield's very generous and unassuming support.



Geoffrey and Heather Proctor on their wedding day in 1953



Heather Field in the 1940s