

Parkinson's Centre Newsletter

December, 2010

Welcome to ParkC

2010 has been a positive year for ParkC, full of big challenges and even bigger rewards. We have continued our research in the laboratory and have made new head way in our subtypes of Parkinson's study.

As a team, we have continued to grow, welcoming several new staff members and sadly, farewelling others. We have continued to work with the community and build new networks.

With your assistance, fundraising for 2010 has been a great success with donations raising in excess of \$17,500 this year. These contributions have been pivotal in developing our research, which aims to assist in the development of preventative measures, as well as improve the quality of life for people with Parkinson's and those throughout the community who are touched by the condition.

We continue to aim to lessen the burden, search for a cause, gain a better understanding and develop effective treatment, with the ultimate aim of contributing towards finding a cure.

Once again, on behalf of ECU and the Parkinson's Centre, thank you for your ongoing support.

Kind regards



Meghan Thomas

ParkC's 3rd Annual Open Day

ParkC's Open Day, held 13 November 2010, is an annual event that aims to inform the community about the important work undertaken both at ParkC and internationally. Guests were welcomed by ECU's Vice-Chancellor of Research, Professor John Finlay-Jones, and then enjoyed presentations from Chief Scientist of WA, Professor Lyn Beazley and the Centre's own Dr Meghan Thomas, who gave an overview of ParkC's expansion and development over the past three years. Dr Thomas made particular mention of the various people who have played an integral role in the Centre's growth. Dr Roger Barker then delivered the main address.

Following the formal presentations, guests were treated to lunch and the dulcet tones of the 6th Avenue Jazz Band. Guests had the opportunity to discuss ParkC's current work with students, staff and guest neurologist from Cambridge University, Dr Roger Barker. To view photos and a video of the presentations visit: www.ParkC.org.au or visit us on Facebook at <http://www.facebook.com/home.php#!/pages/ParkC/150220745018363>.

Laboratory News

ParkC's laboratory research has focused on three areas:

1. *Turning bone marrow stromal cells (BMSCs) into neurons.*

We are extremely pleased to report that, after completing some more technically challenging experiments and some extensive re-writing, this manuscript has been accepted for publication by the journal "Translational Research". The manuscript centres around the notion that bone marrow stromal cells are easily accessible, free of significant ethical concerns, and can potentially be turned into brain cells (or neurons), thus making them of interest as a source of replacement cells for neurodegenerative conditions. The report is set to be published early next year, but for those with a technical bent, here is an excerpt from the abstract:

"...We sought to evaluate the neuronal phenotype and functional capacity of adult rat BMSCs following exposure to a novel multi-step in vitro differentiation protocol compared to cells exposed to other reported neuronal differentiation conditions. We employed a systematic, comprehensive method of assessment in order to determine the neuronal differentiation capacity of BMSCs. Our results confirmed that undifferentiated BMSCs isolated based on their adherence to plastic are of mesenchymal origin and express a range of lineage markers. Following exposure to pre-induction and neuronal induction steps, BMSCs down-regulate markers of other lineages but fail, as assessed by patch clamp, to differentiate into functional neurons. Thus, for BMSCs to be considered as a source of dopaminergic neuronal replacement cells, their ability to terminally transdifferentiate along a neuronal lineage must first be clarified before attempting to direct more complex specification process required for them to be used in Parkinson's disease focused cell replacement therapies."



Meghan with ZI poster

For those without a technical bent: Bone marrow stromal cells are easily accessible, free of significant ethical concerns and it is claimed that they can be turned into brain cells (or neurons), thus making them of interest as a source of replacement cells for neurodegenerative conditions. However using methods that have been widely employed to-date, we have shown that the cells only look like neurons but that they are unable to act like neurons. New more convincing methods need to be developed to exploit the ability that these cells may have to turn into neurons.

2. *The zona incerta (ZI) as a new target for deep brain stimulation .*

Deep brain stimulation (DBS) is a reversible surgical procedure used to treat a variety of movement disorders including Parkinson's. DBS uses electrodes to block abnormal nerve signals. The placement of the electrode into specific brain regions is critical and the best brain "target" varies depending on the neurological condition and symptoms. In conjunction with Prof Charles Watson (the world's most eminent neuroanatomist) and Mr Lind (neurosurgeon at Sir Charles Gairdner Hospital), ParkC's first honours student Ms Tiza Chipungu characterised the human ZI. Tiza also characterised the rat ZI and compared it to the human ZI. Results from Tiza's work were presented by Dr Thomas as a poster at The Movement Disorder Society's 14th International Congress of Parkinson's Disease and Movement Disorders in Buenos Aires. Of the 1067 posters at the conference, Tiza's was one of 160 posters selected to be part of a special "guided poster tour". Congratulations to Tiza for her excellent work.

3. *Pax6 as a neuroprotectant.*

Pax6 is a gene that, during development, is known to be important in telling cells to turn into dopaminergic neurons, including those of the substantia nigra. We are continuing to use cell culture models to see if a cell that has Pax6 is more protected than a cell that does not. These experiments are ongoing. In an exciting development, PhD student Maria Albertsen joined the team in July 2010 and is currently working on the Pax6 project. She is currently reading all of the literature and writing her research proposal. Maria's particular interest is in understanding how Pax6 is regulated. Watch this space for more details.



ParkC welcomes Maria

Blood Samples and DNA Analysis

ParkC is excited to begin another research phase: the collection of DNA samples from people with Parkinson's. ParkC has established an agreement with Perth Pathology allowing the Centre to obtain blood samples, from which DNA is isolated. Perth Pathology has some 21 collection centres around the Perth metro area, staffed by skilled phlebotomists. The information gained from the DNA will be added to the database that we are compiling on people with Parkinson's as part of the subtypes of Parkinson's study. It will enable us to explore the possible relationships between subtypes of Parkinson's and gene expression. An added advantage of these studies is that the DNA can be stored so if, in future, a new gene is suspected to play a role in the progression of Parkinson's, the stored samples can be re-analysed.

Subtyping Parkinson's

One of the biggest ParkC projects is the "subtypes of Parkinson's" study. The idea behind this is that Parkinson's is a heterogenous condition, by describing what it "looks" like in as many people as possible over time, we will be able to determine if there are distinct subtypes. The assumption is that the different combinations of symptoms indicate different underlying pathologies. This knowledge will enable the development of future treatments that are targeted towards those who would benefit the most.

This year has been a time of change and growth. The Centre has recruited 120 people with Parkinson's to this study, and has commenced two year follow-up assessments.



Cake stall at the PWA Unity Walk

Heading the project is Kate Cruise, who has returned from maternity leave part-time, and Maria Krozcek who completed her Honours project last year and is now undertaking her PhD. Her studies are focused on the role of sleep in people with Parkinson's. In addition to being a dedicated researcher, Maria is fantastic at getting involved in community events. At her suggestion, and with her amazing baking skills, ParkC raised over \$300 at their cake stall at the PWA Unity Walk.

During Kate's absence Aimee coordinated the subtypes of Parkinson's project and brought with her a strong background in clinical neuropsychology. Aimee amalgamated five excel spreadsheets into one statistical database with 2,500 variables encompassing questionnaires, cognitive and computerised testing and motor testing. This has significantly strengthened ParkC's research sustainability.

Sadly, Aimee has now undertaken a position with the Navy, but was thankful for the time she had spent with the team; *"I wanted to say a sincere thank you to the wonderful people I met through ParkC. You shared your personal stories without hesitation: your experiences with the cognitive, mood, and motor challenges of Parkinson's, and the difficulties you face in everyday life. I am sorry to the person who helped me to discover that putting socks on is not easy, and grateful for the person who showed me ways to make it easier – you both know who you are. You have enhanced my knowledge of this condition for my future practice as a neuropsychologist and clinical psychologist, for that I am indebted to you. Through ParkC I was given the opportunity to work with researchers of the highest calibre across many disciplines and thank them for sharing their knowledge with me."*

Roger Barker's Visit

In November 2010, ParkC welcomed Dr Barker to Perth.

Dr Barker had a hectic presentation schedule covering a range of topics: Can we repair the brain in PD? If so, how?; PD in 2010; Recent advances in PD - from Lab to Clinic and What is new in PD in 2010?

These presentations were attended by over 350 members of the WA medical profession and local community.

ParkC would like to thank Parkinson's WA for their generous contribution towards Dr Barker's visit.



Dr Prue Cormie awarded VC Staff Award

Congratulations to Dr Prue Cormie, one of two recipients of the 2010 Vice-Chancellor's Staff Awards for Excellence in Research by Early Careers in Research.

The award recognises and rewards colleagues who demonstrate excellence in research; beyond their normal role, and who contribute to achieving a more prosperous, inclusive and sustainable community.

Meet The ParkC Scientific Steering Committee

In 2009, ParkC established a Scientific Steering Committee to:

- Provide scientific guidance and oversee the development, planning and implementation of ParkC research
- Encourage publication of results
- Promote awareness of ParkC amongst scientific and local communities
- Encourage collaboration between ParkC and other individuals, institutions and programs concerned with the scientific study and community awareness of Parkinson's.

The committee meets quarterly and manages a very full agenda.

The members of the committee are: Dr Meghan Thomas (Chair), Dr Romola Bucks (School of Psychology, University of Western Australia), Dr Andrea Loftus (School of Psychology, University of Western Australia), Dr Natalie Gasson (School of Psychology and Speech Pathology, Curtin University of Technology), Dr Prue Cormie (School of Exercise and Sports Science, ECU), Janet McLeod (Parkinson's nurse specialist), Dr Roger Barker (neurologist, Cambridge University, UK), Pam van Omme (founder of the Young Onset support group), Karen Rowland (person with Parkinson's), and Don Capel (person with Parkinson's).

Fundraising for ParkC

Its been another busy year for ParkC Fundraising. Your support is greatly appreciated and makes a big difference to our ability to do research.

A special mention to Grand Cinemas, Warwick who hosted a movie night. We were treated to an advanced screening of the movie "Wild Target" starring Rupert Grint, Bill Nighy and Emily Blunt. Pam van Omme with assistance from Tony, Karen, and Tara, sold over 100 tickets and raised in excess of \$2,000 for ParkC.

A big thank you also goes to all our donors:

- The Royal Freshwater Bay Yacht Club
- Currawong Engineering
- Judy Buchhom, John Thompson, Denise Murray, Pam Bennes, Ruth Bramston, Bob Parry, Pam van Omme, Darshan Sandhu, Ronald Peters and all our anonymous donors for 2010.

Your contributions are pivotal in ensuring ParkC research continues to progress for years to come.

A Merry Christmas and Happy New Year to all our ParkC supporters, we look forward to sharing a prosperous and eventful 2011 with you all.



"...improving the quality of life of people with Parkinson's through research and education in the search for a cure."