

# Parkinson's Centre Newsletter

Dear All,

Last year was an amazingly busy, challenging and rewarding one for ParkC. We are continuing to grow and mature as a group with new students, new collaborators and new research ideas. ParkC has continued to show its commitment to being involved in the local Parkinson's community with several successful community events.

The team has come back from a break over the Christmas holidays excited about what 2010 holds! The year ahead is going to be an exciting one which we hope will see the continued growth and development of ParkC.

More importantly, we would like to thank those people who have formed part of our research program (either by being a participant or through a generous donation). Your involvement, encouragement and inspiration are the reason why we are here. I hope that in turn, our efforts excite and inspire you. As the young onset group say: "This is the best day of my life, I'm not scared of tomorrow, I've seen yesterday and I love today" ([William Allen White](#)).

Kind regards



Meghan

## Research - Laboratory

ParkC's laboratory research has focused on three areas:

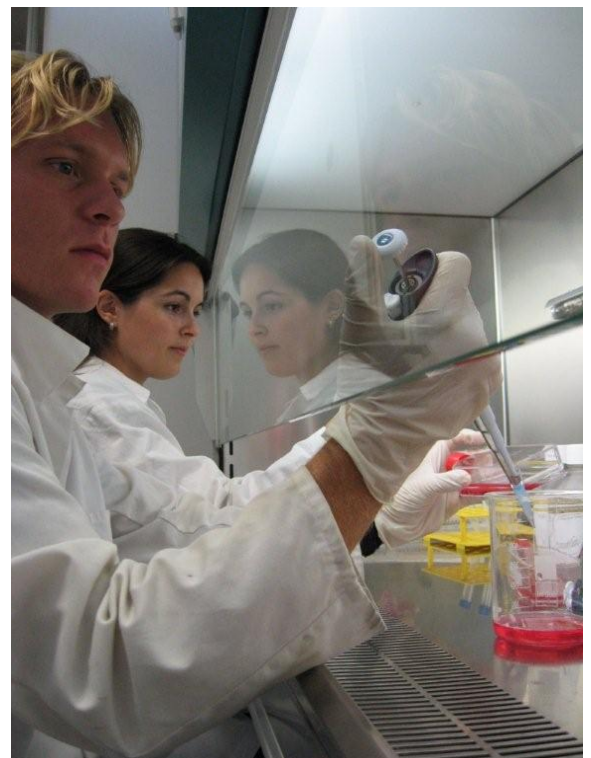
### 1. Turning bone marrow stromal cells (BMSCs) into neurons

This research has been an ongoing project for a few years now, thankfully the final sets of experiments have been performed and a manuscript prepared and submitted for publication.

Bone marrow stromal cells (BMSCs) have been proposed as a potential source of replacement cells for central nervous system focused cell replacement therapies, such as Parkinson's. While BMSCs are viewed as ethically acceptable, easily procured, readily expanded and able to confer functional benefits via their secretion of neurotrophic factors, there is conflicting evidence over their ability to differentiate into neurons.

As part of the ParkC research program we have performed laboratory experiments where we used a systematic, comprehensive method of assessment in order to determine the neural differentiation capacity of BMSCs.

Our results demonstrated that the current differentiation methods make the cells look like neurons but they are not able to act like neurons. This means that substantial progress in this field needs to occur before BMSCs can be considered as a source of neuronal replacement cells.





## 2. Pax6 as a neuroprotectant

What makes the dopaminergic neurons of the substantia nigra particularly vulnerable in Parkinson's? Understanding the genetic differences between the dopaminergic neurons of the substantia nigra compared to other brain populations of dopamine cells may give important clues.

The gene, Pax6, is known to be important during development in specifying dopaminergic neurons including those of the substantia nigra, but it is not maintained in the adult substantia nigra. We have been using cell culture models to see if a cell that has Pax6 is more protected than a cell that does not.

Our initial experiments have demonstrated a heightened level of protection if a cell has Pax6 than if it does not. We are now trying to understand how Pax6 is protecting the cell.

## 3. The zona incerta (ZI) as a new target for deep brain stimulation (DBS)

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 Perth, neurosurgeon Mr Chris Lind is leading the world in pioneering the use of the caudal ZI as a DBS target for PD. We know that this brain region gives excellent clinical outcomes for patients, but we don't know why, how it works or what sort of cells it is made up of. In conjunction with Prof Charles Watson (THE world's most eminent neuroanatomist) and Mr Lind, ParkC's first Honours student (Ms Tiza Chipungu) is aiming to characterise the human ZI. Tiza will then characterise the rat ZI and compare it to the human ZI. The results from her work will enable researchers and neurosurgeons to apply information gained from animal studies to the human situation.

## Research – Subtyping Parkinson's



In 2009 ParkC began recruiting people with Parkinson's to undertake a range of cognitive tests.

The aim was to see if we could determine whether there are different subtypes of Parkinson's within the Perth community. This study has been so successful that we have decided to

expand our range of tests to include the motor characterisation of Parkinson's. Many of you would have received a letter asking for you to allow us to access your H&Y scores from PWA. In addition we have also asked if you could please take part in our UPDRS tests. Combining the cognitive and motor aspects of Parkinson's will substantially increase the power of our study.

## Dr Kate Cruise on maternity leave

Many of you would know that Dr Kate Cruise who was in charge of the ParkC cognition study is currently on maternity leave. Kate gave birth to a healthy, happy baby boy called Lachlan in late October 2009. We wish Kate and her family all of the best and lots of sleep filled nights! To ensure that our research into the different cognitive aspects of Parkinson's continues, Ms Aimee Velnoweth has joined the team. Aimee brings with her a strong background in clinical neuropsychology. Her positive attitude and professionalism have been a critical asset to the continued strength of ParkC.



## Dr Meghan Thomas recognised for her research efforts



The Vice-Chancellor's Awards for Excellence in Research recognise and reward individuals who

demonstrate excellence in research; research supervision; and early career research; beyond their normal role expectations, contributing to achieving ECU's strategic priorities through specific projects/activities or through excellent performance over a sustained period. We are proud to announce that Dr Thomas was awarded the excellence in research for an early career researcher.

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A big thank you to everyone who has agreed to be part of these further tests. We really appreciate the time and effort involved in participating in research and your involvement is continuing to help us understand this condition. Hopefully, this will lead to the development of a range of therapies that will be of benefit to people with different subtypes of Parkinson's.

## Fundraising for ParkC

For the second and final year the Royal Freshwater Bay Yacht Club (RFBYC) donated the proceeds from its Melbourne Cup Luncheon to ParkC. The day was a huge success with over \$14,500 raised.

ParkC would like to thank:

- The RFBYC organising committee (Peter Ahern, Alan Fisher, Sue Barker, Maddy Barker, Kerryn Loughnan, Fiona Allan) for putting together a truly impressive event.
- Costello Jewellery - for donating a gorgeous pearl necklace that was auctioned off on the day.
- Stonebarn – for donating 3 nights luxury accommodation that was auctioned off on the day.



The McCusker Charitable Foundation donated a further \$5,000 to ParkC in 2009. This donation was used to purchase a pump that will enable us to deliver substances of interests (ie potential neuroprotectant factors) to a specific brain volume. This work is part of our ongoing collaboration with neurosurgeon Mr Chris Lind.



The Young Onset Group (YOG) Student Scholarship had a very successful 2009. Jones Lang LaSalle joined the cause and, through a series of fundraising events that included a movie night, raised over \$5,000 for the scholarship. The YOGs have raised a total of \$16,276. All that is left is for the group to find a suitable student that they would like to support.

Tara Preston (herself a YOG) organised a bowling day that raised \$7,000 for research, through Parkinson's WA.

These funds have been awarded to a student, Ms Tiza Chipungu, who is undertaking an Honours project (one year) with Dr Meghan Thomas. Keep your eyes open for Tiza's report in the PWA newsletter!

If you know of anyone who would like to fundraise for ParkC please contact Fiona Allan, ECU's Fundraiser, on 6304 2085 to discuss further.

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## Establishment of the ParkC Scientific Steering Committee.

With the expansion of research projects and members, ParkC has established its own Scientific Steering Committee. The primary functions of the ParkC SSC are to:

- Provide scientific guidance to and oversee the development, planning and implementation of ParkC research;
- Encourage publication of results;
- Encourage the promotion and wider 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 PD.

As ParkC is a multi disciplinary research centre, members of SSC are from a wide range of backgrounds and includes two people with Parkinson's and one carer of a person with Parkinson's.

If you would be interested in being part of the SSC please contact ParkC for further information.

## ParkC's 2<sup>nd</sup> Annual Open Day

The idea of the ParkC Annual Open day is to inform the community of the work that is being undertaken at ParkC as well as internationally. In 2009, the focus was on the research that had been done at ParkC.



The day was opened by the Chief Scientist of WA, Prof Lyn Beazley, and attended by ECU's Pro-Vice Chancellor (Research), Prof John Finlay-Jones and Deputy Vice-Chancellor (Academic) Prof Arshad Omari.

Also present were representatives from Jones Lang La Salle, physiotherapists from Osborne Park Hospital and over 100 people from the local Perth Community.

Presentations were given by Dr Meghan Thomas (ParkC co-ordinator and laboratory researcher), Dr Andrea Loftus (UWA Psychology), Ms Maria Kroczeck (Honours in Psychology) and Mr Roger Pegoraro (Exercise Physiologist, and ParkC's first PhD student!).

The talks ranged from development of neuroprotective treatment options, to the different subtypes of Parkinson's, to the effect of sleep, and finally to the importance of exercise medicine.

Following the presentations, there was a sausage sizzle and time for people to ask questions, exchange experiences and catch up with new friends.

## Publications

In the academic world, the measure of the quality of your work is having your research published in peer-reviewed journals. To achieve this a gigantic effort is put into not just generating the results but writing the manuscript and responding to reviewers comments.

A further mark of respect and recognition of being an expert within a field comes from being invited to write a review for a journal. In 2009 Dr Meghan Thomas was invited to write a review for the journal *Regenerative Medicine*. The review is titled "Parkinson's Disease: A study of the role of transcription factors in cell therapies".

ParkC has also had a further two manuscripts accepted:

- Cruise, K.E., Bucks, R.S., Loftus, A.M., Newton, R.U., Pegoraro, R., & Thomas, M.G. Psychosocial aspects of quality of life: Benefits from exercise by people with Parkinson's Disease. *Acta Neurologica Scand* (Accepted subject to revisions);
- Cruise, K.E., Bucks, R.S, Barker, R.A., Loftus, A.M., Thomas, M.G. Do Coping Processes Influence Quality of Life in Parkinson's disease? *International Journal of Geriatric Psychiatry* (Accepted subject to revisions);

All of these articles will be in print in 2010. Congratulations to everyone involved (including everyone who took part in the ParkC exercise intervention program), it is definitely a team effort.