NEWS AND EVENTS

PhD Oration Program (POP) - An Introduction

NOTDRS and the Department of Biochemistry and Molecular Biology are introducing a new Program by which leaving PhD students are invited to give an oration of ~50 mins to members of the Department either before or after they submit their thesis. As an invitational oration, it should be noted that there are many positives to giving such a presentation, which should be a celebration of the students’ work and will not be assessed.

Presenting as an invited speaker is looked upon favourably on a CV. This will give you a competitive edge over other people applying for the same position. On top of this, it will generally be assumed when starting your first post-doc that you will already have given a ~50 min seminar to your department about your PhD research. So it’s typical that when you arrive at a new institution, whether it be abroad or elsewhere in Australia, you give the same talk to introduce yourself to your new department. This Oration program provides the perfect practice platform, and many students will find that telling more of their story to the department is more satisfying and far more relaxed than confirmation and other, shorter, student seminars presented throughout the PhD program.

By giving a departmental seminar you will effectively be advertising yourself for future postdoctoral positions both within the department and the wider scientific community. This is an opportunity to communicate to a general audience and show your enthusiasm for your work. You will open yourself up to collaborations as someone may wish to continue on with your work after you leave, potentially leading to joint publications.

The oration program will also provide an opportunity for feedback from friends and colleagues on your talk and research in general. Depending on how and when you choose to present, the seminar provides a chance to gather your thoughts for your final writing task and critique of the structure and arguments of your thesis.

Speakers are encouraged to invite family and friends, and the department will provide pizza and refreshments after each oration. Orations will be scheduled for Mondays in M3, and Fridays in M2, from 4-5pm. We hope that this program will be welcomed by students submitting their thesis in 2010, and hope to see you when the first graduate POPs open the champagne!

The NOTDRS Committee

STUDENT SOCIETY

NOTDRS (Necessary Outlets for Tertiary Doctoral Research Students)

FIFA Competition Results

Richard Berry (37 points, Rossjohn Lab) was the overall winner and took out the major prize of $84. Cecilia Naranjo (Smyth Lab) and Allan McKelvie took equal 2nd place (35 points) and each won $28.

NOTDRS President, Nick Walpole, expressed his congratulations to all that took part and said “the competition was fierce and with most getting less than 50% correct, we certainly showed that nothing is certain in the ‘Joga Bonito!’”

Events

Beer Club
Date: 4pm, Saturday, 14 August
Venue: 1R of building 76/77

Please visit the NOTDRS website:

At the Australian Society for Medical Research (ASMR) 1st Victorian Student Research Symposium, Micka Bertucci (Mitchell Lab) was awarded the best 2nd year PhD poster prize. The symposium was a part of ASMR Medical Research Week 2010 and there were 20 entrants in the 2nd year poster section.

Micka won a ticket to the ASMR Medical Research Week Dinner in the Grand Ballroom at the Hilton on the Park, which included a presentation by the Commonwealth Health Minister’s Award for Excellence in Health and Medical Research Featuring ASMR Medallist 2010, Baroness Susan Greenfield CBE. Micka was also awarded a $200 cash prize funded by the Chinese Cancer Society of Victoria.

The title of Micka’s poster is “A novel localisation and cellular role for PI(3)P at invadopodia in a human breast cancer cell line”.

Micka stated that cancer metastasis is responsible for high levels of mortality and morbidity. The mechanisms behind metastasis involve the secretion of enzymes from actin-rich structures cellular structures, termed invadopodia, that drive invasion via the secretion of matrix metalloproteinases (MMPs) and allow tumours to spread to distal sites of the body. Unpublished novel work by Dr Jenny Dyson in the Mitchell laboratory has identified the PI3KKinase (PI3K) product, PI(3)P, at invadopodia. Micka undertook two approaches to determine the synthesis and mechanism of function of PI(3)P at invadopodia. Firstly, using siRNA mediated knockdown of the candidate PI3K isoforms, Micka identified PI3KC2α as the PI3K isoform responsible for the synthesis of PI(3)P at invadopodia. Secondly, using siRNA mediated knock down she investigated the secretion of MMPs that are required for cell invasion. PIK3C2α knock down resulted in a significant reduction in MMPs secretion, the enzymes that drive cell invasion. Collectively, her studies identify that PI3KC2α has a significant role in the process of cancer metastasis.

Basically, Micka has identified the enzyme responsible for the production of PI(3)P at invasive structures, invadopodia. “By regulating the level of PI(3)P we can reduce the ability of these structures to degrade the surrounding tissue. Therefore this work has strong implications for breast cancer metastasis” Micka said.

Micka studied her Bachelor of Science degree here at Monash University Clayton and went onto do her Honours in the Department of Physiology studying inflammatory markers in intrauterine fetal growth restriction in 2006. She then took time off to work as a research assistant at the Alfred Hospital investigating drug development in cardiac remodelling before returning to study in 2009 doing her PhD in the Biochemistry Department under the supervision of Professor Christina Mitchell and Dr Jennifer Dyson.
Spotlight on: Dr Kip Gabriel

Background

My interest in mitochondria was sparked as far back as undergraduate study. During my honours year in Professor Nick Hoogenraad’s laboratory, I identified and characterized a mammalian mitochondrial import receptor, Tom70. During my PhD, in Professor Trevor Lithgow’s laboratory at the University of Melbourne, I was shown the power of the yeast Saccharomyces cerevisiae as a model system for studying protein transport mechanisms. I specifically focused on understanding aspects of protein translocation across the outer mitochondrial membrane. We were able to show that transport across the inner mitochondrial membrane is coordinated with events at the outer membrane, discovering a switch in the outer membrane that dictates which import pathway imported proteins as they enter mitochondria.

In mid 2004 I was awarded an Alexander von Humboldt Fellowship and moved to the Nikolaus Pfanner’s laboratory at the Institute for Biochemistry and Molecular Biology in Freiburg, Germany. There, I worked on understanding how proteins that reside in the mitochondrial inter-membrane space are imported and folded. It was during this time that we discovered the key component involved in import of inter-membrane space proteins, Erv1. We made many inroads to understanding the mechanistic requirements for import of proteins into the inter-membrane space, and the time spent in the Pfanner lab was great fun.

In mid 2007 I moved back to Australia after receiving the University of Melbourne’s J.N. Peter’s bequest fellowship to conduct research in the Department of Genetics. I established projects relating to the mitochondrial aspects of Parkinson’s disease. In 2009, I moved to Monash University to establish my own lab.

Projects

My group at Monash University focuses on aspects of mitochondrial dysfunction during infection and disease. As a result we have moved to mammalian model systems, a move that has only made my appreciation of yeast as a model organism even greater! Of principal focus is research on the bacterial toxins VacA from Helicobacter pylori and PorB from Neisseria meningitidis. Both of these toxins are targeted to mitochondria during pathogenesis. Their final sub-mitochondrial localisation and how and why they are sent to mitochondria is a mystery.

The VacA cytotoxin from H. pylori H. pylori is the major cause of peptic ulcers, and significantly increases the risk of gastric cancer in humans. The bacteria secrete a suite of toxins that are targeted to host cells to interfere with function, resulting in an advantage to the pathogen. The two-part VacA toxin is one of the most abundantly secreted toxins from H. pylori and is critical for pathogenesis. In collaboration with Terry Kwok-Schuelein and Richard Ferrero (Monash Institute of Medical Research) my group has already made significant progress and published a manuscript clarifying how the two subunits that form the VacA toxin are targeted to the mitochondrial inner membrane. It was previously thought that only one of the two components was targeted to the organelle. We are now focusing on showing that both subunits can re-assemble into an ion permeable channel that leads to mitochondrial driven apoptosis.

PorB from N. meningitides N. meningitidis and N. gonorrhoeae cause bacterial meningitis and gonorrhoea respectively. Many of the pathogenic mechanisms at play are still poorly understood but some of the toxins targeted to host cells have been identified. We are interested in the pore-forming PorB toxin that is targeted to mitochondria during infection by both of these organisms. In collaboration with Professors John Davies (Monash, Microbiology) and Richard Strugnell (University of Melbourne) we are now coming to appreciate the exact localisation and function of PorB at mitochondria. We are examining how PorB “hijacks” the host machinery for entry into host mitochondria during infection.

My group is continuing work towards understanding mitochondrial dysfunction during neurodegenerative disease, supported by an NHMRC Project grant with Heung-Chin Cheng and Janetta Culvenor (both from the University of Melbourne) to study the function of the Parkinson’s disease related protein PINK1, a protein kinase associated with the mitochondrial membranes.

Although I arrived at Monash in 2009, my time here has already been thoroughly enjoyable and the research environment in the department and the STRIP buildings has allowed my group to form strategic collaborations for new projects. I am very happy to be here.

The Research Team

Research assistant: Kher Shing Tan
PhD students: Janette Tong, Jhih-Hang Jiang
Honours student: Melissa Jolly
POSTGRADUATE MATTERS

PhD Graduates

Natasha May-Yoke Ng
Thesis: Determinants of thrombin specificity.
Supervisor: Professor Rob Pike

Kai Ying Soo
Thesis: Cytotoxic mechanisms of mutant SOD1 in a cellular model of motor neuron disease (ALS).
Supervisor: Professor Phillip Nagle

exPERT Program Seminar

The Monash Research Graduate School coordinates an annual seminar and workshop program for postgraduate research students, known as the exPERT program. The program focuses on key aspects of employment and research training and the development of generic and transferable skills.

http://www.mrgs.monash.edu.au/seminars

OH&S

The Student Representative is Craig.DonPaul@med.monash.edu.au

Students can feel free to contact Craig any time of any concerns or issues concerning OHS matters, which he can present to the Biochemistry OHS committee for a resolution. He can also assist in directing your issues to the appropriate people to help you. You can be rest assured that all matters raised will be kept confidential.

The Staff Representative is Alex.Theodossis@med.monash.edu.au

Any Biochemistry staff member can approach Alex for any OHS matters. All matters will be kept confidential and can be presented to the Biochemistry OHS committee for a resolution.

The Deputy Departmental Safety Officer is Gavin.Higgins@monash.edu.au

He is located in building 13D and will be able to assist all Biochemistry staff and students in buildings 13A/B/C & 16 with all OHS matters.

Three Minute Thesis Competition 2010

The Department of Biochemistry & Molecular Biology heats were held on Wednesday 21st July and the two top contestants Sandra Hakim (Mitchell lab) and Stephanie Kondos (Whisstock lab). Sandra and Stephanie will go forward to the MBio final, which will be held on Friday 30th July.

The judging criteria (equal weighting) consisted of:

1. Communication style - was the thesis topic and its significance communicated in language appropriate for an intelligent but non-specialist audience?

2. Comprehension - did the presentation help the audience understand the research?

3. Engagement - did the speech make the audience want to know more?

QUICK OVERVIEW OF WHAT TO DO WHEN AN EMERGENCY ARISES:

1. Remain CALM...
2. Yell out for a First Aider (don’t go looking for one yourself, get someone else to go looking)
3. First Aiders: Read MSDS before treating any chemical injury
4. First Aiders: Call Med Centre if necessary ext. 53175
5. First Aiders: Call the Safety Officer and/or Safety Representative as soon as possible
## PAPERS PUBLISHED IN JUNE 2010

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