

# ANZSCDB Newsletter

Australia and New Zealand Society for Cell and Developmental Biology INCORPORATED



Summer 2015/16



Dear  
Friends and  
Colleagues,

## President's Report

The Society's newsletter has always been a highlight of my summer. It brings together the activities of the last six months, reminding me of the vibrancy of the ANZSCDB. It also allows us to reflect on the successes of many in our Society. This year the newsletter has a special meaning for me because now, as President, I can thank the many who have made, and who continue to make, important contributions to the running of our society.

As many of you are aware the ANZSCDB holds its annual general meeting at ComBio and it is at this time that some have to step down from their positions of service on the Executive Committee, the Advisory Committee, or as a State Representative.

### **Executive Committee**

The ANZSCDB Executive consists of the President, Secretary, Treasurer, Past

President and President Elect. This committee was lead by Carol Wicking (President) and included Josephine Bowles (Secretary), Rohan Teasdale (Treasurer) and Peter Currie (Past President). Serving as President Elect on this committee made me really appreciate the time, effort and commitment this committee devotes to running the society for us all. A special thanks to Carol Wicking who worked really well with her Queensland mob and made many improvements in the way we do business; importantly Carol also increased the number of society members by a magnificent 30% using a very effective personal approach. To Carol, Josephine, Rohan and Peter I say THANK YOU from all members of the ANZSCDB. I wish now to welcome three new members to our Executive Committee: Annemiek Beverdam (Secretary), Mike Piper (Treasurer) and Sharad Kumar (President Elect).

### **State and New Zealand Representatives**

The State Representatives are a big part of our Society and increasingly so, with the annual State Meetings becoming more popular by the year. Look out for

### Read Up On:

The President's report

Member profiles  
- our award winners

ComBio 2015

Student Activities  
-Leica Travel Award

State of the States

Paper highlights

Membership news

emails advertising these events or check out details on the Society's website. Put the date in your diary and start preparing to present your research. If you would like to get involved in these meetings in any way or need information, please contact your State Representatives, whose details are on the Society's website. State (and New Zealand!) Representatives serve the society for two years, with new and experienced representatives working together each year. THANK YOU very much to all of you for getting us together so that we can share our research and our experiences.

*The retiring State*

*Representatives are:*

Elizabeth Duncan (NZ),  
Nathan Pavlos (WA)  
Michael Samuel (SA)  
Louise Cheng (VIC)  
Julia Horsfield and Kristen Barratt (ACT)  
Annemiek Beverdam (NSW)  
Mat Francois (QLD).

*The ongoing State*

*Representatives are:*

Fiona Pixley (WA)  
Michael Lardelli (SA)  
Jan Kaslin (VIC)  
Kazu Kikuchi (NSW)  
Annette Shewan (QLD)

*The incoming State*

*Representatives are:*

Ralene Endersby (WA)  
Sophie Wiszniak (SA)  
Sebastian Dworkin (VIC)  
Koula Diamond (ACT)  
Stuart Fraser (NSW)

Guillermo Gomez (QLD)

Thanks also must go to Megan Wilson (Otago) for keeping us all informed about Society news, what our members are up to, conferences and other interesting things, via facebook and twitter.

**The Advisory Committee**

This committee provides advice to the Executive Committee and participates in decision-making, especially with respect to the President's Medal and the Emerging Leader Award. I would like to thank retiring, continuing and new members to this committee for their sage contributions to the Society. Alpha Yap (QLD) and Sharad Kumar (SA) are retiring from the committee. Edna Hardeman (NSW), Miranda Grounds (WA), Phil Crosier (NZ), Joan Heath (VIC) and Peter Koopman (QLD) are continuing, and Pete Currie (VIC) and Rob Saint (SA) are joining the committee.



President's Medal

**ComBio**

ComBio2015 was held in Melbourne and both the weather and the science were exemplary. Marie Bogoyevitch and Ed Newbigin were the conference Chairs, David Jans the program

co-Chair (ANZSCDB) and Edwina McGlenn and Paul Gleeson organised the Cell and Developmental Biology Streams- a huge THANK YOU to you all, to the session chairs and to the speakers. A ComBio2015 wrap up, by Marie Bogoyevitch, appears later in this newsletter, so please enjoy.

I hope that the dates of ComBio2016 are in your diaries: 3-7 October at the Brisbane Convention Centre. Joseph Rothnagel is the meeting Chair, and Rebecca Ford and Dominic Ng are the Program Chairs. The Cell Biology Stream is being organised by Andrew Brooks and Ingrid Winkler and the Developmental Biology Stream by Josephine Bowles and Mike Piper. The website is now active and I encourage you to take a look at it and to get in touch with the Chairs and Stream Organisers if you would like to get involved in organising the meeting or if you wish to suggest possible speakers. Keep an eye on <http://www.asbmb.org.au/combio2016/>.

**Society Awards at ComBio2015**

The Society really enjoys awarding prizes to students and postdoctoral researchers and this year the competition was as fierce as ever. I would like to congratulate the following winners on your behalf.

*Cell Biology Poster Prize:* Lauren Forbes Beadle, Monash University. The

*Drosophila melanogaster* MACPF protein torso-like is required for the cellular immune response.

*Keith Dixon Prize for a Developmental Biology Poster:* Bassem Akladios, UNSW Australia. YAP activates beta-catenin in murine epidermal stem/progenitor cell proliferation.

*David Walsh prize for the best student talk:* Heidi Neubauer, Centre for Cancer Biology, SA. Determining the oncogenic role of sphingosine kinase 2.

*Toshiya Yamada prize for the best postdoctoral talk:* Nicole Schonrock, Garvan Institute of Medical Research. Exploring the epitranscriptome: m22G and intellectual disability.

## President's Medal and the Emerging Leader Award



**President's Medallist Melissa Little with President Carol Wicking**

Society Awards are to acknowledge the important contribution that our members are making to the research field of cell and developmental biology and beyond. They also serve to encourage us all to strive to make the best contribution that we can. The President's Medal has been

sponsored by Sigma-Aldrich since 2003. The Society is very grateful for Sigma-Aldrich's ongoing and generous support of this important award. In 2015 the President's Medal was awarded to *Professor Melissa Little* at the Murdoch Childrens Research Institute. The Emerging Leader Award was bestowed on *Assoc Professor Brett Collins* from the University of Queensland.



**Emerging Leader Brett Collins with President Carol Wicking**

I am sure you will enjoy reading about these two stars of the ANZSCDB, as Fiona Wylie profiles both Melissa and Brett in this newsletter.

## Research Funding

As always, talk surrounding funding is all around us. As many of you would be aware for grants starting in 2016, the success rate for NHMRC Project Grants was 13.7% and for ARC Discovery Grants 17.7%. It is not yet clear to what extent the Medical Research Future Fund (MRFF) will improve the funding rates of NHMRC grants, but the promise is there for improvement. According to the Federal Government's 2015 budget papers, there is positive news for our sector. The MRFF currently holds \$3.1bn and it is expected that \$10m will be dispersed in 2015/16,

\$53m in 2016/2017, \$130m in 2017/2018 and \$224m in 2018/2019.

## Membership



Join Us!

Our Society is only as great as our members, their interactions and their achievements. Therefore I call on all of you to get involved and to stay involved. Also, please keep your membership current and please see if you can encourage others to join the ANZSCDB. Membership runs for the calendar year (January 1st to December 31st), but note that members joining after ComBio in the last quarter of the year (after October 1st) will also receive membership for the following year. Also note that at the 2015 Annual General Meeting the motion was passed that fees should increase relative to the consumer price index. Please remember to renew and see the website for details.

Wishing you all a very happy and prosperous 2016!

Sally Dunwoodie

President ANZSCDB



# Sanger Arrayed Lentiviral CRISPR Libraries



## The Next Generation of Screening Tools has Arrived

Two leaders in genome editing, Sigma-Aldrich® and the Wellcome Trust Sanger Institute, have joined forces to make the first ever arrayed lentiviral CRISPR knockout libraries. Based upon validated techniques published in the literature, the Sanger CRISPR libraries will put your lab at the forefront of the race to make the next big discovery.

### Content

- 2 knockout clones for every human and mouse protein-coding gene
- Nearly 40,000 sequence confirmed clones per species library

### gRNA Design

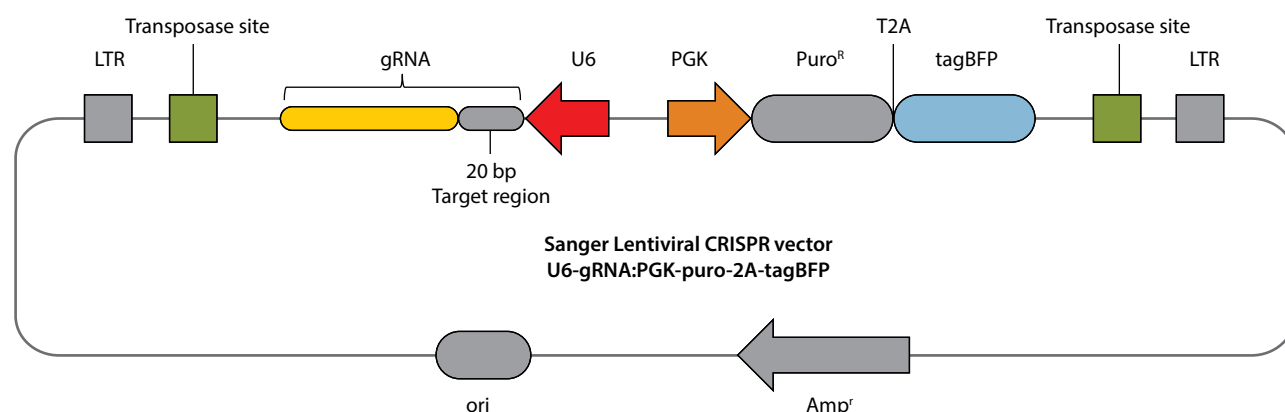
- Sanger clones maximize gene knockout by targeting the first half of the protein coding region while avoiding the first 90 bp
- Genomic target sequences are highly conserved, avoiding SNPs, to ensure representation in multiple cell lines
- Stringent design rules reduce or eliminate the potential for off-target effects

### Vector

- Simplify the workflow with puromycin selection
- Illuminate CRISPR-expressing cells with BFP
- Flip the expression components into and out of the genome using transposase

### Additional Features

- Better, not bigger: Two optimized clones per gene reduce the time, cost, and scale of screening experiments
- Ready-to-screen: Clones are arrayed in a robotics-friendly 96-well format for high throughput screening
- Collaborative: Real-time, library validation continues through the Sigma-Aldrich and Sanger Institute partnership



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# President's Medallist - Melissa Little

## *What was the journey to becoming Professor Melissa Little?*

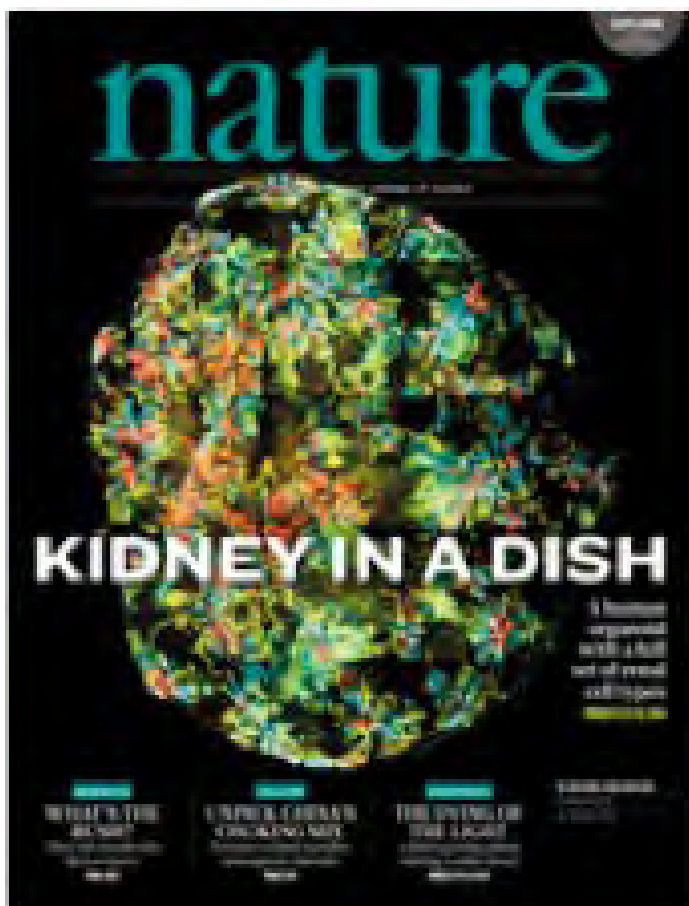
When I finished High School at the dawn of the 1980s I was still only 16, and like many other kids, I didn't really know what I wanted to be when I grew up, let alone what to do at University. My best subjects were Art and English, and my teachers wanted me to do Medicine, but I didn't think I wanted to be a doctor. I had always liked science and my Dad was a soils chemist with CSIRO, so I decided on a BSc at the University of Queensland (UQ). In my first year, I discovered Physiology I, and the rest as they say...I went on to graduate with first-class Honours and the University Medal. Having moved out of home by this time, I needed an income. So, after uni I took a job as a research assistant at the Queensland Institute of Medical Research in the laboratory of Prof. Peter Smith, looking at the molecular basis of the childhood kidney cancer, Wilms' tumor. Working as a research assistant was a great step because I soon realised that I really wanted to 'drive the bus' and not just be a passenger, and that a PhD had to be next.

After completing my PhD in childhood cancer at QIMR, I was awarded a Royal Society Endeavour



Fellowship to work at the MRC Human Genetics Unit in Edinburgh. This was just after the isolation of the WT1 gene, and I worked with Nick Hastie, Wendy Bickmore and Veronica van Heyningen. It was an exciting time and we published some really good stuff that set me up very well to return to Brisbane and the lab of Brandon Wainwright at UQ's Centre for Molecular and Cell Biology (CMCB, now the IMB).

As a Research Fellow, I continued to work on WT1 but with a growing interest in the role of this gene in normal development rather than just in cancer. Developmental biology was gaining strength at CMCB and my lab was next to those of Peter Koopman and Toshiya Yamada, who taught me many valuable things. My kids also appeared around this time, so for about a decade I was juggling small children and work and running a pretty small lab. It was probably around 2000, with the discovery of stem cells in the adult brain (Perry Bartlett) and the loss of Toshi, that I refocused my lab on kidney regeneration and began to apply what we understood about the molecular and cellular basis of kidney development to how we might rebuild a kidney.



Initially, we investigated the evidence for postnatal stem cells in the kidney, before moving towards recapitulating kidney progenitors using reprogramming and directed differentiation of pluripotent stem cells. This work was constantly underpinned and reinforced by the basic developmental biology going on within the lab, and having an overarching goal of building a kidney was critical in directing the research being performed rather than just following others.

I became a Professor somewhere around 2005, which in and of itself didn't change much, and in fact, I remember much more distinctly the timing of research papers, grants and fellowships along the path.

### **What were the milestones along the way?**

- Taking an international postdoctoral fellowship was a critical decision in my career. To be in such a vibrant research environment at a protected time of your career (no grant writing pressures) was really important. Being in a lab where I made my own decisions was also invaluable.
- Moving to the CMCB at UQ, which was by far the best research environment available in Queensland, allowed me to establish a lab of my own very early in my career (courtesy of John Mattick whose policy was to make everyone with a personal fellowship a lab head). I was provided shelter but also opportunity in a fantastic learning environment.
- Choosing to stay on the risky track of competitive grant and fellowship funding and NOT take a lecturers position (a decision I almost made when I had my first child) ensured that I could focus on research while my kids were young. Had I stepped out at that point, I don't think I would have remained competitive.



- Having a partner who tolerated my obsession with work and was willing to take on a load at home has been essential.
- Being asked to sit on the Wills review in 1998, when my son was only 7 months old, was an incredible learning experience and has opened the door for me to science policy locally and internationally.
- Setting up a company around renal regeneration trained my thinking in terms of 'what is an invention' and what research might make a difference. Graduating from the Australian Institute of Company Directors taught me about governance and how it can be applied much more widely than just in the corporate sector.



- In 2006, I was an Eisenhower Fellow in the US researching barriers to the translation of stem cell research. This experience was again amazing, well outside of science, and taught me a great deal about politics and international relations. It also taught me a bit about the biotech and venture capital environment.
- Seeking funding from the NIH opened up a world of opportunities for me and engaged us in collaborative research on an international scale. It also taught me to be unafraid of seeking funding from sources other than the familiar. I have been involved in three different NIDDK-funded consortia, but also in teams funded by the Human Frontiers Science Program and the European Union.
- Leaving IMB was a big milestone and a difficult one, but this new and major step has allowed me to close a circle between my research and the clinical interface. Hopefully, this will allow me



to reach the goal of doing research that makes a difference to health. I believe that this is an important aspiration, particularly given that the public assumes this is what we do research for, and that it is an achievable outcome even for a fundamental biomedical researcher.

***What do you see as your biggest research achievement to date and/or what are you most proud of?***

We have worked for more than two decades on the molecular basis of kidney development. About 7 years ago, we began trying to use this knowledge to re-create an embryonic kidney from human pluripotent stem cells. This was recently published in *Nature* (Takasato et al, 2015). While this is currently the pinnacle of my career, it is also the beginning of the next phase. If I didn't think there was more to do, I'd retire.

***How would you summarise your current research?***

My laboratory focuses on understanding the morphogenesis of mammalian kidney at the level of the gene, cell, tissue and organ. Based on this information, we investigate the molecular and cellular basis of kidney disease (including congenital anomalies, but also the influence of development on postnatal function), kidney repair (what capacity does the organ have to overcome damage and how does it do this?) and kidney regeneration (how can we use what we know about how the organ forms to replace renal function). Having identified a method for re-creating kidney morphogenesis in vitro using human pluripotent stem cells, we are now generating patient-derived lines for functional genomics. We are also investigating the use of kidney organoids in drug screening, bioengineering and cell therapy.

***How have things changed (for the better or worse) since you started in research and what advice would you give people building a career in cell and developmental biology today?***



In terms of cell and developmental biology, I think this is an area that has grown and grown in Australia across the last 20 years, fueled by talented Australians returning from overseas. Both have also blossomed with continued improvements in imaging technologies. The rapid access to high throughput expression profiling and now sequencing technologies has driven our capacity to interrogate cells and organisms at the molecular level. Model animals such as *Drosophila* and Zebrafish are more accessible

and gene editing technologies (CRISPR and ZF nucleases) are allowing the modification of organisms, even mice, to be rapid and cost effective. Anyone entering this field now would do well to stay abreast of the constant improvements in imaging and to take on the challenge of morphogenesis across time as well as space in vivo. Cellular self-organisation and the transduction of mechanical signals between cells will drive advances in bioengineering.

In terms of funding, there is a lot of talk about how bad things are in science and how hard it is to get funding. This has been the case for much of my career. Prior to the doubling of the NHMRC budget (as a result of the Wills review), success rates were not dissimilar to where they are right now (although the total amount of money was substantially less overall as well as per grant). With increased funding, the sector increased and many new research institutions were created. With a levelling of the budget, things are now tight again. While

this is not unique to Australia, I think we have a system in which the pain will be more acute. Australia still fails to fully fund research and the University and MRI sectors continue to assume there are enough fellowships to cover the salaries of their staff. In addition, there are too few options for a genuine exit from science without a manufacturing or substantive pharma/biotech sector in this country. Science is still seen as a dalliance or a cottage industry generating quirky news items and not as a transformative industry.

### **Who inspires you in science and in life?**

Close to home, many people in my career have inspired me - Nick Hastie as my mentor on big thinking in science, John Funder on how to stand your ground and speak your mind, Ian Frazer for his humanity, intelligence and energy, Georgia Chenevix-Trench and Julie Campbell on being a scientist and not agonising about the fact that you are also a woman, Patrick Tam for his sharp and open mind. Internationally in science, inspiration has come from Ben Humphreys for eternal lessons on politics, Andy McMahon on masterfully holding your cards, Christine Mummery for her sharp mind and eternal positivity, Shinya Yamanaka for busting the paradigm of terminal differentiation, Rafi Kopan for his sheer intelligence and his friendship, Hans Clevers for taking a finding and making value of it...and many, many more. And overall, Barack Obama for having a higher goal and working towards it.

### **What excites you in cell and developmental biology at the moment?**

Lots!! Cell competition during tissue development, directed differentiation of stem cells to organoids, embryonic self-organisation, defining progenitor subtypes using single cell transcriptional profiling, in vivo imaging of cell migration, mechanobiology.....

### **How do you see the ANZSCDB playing a role in your science?**

ANZSCDB has always been the society in Australia providing training and professional support in developmental biology. This has been crucial for my own career, but also for my staff and students. It was at an ANZSCDB meeting in Brisbane that I first met Robb Krumlauf, whose genuine enthusiasm for developmental biology was infectious. This is the sort of opportunity the society can bring to a young scientist. I have been associated with ANZSCDB for a long part of my career and I regard many of those in the society as friends as well as colleagues.

### **What would you do if you were not in research?**

If I stayed in science, I'd probably move into biotech or science policy. If I had my time over again, I might have stayed in the Arts – writing or drawing, perhaps journalism.

### **What do you do to relax?**

Paint, cook, take photographs, play in my garden, walk in the bush, eat fine food and drink good wine with friends and family, enjoy watching my children make their own way in the world.

### **Preferred epitaph?**

'She made a difference to the lives of others'.





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# Emerging Leader Award - Brett Collins

## *What was the journey to becoming Associate Professor Brett Collins?*

I grew up in the small country town of Goulburn, where traveling to Canberra was considered a trip to the big city. So moving to Sydney to study was an exciting change for me. I didn't originally intend to be a scientist or researcher, initially enrolling in a Medical Physics degree at the University of New South Wales, which was a strange amalgam of physics, biochemistry and physiology. In third year however, I was introduced to structural biology in lectures by Prof. Paul Curmi, and I distinctly remember almost immediately deciding on what I would pursue for an Honours project.

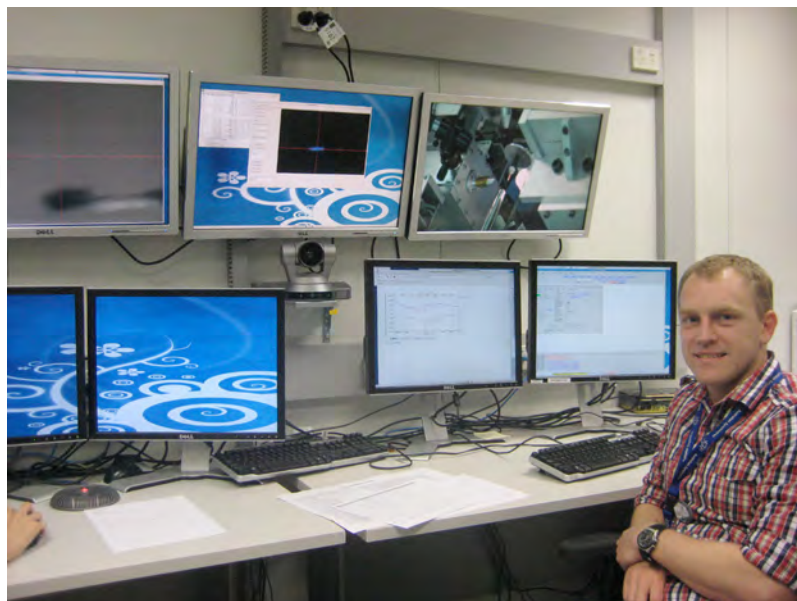
I subsequently started a PhD with Prof Bridget Mabbutt at Macquarie University, aiming to use NMR to study protein structures. However, things didn't work as planned and I ended up travelling back and forth to Paul Curmi's lab at UNSW to solve structures by crystallography. So I ended up as an X-ray crystallographer somewhat by accident, but I'm very glad I did. I then was fortunate to do a postdoc with Prof David Owen at the Cambridge Institute for Medical Research (CIMR), UK. I was David's first and, for a long time, only postdoc, and for more than a year his only lab member. It was a really great time though, and I consider myself very lucky to have been able to work in the lab alongside David, almost as partners in crime rather than supervisor and postdoc.

It was here that I was introduced to the field of membrane trafficking, which is still what I am primarily interested in. The CIMR was a



great place to be, working alongside fantastic cell biologists like Scottie Robinson, Paul Luzio and Matt Seaman, and I really took away from this period the strong belief that to do "structural biology" properly, it is essential to work closely with actual cell biologists. When I returned to Australia after five years in the UK, I was fortunate to earn an NHMRC Career Development Fellowship. This funding let me work with Rohan Teasdale at the Institute for Molecular Bioscience (IMB) in Brisbane to establish myself, and then two years later I applied for a Group Leader position.

Rohan was a great mentor during that difficult period of trying to establish independence and negotiating the winding road of running a lab, applying for grants and trying to figure out precisely what it is you would like to achieve. He continues to be a major collaborator







on our studies of intracellular trafficking, and we now also work closely with several groups in Brisbane such as Fred Meunier at the Queensland Brain Institute, and Rob Parton at the IMB, as well as other groups around the world with shared interests. Being at UQ and the IMB in particular is fantastic; there are lots of really world-class cell biology and structural biology labs that I get to work with.

### ***What were the key steps along the way?***

I think an important point to make for younger scientists is that I didn't end up where I am now because of clear-minded planning from day one. Now I can look back at various times where I made an important decision that eventually led me to this point, but there are many times when my career path could have easily gone in a different direction. Perhaps in an alternative universe, I would not have gone to David Owen's lab for example. It was a bit of a risk, as he was just setting up and there was no guarantee the lab was going to be successful. In the end that was one of the best decisions I made, as I was able to have a really productive postdoc precisely because it was a small lab. The group worked really closely together and David was around to help guide everyone to the high impact results. So my message is that you shouldn't sweat too much if you don't know exactly where you'll be in a few years time. Sure it helps to have at least a

vague idea. But just try and enjoy the thing you're doing, do it as well as you can and the next steps will all work out (at least in hindsight!).

### ***What does your group research?***

We're interested in how peripheral membrane proteins regulate membrane trafficking and the remodeling of membrane structures to control cell transport and signaling. This is of fundamental importance for all eukaryotic cells, and increasingly we are being directed to focus on the role of protein trafficking pathways in neurons, where defects

in proteins that we study such as sorting nexins and retromer are known to lead to neurodegenerative diseases like Parkinson's and Alzheimer's.

### ***What was the hardest thing about setting up as an independent researcher and what would you advise people embarking on a career in research?***

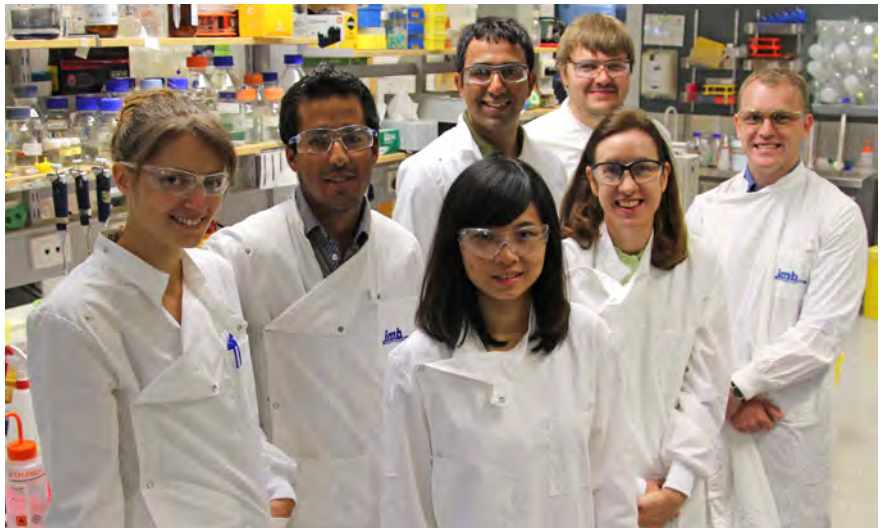
For me it was coming back to Australia because it took quite a long time to break in to the NHMRC funding schemes...and this was despite having an NHMRC Career Development Fellowship. I think my difficulty was that I came from an exclusively basic science background, and I found it hard to formulate my work in terms of its biomedical importance, at least to start with. Saying that however, I would not advise simply giving up on basic science! Despite a lot of pessimism in recent years with the move of funding towards more clinical and translational outcomes, I still believe there is an absolutely vital role for high-quality basic science. If you publish well, and it's your passion, it is still possible to get funding to work in fundamental areas of cell and developmental biology.

### ***Who inspires you in science and in life?***

It's clichéd and cheesy I know, but watching my daughter grow up inspires me everyday. Also, at an early age I was inspired very much



by my father, who instilled in me the idea that you should at least try to leave everything either as you found it, or preferably even better. Overall, I've had many inspiring mentors through my career (and that's another important piece of advice for young scientists – seek out mentors that have your best interests at heart).



### ***What are the best and worst things about what you do?***

Now that I'm much less of a bench jockey than I used to be, the best thing for me is living vicariously by watching people in the lab discover something new. It's always great to sit next to a postdoc or student when they see the first electron density map of their new protein structure, or discover something new and interesting about their proteins. That's the fun part of science that I think we all really enjoy. I'm tempted to say the worst thing is grant writing, but I think it is really the amount of pressure we all put on ourselves as scientists to get the big result or publish that Nature paper. That said, I can't wait for another Nature paper!

### ***What is your burning question in science right now?***

While there are several specific trafficking pathways we're interested in, the overarching question we're interested in is how transient and dynamic protein-protein and protein-lipid interactions lead to the complex cellular behaviors that underpin organelle formation. And then in particular why is it that defects in these processes so often lead to particular neurodegenerative diseases.

### ***How do you see the ANZSCDB playing a role in your science?***

I'm a card-carrying member of both the ANZSCDB and the ASBMB and I think these societies are essential as hubs for networking with other Australian scientists with shared

interests. Obviously the Combio meeting is an important forum for getting together with colleagues, and I've set up some important collaborations with people I've met there. Other local meetings organized by the ANZSCDB (like the annual Cell and Developmental Biology meeting in Brisbane) are also really important for giving younger scientists a platform to show off the great stuff they are doing.

### ***What would you do if you were not in research?***

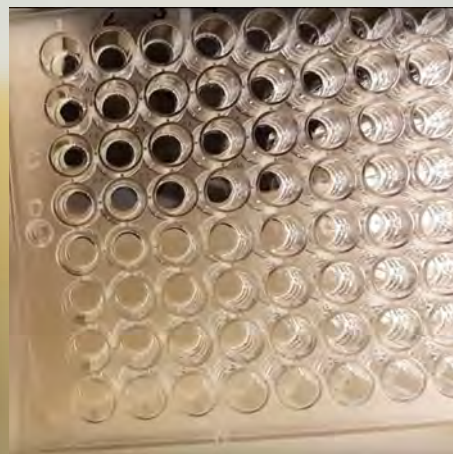
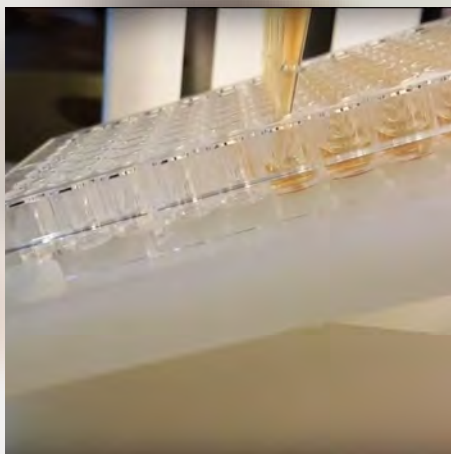
It's hard to think of an alternative career outside research. There are lots of things I can say I wouldn't want to do, but that still leaves a lot of possibilities.

### ***What do you do to relax?***

At the moment to relax I just like spending time with the family. I'm a pretty uncomplicated person. For the last couple of years I've been enjoying just walking to work - I find it helps clear out the cobwebs before I get to the lab, and lets me switch off before I get home.

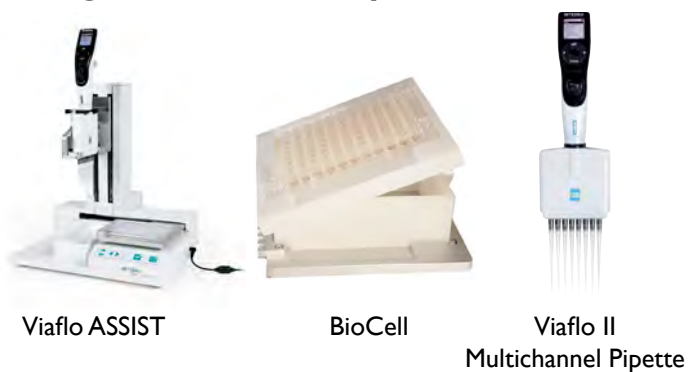
### ***Preferred epitaph?***

"Here lies Brett Collins. He didn't always get it right but he tried his best."



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**VIC**  
**Mark Bourke**  
 m: 0412 700 870  
 e: [mark@biotools.com.au](mailto:mark@biotools.com.au)

# 16TH HUNTER CELL MEETING

INCL. 9TH IMAGING WORKSHOP  
Wednesday Afternoon | Fixed material demonstrations

April 12 - 15, 2016  
Crowne Plaza Hunter Valley  
NSW Australia

## INVITED SPEAKERS

**Peter Friedl** MD Anderson, USA

**Rong Li** Johns Hopkins, USA

**Jonathan Yuin-Han Loh**  
IMCB, SIN

**Tom Misteli** NIH, USA

**Helen McNeill** Toronto, CAN

**Scott Waddell** Oxford, UK

**Magdalena Zernicka-Goetz**  
Cambridge, UK

**Roberto Weigert** NIH, USA

## CONFERENCE THEMES

*Convenor:*  
**Patrick Humbert**

*co-Convenor:*  
**Sharad Kumar**

*Organiser 9th Imaging  
Workshop:*  
**Paul Timpson**

- Functional genomics
- Biological Systems
- Organelle Focus – The Nucleus
- Asymmetric Cell Divisions and Stem Cells
- Intracellular Transport
- Cell Signalling and Gene Expression
- Tissue Architecture and morphogenesis
- Neuronal Function and Development
- Therapeutics and Disease Models

**EarlyBird registration until January 8, 2016**  
**Poster abstract submission until March 11, 2016**  
<http://hcbm.mtci.com.au/>

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# 2ND HUNTER SYSTEMS MEETING

Monday, April 11 - Tuesday, April 12, 2016

Crowne Plaza Hunter Valley | NSW Australia

## CONFERENCE THEMES

- Data integration
- Computational biology
- Systems biology of tissue development
- Network medicine
- Functional genomics
- Biological systems

## INTERNATIONAL SPEAKERS

Claus Jorgensen UK

Rune Linding DENMARK

## INVITED PRESENTERS

- |                               |                                   |
|-------------------------------|-----------------------------------|
| Terry Speed (Melbourne)       | Ian Smyth (Melbourne)             |
| Sue Clark (Sydney)            | Patrick Tam (Sydney)              |
| Shoba Ranganathan<br>(Sydney) | Don Newgreen<br>(Melbourne)       |
| Jean Yang (Sydney)            | David James (Sydney)              |
| Pam Pollock (Brisbane)        | Mark Ragan (Brisbane)             |
| Lan Nguyen (Melbourne)        | Paul Herzog<br>(Melbourne)        |
| Sean O'Donoghue (Sydney)      | Yeesim Khew-Goodall<br>(Adelaide) |
| Tianhai Tian (Melbourne)      |                                   |
| Edmund Crampin<br>(Melbourne) |                                   |

**Early Bird registration until January 8, 2016**

**Poster abstract submission until March 11, 2016**

<http://hcbm.mtci.com.au/>

Convenor:  
Roger Daly

Co-convenor:  
Edmund Crampin

<http://hcbm.mtci.com.au/>

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Sydney, NSW Australia  
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# ComBio does Melbourne

**Marie Bogoyevitch, Convenor**

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ComBio 2015, held at the Melbourne Exhibition and Convention Centre from 27 September to 1 October, incorporated the annual meetings of the three core ComBio societies, ANZSCDB, ASBMB and ASPS, joined by the NZSBMB and NZSPB. In the opening address, I reflected on the continuing history of ComBio from its beginnings as a combined meeting held in Queensland in 1999, and its recognized value in the current scientific climate where both the depth and breadth of knowledge and skills are critical in addressing current complex questions across the spectrum of biological and biomedical sciences. The complexity of such a meeting continues to be seen with the sheer numbers of presentations at ComBio2015: 13 invited international plenary speakers, 7 plenaries by medallists of the participating societies, 239 symposium presentations, 36 colloquium presentations, a career development forum and 243 posters on top of numerous official and unofficial social events. In all, more than 800 registrants enjoyed this exceptional opportunity in Melbourne to engage with Australian and international research.

The ComBio2015 plenary speakers again showcased the power and sophistication of basic research across the spectrum of cell and developmental biology, biochemistry and molecular biology, and plant biology. The opening plenary, delivered by a pioneer in the study of autophagy Ana-Maria Cuervo (Albert Einstein College of Medicine, USA) highlighted how regulatory mechanisms and functional outputs of mammalian autophagy could be dissected in cultured cells, but then how further tissue-specificity

could be elegantly revealed through sophisticated *in vivo* studies. Roberto Mantovani (University of Milan, Italy), then Bob Schmitz (University of Georgia, USA), followed in the opening plenary session with their current interests in probing transcriptional control via the NF- $\kappa$ B transcription factor in mammals and plants, and evaluation of the mechanisms governing DNA methylation over longer evolutionary timescales, respectively. The scheduling of these plenaries to run sequentially, rather than concurrently, allowed all participants to engage in this broad spectrum of research, an opportunity repeated in the ComBio2015 closing session with the elegant presentations by Yukihide Tomari (University of Tokyo, Japan) who emphasized the power of biophysical approaches including single molecule imaging approaches to dissect the assembly of the RNA-induced silencing complexes, John Wallingford (University of Texas, USA) who highlighted the synergistic gains of proteomic approaches, *in vivo* imaging and mouse and human genetics in dissecting actions of essential ciliogenic machinery in human disease and Pam Ronald (University of California Davis, USA) who showed the sustained molecular detective work required in defining mechanisms in plant immune responses.

Of particular interest to ANZSCDB members were other plenary lectures delivered over the four main days of the meeting, including the ANZSCDB President's Medal Lecture by Melissa Little who elegantly summarized her team's ongoing work in the molecular basis of kidney development, renal



**Plenary inspiration with John Wallingford, Uni Texas**

## ComBio meeting

disease and repair, Guangshuo Ou (Tsinghua University, China) who presented his lab's work on developing live cell imaging approaches to study *C. elegans* larval development thus dissecting the mechanisms of neuroblast development, and Luca Scorrano (University of Padua, Italy) who elegantly explained how gene targeting has revealed altered mitochondrial cristae remodeling as a crucial determinant of metabolism and tissue damage in vivo.

Outside of the plenary times, the symposia and colloquia provided the opportunity for research presentations across the conference themes (Cancer Biology, Education, Global Change Biology, Infection and Host, Metabolic and Cardiovascular, Neuroscience, Plant Cell Biology, Plant Physiology,



**Farhad Shafiei (right) and Reich Webber-Montenegro (left) from Sigma-Aldrich with President's Medallist Melissa Little and President Carol Wicking**

Regenerative and Developmental Biology) integrated by 7 threads (Advanced Structural Methods, Chemical Biology and Drug Discovery, Emerging and Enabling Technologies in the Biological Sciences, Genomics and Transcriptomics, Hot Topics, Model Systems, Molecular and Cellular Imaging, Proteomics and Metabolomics, Systems and Computational Biology). The theme coordinators and the session chairs all did a fantastic job in putting together these excellent sessions that were both stimulating and well-attended. Fortunately, the close proximity of the rooms for the parallel sessions helped when moving between sessions and the difficult job of coordinating choices for attending different talks in different sessions was made easier with the tagging of presentations in the web-based ComBio2015 App.

ANZSCDB and the ComBio Organizing Committee continue to be extremely grateful to the trade exhibitors, many of whom have been long-standing supporters of the ComBio conferences. The trade exhibition continues to provide a lively space for interaction with the company sales and technical staff, where new equipment can be checked out and the latest information on new products can be sourced. The Passport Prize competition, which encourages all attendees to visit all trade booths, was again a highlight, with some fabulous prizes awarded to the winners of the competition. The interaction with the trade exhibitors is absolutely critical for the long term support of ComBio, and so a special thanks is given to everyone who visited the trade exhibition during ComBio2015.

The ComBio conferences have continued to provide a forum for presentations by participants at all stages of their careers. As anticipated, the medallists and award winners presented truly excellent overviews of their research interests. Equally important are the opportunities ComBio meetings for students and early career researchers to present their work at a national level, either in the form of symposia or colloquia talks, or as a poster presentation. Indeed, there were lively







**Toshiya Yamada Prize winner for best postdoctoral talk was Nicole Schonrock from the Garvan Institute of Medical Research**



**Lauren Forbes Beadle from Monash University (left; best student Cell Biology poster) with Heidi Neubauer from the SA Centre for Cancer Biology (right; best student talk) show off their awards**

question times in the sessions, emphasizing the valuable opportunities for feedback and discussions of new collaborations. ANZSCB again offered four prizes to its student and postdoctoral members: The Toshiya Yamada Early Career Award for the best post-doctoral oral presentation, The Keith Dixon Prize for the best student poster in Developmental Biology, The David Walsh Prize for the best student oral presentation and The ANZSCDB Cell Biology Student Poster Prize.

An important feature of all ComBio meetings continues to be the social activities. Both the Welcome Mixer on Monday and the Cocktail Party on Tuesday ensured a great opportunity to meet and catch up with new and old friends alike, as well as to gain a little extra time at the posters and the trade exhibition. The Conference Dinner held on the Wednesday at the Melbourne Aquarium was also a great success. Predinner drinks in the Touch Pool and Bay of Rays area were followed by a 3 course meal in the main aquarium area. DJ Pat, who made sure the dance floor was put to maximum use after the dinner, was a highlight only to be outshone possibly by Pinjarra the 750kg, 50 year old male crocodile who calmly supervised the dance floor from his adjacent tank.

Of course, we are indebted to Sally Jay Conferences for their continued involvement in organizing every aspect of the logistics of ComBio2015. Their knowledge and experience accrued over many years underpins the



success of the ComBio concept; the Local Organizing Committees for each ComBio meeting would not have the confidence to focus on the scientific programme without this exceptional organizational support provided by Sally Jay and her team.

We can now all look forward to ComBio2016 in Brisbane led by Joe Rothnagel (Chair), Rebecca Ford and Dominic Ng (Program Chairs). We are certain that ComBio2016 will continue the tradition of successful and vibrant ComBio meetings.



ComBio **2016**



Brisbane



## Brisbane Convention & Exhibition Centre 3 to 7 October 2016

**ComBio2016** will be held at the Brisbane Convention Centre located in the heart of Brisbane's unique Southbank Precinct - a 17 hectare riverside oasis renowned for its abundance of creative, cultural, entertainment and lifestyle activities.

### Provisional Conference Themes:

- 1 Plant Cell and Developmental Biology and Genetics
- 2 Plant Physiology and Ecology
- 3 Developmental, Stem Cell & Regenerative Biology
- 4 Proteins & Proteomics
- 5 Genomes & Bioinformatics
- 6 Cell Biology
- 7 Cell Signalling
- 8 Biochemistry & Metabolism
- 9 Emerging Areas, Hot Topics & Enabling Technologies
- 10 Education & Career Development

**Early registration/abstract deadline:**

**Monday, 27 June 2016**

**Combined ASBMB, ASPS and ANZSCDB Annual Meetings**

- Australian Society for Biochemistry and Molecular Biology
- Australian Society of Plant Scientists
- Australia and New Zealand Society for Cell and Developmental Biology

### Further information:

**Conference Chair:**  
Joe Rothnagel  
j.rothnagel@uq.edu.au

**Program Chairs:**

- Rebecca Ford  
rebecca.ford@griffith.edu.au
- Dominic Ng  
d.ng1@uq.edu.au

**Registration/  
Exhibitions:**  
Sally Jay  
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## KEYNOTE LECTURES

- |                   |  |
|-------------------|--|
| Betzig Eric       | Imaging life at high spatiotemporal resolution   |
| Chalfie Martin    | Determining neuronal cell fate in <i>C. elegans</i>  |
| Cossart Pascale   | What bacteria – in particular <i>Listeria</i> – have learnt to cell biologists               |
| Gall Joseph       | Giant chromosomes and deep sequences: what the amphibian oocyte tells us about transcription |
| Goldman Robert    | Intermediate filament networks are systems integrators in mammalian cells                    |
| zur Hausen Harald | Bovine milk and meat as risk factors for human diseases                                      |
| Simons Kai        | The dynamic organisation of cell membranes   |
| Walter Peter      | From protein folding to cognition: the serendipitous path of discovery                       |

## SYMPOSIA LECTURES

- |                     |   |
|---------------------|---|
| Almouzni Geneviève  | Shaping chromatin in the nucleus, key architects  |
| Bártek Jiří         | Genome integrity maintenance: mechanisms and relevance for cancer and aging                                   |
| Baumeister Wolfgang | Structural biology in a cellular context  |
| Di Fiore Pier Paolo | The Numb:p53 axis connects asymmetric cell division and tumor suppression in mammary stem cells               |
| Gasser Susan        | Heterochromatin and its crucial role in genome maintenance  |
| Grosveld Frank      | Transcription and the dynamics of the 3D structure of the genome  |
| Heald Rebecca       | Mechanisms of mitosis and size control in <i>Xenopus</i>  |
| Hetzer Martin       | How the nuclear membrane controls genome function   |
| Hirokawa Nobutaka   | Kinesin superfamily molecular motors, KIFs: from regulation of neuronal functions and development to diseases |
| Hořejší Václav      | Immunoreceptor signaling  |
| Humphries Martin    | Regulation of cell adhesion through the cell cycle  |
| Jacobs Howy         | Maintenance of mitochondrial fidelity   |
| LeRoith Derek       | Subcellular and supracellular mechanisms of cell morphogenesis  |
| Lin Haifan          | The role of GH/IGF-I axis in the regulation of glucose metabolism and its disturbances                        |
| Martienssen Rob     | Uniting the genome: multifaceted roles of the Piwi-piRNA pathway in the germline                              |
| Mayor Satyajit      | Epigenetic reprogramming and small RNA  |
| McKnight Steven     | Active control of cell membrane composition   |
| Misteli Tom         | A solid state conceptualization of information transfer from gene to message to protein                       |
| Nigg Erich          | Deep imaging to see the genome  |
| Oren Moshe          | Deep imaging to see the genome  |
| Peters Jan-Michael  | Impact of centrosome aberrations on microcephaly and cancer   |
| Silver Pamela       | The fifty shades of p53   |
|                     | How cohesin controls sister chromatid cohesion and chromatin structure  |
|                     | Designing biology – from basic cell biology to application  |

- |                    |  |
|--------------------|--|
| Vandenabeele Peter | Role of RIPKs in life and death decisions                |
| Wang Xiaodong      | Biochemical pathways of cell death                       |
| Watt Fiona         | Studying epidermal stem cells at single cell resolution  |
| Yoshimori Tamotsu  | Autophagy: its molecular basis and anti-disease function |
| Zerial Marino      | Molecular mechanisms of endosome biogenesis and fusion   |

## SPECIAL LECTURES

- |                  |  |
|------------------|--|
| Bertuzzi Stefano | The curious incident of the translational dog that didn't bark. Where is cell biology going? Where will a PhD in science take you? |
| Mattaj Jai       | Promoting excellence by choice; EMBL and international life science collaboration  |

## MINISYMPOSIA TOPICS

- |   |  |
|---|--|
| Cell biology of host-pathogen interactions                        | (Peter Šebo + Pascale Cossart)           |
| Mechanisms of intracellular trafficking                           | (Daniela Corda + Margaret Robinson)      |
| Epigenetic control of cell fate                                   | (Guoliang Xu + Petra Hájková)            |
| Microtubule organization in health and disease                    | (Mónica Bettencourt-Dias + Pavel Dráber) |
| Lamins and chromatin during development and ageing                | (Roland Foissner + Yixiang Zheng)        |
| Emerging technologies for cell biology                            | (Alasdair Steven + Stanislav Kmoch)      |
| DNA replication, repair and recombination                         | (Cristina Cardoso + Eva Bártova)         |
| Pluripotent stem cells  | (Alexey Tomilin + Aleš Hampl)            |
| Chromosome segregation and aneuploidy                             | (William Earnshaw + Iain Cheeseman)      |
| Nuclear periphery   | (Yosef Gruenbaum + Ohad Medalia)         |
| Shaping the cell  | (Buzz Baum + Tomáš Mazel)                |
| Host cells and vector borne pathogens                             | (Libor Grubhoffer + Marshall Bloom)      |
| Tissue microenvironment under physiological condition and disease | (Hernandes Carvalho + Karel Smetana Jr.) |
| Neurons meeting glia in the brain plasticity, disease and therapy | (Marko Brankatschk + Miloš Pěkný)        |
| Dynamics of the gene expression machinery                         | (David Tollervy + Thoru Pederson)        |
| Centrioles, centrosomes and cilia: function and dysfunction       | (Jordan Raff + Renata Basto)             |
| Chromatin plasticity and nuclear architecture                     | (Evi Soutoglou + Eran Meshorer)          |
| Cell adhesion dynamics in tissue organization                     | (Carlen Niessen + Corinne Albigès-Rizo)  |
| Cell biology and nanomedicine                                     | (Gareth Griffiths + Arwin Jones)         |
| Plant development and adaptation                                  | (Jiří Friml + Maria-Carmen Risueño)      |
| Non-coding RNAs in health and disease                             | (Claudio Azzalin + Štěpánka Vaňáčková)   |
| Structural biology  | (Ueli Aebi + Christian Spahn)            |
| Cancer cell biology   | (Elias Campo + Marek Trněný)             |
| Cell signalling/Systems and computational biology                 | (Marino Zerial + Philippe Bastiaens)     |
| Cell biology of metabolic diseases                                | (Derek LeRoith + Martin Haluzik)         |

ONLINE ABSTRACT SUBMISSION & REGISTRATION OPENED

→ < [info@iccb2016.org](mailto:info@iccb2016.org) >

EXHIBITION & SPONSORSHIP REQUESTS

→ < [sponsorship@iccb2016.org](mailto:sponsorship@iccb2016.org) >

Oral Abstracts Submission Deadline March 31, 2016  
 Poster Abstracts Submission Deadline May 15, 2016  
 Early Registration Deadline April 30, 2016  
 Sponsors' Enrolment Deadline March 31, 2016  
 Exhibition Space Booking Deadline April 30, 2016

More information at [www.iccb2016.org](http://www.iccb2016.org)



# LEICA STUDENT TRAVEL AWARD

Joan Rohl, QUT, Brisbane

## From Bed to Bench: Report on the 7th Joint Meeting of the European Tissue Repair Society & the Wound Healing Society in Copenhagen

*I would like to thank the ANZSCDB committee for enabling me to attend the ETRS/WHS conference in Copenhagen at the end of last year where I was exposed to the latest insights into wound healing, had the opportunity to present my research data to an international audience and got to meet amazing fellow scientists, healthcare professionals and industry groups.*

In October, when the beautiful Jacarandas were in full bloom in Brisbane giving a sign that summer is underway, I boarded a plane heading to the 7th Joint Meeting of the European Tissue Repair Society & the Wound Healing Society held in Copenhagen, capitol of Denmark. I was welcomed with very typical Danish weather at this time of the year – temperatures around 10 degrees Celsius, a grey sky and a slight drizzle. But that does not stop the inhabitants of one of the world's top cycling cities from continuing their daily commute on bicycles. And besides, the colourful autumn leaves all around the city made up for the hazy weather.



Before the start of the three day conference, I had a little bit of time exploring the port city. In the heart of Copenhagen is a maze of small streets and historical squares called Strøget, which is one of Europe's longest pedestrian streets and a dream for every shopper. After walking a bit further, I found myself in Nyhavn – a canal area that reminded me a lot of Amsterdam. Of course I also had to visit The Little Mermaid statue as it is very iconic for Copenhagen, although I have to admit that I was a little bit disappointed especially after seeing the remarkable Gefion Fountain on the way.



The conference, located in the Scandic Copenhagen hotel, was opened by the conference Chair Prof Magnus Ågren (Denmark) who is now also President of the ETRS. The first day of the conference had a slight focus on the role of inflammation for



wound healing outcomes: Prof Sabine Werner (ETH Zurich, Switzerland) and Prof Karin Scharffetter-Kochanek (University of Ulm, Germany) were talking about intrinsic (transcription factor Nrf2) and extrinsic (mesenchymal stem cells) components to rebalance ROS-driven inflammation in wound repair. Prof Sabine Eming (University of Cologne, Germany) presented macrophages as central targets to modulate the healing response as IL-4 signalling of late-stage (type 2) macrophages controls collagen fibrillogenesis and cross-linking through macrophage-derived Relm- $\alpha$ . This was a fantastic lead-in for my talk in which I presented data from my PhD project at the Queensland University of Technology investigating intracellular trafficking pathways of Matrix Metalloproteinases to alter



macrophage infiltration of wound tissue. It was a very rewarding experience as the audience asked interested and stimulating questions following my presentation. People also approached me afterwards to congratulate me on my work and discuss my research and future endeavours. Other podium presentations on that day covered topics such as current practices and new landmarks in wound healing. A few of the poster abstracts were also selected to be showcased in two-minute-presentations.

After the Welcome reception at the Scandic Copenhagen, I joined a few fellow researchers at a microbrewery called Mikkeller – the beer and company were both excellent and made for a great end to day one. It also represented a great opportunity to establish valuable networks with other scientists from around the globe.

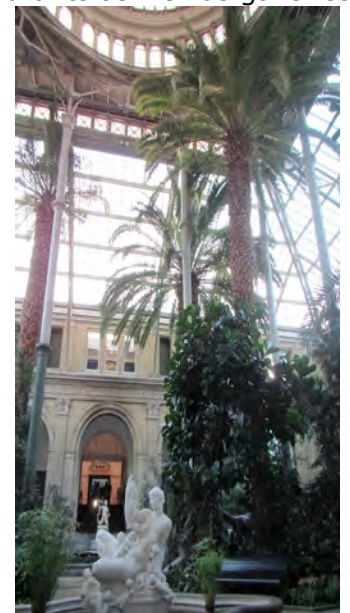


On the second day, the conference focus shifted a bit more towards fibrosis and scarring: Assistant Prof Susan Volk (University of Pennsylvania Philadelphia, USA) presented her group's work showing that Type III Collagen plays a critical role in matrix deposition and organisation, acts as a regulator of migration and invasion of cancer cells and has an effect on myofibroblast differentiation. Associate Prof Boris Hinz (Dentistry University of Toronto, Canada) demonstrated the role of miR-21 in mechanically priming mesenchymal stem cells by negatively regulating inhibitors of TGF $\beta$  signalling. He also had an excellent way to explain how mechanical signals can override chemical signals, as is the case for the release of active TGF $\beta$  from mechanically resistant ECM through binding to integrins on the surface of retracting cells. Other sessions on the day were about bugs in wounds as well as gastrointestinal, skeletal muscle and tendon repair.



My personal highlight of the day however was the Charles Lapière memorial lecture given by Emeritus Prof Hideaki Nagase (*pictured left*) on matrix metalloproteinases (MMPs). I really enjoyed listening to the connections he made between the collagenolytic mechanisms of certain MMPs ("Brownian Ratchet") and its suggested contribution to directional cell migration, as well as LRP1-mediated endocytic clearance of MMP9 while MMP14 acts as a shedder of LRP1 in this process.

The conference dinner on day two took place in Copenhagen's trendy Meatpacking District, which harbours a range of restaurants as well as galleries and nightclubs. The restaurant in which the dinner was held is called Nose2Tail and fits right into the district being a former butcher shop basement – probably not a good place for a vegetarian though.



Day three of the conference consisted mostly of presentations from PhD students competing for the Young investigator Award. The 2015 award winner was Simon Barr, who is from Dr Ardy Bayat's lab in Manchester, England working on implant surface technologies. Additional topics covered on the day were biofilms in wounds and randomised controlled trials.



After the closing of the conference I only had a couple more hours as a tourist and I decided to visit the Ny Carlsberg Glyptotek, which is a very unique fine-art museum with antique Mediterranean sculptures that I can highly recommend to anyone visiting Copenhagen.

*On my next trip to Copenhagen, I hopefully have some more time to go to the famous Tivoli Gardens – who is in for a ride?*

# Regional Round-up

## NSW and ACT

### **Kazu Kikuchi**

---

The annual NSW and ACT Cell and Developmental Biology Meeting was held on the 16th of March at the Garvan Institute for Medical Research, Sydney. The attendance has grown enormously in the past few years, having attracted approximately 200 this year from research institutes all over NSW.

The plenary speakers at the meeting were Professor Olivier Pourquie (Harvard, USA), Professor Nadia Rosenthal (ARMI), and Professor Daisuke Sugiyama (Kyushu University, Japan). Professor Pourquie overviewed his body of work on vertebrate somite development and presented new results revealing metabolic regulations of somitogenesis. Professor Rosenthal discussed the immunological control of organ regeneration with results obtained from various animal models, including salamanders. Professor Sugiyama presented a recent advance in engineering chemical compounds that stimulate hematopoiesis, adding a glimpse of the clinical relevance of developmental biology to the meeting. The meeting committee acknowledges Dr. Richard Harvey (VCCRI), the Hunter Meeting conveners, and Leaders in Science and Society Seminar organisers (Garvan) for co-hosting the plenary lecture by Professor Pourquie.

The meeting also hosted 10 fantastic talks by junior postdocs and students, and two well-attended poster sessions showcasing over 50 posters. The meeting was concluded by the announcement of winners for best oral and poster presentation awards. Dr. Emily Don (Cole Lab, Macquarie Uni) and Ms. Hananeh Fonoudi (Harvey Lab, VCCRI) were awarded the

prizes for best talks, and Dr. Alexander Sobinoff (Pickett Lab, CMRI) and Ms. Claire Henry (Ford Lab, UNSW) those for best poster presentations. It was obviously a difficult task to select one presentation from a body of good talks and posters, which would never be possible without fantastic service by local group leaders and senior scientists that constituted the judging panel.

The meeting committee is extremely grateful for the generous support from ANZSCDB, ASBM, CMRI, and UNSW. We would also like to thank Cell Bank Australia and JOMAR Life Research for their sponsorship support. Through their help, we were able to forego a registration fee, unlike in many other conferences. We aim to maintain this policy in our future meetings, to attract as many early career scientists as possible and to provide opportunities to interact with world-class researchers for future leaders in Australian biomedical sciences.

Lastly, we would like to thank all participants for showing their huge enthusiasm in science, making the meeting highly inspiring. We will have our 2016 meeting at the same venue, the Garvan Institute, on the 11th of April 2016, with an excellent lineup of plenary speakers. Professor Tom Misteli (NIH, USA) will be our international plenary speaker, and Professor Melissa Little (Murdoch) and Professor Jane Visvader (WEHI) will be our national plenary speakers. We are looking forward to seeing all of you again at the 2016 meeting!

***The Committee: Kazu Kikuchi (VCCRI), Annemiek Beverdam (UNSW), Stuart Fraser (USyd), Kim Beaumont (Centenary), Guy Barry (Garvan), Jude Weidenhofer (Newcastle), Kristen Barrat (ANU).***

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## Victoria/Tasmania

**Jan Kaslin and Sebastian Dworkin**

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The **8th annual Melbourne Cell and Developmental Biology Symposium (MCDB8)** was held on Friday 2nd October at the Bio21 Institute in the Parkville science precinct. More than 80 people came together from a broad range of Melbourne and Victorian research institutions, despite the suddenly announced "Footy" holiday. The footy holiday kept the organisers on their toes until the last minute since universities announced the holiday less than four weeks before the event. However, thanks to the support from Bio21 directors, and in particular David Keizer, the event went smoothly.

As is usual for these meetings, the program consisted of invited plenary speakers, as well as postdoc and student talks selected from submitted abstracts. The first plenary lecture was given by Prof. Guangshuo Ou (Chinese Academy of Sciences, School of Life Sciences, Tsinghua University, China) who gave a tour de force presentation on how new tools in genetics and imaging can be combined with forward genetic screening to study cell polarity of neural progenitors in *C. elegans*. Our second plenary lecture was given by Dr. Suresh Jesuthasan (A-Star, Singapore), who gave an inspiring talk on the cellular and molecular wiring that controls fear response in vertebrates.

Fourteen selected talks were presented from students and postdoctoral fellows covering a broad range of topics, methods and model organisms. Overall the talks were of a very high standard. Numerous prizes were available for the presenters throughout the day. Dr. Alex Pinto Godwin from the Australian Regenerative Medicine Institute (ARMI) was awarded the best oral presentation prize. Alex showed a new systems biology approach for identifying and clustering cell populations in an unbiased way from FACS data. Dr. Sebastian Judd-Mole from Monash University won the best student poster presentation award for his work on the role of ion transporters during *Drosophila* development.

The meeting was a great success and it concluded with refreshments at the only pub we could find open nearby on the footy holiday, where participants continued to talk about science and other interesting topics for several hours after.

We would like to thank everyone involved in making the symposium a great success. In particular, Bio21 staff for their invaluable efforts in meeting organisation, and both ARMI/Monash University and the Peter McCallum Cancer Institute for their support. Many thanks also to our loyal and generous sponsors, and for their effort in providing the trade tables and displays. We are looking forward to the meeting in 2016.

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## South Australia

**Sophie Wizniak, Michael Samuel and Michael Lardelli**

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The **5th Adelaide Cell and Developmental Biology Meeting** was held on Nov 17, 2015 at the University of South Australia (Uni SA) under the auspices of the ANZSCDB. The two outstanding plenary speakers were Prof Richard Marais from the Cancer Research UK, Manchester Institute and Dr. Leonie Quinn from the University of Melbourne. The meeting was attended by more than 65 members of the South Australian cell and developmental biology community, with the University of Adelaide, Centre

for Cancer Biology, Flinders University, the South Australian Health and Medical Research Institute (SAHMRI) and Uni SA all well represented.

Our program began with Richard Marais, who beautifully illustrated the power of patient-derived xenografts (PDX) in precision medicine to target melanoma. Prof. Marais has been working on a new approach to stay ahead of individual cancers by establishing PDX when a tumour is first removed, and completely characterising the cancer with a view to pre-empting tumour progression. This would enable the treating clinicians, armed with

in-depth knowledge about the cancer, to select with precision the most appropriate treatment course upon relapse, a frequent event with melanoma. The first plenary talk was followed by six short presentations from postdoctoral fellows. The high quality of these presentations made it difficult for the judging panel to select the most outstanding, with Genevieve Secker from the Centre for Cancer Biology awarded for her talk on "The role of the Nedd4 ubiquitin ligase during lymphatic development".

The lunch break provided a great opportunity for interaction between delegates at the poster presentations, which showcased the variety and depth of cell and developmental biology research in SA. The prize for best poster by a student was awarded to Shee Chee Ong from Flinders University, for "Novel insulin analogues with improved therapeutic benefits: Dicarba insulin analogues exhibit reduced mitogenic potential", and the prize for the best poster by a post-doctoral scientist was awarded to Jan Kazenwadel and Kelly Betterman from the Centre for Cancer Biology for "GATA2 haplo-insufficiency underlies predisposition to lymphedema due to a key role for GATA2 in lymphatic vessel valve development".

The second plenary speaker was Leonie Quinn, who spoke engagingly on an unexpected function of single-stranded RNA-binding protein Half pint (Hfp), the *Drosophila* orthologue of mammalian FBP Interacting Repressor (FIR), in negatively regulating expression of the Myc oncogene by directly binding its promoter, and on restricting the niche for germ cell production in the *Drosophila* ovary. Following the second plenary presentation,

Janni Petersen from Flinders University presented a special symposium on the function of ammonia in facilitating cell survival through activation of the mTORC1 complex. The session continued with seven short talks by students. Once again, all were excellent, with the judges awarding the most outstanding to Sarah Boyle from the University of Adelaide for her talk, "The chemokine receptor CCR7 promotes mammary tumourigenesis through amplification of stem-like cells".

Heartfelt thanks to our sponsors - ANZSCDB, Centre for Cancer Biology (sponsored Richard Marais), University of Adelaide (sponsored Leonie Quinn), Uni SA, In Vitro Technologies, Coherent Scientific, GeneWorks and Thermo Fisher Scientific. We would also like to thank all who attended for an interactive and stimulating day showcasing excellent science. We look forward greatly to building on this success at the 6th Adelaide Cell and Developmental Biology Meeting in 2016.

Other meetings in the region included the **7th Barossa Signalling Meeting on "Cancer Biology and Therapy"**, held at the Novotel Resort in the Barossa Valley from 18th–21st November. This year's meeting attracted 120 delegates including many high-profile national and international speakers. Highlights included John Scott from University of Washington, Seattle, who is using super-resolution microscopy and proximity ligation techniques to visualise protein co-localisation in controlling spindle assembly. Frederic de Sauvage from Genentech, San Francisco, spoke of Wnt pathway function in intestinal stem cells, and is using several novel mouse models to investigate the niches of these cells in colorectal cancer.

Xiaomeng Wang from Nanyang University, Singapore, spoke of a novel modulator of TGF-beta signalling, LRG1, and its role in keratinocytes and skin carcinogenesis. Ivan Dikic of Goethe University, Frankfurt, talked about the crosstalk between phosphorylation and ubiquitination in regulating protein function, while Richard Marais of Cancer Research UK presented his novel xenograft



mouse models of melanoma, and the use of patient samples to predict personalised drug regime outcomes. Finally, KJ Patel of Cambridge University gave an entertaining presentation on the role of alcohol and aldehydes in inducing DNA damage, leading to cancer, making us think about how many glasses of Barossa wine we enjoyed that night!



Several prizes were awarded, including the Clifford Prize, which recognises international excellence in cancer research. This year it was jointly awarded to Inder Verma of the Salk Institute, USA and Jane Visvader of WEHI, Melbourne. Inder spoke of the micro-environmental signals that may lead to glioblastoma progression, and Jane combined genetic lineage tracing techniques with beautifully 3D-reconstructed confocal images to define the origins of pre-neoplastic breast cancer cells. Student poster prizes were awarded to Layla Zhu and Heidi Neubauer, both from the Centre for Cancer Biology, Adelaide.

The meeting also included several social events, beginning with a poolside BBQ on the first night, which was perfect given the balmy evening. The Clifford Prize dinner was held at "The Farm" this year, with an exquisite 3-course dinner presented by Elli Beer, and over 10 food-matched wines for



tasting introduced by John Leydon. There was also ample time to visit some local Barossa wineries and a final conference dinner at the Novotel. The next Barossa Signalling meeting will be held in 2017.

The final meeting for the year was the **4th ANCVDB National Meeting** (Australian Network of Cardiac and Vascular Developmental Biologists), held from 3rd-4th December at UniSA. This intimate meeting of 50 attendees was a fantastic opportunity for senior leaders and early career researchers alike to present new and unpublished work. The two invited international speakers were Guillermo Oliver of the Feinberg Cardiovascular Institute, Chicago, and Jeroen Bakkers of the Hubrecht Institute, Utrecht. Guillermo started with a historical perspective of the developmental origins of the lymphatic vascular system and new work identifying factors important for lymphatic specification, and then talked about his recent work on the link between lymphatic defects and obesity in clinical cases. Jeroen presented a novel RNAseq technique using whole zebrafish embryos combined with 3D modelling to define a spatial map of gene expression on a whole-transcriptome scale, and used this to identify regulators of cardiac development in the zebrafish. Another highlight was the range of presentations by national speakers including Ben Hogan, Mat Francois, Leigh Coultas, Peter Psaltis, Robert Bryson-Richardson, Kelly Smith, Xiangjian Zheng, Richard Harvey, David Elliot, Nadia Rosenthal, James Hudson and Enzo Porrello. Many junior researchers also presented talks and posters. Awards for the best early career researcher presentations went to Cathy Pichol-Thievend, Gen Secker, Neil Bower and Sophie Wiszniak. The conference dinner at The Exeter Hotel was a great opportunity for informal discussions amongst all attendees, and the warm Adelaide evening provided the perfect excuse for continuing drinks into the night! This meeting has in previous years had a reputation as a friendly, supportive and inviting environment for everyone, senior and junior, to present their new and unpublished results, and this year was no exception. Everyone who attended is looking forward to the next meeting to be held in Sydney in 2016.



# Queensland

Annette Shewan and Guillermo Gomez

On 2 October 2015, the **ANZSCDB Brisbane Cell and Developmental Biology Meeting** was held at the Institute for Molecular Bioscience (IMB) in Brisbane. This meeting was made possible by generous support from the ANZSCDB, UQ's IMB, Queensland Brain Institute (QBI) and School of Biomedical Sciences (SBMS), and the Institute of Health and Biomedical Innovation (IHBI) at Queensland University of Technology (QUT), as well as by sponsorship from many supporting companies.

This annual meeting provides a platform for disseminating outstanding cell and developmental biology research going on within the Queensland research community, with a particular focus on engagement and career development for early career researchers (ECRs). Despite the long weekend we attracted a large number of eager registrants, with 141 there on the day. It was a real delight for the organising committee to see so many enthusiastic supporters of cell and developmental biology across Brisbane.

After a welcome address by the 2015 ANZSCDB Emerging Leader Assoc Prof Brett Collins (IMB), Assoc. Prof Massimo Hilliard (QBI) kicked off the plenary presentations with a cracking seminar on mechanisms of axonal repair and fusion. After morning tea, Dr Suyinn Chong from Brisbane's Mater Medical Research Institute (MMRI) presented her work on prenatal alcohol exposure and developmental reprogramming in the adult, followed by a tour de force from our international plenary speaker, Prof John Wallingford, (Howard Hughes Medical Institute and Dept of Molecular Biosciences, University of Texas at Austin), on the intricacies of tissue morphogenesis in the developing embryo. Dr Fiona Simpson (UQ) closed out the day presenting her work on a mechanism to improve targeted immunotherapies for cancer treatment.

The four plenary talks were interspersed with a series of presentations from PhD students and postdocs covering various topics in cell and developmental biology, and a well-attended poster session. This year prizes were awarded to Kyle Upton (MMRI, best talk by a postdoc) and Lucia Zacchi (SBMS, runner-up); Sarah Kerwin (SBMS, best talk by a student) and Jessica de Angelis (IMB, runner-up); Mark Adams (IHBI, best poster presentation by a postdoc) and Sebastian Dworkin (IMB, runner-up); and Tim Edwards (QBI, best poster presentation by a student) and Melissa Ilsley (MMRI, runner-up). The quality of ECR submissions for oral presentation spots was excellent by any standard. In response to



the sheer number of outstanding applications, and since not every deserving applicant can be awarded a talk, the committee instigated a new aspect to the program - an ECR networking lunch with the headline speaker, Prof John Wallingford (**pictured below**). This event was a great success and will be a feature of the program into the future.



## Regional Round-up

Overall it was a fabulous event, gauging by the level of 'buzz' in the poster area during the breaks, and feedback received from participants and our sponsors.

Koops did the honours of closing out the ANZSCDB Queensland meeting, and presented the thank-you gifts to our plenary speakers. (L-R): Koops, Massimo, Fiona, John and Suyinn.



Finally, the meeting couldn't have happened without the dedicated teamwork of the organising committee (Pictured (L-R): Rashmi Priya, Annette Shewan, Eloise Dray, Michael Piper, Rehan Villani, Lynn Fink, Mathias Francois and Nicolas Paquet (Nico not in photo).



Early in October (8-9th, to be exact) the **"Forces in Biology" symposium** was also held at the IMB. Alpha Yap was instrumental in convening the joint meeting of the IMB and the Mechanobiology Institute of Singapore. Alpha writes: "The conference aimed to highlight the latest developments in understanding mechanobiology, the emerging discipline that seeks to understand how force is used, and sensed, in biology. In particular, the conference explored the intersection between mechanobiology at the cellular level and its impact at the tissue level. Keynote presentations by Mike Sheetz (Mechanobiology Institute, Singapore) and Martin Schwartz (Yale University, USA) highlighted molecular mechanisms of mechanosensing and their contribution to atherosclerosis, respectively, to frame the scope of mechanobiology from basic discovery to elucidating human disease. These talks were complemented by sessions that encompassed topics such as the link between adhesion and the cytoskeleton, mathematical modelling and physical theory, the use of engineered microenvironments to dissect the impact of force on cellular morphogenesis and stem cell differentiation, and direct analysis of tissue mechanobiology in organismal systems. Bringing together international participants with invited national participants from around Australia, the meeting highlighted the exciting opportunities for regional, multidisciplinary collaboration in this important new field."

Lastly, on the 4th December, the **6th Annual Early Career Researcher Symposium** was held at the Advanced Engineering Building, University of Queensland. This event brought together 14 schools and institutes across UQ, joined for the first time by colleagues from Griffith University and the Queensland University of Technology (QUT), with 300 registrants. Events of the day included presentations by Assoc. Prof. Mia Woodruff from IHBI (QUT) and Prof. Anton Middelberg, Pro-Vice Chancellor (Research and International) at UQ, alongside 74 poster presentations and 13 talks by ECRs. This stimulating and productive meeting continues to go from strength to strength.

Finally, we would like to take this opportunity to thank all the people who have supported the Queensland activities this past year. In particular, thank you to the energetic committee members who helped run the State Meeting, and for the support and advice of the ANZSCDB executive. We also thank Mat Francois, our retiring state representative. We look forward to our roles in the cell and developmental biology community of Queensland in the coming year, and to welcoming you to Brisbane for ComBio 2016.



# Western Australia

Nathan Pavlos and Fiona Pixley

2015 has been another exciting year for the WA branch of the ANZSCDB with cell and developmental biology back in the spotlight at the WA-hosted EMBL Australia PhD Course and the Combined Biological Sciences Meeting.



The **2015 EMBL PhD Course**, modelled on EMBL's predoctoral course for first year PhD students, was held at the Harry Perkins Institute of Medical Research, Perth (June 22-July 3). This two-week intensive program was host to some 60 budding PhD students and showcased some of the best local and international research talent from across a range of fields including bioinformatics, cell and developmental biology, genomics and regenerative medicine.

Several WA ANZSCDB members led the charge chairing sessions on RNA Regulation (Archa Fox), Cell and Developmental Biology (Nathan Pavlos) and Translational and Clinical Sciences (Raelene Endersby). This year's Cell and Developmental Biology Session was themed "Organelles to Organogenesis: Simple Cells to Complex Organisms" and featured

a panel of esteemed speakers who covered topics ranging from the dynamic lives of endosomes (Rohan Teasdale, UQ) and spermatogonial stem cells (Donal O'Carroll; EMBL Italy), to macrophage invasion (Fiona Pixley, UWA), the regulation of limb patterning (Edwina McGlinn, EMBL Australia). and embryonic head development in higher vertebrates (Ruth Arkell, ANU).





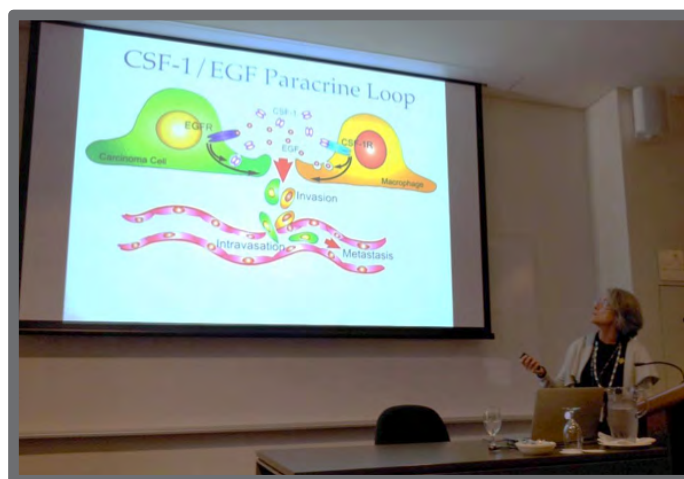
Not to be outshone was our **annual Combined Biological Sciences Meeting (CBSM)**, held on Friday 28th August at the University Club of Western Australia. The CBSM provided an excellent opportunity for students and early career researchers to showcase their research in oral or poster presentations to a wide biological sciences community. The CBSM continues to be one of our most successful local events, with the 2015 meeting one of our biggest yet, attracting over 280 delegates from WA's leading research institutions. This year the CBSM celebrated its 25th Anniversary, and this special occasion was marked by recognising two prominent ANZSCDB members (Prof George Yeoh and E/Prof Miranda Grounds) with "Life Member" status awards, in recognition of their outstanding contributions to and advocacy in life sciences in Western Australia.

The 2015 plenary line-up welcomed a revered panel of local and international speakers including Prof Stephen Simpson (University of Sydney) who gave an elegant overview of nutritional geometry in organisms ranging from slime moulds to human in his talk "Putting the balance back in diet"; Prof Thomas Gilbert (University of Copenhagen) "Phylogenomics, Population Genomics, Palaeogenomics and De-extinction"; and Prof Tarun Weeramanthri (Dept. Health, WA) "Flaws in the Fabric-Ebola, Science and Public Health". The 2015 CBSM also held four concurrent breakout sessions including a dedicated Cell and Developmental Biology Symposium at which WA state representative Prof Fiona Pixley (UWA) put the macrophage cytoskeleton under the microscope with her keynote presentation entitled "CSF-1 induced macrophage migration in health

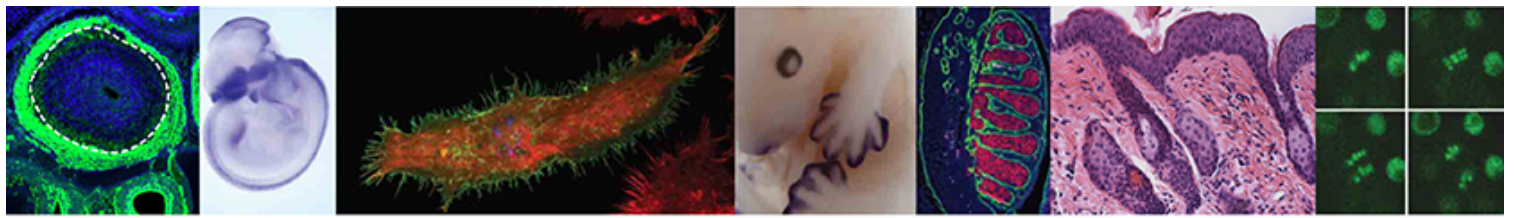
and disease". This year's cell and developmental biology student prize was awarded to Ms Julia Wells (Telethon Kids Institute), for her presentation entitled "Actute Lymphoblastic Leukemia Cells Secrete Connective Tissue Growth Factor that Modulates the Bone Marrow Microenvironment to Favour Leukaemia Dissemination".

As we look towards 2016 we will see another changing of the guard for WA representatives with the tenure of Nathan Pavlos term reaching its end. However, Prof Fiona Pixley will continue her push for Cell and Developmental Biology in WA. This will be strengthened by Dr Raelene Endersby (Telethon Kids Institute) who brings an equal amount of passion and enthusiasm to the tumour cell biology space. Thus I am confident that cell and developmental biology will remain alive and kicking in WA.

In closing we would like to thank all of our WA members for their continued support and we look forward to another great scientific year in 2016!!



*WA state representative Prof Fiona Pixley*



# NSW and ACT Cell & Developmental Biology Meeting

11 April  
2016  
9am-5pm

Garvan Institute/VCCRI  
384 Victoria St  
Darlinghurst, NSW 2010, Australia

## Confirmed plenary speakers:

**Professor Tom Misteli, NIH, USA**

<https://ccr.cancer.gov/Laboratory-of-Receptor-Biology-and-Gene-Expression/tom-misteli>  
co-hosted by Garvan's Leaders in Science  
and the 2016 Hunter meeting (<http://hcbm.mtci.com.au>)

**Professor Melissa Little, MCRI**

<https://www.mcri.edu.au/users/melissa-little>

**Professor Jane Visvader, WEHI**

<http://www.wehi.edu.au/people/jane-visvader>

Postdocs and PhD students will be chosen from abstracts to present a talk

PRIZES WILL BE AWARDED TO THE BEST TALKS (Please note: ANZSCDB members eligible only),  
BEST POSTERS, AND (**NEW THIS YEAR!**) THE MOST SPECTACULAR SCIENCE IMAGE.

## REGISTRATIONS ARE FREE AND ARE OPEN

(<http://medicallsciences.med.unsw.edu.au/2016-nsw-cell-and-developmental-biology-meeting>)

Contact the ANZSCDB NSW state representatives:  
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or Stuart Fraser ([stuart.fraser@sydney.edu.au](mailto:stuart.fraser@sydney.edu.au))

Refreshments, lunch and prizes provided by our sponsors:

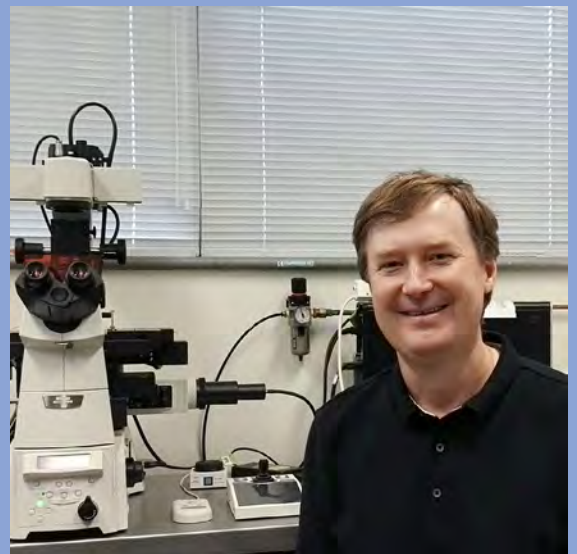


# Member Publications

Here we feature a recent publication from Vladimir Sytnyk (UNSW) and his team in *Nature Communications*, and also highlight two other papers published by our members in 2015.

Leshchyns'ka I, Liew HT, Shepherd C, Halliday GM, Stevens CH, Ke YD, Ittner LM, Sytnyk V.  $A\beta$ -dependent reduction of NCAM2-mediated synaptic adhesion contributes to synapse loss in Alzheimer's disease. *Nat Commun.* 2015 Nov 27;6:8836. doi: 10.1038/ncomms9836.

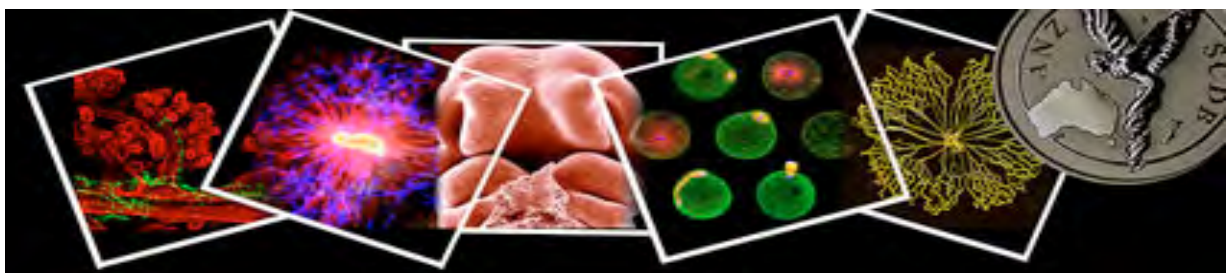
In this paper hot off the press, Vladimir and his team of researchers have discovered how connections between brain cells are destroyed in the early stages of Alzheimer's disease - work that opens up a new avenue for research on possible treatments. One of the first changes in the brain affected by Alzheimer's disease (AD) is the loss of synaptic contacts between neurons. This work shows that in AD the levels of the neural cell adhesion molecule 2 (NCAM2) are reduced in synaptic contacts between neurons formed in the hippocampus, a brain region strongly affected in this neurodegenerative brain disorder. NCAM2 directly binds to beta-Amyloid, a peptide accumulating in AD brains. Exposure to beta-Amyloid induces cleavage and removal of NCAM2 from synapses both in the in vitro cell culture model and in vivo in the transgenic mouse model of AD. Disruption of NCAM2 functions in synapses results in the disassembly of glutamatergic synapses. Synapse disassembly induced by beta-Amyloid is inhibited in neurons overexpressing a cleavage-resistant NCAM2 mutant. This work improves our understanding of the molecular changes preceding synapse loss in AD, and also reveals an important role that cell adhesion molecules play in synapse maintenance in the brain.



Vladimir Sytnyk

Sztaf, T.E., Zhao, M., Williams, C., Oorschot, V., Parslow, A.C., Giousoh, A., Yuen, M., Hall, T.E., Costin, A., Ramm, G., Bird, P.I., Busch-Nentwich, E.M., Stemple, D.L., Currie, P.D., Cooper, S.T., Laing N.G., Nowak, K.J., Bryson-Richardson RJ (2015). Zebrafish models for nemaline myopathy reveal a spectrum of nemaline bodies contributing to reduced muscle function. *Acta Neuropathologica* 130, 389–406.

Kettle EK, Page SL, Boadle R, Morgan G, Marsh BJ, Robinson PJ, Chircop M. (2015). Endocytic activity occurs at the intracellular bridge during cytokinesis. *Traffic*. doi:10.1111/tra.12328





# Membership News

At this year's ComBio meeting, two long-time ANZSCDB members were on the awards podium.

Past ANZSCDB Committee member **Professor Christina Mitchell** (Monash University) was awarded the prestigious ASBMB Lemberg Medal at ComBio 2015. This award recognises demonstrated excellence in biochemistry and molecular biology and significant contributions to the scientific community. The medal is named for Emeritus Professor M.R. Lemberg who was the Society's first President. Chris presented the Lemberg lecture at ComBio 2016.



The other winner was **Professor Paul Gleeson** (University of Melbourne), who received the LabGear Australia Discovery Science Award for his distinguished contributions to the field of biochemistry and molecular biology, and particularly in research innovation, technology transfer, and communication. The Award is intended as a Travelling Lectureship so Paul might be appearing at a venue near you very soon.



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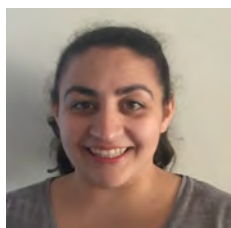
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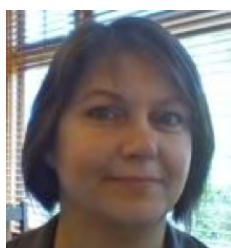


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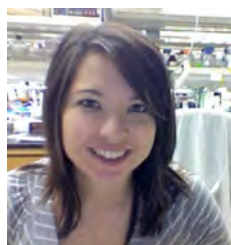
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Dept of Anatomy  
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**Robert Saint**

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**Peter Koopman**

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**Miranda Grounds**

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**Phil Crosier**

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