ANZSCDB
Newsletter
Australia and New Zealand Society for Cell and Developmental Biology INCORPORATED

December 2013

President's Report

Dear Friends and Colleagues

With the end of 2013 in sight it is timely to reflect on events of the past year, while also looking to what the future may hold for cell and developmental biology in Australasia.

Time for change – a new executive

The AGM in Perth in September brought a change of ANZSCDB executive. I am honoured to take over as President from the very capable hands of Pete Currie. Along with Ian Smyth (secretary) and Kieran Harvey (treasurer), Pete has overseen some important changes in the administration of the society. Of note has been the shift to a new secretariat, and I thank Magic Touch, our previous and first secretariat for the essential work they did in establishing member databases, overseeing membership registration and curating the website. Our new secretariat ASN Events have got off to a flying start and we look forward to working with them to ensure administration of the society runs smoothly into the future. The change in executive also saw Edna Hardeman step down as immediate Past-President. It is timely to mention the huge effort Edna put into keeping the society on track over a number of years and establishing many of the processes that are now in place to ensure the success of ANZSCDB. She now joins the overarching ANZSCDB Committee, from which Christina Mitchell has now resigned. We thank Chris for he valuable input over the past few years.

And now looking to the future, I am very pleased to be working with a highly motivated and hardworking team on the new executive. As announced previously by email the new secretary is Jo Bowles (IMB, UQ) and treasurer Rohan Teasdale (IMB, UQ). We are joined by Sally Dunwoodie (Victor Chang Cardiac Research Institute, Sydney) as President-Elect and Pete Currie will stay on as immediate Past-President. All of these people will be well known to many of our members, as all are strong supporters of ANZSCDB and cell and developmental biology in Australasia. Fiona Wylie remains our very capable and efficient Newsletter Editor.

State and NZ news

Our state and NZ reps take care of your local issues, organise state scientific meetings and aid in recruitment of new members. Acting in the role of state rep can be extremely rewarding and I encourage all

members to consider applying for these positions as they become available each year around the time of our

President's Medal

AGM at Combio. Thanks to the following retiring state reps for their efforts over the past two years – Annemiek Beverdam (Qld), Jake Baum (Vic), Jeff Mann (Vic) Will Hughes (NSW), Natasha Harvey (SA), Archa Fox (WA). Also thanks to ongoing reps for their continued support – Kelly Smith (Qld), Matt Naylor (NSW), Donna Denton (SA), Kristen Barratt (ACT), Megan Wilson (NZ) and Evan Ingley (WA). And finally, thanks to the new state reps for volunteering their time to further the work of the society – Mat Francois (Qld), Annemiek Beverdam (NSW), Jan Kaslin (Vic) Louise Cheng (Vic), Nathan Pavlos (WA), Michael Samuel (SA). You can read all the news from the states, including reports on the ANZSCDB sponsored state cell and developmental biology meetings, later in this newsletter.

Social networking

I would like to especially mention Megan Wilson one of our NZ reps who has propelled us into the world of social networking with an ANZSCDB Facebook page and twitter handle (more details later in the newsletter). We see this as an essential way to engage with our younger members as well as encouraging our more senior members to embrace the social networking revolution! Thanks to Megan, our Facebook page in particular is full of links to interesting articles relevant to cell and developmental biology both locally and internationally. There is no doubting the power of these approaches so please access them and show your support.

Combio 2013

Combio continues to be the flagship annual conference for the ANZSCDB and this year in Perth we were treated to some great science. Registration numbers were lower than normal but those of us who made the trek to the West were not disappointed. Catch up with all the details in the report by Megan Wilson later in this newsletter. Thanks to the organisers led by long-term ANZSCDB member George Yeoh (WAIMR), and including other ANZSCDB representatives Miranda Grounds, Aleksandra Filipovska, Evan Ingley and Archa Fox.

On a social note, the ANZSCDB dinner continues to be a highlight of this meeting. It is the one opportunity in the year for our members to come together and socialise as a group in a relaxed and casual environment, along with our invited international speakers. This year's dinner at Ecucina Wine Bar and Restaurant continued this tradition. Thanks to Evan Ingley and Archa Fox for their efforts in organising this event.

Combio 2014 will be held in Canberra on 28 September-2 October. The organising committee, led by our own Edna Hardeman, is based in Sydney, but renovations of the Sydney Convention Centre necessitated the shift in venue to Canberra. ANZSCDB stream co-ordinators are Richard Harvey and Kat Gauss. The program is already progressing well so please join us in Canberra in September.

Award winners

The President's Medal is the highest award bestowed by the Society each year and the 2013 winner Professor Alpha Yap (IMB, The University of Queensland) is an extremely deserving recipient. Alpha is a long-standing member of ANZSCDB and as a Past-President has had considerable input into shaping the society. This award recognises his truly seminal contributions to the field of cell adhesion. Alpha has been profiled extensively in a previous newsletter but you can catch up with his thoughts on life and science as he chats to Fiona Wylie later in the newsletter. Thanks to Sigma for their generous sponsorship of this award over many years.

The Young Investigator Award recognises the scientific contributions of an ANZSCDB member in the early stages of their independent research career. This year's winner

Associate Professor Natasha Harvey (Centre for Cancer Biology, South Australia) is recognised for her high impact work on lymphatic development. Natasha is also an active member of ANZSCDB and is the retiring state rep for SA. Learn more about Natasha and her work from her Q&A session with Fiona Wylie. Thanks to Carl Zeiss for their generosity in sponsoring the YIA.

Combio also saw the award of poster and oral presentation prizes to our student and postdoc members. These awards are vital in supporting and encouraging our more junior members as they embark on their research careers. This year's winners were:

ANZSCDB Cell Biology Poster Prize: Simon Brayford, The University of New South Wales. The regulation of cell motility by tropomyosin
ANZSCDB Keith Dixon Prize for a Developmental Biology Poster: Eamon Coughlan, Monash University. Novel expression of microRNA (MIR)-196A1 and MIR-196A2 in the mammalian central nervous system.
David Walsh prize for the best student talk: Hannah Vanyai, Walter and Eliza Hall Institute, Melbourne. The histone acetyl transferase, MOZ, is required for multiple genetic pathways during palate development
Toshiya Yamada prize for the best postdoctoral talk: Dr Kerry Miller, Murdoch Children's Research Institute, Melbourne. Two novel mouse models of human craniofacial dysmorphology

This year also saw the introduction of the new Leica PhD Student International Travel Award. This was awarded to Cesar Canales Martinez from the School of Medical Sciences UNSW, allowing him to attend the American Society for Human Genetics Congress in Boston in October. His report on this meeting, along with pieces from two other students attending international workshops, attests to the inspiration young scientists can derive from the opportunity to step out from their own environment and interact with the broader international scientific community. We are very grateful to Leica for their generous support of the student travel award.

Please look out for the announcement of nominations for all our awards and Combio travel scholarships by ANZSCDB announce emails throughout 2014, and visit our website for more details.

Now the not-so-good news
With so much good news already you would be forgiven for thinking that all is looking positive for cell and developmental biology heading in to 2014, but unfortunately 2013 also bought us new challenges and highlighted old issues.
In any election year there is uncertainty about ongoing support for the research sector and with the announcement that the Abbott ministry did not include a minister for science, things got off to a disappointing start. However, Health Minister Peter Dutton has assured us that "Medical Research is one of the priorities that you'll see under the Coalition government" (Radio National Life Matters, October 2013). He also repeated assurances to implement recommendations of the McKeon review (http://www.mckeon-review.org.au/), including streamlining grant applications and moving towards five year funding cycles. It will be interesting to see how the implementation of such measures proceeds over the coming months and years.

With NHMRC project grant success rates dropping to a low of 16.9% in 2013, there is no doubt that medical research is facing tough times ahead. This is particularly true for cell and developmental biology, which face specific issues related to so-called "relevance" in the current translational funding climate. As a group we need to reinforce the absolute importance of fundamental discoveries to future translation. In my own field I was reminded of this listening to Phil Ingham's Plenary Talk at Combio in Perth as he highlighted the twenty years of basic research on hedgehog signalling in flies, zebrafish, mouse and humans that lead to the FDA approval of Vismodegib, the first drug for basal cell carcinoma, in 2012. Translational outcomes do not come overnight, but are built on many years of fundamental scientific discovery. It would be extremely short sighted to ignore the importance of this research to Australia's future.

Finally, the issue of gender equity was highlighted quite dramatically in 2013 both in the make-up of the Abbott ministry and, more relevant to ANZSCDB, in the disappointing news that of the twenty new Fellows elected to the Australian Academy of Science not one was a woman. Both outcomes left many bewildered about the status of women in Australian society in 2013. However, if there is any good to come from this it has been a renewed focus on these issues across many facets of Australian life, including in the research sector. Indeed, to its credit the Australian Academy of Science has recently announced calls for nominations for the Nancy Mills Medal, a new award that recognises outstanding research and leadership in early- to mid-career Australian women (nominations close 10 February, 2014). This is certainly a step in the right direction.

We encourage all members of ANZSCDB involved in organisation of conferences and other events to consider gender balance in your programs. These small steps can make a difference in providing role models for our younger women scientists.

Membership – we need your help!

Membership is an ongoing issue for the society. As highlighted in a recent email we are moving to one standard annual renewal date so that as of 2014 all memberships will run for a calendar year. In the long term we believe this will make it easier to manage memberships and ensure we maintain a solid member base.

We would ask all of you to help us recruit new members by encouraging your lab members, students and colleagues to join us. There are many benefits to being a member of ANZSCDB, not least of which is the opportunity to be part of a vibrant research community dedicated to enhancing the status of cell and developmental biology in Australia and New Zealand. Joining up is easy online at http://www.anzscdb.org/.

I hope you all enjoy a relaxing time with your family and friends over the holiday period and I wish you all a happy and successful 2014.

Carol Wicking

CHATTING WITH OUR WINNERS

Our newsletter editor Fiona Wylie caught up with the 2013 ANZSCDB Award winners Alpha Yap (President's Medallist) and Natasha Harvey (Young Investigator Award Winner).

ANZCSDB award winners Natasha Harvey (centre) and Alpha Yap (right) with Sharad Kumar, a long time member of ANZSCDB who this year was awarded the Lemberg Medal, the premier award of the Australian Society for Biochemistry and Molecular Biology.

ANZSCDB President's Medal

Alpha Yap - 4 years wiser

Fiona Wylie

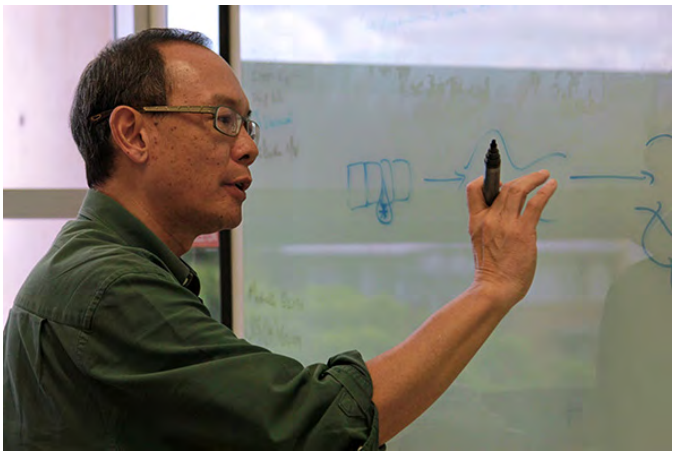
When I spoke with you in 2009, you said that your biggest research achievements to date emerged from your postdoc in New York with Barry Gumbiner. How would you answer that same question in 2013?

For a start, 2009 seems so long ago! Actually, I am very proud to say that my lab has clearly surpassed anything that I did when I was allowed to do experiments. Without quite planning it, we've moved into trying to understand how cadherin junctions serve as active agents in the mechanical interactions between cells. We've long understood that cell adhesion resists the impact of forces that potentially detach cells from their environment (for us, other cells), but we've thought of that as essentially passive. Things look much more complicated now. Not only do cadherins participate in signaling pathways that allow cells to sense the forces acting upon them, they also serve to regulate and initiate some of those forces by regulating the cytoskeleton. Thus cadherins actively participate in the mechanical interactions between cells.

An interesting consequence of this venture of ours is the new perspectives it has given us to guide our research. The experimental technologies available to us now are so facile that it is really quite easy to do the next obvious experiment without thinking seriously about the larger questions. The danger there is that this just creates busy-work, not something that is genuinely helpful…or at least personally satisfying. One thing that we are trying to do is frame our work in conceptual terms. Working with physicists and mathematical modellers is very useful here, since they force us to be explicit in our thinking. (Not always successfully, but at least we are trying.) I now have the new challenge of learning some physics (and we haven't even started on the maths); thankfully the guys in the lab are more skilled in this than I am.

What does receiving the 2013 ANZSCDB President's Medal mean to you, especially as a past-Pres of the society?

To say this has become a bit debased by awards shows, but it is such an honour to receive the approbation of one's colleagues and peers. The great joy of this, for me, lies in the fact of community. I had not realized this when I first stumbled into science – but it is a wonderful thing to be part of a set of communities, local, national, international. And science gives you the opportunity to embrace, and (hopefully) be embraced by those communities. I think it is important to be part of something larger than one's own self. Not just personally, but also pragmatically: we all need networks to help us now and then.



For me, the ANZSCDB is exactly just such a community. But it also reminds me that we need to work to keep our communities vibrant. It is too easy to take a society for granted, although here I've been heartened by the energy that many of the younger members show in their society activity (organizing local meetings, participating at ComBio).

How has cell and developmental biology changed in Australia since you started out?

There was almost no cell biology in Australia when I started out, as a PhD student in the early 90s. Developmental Biology was beginning, but people like Jenny Stow and David James had yet to return to the country. Luckily for people like me, when I returned from NY a few years later, two major shifts were happening in our research landscape. The human structure of Australian cell biology was in place, providing a quorum of strong advocates for our disciplines, both in cell and developmental biology – who helped build the ANZSCDB, established ComBio as a national meeting, and developed specialist meetings, such as the Hunter meeting. The second thing happening was a significant expansion of research funding in Australia (particularly through growth of the NHMRC budget), providing stronger physical infrastructure (institutions that invested in the tools we need, eg. optical microscopy and proteomics) and above all, opportunity.

I think we are now moving into more uncertain times. Funding is tighter, everyone is trying to balance discovery science and translational impact, the era of "big science" has sometimes overshadowed the more investigator-driven (dare I say it, artisanal) science which characterizes cell and developmental biology. What this means to me is that we face challenges – to advocate for the value of the science that we do (which is the science that we care about); and to help and mentor the next generations who will determine the future of our disciplines (our students and post-docs, and also the junior investigators who are making their way to leadership). Here it is important that we think of our disciplines as organisms that change and adapt as our scientific problems change. For example, I am impressed by increasing efforts to study cell biology in whole organisms; understand the mechanistic bases of development; and model organisms that allow us to use insights drawn from basic discovery science to illuminate our understanding of disease.

What advice would you give people embarking on a career in cell and developmental biology today?

The same as I would have given 10 years ago, and which my various mentors (clinical and scientific) gave me – do what you love and care about. It is the thing that will sustain you (and enrich you). Of course, there are pragmatic things that you need to think about – issues of building a career etc. But to some extent I worry that we focus so much on the pragmatics that we forget the truly important stuff – the drive to do creative, worthwhile science. To an extent, the externals of career building can get you only so far; if the inner drive is less strong, then at some stage careerism will become a little hollow.

What inspires you in science and in life?

The unexpected. Not just novelty – rather, the unexpected that provides the cohesive insight… the key to seeing the familiar in a different light. It's the essence of science – but also of art, and so much else. What scientist, what person, hasn't had that moment of insight after which everything looks different?

What do you do to relax…perchance, something to do with bikes?

Too many things! Yes, I do get up ridiculously early to cycle (and spend too much money on bike bling). But I also spend too much money on books, music (live and recorded). Oddly, this does not necessarily mean getting away from science and I have had some surprising ideas on bike rides or listening to music (some of which proved to be quite decent). Conversely, I confess that my attention sometimes wanders to other things at conferences.

...But, in truth, what I love most is hanging out with my family. And as they grow older and are about to leave the home (or have already left) that becomes more precious.

What would you be doing if you were not doing research?

If I had the talent – and the courage - I'd be a musician.

3 top likes in life and 3 top dislikes?

Top 3 likes (at the moment):

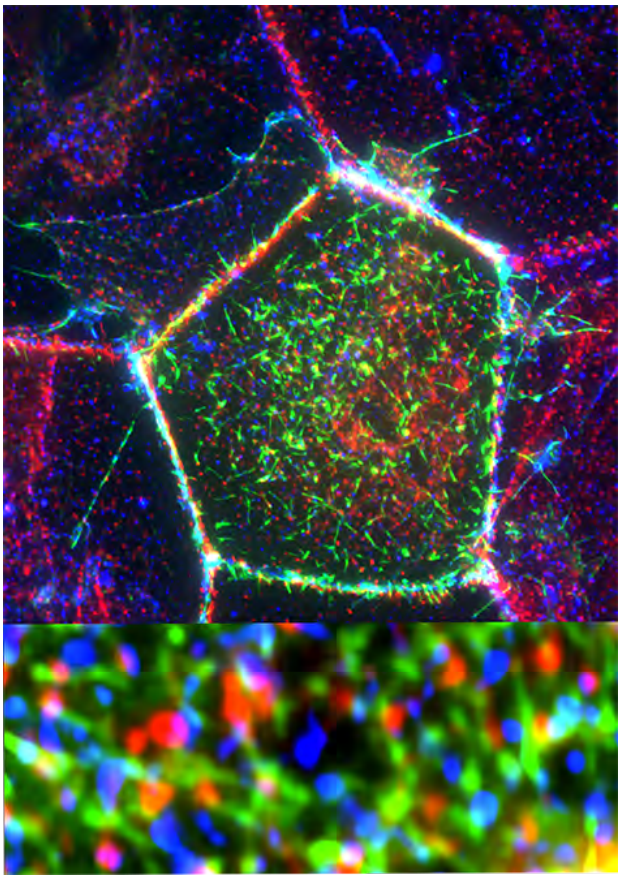
- Music – especially my daughter Katie's
- Literature
- Espresso coffee

3 dislikes:

- Unnecessary use of the "intrusive" apostrophe (e.g. CD's rather than CDs)
- Conference speakers who reaching the final 5 min, then say "now, in the second part of my talk"…(and I have been one of those).
- Nothing else comes close after those two (except maybe using "disinterested" when "uninterested" is perfectly elegant).

Preferred epitaph?

It's always in front of my nose, but I never see it.



Young Investigator Award

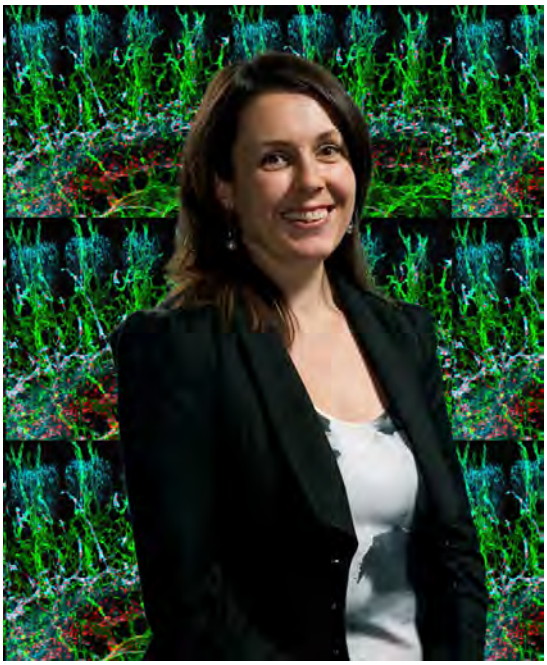
What was the path to becoming Associate Professor Natasha Harvey?

I did my undergraduate degree and Honours at the University of Adelaide, majoring in biochemistry and immunology, before entering the world of caspases with Sharad Kumar to do my PhD at what was then the Centre for Cancer Biology in Adelaide. After finishing my thesis, I stayed on in Sharad's lab for a short postdoc (2 years) with a Fellowship from the Cancer Council SA to work on identifying Drosophila caspases. During that time I cloned a new Drosophila caspase, and in collaboration with Helena Richardson's group, started looking at what these caspases do during Drosophila development. And that project really started my shift into developmental biology.

From then, I became very keen to continue my postdoc work in mouse development, and one day I was browsing through Nature and saw a position advertised in Guillermo Oliver's lab at St Jude Children's Research Hospital in Memphis. So, I contacted him and after a phone interview, I was suddenly on my next journey and headed to the States. That was in 2001. I stayed there for 4 years and then in 2005, I secured a Royal Adelaide Hospital Florey Fellowship to come back to Adelaide and start my own group at the Hanson Institute and Centre for Cancer Biology, as it is now.

So what did you get out of each of those steps?

In my PhD and first postdoc with Sharad, I got a really strong foundation in molecular and cellular biology. He was really great as a mentor and certainly doing great science. I also learnt a lot about how to do science efficiently – Sharad was really good at saying, "OK, lets get the data and write up the paper and it is done…and it usually worked". I learned to ask the right questions, do the work efficiently, wrap it up and get it published…such an important skill.
The postdoc work in Sharad's lab was also what first stimulated my interest in developmental biology and really encouraged me to go down that track.



Then, it was the postdoctoral work at St Jude's that really transformed my career. When I went there my scientific career could have gone in a couple of different directions and I was not sure about going down the PI route. But I just found everything about what I did there fascinating - developmental biology, and especially lymphatic vessels. And Guillermo was a very inspiring and wonderful mentor. So, from there my career became a very natural progression because I just wanted to keep going!!

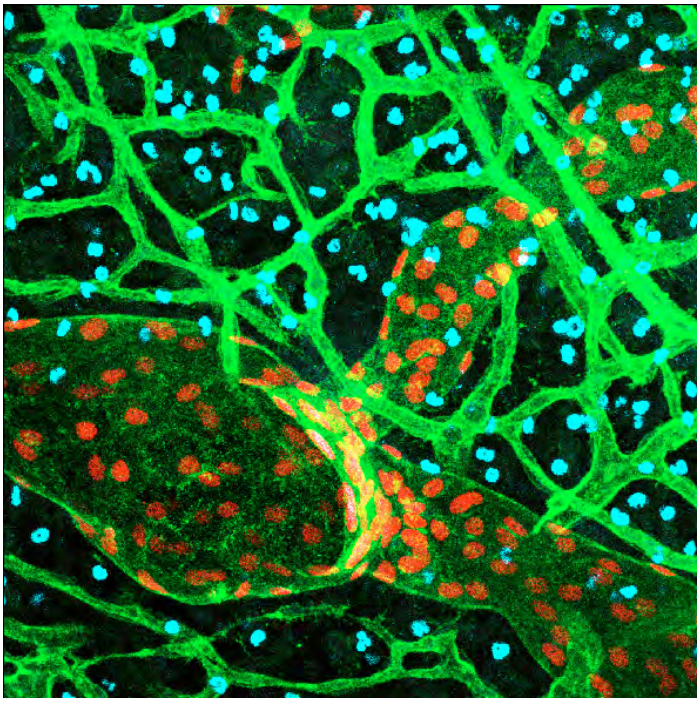
What is the hardest thing about setting up as an independent researcher?

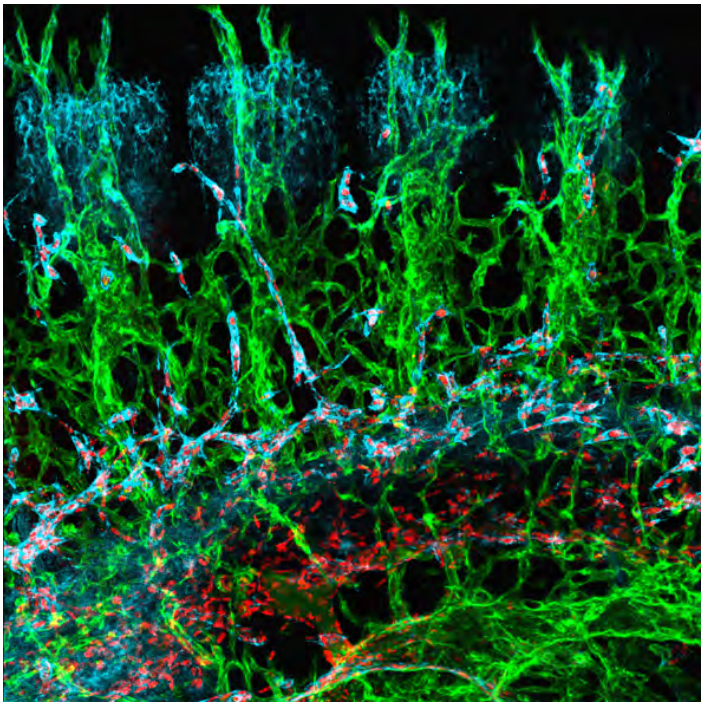
The time it has taken to get going…to get the research really up and going and to publish on the work – that has taken a long time. There is this big delay when you first start up and especially in setting up in a new place, setting up projects and animal models, getting funding… all of it. That all took much longer than I ever imagined it would.

But now I think that delay is finally finished and things are going smoothly. In fact I am really happy with my lab at moment – it is very harmonious and seems to work well together and feels manageable…just.

One thing that made the whole thing much easier was and is the fantastic strength and mentorship provided by the Australian cell and developmental biology community – and I have really enjoyed feeling welcomed by and working within this community. People like Mat Francois and Ben Hogan…all of the developmental biologists…are incredibly supportive, especially of early-stage researchers. The collegial mentorship and collaborative opportunities have helped me so much, particularly as I changed fields from a cell death background to developmental biology between leaving Australia and coming back.

Sharad of course has continued to be a great mentor, and I would also like to give special mention to, Carol Wicking and Alpha Yap at the IMB, and Richard Harvey at Victor Chang – they all have been very supportive of me and of my work.





What is your burning question in science right now?

I really want to understand how the lymphatic vasculature is built during development and how that process goes wrong in human disorders and diseases. So ultimately, we would like to find opportunities to intervene in that process during growth and development to generate therapies – that is my holy grail. Sounds simple doesn't it, but it will turn out to be a career-long aim I am sure.

What does the ANZSCDB YIA mean to you personally?

It is an honour!! I just feel really privileged to receive the award.

What would you do if you were not in research?

Making cakes! Yes, definitely something to do with food. Or shoes - having a shoe shop full of fabulous shoes. Combining the two – cake and shoes – would be perfect!

Although, as a friend once reminded me, there is probably a fair bit of harsh peer review in the cake world as well!

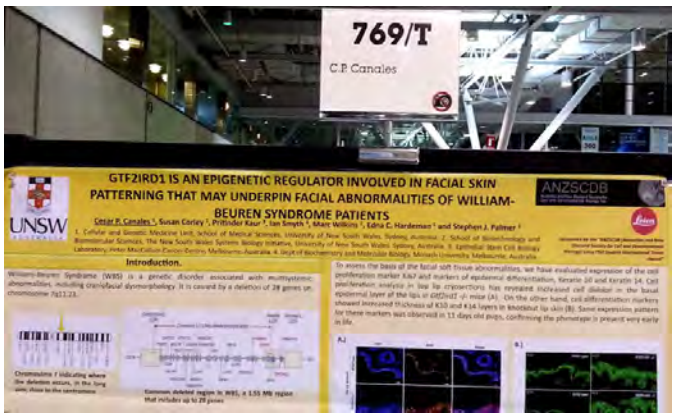
LEICA STUDENT TRAVEL AWARD - OUR INAUGURAL WINNER REPORTS BACK

Cesar Canales Martinez
School of Medical Sciences, UNSW

This year the American Society of Human Genetics annual meeting (ASHG), the largest human genetics meeting and exhibition in the world, was held at the Convention and Exhibition centre in Boston (BCEC), from October 22nd through Saturday 26th. As usual, the schedule included invited sessions, platform and poster sessions, ancillary events, exhibitor workshops and university receptions.

From the moment I stepped into the Convention Centre I knew it was worthwhile having spent more than twenty hours in a plane, including a stop in Los Angeles. As one may expect, with over 6,500 scientific attendees, the meeting dimensions are massive and people are everywhere.

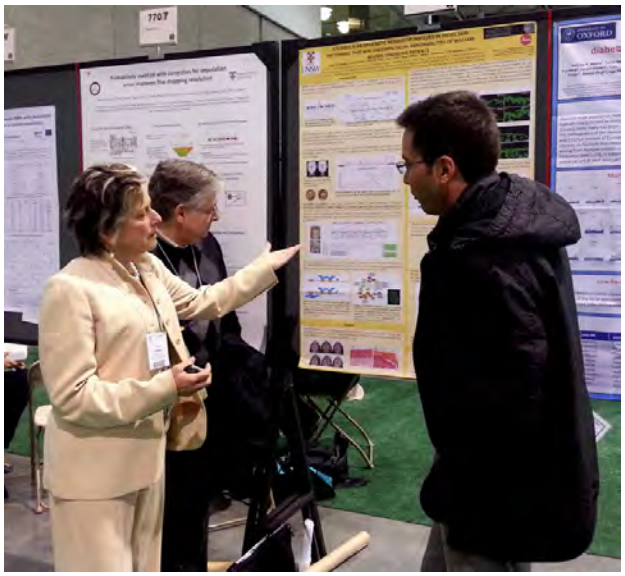
While seated in the plenary grand ballroom, waiting for the first plenary talk on my schedule to start, I was enthralled by the size of the room with more than 9 projection screens. But as the talk started, these distractions left me and I could focus on a talk entitled "Chromatin loops and CNVs: The complex spatial organization of the 16p11.2 locus" by N. M. Loviglio, a post-doctoral researcher from Alexander Reymond's laboratory, which made my jetlag disappear for a while. Alexander Reymond is an investigator from Switzerland who has published many articles related to the molecular basis of chromosomal rearrangement syndromes, such as Williams-Beuren Syndrome; a subject that is highly related to my PhD research.
While the plenary and platform talks were excellent, I found that the poster sessions were the most valuable for the details of what people are doing. They give you an opportunity to really understand the basis for a particular study and to talk with the person who has designed the experiment or actually held the pipette. This year there were 3,095 posters, and this meant that I spent a fair amount of evening time in my hotel room pressing Ctrl-F, sifting through the abstracts I wanted to attend, preparing for another busy schedule tomorrow.



This year, I presented my research on our Gtf2ird1 knockout mice that show a craniofacial abnormality leading to excess proliferation of the epidermis. I belong to the Cellular and Genetic Medicine Unit (CGMU) and work under the supervision of Prof. Edna Hardeman and Dr. Steve Palmer at UNSW. We do this research in collaboration with Dr. Pritinder Kaur, from The Peter MacCallum Cancer Centre in Melbourne, Dr Ian Smyth from Monash University and Dr. Susan Corley and Prof. Marc Wilkins from the NSW System Biology Initiative at UNSW.

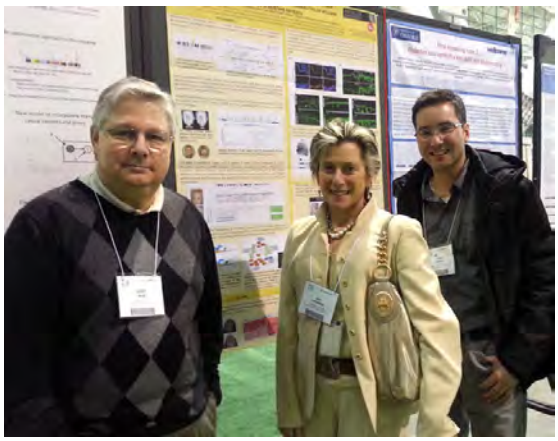
Data generated on this topic have a potential impact on craniofacial patterning (particularly of the developing lips) and on skin proliferation control mechanisms with its potential importance in skin disease and skin cancer. However, interest in GTF2IRD1 is strongest in the community that research the causes of Williams Beuren Syndrome (WBS) because the human ortholog is a prime candidate for many of the key features of this disease, including the associated craniofacial abnormalities. This is the main reason I have chosen the ASHG meeting to share my research, because many of the key players in the WBS field, use the American Society of Human Genetics meeting as the annual international focal point for sharing of progress and for regular networking. Therefore, it is an ideal forum for me to present my work and receive feedback from experts.

Standing at my poster I was kept constantly busy with 6 visitors in one hour, which I considered a great success given the size of the meeting and the breadth of the topics presented. It was a great pleasure to discuss my research with Prof. Julie Korenberg, Director of the Center for Integrated Neuroscience and Human Behavior at the Brain Institute Department of Pediatrics, University of Utah. Julie is one of the original pioneers in WBS research and worked closely for many years at the Salk Institute in California, defining the unusual behavioural profile of WBS patients, determining the physical and functional brain abnormalities and correlating these findings with detailed gene mapping analyses. This work has run alongside a similarly vigorous analysis of Down's syndrome. In brief one might say that her work has demonstrated the role that genes play in human behaviour and cognition.



Being at this conference, I really felt I was representing and promoting the important part that Australian developmental geneticists are playing in this topic. I felt privileged to represent ANZSCDB and I am very grateful for the opportunity to be exposed to such a variety of high quality research from all over the world. I was deeply impressed by the consistent level of engagement and encouragement that students and young investigators showed as well as the passion that people demonstrated for their work. So much of scientific progress can begin by chance encounters at meetings like these or small comments made during poster sessions from experts in other fields and I have certainly taken away much more from this meeting than I expected.

I would like to express my appreciation to the ANZSCDB and Leica for the opportunity they offer to PhD students and for the creation of this new "ANZSCDB Leica PhD student international travel award". Opportunities like this are limited and the role that ANZCDB has taken, facilitating this endeavour, is phenomenal. Finally, I would like to encourage young members of the society, to spread the word to colleagues to become members of the society and take advantage of the benefits offered for young members.



From left to right: Dr. Robert Weiss (Department of Human Genetics, Univ. of Utah), Prof. Julie Korenberg (Director of the Center for Integrated Neuroscience and Human Behavior, University of Utah) and Cesar P. Canales (awarded with the "ANZSCDB Leica PhD student international travel award").

ANZSCDB puts the SOCIAL in MEDIA

Megan Wilson and James Smith

The ANZSCDB has recently begun building a much larger online profile, not just through our website, but through the advent of social media. We now have a presence on the world's two most popular social media platforms, Facebook and Twitter.

Social media enables the sharing and exchanging ideas and information though online networks and communities. Free to use, and through its massive international outreach - over 200 million people use Twitter, while Facebook has over a billion users. This interconnectivity has far-reaching advantages for all communication, but particularly of interest to us, for science communication and networking. Each platform has its own advantages - Facebook groups make it easy to follow science news, local meetings and social events, while Twitter offers an almost unlimited opportunity to 'deep dive' into science communication direct to the public, develop and maintain research networks, and follow conferences live from the other side of the world. Most research institutes have had Facebook pages for some time, and many have joined Twitter (eg @IMBatUQ, @MonashUni or @Otago) - along with funding bodies, research ministries, politicians, journalists, chief scientists, research journals, conference organizers… and of course the public. Introduce the public to your research, help them to understand why you do what you do, why it's important, and why research is something valuable which need to be protected. As the team behind rotation-curation Twitter account @realscientists say - "Why should you tweet? Because there's no better way of communicating directly with the end-users of your research - the people who paid for it, one way or another."

How to get started?

If you're on Facebook, 'like' our page at http://www.facebook.com/ANZSCDBiology.
If you're on Twitter, follow us @ANZSCDB (http://twitter.com/ANZSCDB).
If you're new to Twitter, and are interested in learning more about science communication by Twitter, check out the Tweet Your Science project: http://TweetYourScience.com.
Christie Wilcox aka @NerdyChristie of Scientific American's Science Sushi wrote a tremendous multi-part series about the whys, wherefors, hows, dos and don'ts of science tweeting: Part 1 | Part 2 | Part 2.5 | Part 3 | Part 4 | Part 5.
The 'Why You Should Tweet' page on @realscientists' blog is also useful for information on why and how you should go about tweeting: http://realscientists.wordpress.com/why-you-should-tweet-for-us/
Many of the same general principles regarding how-to-tweet (brevity, factuality and lay interest) also apply for communicating through other social media platforms such as Facebook groups.

Go on, give it a try!!

ComBio 2013

ANZSCDB Heads West

Megan Wilson and George Yeoh

ComBio, the largest annual life sciences conference in Australasia, combines the annual meetings of the Australia & New Zealand Society for Cell and Developmental Biology (ANZSCDB), the Australian Society for Biochemistry and Molecular Biology (ASBMB), and the ANZ Society for Plant Biology (ANZSPB). This years meeting was held at the Perth Convention & Exhibition Centre from 29 September to 3 October. Due to its broad scope, this meeting provides an exceptional opportunity to expand your knowledge beyond one's own field of research and to meet and network with leading researchers from all over Australasia. Over 600 scientists attended this years meeting including members of the participating societies and researchers from the following countries: Argentina, Brazil, Canada, Chile, Denmark, Egypt, France, Germany, Japan, Republic of Korea, Saudi Arabia, Singapore, Spain, Taiwan, United Kingdom and USA.

A welcome and opening by the Premier of Western Australia, who also happens to be the Minister for State Development & Science – The Honourable Colin Barnett commenced proceedings on a bright and positive note. There were several Plenary lectures from both local and invited overseas speakers on topics diverse as RNA metabolism, re-designing photosynthesis and the splicesome. The poster sessions gendered lively discussion and were well situated in the venue to ensure that our exhibitors were truly engaged with the meeting participants.

With multiple concurrent symposium it was often very hard to decide which talk to attend. We have highlighted some of the talks to give you a sense and a taste of the impressive scope of developmental biology research presented at the meeting.

ComBio2013 marked an important milestone by highlighting two of the 21st century's most promising technologies - biotechnology and nanotechnology. The conference dedicated a successful symposium to showcase advances in the field of nanotechnology and its utility in biomedical sciences. Nanotechnology in biomedical sciences presents many revolutionary opportunities to combat many forms of cancer, cardiac and neurodegenerative disorders, infection and other diseases. The talks covered research of materials and devices designed to interact with the body at sub-cellular scales with a high degree of specificity which could be potentially translated into targeted cellular and tissue-specific clinical applications aimed at maximal therapeutic effects with very limited adverse-effects. The conference attracted several high profile researchers in the field of nanotechnology.

There were several great talks on sex-biased gene expression, sex-differentiation and fertility. Professor Jozef Gecz (University of Adelaide) presented his group's work investigating sex-differences and abnormal expression of genes in PCDH19-female limited epilepsy disorder. Dr Megan Wilson presented new research from her group examining RNA pausing as a mechanism of sex-differential gene regulation during development of the mouse gonad and brain. A/Prof Dagmar Wilhelm (Monash University) presented recently published work on sexually dimorphic expression of short and long ncRNAs and their likely roles in sex determination. Professor Peter Koopman (Institute for Molecular Biosciences, University of Queensland, Brisbane) showcased the latest work from his laboratory on factors influencing the sex specific differentiation of foetal germ cells. Professor Eileen McLaughlin (University of Newcastle, NSW) presented findings on the role of RNA binding proteins Musashi-1 and -2 as key regulators of germ cell development during spermatogenesis in Drosophila and vertebrates.

As with most developmental biology talks we were treated to many talks with so many beautiful images. Professor Peter Currie (Monash University, Melbourne) discussed his group's work studying muscle progenitor cell biology in muscle growth and regeneration using a zebrafish model. To study this, they are using transgenic animals and imaging to follow old and new growth muscle fibres to determine the age of muscle and trace how muscle grows. Dr Ian Smyth (also of Monash University in Melbourne) revealed some amazing 3D images showcases the their work using optical projection tomography and their own software (TreeSurveyor) to understand branching morphogenesis during development of the nephrons in the mouse kidney.

Stem cells featured prominently in symposia concerned with "Cell Fate Decisions" and "Stem Cells & Organ Regeneration". Grant Ramm from the QIMR emphasized the importance of cell-cell interactions in repairing the liver in conditions that are increasingly affecting the health of Australians; and in the context of an equally important organ subject to damage – the lung. Dr Annemiek Beverdam (University of New South Wales), studying the role of YAP proteins in stem cell proliferation in the mouse post-natal epidermis. Skin cancer is a huge problem in Australia and New Zealand, with over 400,000 Australians being treated for skin cancer each year. Her group is studying the role of the Hippo pathway in epidermis homeostasis and skin cancer.

As always, ComBio also incorporated the annual general meeting and awards presentation for the ANZSCDB. The highly prestigious ANZSCDB President's Medal was awarded to Professor Alpha Yap from the Institute for Molecular Biosciences at the University of Queensland. Professor Yap's laboratory studies the cellular mechanisms behind

cadherin-morphogenesis and their role in epithelial organization, health and disease. He presented new exciting cell biology studies aiming to understand how cadherins co-operate with the actin cytoskeleton and the factors that drive cell extrusion from an epithelial sheet. The ANZSCDB Young Investigator Award was won by A/Prof Natasha Harvey (Centre for Cancer Biology, University of Adelaide) for her work studying the development of the lymphatic system, which is not as well understood as the rest of cardiovascular system development. She presented recent work aimed at unravelling the molecular mechanisms behind the role of an ubiquitin ligase protein, Nedd4, essential for the formation of the mouse lymphatic vascular system.

Cell Biology was once again a strong stream at ComBio. This stream was supported by excellent symposium chairs whose expertise combined to cover a range of topics including membrane dynamics, cell-cell contacts, trafficking, degradation, imaging, organelles and cell death. ASBMB Lemberg Lecture and Medal winner Professor Sharah Kumar (also of the Centre for Cancer Biology at the University of Adelaide) gave an overview of his work characterized a several developmentally regulated genes including Nedd genes (ubiquitin ligases) in neural and vascular development and overall animal growth.

On the social front, the fine food and beverage provided at the Mixer on Monday and Cocktail Party on Tuesday ensured that interactions among the registrants was lively and sustained well into the evening. The Dinner on Wednesday was a huge success; and if the quantity of mirth and laughter

was an acceptable yardstick of enjoyment, then the response to the evening's raucous entertainment provided by Peter Rowsthorn better known as Brett Craig from "Kath & Kim" says it was a roaring success.

In closing, we would like to thank the organizing committee and Sally and Chris Jay for their essential contributions to the success of the meeting.

Join us for Combio2014 in Canberra, 28 September-2 October, 2014.

ComBio 2013 Honoured on the Night

Photographs:

Top - L to R: President's Medal Winner Prof Alpha Yap (left) with Katherine Carey from Sigma Aldrich (middle) and ANZSCDB President Peter Currie (right)- Young Investigator Assoc Prof Natasha Harvey and Peter Currie

Bottom - clockwise: Peter Currie presents prizes to Drs. Eamon Coughlan, Hannah Vanyai, Kerry Miller and Simon Brayford.

ComBio2014

National Convention Centre, Canberra, ACT

28 September to 2 October 2014 Early Registration and Abstract Deadline: Friday, 27 June 2014

Incorporating the annual meetings of:

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

Further information

Convenor/Conference Chair:
Edna Hardeman:
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Deputy Chair:
Ulrike Mathesius:
ulrike.mathesius@anu.edu.au
Registration/Exhibition:
Sally Jay:
combio@asbmb.org.au

Provisional Conference Streams and Topics

Plant Biology
- Plant Signaling & Development
- Plant Ecophysiology
- Photosynthesis & Respiration
- Plant Chemical Ecology
- Plant-Microbe & Animal Interactions
- Plant Functional Genomics & Epigenetics
- Plant Metabolism & Nutrition
- Plant-Water Relations

Plants and Global Change
- Modeling Climate Change Impacts
- Ecosystem Responses to Stressed Environments
- Crop Yield & Food Security
- Improving Abiotic Stress Tolerance

Cell Biology
- Membrane Dynamics
- Cellular & Tissue Architecture
- Matrix & Adhesion & Migration
- Trafficking & Transport (Endocytosis, Exocytosis, Nuclear Transport)
- Autophagy & Organelles
- Imaging (including Single Molecule)
- Apoptosis/Cell Death
- Cell Cycle & Senescence
- Cancer Cell Biology

Developmental Biology, Stem Cells & Regeneration
- Pluripotent Stem Cell Differentiation & Epigenetics & Cellular Reprogramming
- Postnatal/Adult Stem Cells & Organ Regeneration
- Blood Developmental Biology
- Developmental Genetics of Human Disease
- Embryonic Patterning & Organogenesis
- Bioengineering, Bioscaffolds & Nanotechnology
- Gene Regulatory Networks, Epigenetics & Non-coding RNAs in Development
- Neural Development

Genome Biology & Bioinformatics
- Gene Expression
- Epigenetics & Chromatin Structure
- Noncoding RNA
- Transcriptional Programmes
- Genome Informatics

Signaling
- Phosphorylation
- Ubiquitination
- Receptor-mediated Signaling
- Signaling Networks
- Signaling in Development & Disease

Protein Structure, Function & Proteomics
- Protein Chemistry & Structural Biology
- Enzymes & Metabolism
- Membrane Proteins
- Protein Interactions & Complex Architecture
- Computational Proteomics

Education

www.asbmb.org.au/combio2014 Active in late October 2013

~Announcing the first international Wnt meeting and the first EMBO workshop to be held in Australia~

~ EMBO Workshop on Wnt Signalling: Stem Cells/Development /Disease ~

October 6-9, 2014 ~ Cable Beach, Broome, WA

http://wnt2014.mtci.com.au

Keynote speaker

Hans Clevers (EUR)

Plenary presenters

Tony Burgess (AUS)
Randall Moon (USA)
Roel Nusse (USA)

Invited speakers

Mariann Bienz (UK)
Alan Clarke (UK)
Feng Cong (USA)
Trevor Dale (UK)
Xi He (USA)
Beric Henderson (AUS)
Stefan Hoppler (UK)
Akira Kikuchi (JPN)
Christophe Marcelle (AUS)
Philippe Merle (EUR)
John McAvoy (AUS)
Christof Niehrs (EUR)
Owen Sansom (UK)
Hitoshi Sawa (JPN)
Steven Stacker (AUS)
Fred de Sauvage (USA)
Patrick Tam (AUS)
Marian Waterman (USA)
Dan Wu (USA)
Terry Yamaguchi (USA)

13th Asian Conference on Transcription
19-21 February 2014, University College, Melbourne

After 16 years and many successful international meetings ACT is back in Melbourne! We invite you to join us for a meeting focusing on gene transcription and its regulation in prokaryotes and eukaryotes. We are proud to announce our invited speakers Gerd Blobel, Nathalie Bérubé, Ramesh Wigneshweraraj, John Lis and Wendy Bickmore. Meeting themes include Recognition of DNA elements, Epigenetic Regulation, RNA polymerases and regulatory circuits, Non-coding RNAs and post-transcriptional regulation, Transcriptional control of metabolism and development, Transcription and disease. The focus of ACT is to promote collaborations between neighbouring countries in Asia and provide young scientists with the chance of direct personal contact with top-class molecular biologists. All laboratories attending will have the opportunity to present an oral presentation and all students will be given a 1 minute speaking slot. Early-bird registration and abstract submission is currently open and will close on 31st December 2013.

For more information please contact vincent.harley@princehenrys.org or see www.act2014.org

In the second half of 2013, ANZSCDB sponsored several meetings organised and attended by a number of our members. This sponsorship is just one way ANZSCDB supports the cell and developmental biology communities in Australia and NZ.

6th Science Amongst the Vines Barossa Meeting, November 20-23

Sophie Wiszniak and Quenten Schwarz
Neurovascular Research Laboratory, Centre for Cancer Biology, SA

The biennial Science Amongst the Vines Barossa Meeting is renowned for its showcase of world-class science, exceptional culinary delights and the occasional sampling of fine wine. In the beautiful surrounds of one of Australia's premier wine regions, this year's event was no exception. In addition to a plethora of international speakers that stand at the top of their fields, the meeting also brings together the best of Australian science. In total we had over 120 attendees, 11 invited international speakers, 13 invited national speakers, 26 short talks and 38 posters held over 10 sessions. As always, the meeting was centred around bringing together expertise in cell signalling with a focus this year on the intersection of signalling in the 'omics' era. With seminal presentations detailing the use of Genomics, Transcriptomics, Proteomics, Metabolomics, Psychogenomics, Epigenomics and Nutritional Genomics to study the complex nature of intracellular, cell-cell and system wide signalling, this focal point was abundantly represented.

After a short drive from the city centre to the Barossa Valley (with a quick tasting of some local delicacies en route) we arrived at the conference venue full of enthusiasm. The first session on Cancer Genomics and Epigenomics kicked off on Wednesday afternoon and included presentations by Arul Chinnaiyan and Hamish Scott who detailed the use of genome-wide sequencing and expression platforms to identify novel gene mutations in various cancers, Susan Clark and Jose Polo who discussed epigenome-wide analyses in cancer and stem-cell dynamics and Paul Hertzog who detailed microRNA networks in immune signalling. The poster session followed on Wednesday evening, with special mentions here to Heidi Neubauer from the Centre for Cancer Biology, Lukas Peintner from the Innsbruck Medical University and Yuwei Phua from the Garvan Institute of Medical Research who were awarded with poster prizes.

The second session on VEGFs in the Vascular System and Beyond on Tuesday morning included presentations by Ulf Eriksson who detailed work on their novel approach of targeting VEGF-B in type-2 diabetes and by Kenneth O'Byrne discussing autocrine functions of VEGF-A in tumour growth. The third session on Cell Signalling Architecture included presentations by Richard Moriggl who detailed the many roles of STAT signalling in context-dependent manners and Michael Parker who updated us on the structures of cytokine receptors. The fourth session on Mechanisms of Tumour Progression was lead by Thomas Brabletz who gave an overview of the role of microRNAs in EMT and cancer progression. The fifth session on Metabolism and Disease included presentations by Luke O'Neill and Charles Mackay who detailed the interactions between common metabolites and the immune system, Nigel Pyne who discussed novel roles for sphingosine in cancer progression and Bryan Williams who discussed the role of key transcription factors in

modulating inflammation. The sixth session on Molecular Therapeutics on Friday morning included presentations by Veronica Sexl who presented a novel non-kinase function for a CDK in promoting transcription, and Melanie Bahlo who detailed the fusion of transcriptomics and bioinformatics approaches to identify causal genes in complex genetic traits. The seventh session on Cell Signalling Modules included novel insights into the Hippo pathway in mice and flies. Wanjin Hong presented the first of these talks and discussed the relevance of this signalling pathway in cancer. In the ANZSCDB sponsored symposium Kieran Harvey then gave a detailed overview of the field and presented new data on the mechanisms lying upstream of this signalling pathway and how they control cell size. Session seven also included presentations by Warren Alexander who discussed the role of the thrombopoetin receptor Mpl in controlling platelet production and Anne Voss who detailed the varied roles of Myst acetyltransferases in controlling transcriptional complexes, gene expression and gene silencing in stem cells. The eighth session on Molecular Therapeutics on Saturday morning included Richard Flavell who presented recent work on a microRNA family in regulating the PI3K signalling pathway. The final session on Novel Therapeutics included platform presentations from Vishva Dixit who detailed a myriad of omics-based approaches to tease apart the functions of the deubiquitinase, BAP1, as a tumour suppressor, Peter Gunning who discussed the relevance of tropomyosins in cancer, Roger Daly who detailed their novel approaches to identify system-wide tyrosine kinase networks and James Wells who discussed their cutting-edge technologies to identify cleavage substrates in cell death.

Attendees at the 2013 Science Amongst the Vines Signalling Conference

The meeting also marked the announcement of the Clifford Prize winner for international excellence in Cancer Research, awarded by the Centre for Cancer Biology of SA Pathology. The Prize represents an appreciation by Australian scientists of the outstanding scientific discoveries that have laid the foundation of new and significant cancer therapies. This year's recipient was Professor Arul Chinnaiyan from the University of Michigan, Ann Arbor, USA. In his award lecture Professor Chinnaiyan gave an insightful overview of his research and clinical careers with specific highlights of the innovative advances he has lead in the progression of cancer transcriptional profiling and cancer genomics, and most recently, in the translation of these findings to personalised medicine. He joins the list of a distinguished group of past winners including Axel Ullrich, Tony Hunter, John Dick and Vishva Dixit. The Clifford Prize dinner was held at Maggie Beer's 'The Farm', where the exquisite degustation of fine food and wine was enjoyed by all.

Our international and invited guests were treated to a tour of several local wineries to top off this high-calibre science meeting. All delegates remarked at the outstanding quality of science and interaction, and are looking forward to the meeting in 2015.

Genetics Otago Symposium November 28-29, 2013

Megan Wilson
University of Otago, NZ

The annual Genetics Otago symposium was held in the newly refurbished HD Skinner Annex of the Otago Museum in sunny (yes, really!) Dunedin, New Zealand at the end of November. This two-day symposium is run annually by Genetics Otago (http://www.otago.ac.nz/genetics), a Research Centre of the University of Otago, which has over 240 members based at Otago and right across New Zealand. This year the meeting brought together plenary, guest and postgraduate speakers from Otago and across NZ, in addition to invited speakers from overseas (Australia, Czech Republic). Highlighting the diversity of genetics research, presentation topics ranged from the genomics of NZ stick insects, liver disease, gout, brain development, chordate evolution through to cancer genetics. Below are a few highlights; for more details check out the Storify of the live tweeting from the symposium: http://storify.com/ANZSCDB/geneticsotago-symposium-2013.

Professor Vicky Cameron's (Christchurch Heart Institute; http://www.otago.ac.nz/christchurch/research/cardioendocrine/index.html) group has been studying the genetics of susceptibility to Takotsubo cardiomyopathy or broken heart syndrome, cases of which increased following the two Christchurch earthquakes, especially in post-menopausal women. She and Professor Martin Kennedy, also of University of Otago Christchurch, are championing differing hypothesis for the genetic origin of this condition – a single, rare causative gene mutation versus a 'perfect storm' of contributing SNPs. Dr Amy Osborne (Laboratory for Evolution and Development; http://biochem.otago.ac.nz/DeardenLab/index.html) spoke about her work identifying the mechanisms behind transgenerational inheritance and the predictive-adaptive response ("Are you what your great grandmother ate?") where various behaviours or health conditions can be inherited without DNA sequence changes. In work leading on from the PhD of Sarah Morgan, Dr Osborne has been making use of Drosophila to investigate nutritionally derived transgenerational inheritance in the F3 population following feeding of the F0 generation on a restricted diet.

Sophia Cameron-Christie, a PhD student with Professor Stephen Robertson (http://dnmeds.otago.ac.nz/departments/womens/paediatrics/research/cgg/profile.html), presented on the genetics of biliary atresia, a developmental disorder of the bile duct, which is usually only treatable by liver transplants in children affected by this condition. Sophia is using exome sequencing and linkage analysis on samples from a NZ family to identify susceptibility loci. Two other PhD students from Professor Robertson's group also presented their work, Adam O'Neil on periventricular heterotopia and neuronal migration, and Emma Wade on mechanosensing and bone density.

Professor Neil Gemmell (http://gemmell-lab.otago.ac.nz) spoke about the increasing evidence that the mitochondrial genome has an important impact on sperm fertility and function, through a phenomenon termed 'Mother's Curse' – whereby incremental mutations can accrue with no selective disadvantage to the mother, but are detrimental to sperm performance, sperm having far fewer mitochondria and more intense energy requirements than oocytes.

Tess Sanders (a PhD student from Dr Christine Jasoni's group; http://develneuro.otago.ac.nz/) spoke on how the maternal environment affects foetal brain development. It is well established in humans and other mammals that if the mother is obese, there is a much higher risk of the child being obese. Tessa is studying gene expression changes and axon guidance in the arcuate nucleus, the part of the brain that receives signals whether to eat or not to eat, and has found molecular evidence that gene expression in this part of the developing brain of the embryo alters depending upon the diet of the mother.

Dr Nic Waddell (Centre for Medical Genomics, University of Queensland) gave a excellent talk updating us on the ICGC (International Cancer Genome Sequencing) initiative, in particular where they are at with the Australian focus of the project, whole genome sequence analysis of pancreatic cancer, which has a very high mortality rate in those afflicted.

Associate Professor Andrew Shelling from the University of Auckland (http://www.fmhs.auckland.ac.nz/som/obsgynae/research/medicalgenetics/)

spoke on the role of Foxl2, a transcription factor they identified as playing a role in premature ovarian failure in NZ families. In initially unrelated work, his group also found point mutations in FoxL2 in many granulosa cell tumors and are now carrying out knockdown and overexpression studies in cell lines to determine how Foxl2 acts to cause ovarian cancer, and comparing this to its misfunction in premature ovarian failure

We were very pleased to have the ANZSCDB support a postgraduate speaker prize and with 12 high quality student speakers it was a hard decision for the judges. In the end, the award was presented to Megan Leask, currently writing up her PhD with Associate Professor Peter Dearden, who investigated the molecular mechanisms behind phenotypic plasticity using the honeybee as a model – whereby dietary differences (i.e. the feeding or otherwise of royal jelly to larvae) drive the development of very different adult organisms (queens vs workers). In the hive, worker bee ovaries are repressed due to the presence of a queen in the hive; in the absence of the queen, the worker ovaries become activated and they start to lay eggs. Megan used microarray and RNA-seq, chromatin-immunopreciptation (for epigenetic marks) and drug inhibitor functional studies

Megan Leask, winner of the ANZSCDB postgradiate speaker prize

to understand the molecular changes that occur, both gene expression and chromatin organization, for ovary reactivation, and hence may give us a better idea of how this phenotypic plasticity works at the molecular level. Sophia Cameron-Christie and Tess Sanders won the GeneticsOtago Speaker award.

This was the 5th year for the Genetics Otago Annual Research Symposium, and it was again a big success. It is becoming so popular that registrant numbers had to be capped this year, but given the strong interest from outside Otago, next year's meeting will be extended, with more researchers from the North Island encouraged to attend. Looking forward to it already!

Australian Network for Cardiac and Vascular Developmental Biologists - 2nd annual meeting

On October 31st – November 1st, the 2nd meeting for the Australian Network for Cardiac and Vascular Developmental Biologists (ANCVDB) took place on the Gold Coast in Queensland at the Broadbeach Surf Life Saving Club. The themes of the meeting included cardiac and vascular/lymphatic developmental biology, cardiac and vascular regenerative biology as well as clinical/translational research. This boutique meeting, generously supported by the ANZSCDB, boasted an excellent line-up of international and national invited speakers, including Professor Brian Black (UCSF), Professor Deborah Yelon (UCSD), James Chong (USyd), Leigh Coultas (WEHI), Sally Dunwoodie (VCCRI), David Elliott (MCRI), Natasha Harvey (SA Pathology), Richard Harvey (VCCRI), Kazu Kikuchi (VCCRI), Tony Penington (RCH), Mirana Ramialison (ARMI) and Quenten Schwarz (SA Pathology). Attracting 70 delegates, this specialised meeting was a fantastic opportunity for the growing cardiovascular research community in Australia to come together and share great science.

On behalf of the organising committee,

Dr. Kelly Smith
Dr. Ben Hogan
Dr. David Pennisi
Dr. Mathias Francois

Regional Round-up

New South Wales

Anthony Kee and Will Hughes

In October Dr Will Hughes (Diabetes and Obesity Program, Garvan Institute) ended his term as NSW representative for the ANZSCDB. We would like to thank Will for his contributions, and especially for organizing the 2012 Annual Cell and Developmental Biology Meeting. Dr. Matthew Naylor (USyd) will continue as NSW representative and will be joined by new NSW recruit Dr. Annemiek Beverdam (SoMS, UNSW).

In NSW, members of the ANZSCDB have been involved in the organization or participated in an impressive number of local meetings, conferences and symposia in 2013. These included the 2nd Cell Architecture in Development and Disease Symposium at the Lowy Cancer Research Centre (UNSW), the 3rd Sydney Imaging Group Symposium (UNSW), the 2013 Hunter Cellular Biology Meeting (Pobolkin, NSW), the Leica Scientific Forum (UNSW), the 4th Australian Pancreatic Cancer Genome Initiative Symposium (Garvan), the Lowy Cancer Symposium (UNSW), the Workshop on Preclinical Molecular Imaging (USyd), the 21st St Vincents and Mater Health Sydney Research symposium (Garvan), and the 1st Chemical Proteomics Symposium (CMRI).

Dr. Annemiek Beverdam (UNSW), Dr. Matt Naylor (USyd), Dr. Nicolas Fossat (CMRI) and Dr. Caroline Ford (UNSW/Lowy) are currently organizing the 2014 Cell and Developmental Biology Meeting, which will be held at the end of March 2014. The team has already been able to attract Prof Freddy Radtke (EPFL, Lausanne, Switserland) as international plenary speaker, and is working hard to put together a very exciting program for the day.

The 14th Hunter Valley meeting will be held from 25 – 28 March 2014 and will showcase an impressive list of 13 confirmed international speakers. NSW ANZSCDB member Professor Edna Hardeman is involved in organizing this meeting.

Queensland

Michael Piper and Kelly Smith

It's been a busy semester for the Queensland arm of the ANZSCDB.

On 10 October 2013, we held a 1-day Cell and Developmental Biology Meeting at the Institute for Molecular Bioscience (IMB) at the University of Queensland (UQ). This meeting was made possible with generous support from the ANZSCDB, the IMB and The School of Biomedical Sciences at UQ, as well as sponsorship from many supporting companies. We attracted over 120 registrants for this meeting, which made for a vibrant and exciting day of discussions. Following on from the successful Combio meeting in Perth the week before, we were lucky enough to have two international plenary speakers, namely Liz Miller (Columbia University, USA) and Phil Ingham (Lee Kong Chian School of Medicine, Imperial College London/NTU, Singapore).

Incoming ANZSCDB president Carol Wicking (centre) with Liz Miller (left) and Phil Ingham (right).

Liz presented a fantastic seminar on the molecular components regulating protein quality control within the secretory pathway, while Phil gave an inspiring overview of 20 years research into hedgehog signaling in development. We were also fortunate enough to have a local speaker, Michelle Hill from UQs Diamantina Institute, present her work on the secretion of microvesicles in cancer. These three plenary talks were complemented by a range of presentations from PhD students and post docs into various aspects of cell and developmental biology. The poster session was also a treat, with a host of exciting posters from across the Brisbane region. This year prizes were awarded to Dr. Samantha

Stehbens (TRI; best talk by a post doc), Dr. Laura Genovesi (IMB; best poster presentation by a post doc), Clarissa Rios-Rojas (IMB, best talk by a student) and Joelle Kartopawiro (IMB, best poster presentation by a student).

On the 15th November, the Early Career Researcher Poster Symposium was held at the Abel Smith Lecture Theatre, The University of Queensland. This was a great opportunity for the 70 Early Career Researchers who took part to discuss great science and interact with one another. The day boasted over 30 poster presentations and included 6 talks by ECRs. Award winners included Katelin Haynes (UQDI) and Anne Conibear (IMB) for best oral presentations and Megha Bajaj (IMB) for best poster presentation.

These two events were a great success and this was made possible through the support of ANZSCDB as well as our other sponsors and from the great work of the organizing committees: BCDBD - Michael Piper, Annette Shewan, Gregory James, Kelly Loffler, Eloise Dray, Anne Lagendijk and Kelly Smith; and ECR Poster Symposium – A combined effort between the ECR committees from IMB, QBI, AIBN, SCMB, TRI and CAI.

Incoming ANZSCDB president Carol Wicking (second from left) with prize winners (left to right) Laura Genovesi, Joelle Kartopawiro and Clarissa Rios-Rojas (absent: Samantha Stehbens)

In addition to these events, we have now wrapped-up the year's Brisbane Developmental Biology Seminar Series. We were once again treated to an outstanding line up of speakers, including Didier Stainier (Max Planck Institute, Bad Nauheim), Enzo Porrello (SBMS, UQ), Peter Currie (ARMI), Brian Key (SBMS, UQ), Michael Piper (SBMS, UQ), Moira O'Brian (Affiliation), Karen Moritz (SBMS, UQ) and Robin Hobbs (ARMI).

Finally, it is with great pleasure that we congratulate Professor Alpha Yap of the IMB, UQ, who was this year's recipient of the ANZSCDB President's Medal for his contributions to Cell Biology.

South Australia

Natasha Harvey and Donna Denton

The third meeting of the South Australian Cell and Developmental Biology community was held on November 19th this year at the University of South Australia. Our plenary speakers for 2013 were Associate Professor Helena Richardson from the Peter MacCallum Cancer Centre in Melbourne and Professor Peter Gunning from UNSW in Sydney. The meeting was attended by approximately 60 members of the South Australian cell and developmental biology community, with University of Adelaide, Centre for Cancer Biology, UniSA and Flinders University all represented.

Our first plenary speaker, Helena Richardson, kick-started our program with an overview of her work employing Drosophila to understand the role of cell

polarity regulators in tissue growth and tumorigenesis. It was fascinating to see how complex the pathways regulating cell growth and proliferation have become since Helena's postdoctoral days working on cyclin E. Helena's talk was followed by five presentations from postdoctoral fellows. The judging panel had a hard time selecting the most outstanding of these; Genevieve Secker and Sophie Wiszniak, both from the Centre for Cancer Biology, were deserving recipients for their talks on "Defining the role of the Nedd4 ubiquitin ligase during vascular morphogenesis in the mouse embryo" and "Defining the role of neural crest and blood vessel interactions in craniofacial development".

Helena Richardson and Peter Gunning

Peter Gunning delivered the second plenary talk, "The path from cell architecture to cancer therapeutics". In addition to fascinating science, Peter provided great insight into the difficulties and rewards associated with challenging dogma, together with wise counsel on sustaining a productive scientific career. James Hughes then provided an exciting overview of the latest progress in the Thomas Laboratory regarding the rapid generation of mutant mice using TALEN- and CRISPR-mediated genome editing technology, a talk that left us excited at the prospect of generating a bevy of mutant mice! Following James' presentation, there were four short talks from PhD students. Once again, all were excellent, with the judges awarding the most outstanding gong to Joey Puccini from the Centre for Cancer Biology for his work "Caspase-2 deficiency augments lymphomagenesis and enhances genomic instability in Atm-deficient mice" and to Sarah Hemming from the University of Adelaide for her work "Ezh2 and Kdm6a act as an epigenetic switch to regulate mesenchymal stem cell lineage specification". Awards for outstanding student posters were presented to Lukas Peintner and Pranay Goel, both from the Centre for Cancer Biology, and for outstanding postdoctoral posters, to Kimberley MacKenzie and Claire Wilson, also from the Centre for Cancer Biology.

Overall, the meeting provided a great opportunity to hear about the exciting cell and development biology going on across Adelaide and to interact and build networks that will ultimately facilitate future collaborative work. Many thanks again to our meeting sponsors: ANZSCDB, UniSA, Carl Zeiss Australia, Genesearch, Pacific Laboratory Products, Merck Millipore and Millenium Science. Thanks also to all of the participants for an interactive and stimulating day - we look forward to next year's event!

Victoria

MCDB6, Melbourne Cell and Developmental Biology 6th Annual Meeting

Jake Baum and Jeff Mann

MCDB6 was held on Friday 11th October at the new Davis Auditorium at the Walter and Eliza Hall Institute in Parkville. This excellent new facility comfortably accommodated more than 150 people from a broad range of Melbourne research institutions. It was gratifying to see the meeting reaching increasingly further afield, with attendees from as far away as The Golden Triangle. Our first plenary lecture was by Bruno Reversade, an EMBO Young Investigator based at the Institute of Medical Biology in Singapore. Bruno started off the meeting with a bang, giving a stunning talk on the genetic basis for monozygotic twinning in a Jordanian family. Straight after lunch, our second plenary speaker was Katharina Gaus, from the Centre of Vascular Research, UNSW. Kat provided an information-packed seminar on super-resolution microscopy as applied to analysing the regulation of T-cell signalling.

Around the plenaries were slotted 15 high-class talks by postdocs and students in equal proportion. Also, drawn-out coffee-breaks and a long lunch break allowed people to pack into the vestibules to ponder and digest 35 very high quality posters. Overall, there were 50 high-class local talks or posters for the meeting, showing that cell and developmental biology is a powerful research force in Melbourne—if there was any doubt. Signalling and morphogenesis were strong themes, with some epigenetics thrown into the mix. Overall, the standard was so high across the board that it was very difficult to choose prizewinners. But, congratulations to the prizewinners on the day: Michelle Henstridge—Monash University (best student talk), Jan Manent—Peter MacCallum Cancer Institute (best postdoc poster), Caitlyn Perry—University of Melbourne (best student poster), and Kim Pham—Peter MacCallum Cancer Institute (best postdoc talk).

We thank everyone involved in making the day such a great success: Our 'deputies', the local organizing committee—Lucy Clemens-Daxinger, Joffrey Degoutin, Bilal Sheikh and Joep Vissers, the WEHI Conference Office—in particular, Rebekah Kober and Lisa Trinh, WEHI Graphics, IT and Finance, each for their hard work in putting together such a great programme, and ensuring the day ran so smoothly. Many thanks also to our loyal and generous sponsors, and for their effort in providing the trade tables and displays. Until 2014!

Plenary speakers, Bruno Reversade and Katharina Gaus

Prizewinners and organizers
Front, left to right: Kim Pham, Jan Manent, Michelle Henstridge, Caitlyn Perry. Back. left to right: Jeff Mann, Jake Baum

Western Australia

Evan Ingley and Archa Fox

It was a big year for the WA chapter of the ANZSCDB with hosting ComBio2013 but we also continued support for the local annual Combined Biological Sciences Meeting (CBSM) in August. The CBSM held at the University Club of Western Australia provided an excellent opportunity for students and early career researchers of cell and developmental biology to present their research as oral or poster presentations to a wide biological sciences community. ANZSCDB provided a student poster prize for CBSM that this year was awarded to Samuel Taylor (School of Pathology and Laboratory Medicine, The University of Western Australia) for his poster entitled "Explosive co-operation between FLT3-ITD and Cbl RING finger mutations in murine Acute Myeloid Leukaemia."

Considering Perth is known as the most isolated capital city we still managed to attract over 630 delegates to Perth Convention and Exhibition Centre for ComBio2013, held from 30th September to 3rd October with an exciting and well-received program. Many WA members of ANZSCDB were heavily involved in ComBio2013 this year, through organizing the conference (including society member Professor George Yeoh as conference Convener), hosting plenaries, chairing sessions and presenting their research. Local members Dr. Archa Fox and A/Prof. Evan Ingley acted as coordinators of the Cell Biology (with symposia covering Membrane Dynamics, Cellular Architecture, Matrix and Adhesion, Trafficking and Transport, Degradation, Imaging, Cell Death Signalling, and Organelles) and Developmental Biology (including symposia on Organs and Patterning, Embryo Development and Germ Cells, Neuronal Development, and Post-Natal Development and Aging) streams, respectively. Of the outstanding 17 Plenary speakers, two were of particular interest for Cell and Developmental Biology: Prof. Gerry Melino (MRC, UK) and Prof. Philip Ingham (A*-STAR, Singapore). Their talks were very well received and they both actively mingled and engaged with local and national attendees during their time at the conference. Posters and colloquia provided an excellent opportunity for students and early career researchers to present, with four receiving prizes from ANZSCDB; Simon Brayford, Eamon Coughlan, Hannah Vanyai, Dr. Kerry Miller.

We also continued the tradition of having an annual ANZSCDB dinner, which again was a highlight of the social program with a sumptuous menu accompanied by excellent beverages ensuring very pleasant networking transpired. Peter Currie's "presidential address" again enthralled us during the evening that due to our securing of an elite section of the restaurant meant that only society members were thus entertained. Many members also attended the Conference Dinner where our ears were delighted by the classical notes of the string quartet, while we all also let out many a laugh as we were amused by comedian Peter Rowsthorn, famous for his role as Kim's estranged husband Brett Craig in the hit TV series Kath & Kim. Make sure you read the accompanying report on ComBio2013 for a full wrap up of the societies' premier science event.

New Zealand

Julia Horsfield and Megan Wilson

Research news

Dr Chris Hall and Prof Phil Crosier (ANZSCDB Committee member) from the University of Auckland's Department of Molecular Medicine and Pathology have used zebrafish to link the traditionally distinct disciplines of immunity and metabolism. These researchers used live imaging within transparent zebrafish embryos to uncover a new mechanism that controls immune cell function by the activity of a mitochondrial enzyme (immunoresponsive gene 1) that helps regulate mitochondrial metabolism of fatty acids. The work has been published in the latest issue of Cell Metabolism, regarded as the top international journal in the field. "New research into obesity and its associated diseases has revealed activation of the immune system, and subsequent inflammation, as a major driver of these conditions", says Professor Phil Crosier

Hall and Crosier are having a good year, having also identified a novel genetic pathway used in the stabilisation of blood vessels. After five years collaboration with the San Francisco-based company, Genentech, (owned by successful pharmaceutical corporation, Roche), their research has just been published in the journal Blood. "The paper used a range of different scientific research models, where we contributed the zebrafish discoveries," says Professor Crosier. "The success of this collaboration lies in the intellectual input and high quality innovative real time microscopic imaging work undertaken by Dr Chris Hall, a Senior Research Fellow in our group."

Other News

Gravida: National Centre for Growth and Development marks 10th birthday

September 2013 Gravida celebrated its 10th birthday at its annual Science Symposium in Auckland on September 9th. Gravida was one of seven Centres of Research Excellence established by the government a decade ago to get top scientists from across institutions collaborating on specific focus areas. The centre has become globally renowned for its research on how early life events can influence life-long health.

Genetics Otago: Genetics Week

With over 240 members based at the University, Genetics Otago boasts an enormous diversity of genetics research expertise. Sharing this expertise with the wider community was the aim of Genetics Otago's inaugural Genetics Week celebration, which took place 23-29 September.

As part of Genetics Week, fourteen genetics researchers from Otago and two international guests delivered public lectures for five consecutive evenings on themed topics, with the week of lectures culminating in the 'Seven Faces of Genetics'; an evening where seven outstanding researchers from Otago provided a 12-minute snapshot of their work.

Testimony to the public and media interest in learning more about genetics was the sell-out audiences most evenings, as well as Genetics Otago's speakers being interviewed for Radio New Zealand, appearing on TVNZ's prime-time show, Seven Sharp and featuring in a number of print media stories.

Regulating tissue growth and cancer: Hippo opens new information highway

Researchers from Melbourne's Peter MacCallum Cancer Centre, headed by Associate Professor Kieran Harvey have identified a new pathway from the cell surface to the nucleus through which cells can receive important information affecting whether they live or die.

This novel information byway is part of the Hippo signalling pathway, which has been characterised over the past decade by Harvey and others. Hippo signalling helps control organ and tissue size during development by limiting cell proliferation and promoting apoptosis. In adults, the pathway also instructs correct tissue regrowth in response to damage and is deregulated in human cancers. However, much about the workings and operators of this pathway remains a mystery.

Using the fly model Drosophila melanogaster, the research team have now defined for the first time how two key proteins in the Hippo pathway could operate to pass life and death instructions about growth from the surface of a cell to its nucleus. These proteins, Riquiqui (pronounced 'ri-kee-kee') and Minibrain, seem to form a critical and previously uncharacterised line of communication within cells, a side street if you like.

"Our research using Drosophila revealed that Riquiqui and Minibrain are critically important in transmitting and converting cell surface signals into a biological response, switching certain genes on or off to determine whether cells grow and die as they should, or whether they grows and divide in an uncontrolled fashion. And, we know the same proteins are expressed in mammals and that this branch of the Hippo pathway is disrupted in cancer."

Giving Harvey's team even more confidence in their novel signalling findings, concurrent ovarian cancer research conducted in Peter Mac's Cancer Genomics Program has revealed that this new branch of the Hippo pathway may operate similarly in humans. "In searching for genes that are overactive in ovarian cancer, my Peter Mac colleagues have successfully isolated the human equivalent of the Minibrain protein".

'After tackling the same problem from two ends, in patients' tumour cells and in Drosophila, concluding that the same gene is relevant to the onset and progression of cancer is tremendously exciting.'

Harvey hopes that their novel findings, published recently in Nature Cell Biology, will help researchers better understand the Hippo highway and particularly how cells forget to stop growing, which can lead to cancer. The team now plan to carefully define the roles that Riquiqui and Minibrain might play in mammalian carcinogenesis, using models of ovarian cancer.

Degoutin JL, Milton CC, Yu E, Tipping M, Bosveld F, Yang L, Bellaiche Y, Veraksa A, Harvey KF. Riquiqui and Minibrain are regulators of the Hippo pathway downstream of Dachsous Nature Cell Biology 2013, 15:1176-85.

This research was supported by the NHMRC.

Hearty team effort finds another piece in the cardiac puzzle

I am a postdoctoral Fellow in the laboratory of Professor Richard Harvey at the Victor Chang Cardiac Research Institute in Sydney, where we work on mammalian heart development and cardiac regeneration. Our group recently had the pleasure of collaborating with Caroline and Geoffrey Burns at the Cardiovascular Research Centre, Massachusetts General Hospital, Boston, and in particular, one of their PhD students, Noelle Paffet-Lugassy. This team effort to establish a role for our favourite cardiac transcription factor, Nkx2-5, in development of the major heart vessels culminated in some unanticipated, but very exciting findings, as well as a shiny new publication in Nature Cell Biology1.

Interruptions to the aorta, the major arterial vessel of the body, cause severely obstructed systemic blood flow that manifests clinically as a spectrum of conditions including aortic stenosis, interrupted aortic arch (IAA) or co-arctation of the aorta (COA). These congenital disorders often require surgery as well as lifetime follow-up and counselling. While affecting only ~1.5% of infants with congenital heart disease, the outcomes can be traumatic for both patients and parents.

The homeodomain transcription factor Nkx2-5, discovered by the Harvey and Izumo groups in the early 1990s, has been extensively studied in the context of heart development. The gene and its role in cardiac organogenesis are highly conserved, and mutating Nkx2-5 severely affects heart development in Drosophila and mouse models. It is also one of the most commonly mutated single genes in humans with familial congenital heart disease including IAA and COA.

Our present study used zebrafish and mouse models to establish a conserved and indispensable role for Nkx2-5 in the differentiation of blood vessel progenitors in pharyngeal arch arteries, which are transient embryonic vessels needed to form the carotid arteries and great vessels of the heart, including the aorta and pulmonary arteries. This seemingly pro-vasculogenic function of Nkx2-5 was certainly not expected.

Using Nkx2-5-YFP and Nkx2-5-Cre transgenes, we found expression of zebrafish Nkx2-5 in bilaterally arranged clusters of vascular progenitor cells, with each cluster representing the founder population for a single branchial arch artery. Subsequent Nkx2-5 knockdown revealed normal partitioning of the pharyngeal arch artery progenitor clusters, but no down-regulation of Nkx2-5 expression or vascular differentiation, leading to complete disruption of the branchial arch vessels. This defect was cell autonomous, suggesting a direct role for Nkx2-5 in the vascular program. The findings in zebrafish were support by Cre-lineage tracing in mouse embryos with Nkx2-5-null embryos showing no communication between the heart and systemic circulation.

Our study has provided a broader perspective on Nkx2-5 function in the embryo and in congenital heart disease, and a new avenue for understanding the genetic regulation of vasculogenesis. The study was funded by the NHMRC.

Reena Singh, PhD

1Paffett-Lugassy N, Singh R, Nevis KR, Guner-Ataman B, O'Loughlin E, Jahangiri L, Harvey RP, Burns CG, Burns CE. Heart field origin of great vessel precursors relies on nkx2.5-mediated vasculogenesis. Nature Cell Biology 2013, 15:1362-1369

INSPIRING THE NEXT GENERATION

Elanor Wainwright and Kathryn McClelland, two PhD students from UQ, were this year fortunate to experience the intellectual stimulation, excitement, comraderie and exhaustion that comes with attending two of the most prestigious and long-running international developmental biology workshops. Here they share their experiences in reports that will no doubt inspire other Australian students to follow in their footsteps.

Six weeks in Woods Hole: the 120th Embryology Course

Kathryn McClelland
Institute for Molecular Bioscience, UQ

This year marked the 120th year of the Embryology course, which was founded in 1893. Our cohort, as with those before us, studied a wide range of models and systems and came from all over the world: we had in common a passion for embryology and basic science. This year the course was directed by Alejandro Sánchez Alvarado (Howard Hughes Medical Institute/Stowers Institute) and Richard Behringer (MD Anderson Cancer Center, University of Texas) with a faculty of 51 researchers. In addition to the history of the course and the amazing faculty, the rich scientific heritage of the MBL was there for us to explore, with the rare book room and library showcasing scientific texts dating back to the 1500s.

During the Embryology Course we had the unique opportunity of using over two dozen invertebrate and vertebrate models. My imagination was captured from the moment I walked into the lab. In our first lab I saw sea urchin embryos undergo the first divisions after fertilisation - I was mesmerized. We started with Sea Urchin, Nematodes and Arthropods in weeks 1 and 2 and progressed to Xenopus, Zebrafish, Chick and Mouse in weeks 3 and 4. By week 5 and 6 we were studying to Cnidaria, Planaria, Spiralians, Ctenophores, Ascidians and Annelids. Many of the animals we studied were non-model organisms and I, for one, had never worked on them.

In the morning we heard about the guest speaker's research field and their current work, then as a class we got to ask questions for over an hour; this alone was a fantastic learning experience. After lectures we were in the lab and able to talk to the speakers casually about their research, the big questions in their field, how they would dissect an embryo or how they would design an experiment. On many occasions we watched luminaries such as Claudio Stern demonstrating some of their pioneering experiments.

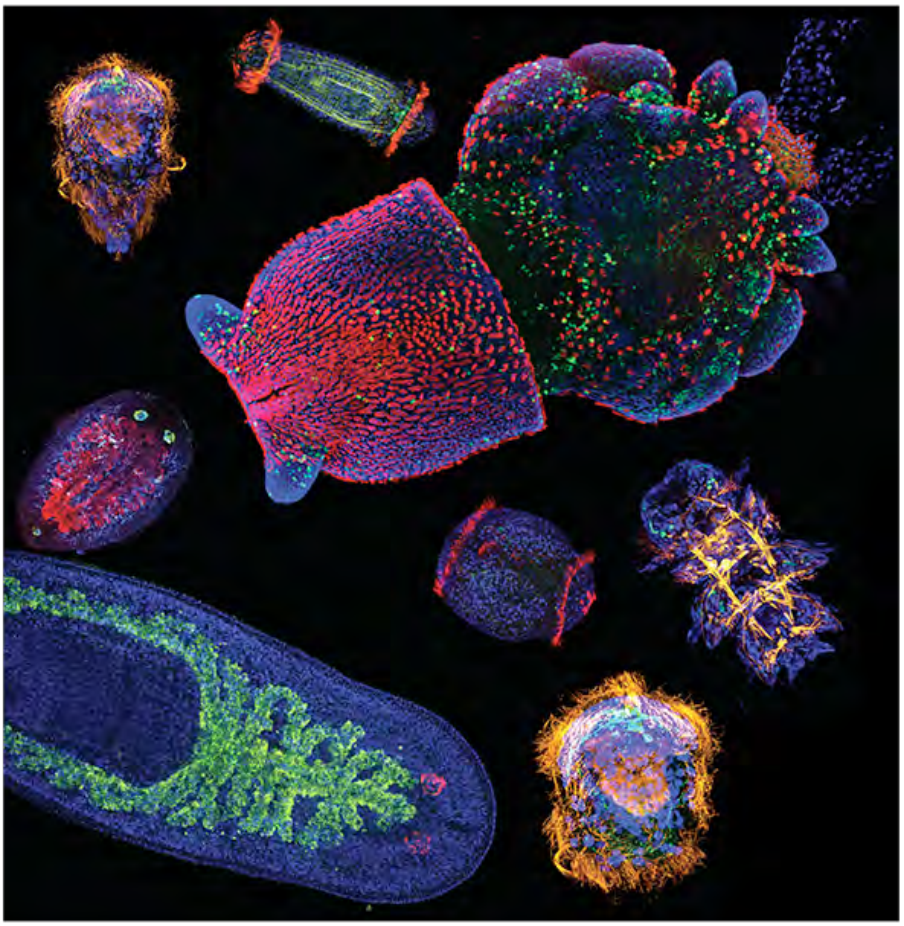
We spent our days dissecting, doing time-lapse movies and spent hours on the confocal or fluorescent microscopes

to capture the results of our experiments. You could be bold and try things that you had no idea how to do in organisms you have never worked on before. Lab work and imaging went well into the night (often followed by a 2am swim with the Ctenophores at the local beach).

In addition to the amazing facilities and the freedom to play in the lab, the most remarkable thing to me about studying at the MBL was the community of scientists this experience built over 6 weeks. Many of the speakers and teaching assistants that ran each module had a history with the course. The faculty, course directors, and TAs worked with us all day and most of the night, optimising imaging or antibody staining and providing a wealth of experience and knowledge. We learnt from the faculty and from each other. The wide range of experience and projects within the class was fantastic: we talked science constantly. Spending so much time with people who were so passionate about the same things as you was an extraordinary experience and helped us all grow as scientists.

By the end of six weeks the 24 of us in the embryology course had built a strong community of early career scientists and an even stronger group of friends.

Thanks: My attendance at the 2013 MBL Embryology course was supported by the John & Madeleine Trinkaus Endowed Scholarship.



The 2014 Woods Hole Course will be held from June 7-July 20. Applications close February 3, 2014. Please note that there is significant scholarship support to attend this course.

Cold Spring Harbor Laboratory Mouse Development, Stem Cells and Cancer Course, New York

Eleanor Wainwright
Institute for Molecular Bioscience, UQ

I am a third year PhD student at the Institute for Molecular Bioscience in Prof Peter Koopman's laboratory, working on the signalling underlying the early patterning of the urogenital system. To me, the development of an embryo is one of the most fascinating phenomena. I think that the journey of a single cell, which divides, signals, differentiates, changes shape, migrates and gives rise to a living organism, is truly amazing. During undergraduate studies, I saw my first mouse embryo and was completely transfixed by the exquisite complexity on such a small scale; miniature organs starting to take shape; bursts of red blood cells falling into the dish like glass beads; and a tiny contracting heart. As a budding mouse embryology nerd, I was lucky to be selected as one of 14 students/postdocs/early career PIs to attend the Cold Spring Harbor Laboratory Mouse Development, Stem Cells and Cancer course in New York.

Cold Spring Harbor Laboratory is at the forefront of advances in life sciences research and is internationally renowned for hosting outstanding training courses and conferences. The origin of the course goes back to the University of Oxford in the early 1980s where there was a developmental biology hub of the pre-eminent scientists Chris Graham, Richard Gardner, Rosa Beddington and Ginny Papioannou to name a few. During this period Brigid Hogan and many other scientists visited Oxford to learn how to make transgenic mice. While there, Brigid Hogan conceived of a course to teach molecular embryology of the mouse, particularly in these new techniques of genetic manipulation, at CSHL. Other visitors to Oxford were recruited to teach at the course: Davor Solter, Robin Lovell-Badge, Andy McMahon, Anne McLaren, some of whom still teach in the course now.

Over Christmas 2012 I sat down and wrote my CSHL application with the manic enthusiasm of someone who had drunk seven cups of coffee. I had a vision of a scientific mecca, a place where the doyens of Mouse Development would pass on their wisdom, knowledge and secrets of success to the next generation of Mouse Developmental biologists. The course has a history of success for participating students and many of the previous students have returned to contribute to the course over the years. One of the 2013 lecturers and now president of MD Anderson Cancer Centre Ron Depinho was a student of the course in 1986 as well as the current course coordinator Randy Johnson in 1995. When I was accepted into the course, a post-doc in my lab and former student at the course told me "this is going to change your life". So with a rather hyped sense of excitement and enthusiasm I set off for New York. I wasn't disappointed.

Desperately jet-lagged I arrived at Cold Spring Harbor laboratories and lugged my bag up a large hill to the cute cabins where we were staying. On the way up the beautifully manicured gardens I passed the poetically named statue "the waltz of the ribosomes". I spent the afternoon meandering around the grounds astonished

that laboratories were located in what looked like small homesteads overlooking the harbor. Post-docs were perched in large armchairs on the front patios writing their next Nature paper. Little did I know the whirlwind that was to come.

To give you an idea of the schedule, lectures started at 9:00 am and went until midday, when we had break for lunch. We then had our lab session all afternoon and started up with another lecture at 7:00 pm until… late. We then went back into the lab to finish any left over work or went to the bar. Or did both.

We were guided through the three weeks by our course instructors Xin Sun, University of Wisconsin, Dr Randy Johnson, MD Anderson Cancer Center, and co-instructors Deneen Wellik University of Michigan Medical Center and Mark Lewandoski, National Cancer Institute. While superstars of Developmental Biology in their own-right, our instructors had done their post-doctoral training in the laboratories of Cliff Tabin, Gail Martin and Mario Capecchi and had expertise across the broad themes of mouse Development, Stem cells and Cancer.

One of the most exciting aspects of the course was learning from Developmental Biologists whose seminal work I studied in both my undergraduate textbooks and in Nature papers today. We had a historical overview of mouse genetics from Davor Solter, and learnt about the development "knock-out" mice from Mario Capecchi, who won the 2007 Nobel prize in Physiology for pioneering this technology (pictured). At one of the course parties, a blond student with a feather boa took a photo with Mario wearing mouse ears. Excited, she emailed it back to her lab saying "guess who I met"? Only to receive the reply from her supervisor, "Hugh Hefner"?

Eleanor getting to know Nobel Prize Winner Mario Capecchi, knockout mouse pioneer

We were lectured on the importance of extraembryonic cell lineages from Janet Rossant and were blown away by the exquisite complexity of gastrulation from Patrick Tam. They both very kindly signed my Mouse Development textbook! In parallel, we practiced flushing oviducts and uteri and put our mouth-pipetting skills to the test setting up morulla-ES cell aggregations and transferring them back into the uteri. We also tested our dissecting skills, peeling away the decidua of 6.5 dpc embryos like an orange.

The developmental biology smorgasbord continued with lectures on heart development from Ed Morrisey, reproductive tract development from Richard Behringer, early post-implantation development from Jaime Rivera, sex determination from Robin-Lovell-Badge, hematopoiesis from Linheng Li, pancreatic development from Ondine Cleaver, neural crest development from Paul Trainor, somitogenesis from Mark Lewandoski, lung development from Xin Sun and axial patterning from Deneen Wellik. Phew! There were also talks highlighting the power of mouse models to study quantitative genetics from David Threadgill and circadian rhythms from Joseph Takahashi.

The course had a large stem cell component where we learnt to derive ES and XEN cells from blastocysts, made iPS cells and differentiated ES cells to neurons and endoderm. Adding to our scientific toolbox were a wide range of techniques on mouse phenotyping, live-imaging, organ culture, transplantation, pro-nuclear injection, blastocyst injection, whole-embryo culture, whole-embryo and in utero electroporation and lineage tracing. We also had workshops on designing gene targeting strategies and optimizing live imaging techniques for whole embyos and organs.

This year there was an increasing emphasis on techniques and lectures on Cancer. I was quite blown

away with the power of mouse genetics to test cancer drivers, and screen for oncogenes and tumor suppressors. We were lucky to be taught by Scott Lowe, Ron DePinho, David Tuveson and Randy Johnson about the approaches to studying the complexity and heterogeneity of cancer using mosaic and inducible mouse models, siRNA in vivo screens and transposon-based random mutagenesis.

I can't talk about all the people that I admire and enjoyed meeting without mentioning the wonderful students and teaching assistants on the course. With such an intense schedule I felt as though I had known my new friends for 6 months not 6 days. The other students came from diverse fields of study for example, mouse labs trying to perfect a particular technique, Drosophila and Xenopus labs trying to translate some of their studies into mice and Bioinformaticians for the first time getting their hands dirty in wet lab. Whether we were sharing blastocysts, plug checking hundreds of mice, pouring tequila shots into 15 ml falcon tubes or going for a midnight swim with the horseshoe crabs, I know that I have made a network of friends and collaborators that will last my scientific career.

The Cold Spring Harbor Mouse development, Stem cells and Cancer course was a truly life-changing experience. It has given me the confidence and knowledge to tackle any challenge in mouse biology and a network of mentors and friends to ask advice. This was an experience where we lived and breathed mouse development, got hands-on experience with the latest protocols, picked the brains of high-flying PIs and shared ideas about science and the perfect sangria recipes. One of the aspects I love about science is that it is a continual journey of acquiring new knowledge. I would whole-heartedly recommend this course to any early career researchers looking to get ahead in their career, stuck on a really tricky mouse problem or wanting to push the boundaries and improve their current experiments. And wanting to have a seriously awesome time!

The CSH Mouse Course Class of 2013. Elanor Wainwright back row, 6th

Developmental biologist Margaret Buckingham wins major French science prize

The international developmental biology community recently received the good news that Margaret Buckingham has been awarded the CNRS Gold Medal, France's highest scientific honour.

Margaret is well known to Australian developmental biologists, having attended several conferences on our shores and contributed to the 6th Australian Developmental Biology Workshop in Melbourne in 2010 as an invited international instructor.

Margaret has been on the Faculty at the Pasteur Institute in Paris for the last 22 years. She is famous for her contributions in the fields of myogenesis, cardiogenesis and stem cells biology. She first discovered how the genes of actin and myosin, two proteins essential for muscle contraction, are controlled. Using genetic manipulations in mice, she then showed that the embryonic cells that will form adult muscles undergo a key step, which irreversibly determines their destiny in muscle differentiation. This takes place well before the cells adopt the characteristics of muscle cells. She later discovered a pair of genes (Pax3/Pax7) whose role is essential in maintaining a population of muscle stem cells in the embryo. In 2005, she managed with her team to isolate stem cells of the adult skeletal muscle — known as satellite cells — in mice and to demonstrate their potential in muscular regeneration. Finally, in the field of cardiogenesis, she overhauled the commonly accepted vision of cardiac development through the discovery of a second induction field of the heart and by focusing on the clonal origins of heart-forming cell populations.

The CNRS Gold Medal is awarded each year for the body of work of a leading scientist who has made an outstanding contribution to the vitality and influence of French research. The prize was announced in September and will be officially awarded on November 14 at La Sorbonne in Paris.

The award of the CNRS Gold Medal brings well-deserved prominence to our field, and the Australasian cell and developmental biology community warmly congratulates Margaret on her remarkable achievement.

Peter Koopman
Institute for Molecular Bioscience,
The University of Queensland

New National Committee for the Australian Academy of Science – CELLULAR AND DEVELOPMENTAL BIOLOGY

Dear ANZSCDB Members,

Although few scientists know much about the inner workings of The Australian Academy of Science (AAS), I want to introduce you to one of its outreach activities that is important to you as ANZSCDB members.

The AAS was founded in 1954 by Royal Charter (being modeled on the Royal Society of London), as an independent body with no statutory obligations to Government (albeit that it receives Government support for its activities). As such, it plays a significant role in science advocacy, education, policy and career development in this country. The AAS engages in these activities tirelessly - often behind the scenes. Its activities are one of the reasons we enjoy a rich scientific culture in Australia. Its Presidents have been eminent leaders – Marc Oliphant, John Eccles, Frank Macfarlane Burnett, Gus Nossal, Suzanne Cory, names that you will recognize.

The AAS has for many years maintained a number of committees termed the National Committees for Science (National Committees; NCs) that respond to the needs of the AAS, and develop work plans that promote their specific disciplines nationally and internationally. A key function of the NCs therefore is to connect the AAS with discipline-specific Societies in a way that enables a two-way flow of information and expertise. On the one hand, the AAS can draw on the expertise held within Societies when needed, for example, in formulating position papers to present to Government, or responding to the community's need for information and informed opinion. Conversely, the NCs link directly to Societies through membership on those committees. Therefore, there is a link directly back to Society Executive Committees, and Societies can provide input into the workings of the NCs.

Within the AAS it was recognized that the life sciences were under-represented on the NCs. In a recent review aimed at strengthening the role of the NCs in Australian science, the AAS formed a new committee - Cellular and Developmental Biology (CDB). This is a wonderful outcome for ANZSCDB. The NC-CDB has now been configured and is composed of the following members:

Richard Harvey FAA (Chair)
Peter Currie (ANZSCDB)
Marie Bogoyevitch (Australian Society of Biochemistry and Molecular Biology)
Moira O'Bryan (Society for Reproductive Biology)
Christine Beveridge (Australian Society of Plant Scientists)
Martin Pera (Australian Society of Stem Cell Research/Stem Cells Australia)
Benjamin Kile (early-mid career researcher)

Other Societies connected to Cellular and Developmental Biology will be represented on a rotating basis.

NC-CDB is now in business and will develop activities that support the disciplines of Cellular and Developmental Biology in Australian hand-in-hand with ANZSCDB and other Societies. We will keep ANZSCDB informed of its activities – the ANZSCDB Executive will receive agendas and minutes of our meetings, and we hope to use this electronic newsletter to keep you informed of activities or issues. If you think of ways in which the AAS through its NCs can address an issue or lend weight to an existing initiative, we will be pleased to hear from you.
You can find out more about the AAS at
http://www.science.org.au/academy/

and the NC-CDB will develop a webpage in due course.

Richard P Harvey
Victor Chang Cardiac Research Institute, Sydney, Australia
r.harvey@victorchang.edu.au

CellBank Australia

CellBank Australia is a cell line repository that promotes best-practice cell culture by providing authenticated cell lines and cell culture-related services to the Australasian research community

What kind of products and services does CellBank Australia offer?

- CellBank Australia - Australia's national cell line repository - is a unique and critical component of Australia's national research infrastructure.
- CellBank Australia was first established in 2005 by a joint venture of the Children's Medical Research Institute, Cure Cancer Australia Foundation, and National Breast Cancer Foundation, but has been owned and operated by Children's Medical Research Institute (CMRI) from July 2007
- CellBank Australia has received funding from the National Health and Medical Research Council of Australia, Cancer Institute NSW, and the University of Sydney.
- CellBank Australia primarily provides authenticated cell lines and cell culture-related services to Australian researchers.
- CellBank Australia is building a novel collection of Australian and New Zealand cell lines and currently distributes 34 cell lines from that collection internationally, through its distributor, the European Collection of Cell Cultures (ECACC).
- CellBank Australia distributes more than 1750 ECACC cell lines to Australian and New Zealand researchers.
- CellBank Australia provides quality control services and liquid nitrogen storage for deposited cell lines.
- CellBank Australia serves Australian and New Zealand researchers so that they may perform their cell culture studies at the highest possible standards, and can thus extract maximum value from their research funding.

Mark Shannon
General Manager, CellBank Australia

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The *GenePrint*® 10 System provides a powerful and complete system for authentication of human cell lines. The kit contains all of the reagents required for successful identification and authentication of human cell lines and detection of cell line contaminants.

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- One complete kit for sample identification and cell line authentication
- Co-amplification of the nine STR loci recommended by the ASN-0002
- Direct amplification of samples from punch cards
- Tolerance of up to 10ng of DNA template
- Automatic assignment of genotypes

Configuration of the *GenePrint*® 10 System

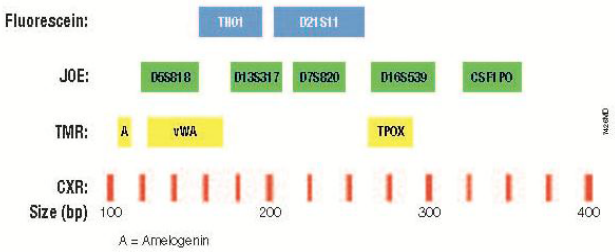

Figure 1. The *GenePrint*® 10 System allows co-amplification and three-color detection of 10 loci, including all ASN-0002-2011 (TH01, TPOX, vWA, CSF1PO, D16S539, D7S820, D13S317, D5S818) plus Amelogenin and D21S11.

The Importance of Cell Line Authentication

Many of us work with tissue culture cells every day without a second thought given to cell line identity or contamination. However, many cell lines are misidentified or contaminated with other cells, wasting substantial time, effort and laboratory resources and potentially invalidating published data. In an effort to stem this problem, the National Institutes of Health and many journals now recommend or require evidence of cell line authentication before grant approval or acceptance of data for publication (2,3).

Product		
GenePrint® 10 System	50 Reactions	Cat# B9510

References

1. ANSI/ATCC ASN-0002-2011. Authentication of human cell lines: *Standardization of STR profiling. ANSI eStandards Store 2012*. http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FATCC+ASN-0002-2011

2. Chatterjee, R. (2007) Cell biology. Cases of mistaken identity. *Science* **315**, 928–31.

3. Capes-Davis, A. *et al.* (2010) Check your cultures! A list of cross-contaminated or misidentified cell lines. *Int. J. Cancer* **127**, 1–8. An updated list of misidentified or contaminated cell lines can be found at: http://standards.atcc.org/kwspub/home/the_international_cell_line_authentication_committee-iclac_/Cross_Contaminations_v6_8.pdf

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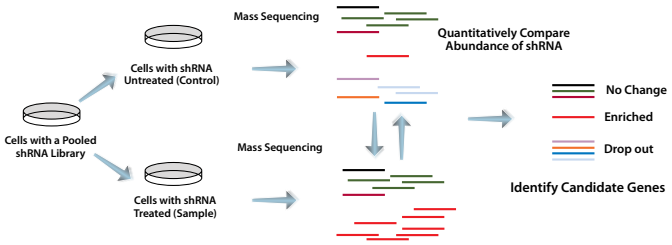
Pooled Screening Approach to Identify Modulators of a Pathway



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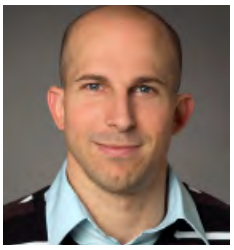

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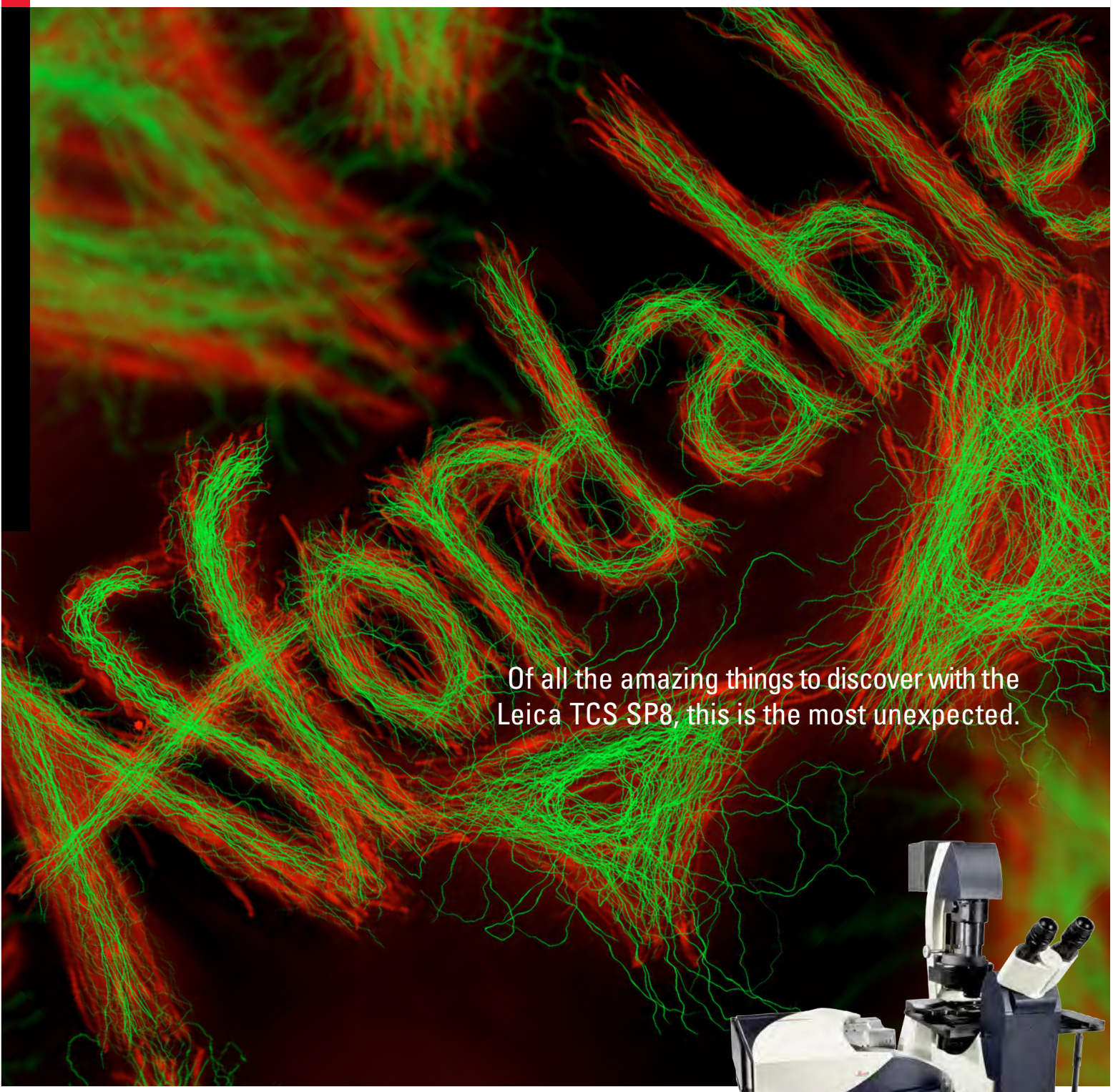

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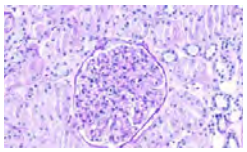

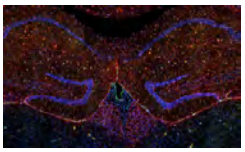

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Wishing you a Merry Christmas and a Productive 2014

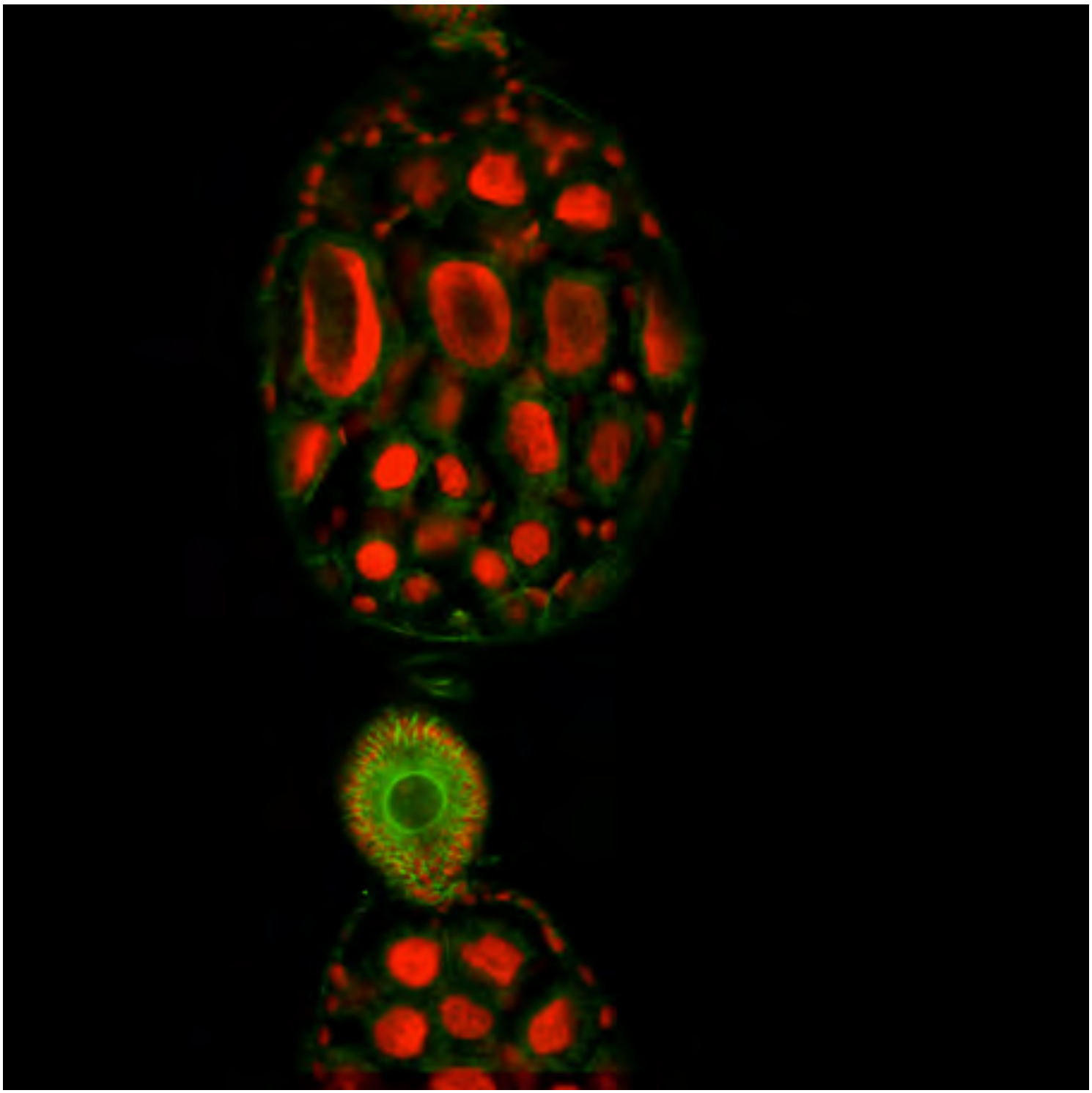

Image for Christmas – A honeybee ovariole stained for DAPI (red) and acetylated-α tubulin (green). Taken by Dr MJ Wilson.