ANZSCDB Newsletter
Australia and New Zealand Society for Cell and Developmental Biology INCORPORATED
July 2011

In this my last report as President of ANZSCDB it is very pleasing to be able to reflect on the growth of the Society, both in membership and activities. I must state upfront that many activities follow on from the impetus set in place by previous executive teams and it is great to see them come to fruition.

State/NZ Chapter Activities

Over the past two and some years I've led upfront with the drive of the Executive to serve our disciplines at the state and regional level. We now have 4 annual stand alone state Cell and Developmental Biology meetings in New South Wales, Victoria, Queensland and South Australia and our presence at the Combined Biological Sciences Meeting in Perth has grown to a symposium. The establishment, growth and success of these meetings are due in large part to the drive of our state/regional representatives who represent the new and future leaders of our disciplines. I speak for the Executive when I say it has been a true pleasure to interact with our representatives to support these meetings.

President's Medal and Young Investigator Award

The President's Medal is the highest honour that our Society bestows and this year it is my great pleasure to announce that Professor Rob Parton from the Institute for Molecular Bioscience, University of Queensland has been chosen as the 2011 recipient. Rob is an internationally renowned cell biologist and fellow of the Australian Academy of Science. He is an expert on microdomains of the plasma membrane, with a particular focus on caveolae and caveolins, and is credited with demonstrating that lipid droplets are functional organelles in the cells. Rob will present a retrospective of his career in research and hopefully, a view of things to come in the ANZSCDB President's Medal plenary lecture at ComBio2011.

The ANZSCDB Young Investigator Award recognises our up-and-coming leaders and I was very pleased to announce earlier this year that the recipient for 2011 is Dr Dagmar Wilhelm of the Institute for Molecular Biosciences. Dagmar's work focuses on sex determination and gonad development from the angle of gene regulation by noncoding RNAs. She will present her work in the 'Molecular mechanisms of development and disease' Symposium at ComBio2011 as well as chair the Developmental Biology Colloquium. In addition to her research accomplishments, Dagmar organised the inaugural Brisbane Cell and Developmental Biology meeting in 2010.
Two of the most difficult and most rewarding tasks of being the President are presiding over the committees that decide these two top awards. I cannot help but be struck by the talent that we have in our disciplines.

Our Annual Meeting and The Hunter Meeting

ComBio continues to be the Society's annual meeting and

Continued on Page 2

our organisation of the Cell and Developmental Biology Streams continues to attract outstanding international and national speakers. Many thanks to Carol Wicking and Rohan Teasdale who have done an outstanding job for ComBio2011 and have managed to secure Hiroshi Ohno (Riken, Yokohama Institute), Dave Drubin (Berkeley), Hans Clevers (Hubrecht Institute), Matt Scott (Stanford) and Beatrix fuller (Stanford) for plenary speakers. Please join us in Cairns to support and promote our disciplines and enjoy the excellent line-up of speakers. Student bursaries to cover registration are still available and in recognition of the difficulties that some lab heads are experiencing regarding use of grant funds to support travel, we are waiving the condition that the supervisor must attend ComBio2011.

The Hunter Meeting has been and continues to be strongly supported by our members. This is an excellent annual meeting and in recognition of our strong ties, the former President Alpha Yap initiated the ANZSCDB Hunter Speaker and we decided to continue it under the auspices of our Distinguished Visiting Lectureship in Cell & Developmental Biology Program. This program supports an internationally prominent Cell and/or Developmental Biologist to give a plenary talk at the Hunter Meeting as well as two seminars at members' institutions. Peter Cullen (Bristol University) was a delightful contributor to our program and the Hunter 2011, and I am very pleased to announce that Fiona Watt (Wellcome Trust Centre for Stem Cell Research) will be the 2012 ANZSCDB Hunter Speaker http://hcbm.mtci.com.au/

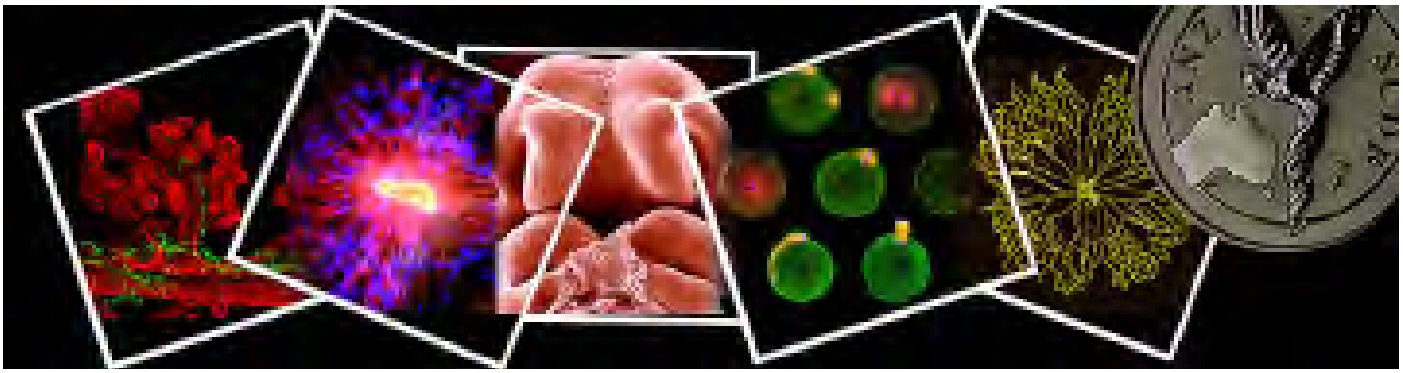
The ANZSCDB Committee

Our constitution stipulates that in addition to the Executive, there must be a Committee that oversees the governance of the Society. The concept of the Committee has been dealt with in various ways over the years, but this year the Executive decided to invite prominent members to form 'The Committee' to provide advice, direction and participate in decision-making. The members are formally introduced in another section of this newsletter, but I would personally like to thank Chris Mitchell, Sharad Kumar, Phil Crosier, Miranda Grounds, Richard Harvey, Peter Koopman and soon-to-be Committee member Alpha Yap for agreeing to serve in these positions and provide oversight for the Society.

Farewell to the Former Treasurer and Secretary and Welcome the New

At our AGM last year, we agreed to uncouple the turnover of the Executive in order to facilitate the transition of each new Executive. To initiate this new format, Kat Gaus and Geraldine O'Neill resigned as Treasurer and Secretary, respectively, in March of this year. Kat and Geraldine were dedicated and conscientious members of the Executive who played essential roles in the growth of the Society. At times they might not have wondered what they signed up for, but they met each duty with a can do attitude. My sincere thanks to both of them. I want to welcome our relatively new Treasurer, Kieran Harvey, and Secretary, Ian Smyth. They are already hard at work and brimming with ideas. Watch this space. And finally, a big thank you to Ros and Liz for your continued assistance and support. Visit our new and improved website at http://www.anzscdb.org/

JOIN US!



A tale of many cities and a family called 'Nedd'

Fiona Wylie

As one who holds an infectious enthusiasm for both science and reading about scientists, Sharad Kumar is basically living his passion – leaving his mark on Australian and international biomedical research and carving out his own fascinating life story.

Professor Sharad Kumar has come a long way – figuratively and literally – from his first foray into science as a keen university student in India to become one of Australia's most eminent cell biologists and cancer researchers. He currently co-directs (with Angel Lopez) the Centre for Cancer Biology at IMVS in Adelaide and is head of the Molecular Regulation laboratory within the Centre. Through his discovery and cloning of the *Nedd* family of genes 20 years ago, and broad range of molecular biology experience prior to that, Sharad has made seminal contributions to the fields of programmed cell death and ubiquitination…and one suspects he is not finished yet.

Strong beginnings to an amazing journey

Growing up in the Himalayan foothills of India in the 1960s surrounded by wilderness and great biological diversity, Sharad recalls always being fascinated by biology. "At high school I even managed to cobble together a dissecting set, a light microscope borrowed from a local college and a collection of preserved plants and live frogs. My two favourite things back then were trying to impress my friends with my 'lab' and, of course, playing cricket."

Sharad studied science, mathematics and languages at high school and credits his grandfather as his first major academic influence. "My sister and I spent much of our secondary schooling years living with our grandparents and my grandfather instilled in us not only the discipline he had learned while working for the British, but also a great respect for education."

Sharad went on to study biology and chemistry at the local university, with the plan to enter Medicine. However, by the time he completed a BSc degree as an 18 year old, his plans started to change. "Medicine seemed to require many years of hard work and my mind was not really engaged for that (how naïve!). I realised that my curiosity would be better fulfilled by a career in science. Most in my family thought I was a bit crazy to even think about a profession that provided no job security or good source of income (they were obviously correct)."

Nevertheless, with the full support of his family, Sharad took the then uncommon step of moving several hundred kilometres away from home to do a Masters degree in Microbiology/Biochemistry at the GB Pant University, studying photosynthetic bacteria for producing biogas from organic waste. "This was the true beginning of my scientific journey that continues to this day."

From the Himalayas to the Adelaide hills

From there it was onwards and upwards for the now science-focussed Sharad, and a PhD was his next target. In those days, although much importance was placed on further education, leaving India wasn't the usual thing to do - especially heading overseas to study basic science. "Most aimed for medicine or engineering…the secure professions. Indeed, nearly all my cousins went down that path." But with only very few places in the country offering postgraduate education in molecular biosciences, Sharad had little option.The most unusual aspect of Sharad's choice turned out to be the destination…Australia, which came about via a great story involving chance (every scientist's old friend) and youthful bravado.

"About the time I was looking for a PhD scholarship in the US, Canada or the UK,

a friend of mine gave me an envelope to mail for him one day because I was going to the post office. He told me he was applying for a scholarship in Adelaide. So I asked where is that? And he said "don't you know it – that is the famous cricket ground of Don Bradman! On relating this news to another friend of mine, he miraculously produced a spare application form, which I filled out and mailed that same day. "So this all happened fairly rapidly and before I knew it I got the scholarship in Adelaide and said yes…and here I am."

So, in April 1980, Sharad arrived in the 'City of Churches' (and 'The Don'), his one suitcase filled mostly with biochemistry and microbiology textbooks. His supervisor's lab was in the Waite Institute at the bottom of the very picturesque Adelaide Hills (which is obviously where Sharad also started developing his oft-reported academic and experimental expertise in wine, a reputation he strenuously denies).

His doctoral studies in the group of Prof Don Nicholas (late) centred on the little-known nitrifying bacteria Nitrobacter and Nitrosomonas. "These bacteria are chemolithotrophs, so they took ages to grow - I remember growing 50 litre cultures for a week to obtain a few tiny bacterial pellets for my studies." Although it was slow and tedious work, not many groups around the word worked on these bugs. This meant less competition and a very productive PhD - 9 manuscripts and an award for the best thesis.

Sharad cites Nicholas as one of his greatest scientific mentors and the driver of his productivity. "He taught me about deadlines and the importance of timely publications. Every few months, the Prof would sit us down and go through everything we had done and if suitable, we would get two weeks to write it up and submit as a paper. It was a good grounding, although I must admit that writing papers nowadays is quite different and usually takes much longer."

Qualified and ready for action

At the end of Sharad's doctoral studies in late 1983, his mind was set on the emerging field of molecular biology. "I enjoyed the bacterial work, but I was greatly influenced by the work on oncogenes being done at WEHI (although I was always too shy to even enquire about a position there)." Instead, he headed north to his first postdoc in Dr Martin Lavin's laboratory at The University of Queensland.

Sharad spent the next three and half years in Brisbane working on several projects. The first and main one was the ongoing effort to characterise defective gene(s) players in ataxia-telangiectasia (A-T), a human genetic disorder with predisposition to cancer. Several approaches were used to no avail, and indeed the A-T gene was not cloned until more than a decade later. In another major project, Sharad set about studying the molecular characteristics of T-cell leukaemia cells. "I studied the rearrangements of T-cell receptor β–chain genes in leukaemic cells and defined the rather unexpected apoptotic phenomenon associated with some types of leukemic cells *in vitro*."

Sharad recalls his lab at the top of the old UQ Biochemistry building being quite a fun and rowdy place, populated by quite a few faces still well known on the Australian cell and developmental biology scene including then-students Kate Stacey and Jo Bowles. Lab-wise, Brisbane in the early 80s was a bit of a shock for Sharad. "Brisbane was a little bit behind then in the technology available. However, Martin was also one of the few people around trying to get into what was then called "genetic engineering. In fact, I have the dubious honour of preparing and running the first DNA sequencing gel in Queensland! We virtually had to design the gel apparatus ourselves and get the glass plates and spacers, etc, all made locally for the job."

In mid 1987 Sharad headed south again, but this time to Geelong and CSIRO's brand new Australian Animal Health Laboratory. He was recruited basically to establish a molecular biology laboratory in their poxvirus vaccine program, which was headed by Dr David Boyle. "During my stay at CSIRO, I identified, cloned and studied new pox virus promoters for expressing foreign genes in infected cells using recombinant vaccinia and fowlpox viruses. The work resulted in several patents for CSIRO and the promoters contributed to the development of the FPV vectors. The technology is currently being used in various clinical trials to deliver vaccine and cancer antigens, and immunoregulators."

Every career has a pivotal moment

Although productive scientifically, the CSIRO project failed to really grab Sharad intellectually. "The time in Geelong had made me really look hard at my own career and realise that my interests really were in cell growth and differentiation. I was very influenced by a seminal paper by Jerry Adams from WEHI published a few years earlier (Adams et al. Nature, 1985). Using the latest technology to express myc oncogenes in transgenic mouse, these guys created one of the first mouse models of lymphoma. I had to take some hard decisions and force myself out of my

comfort zone. After reading about some of history's leading scientists, I also felt that my time was running out!"

That realisation led Sharad to Japan…and the best career move he ever made. "It was quite an unusual step at the time because Japan then did not have the same postdoc culture that Australia and elsewhere did – indeed they hardly had any foreign scientists working in the labs there. But they did have fantastic facilities and many laboratories were at the forefront of research on oncogenes and anti-oncogenes (as the tumour suppressors were initially called). It also helped that I had a few Japanese friends from my days in Brisbane."

In November 1989, Sharad accepted a fellowship from the Japanese Science and Technology Agency and moved to the Institute for Physical and Chemical Research (which in Japanese is an acronym for RIKEN) in Tsukuba. "RIKEN is actually one of the oldest research institutes in Japan with many different branches. The Life Sciences branch in Tsukuba, about 60 km north of Tokyo, was a purpose-built science city established only a few years earlier out in the middle of the rice paddies."

Sharad quickly realised that his decision was a good one. "Japan was a great place to work – so unusual and a great cultural experience. I was surrounded by lots of fabulous young Japanese scientists…many had been trained in the top US laboratories…and there was so much happening in molecular cell biology and the oncogene field at the time. Almost every week there were new discoveries announced in prominent journals."

One of the best things for Sharad was that in the middle of this incredibly stimulating place, he was virtually set free to do whatever he wanted. "Based on my interest in tumour suppressor genes, I was assigned to the laboratory of Makoto Noda who was the pioneer in what he originally called anti-oncogenes (tumour suppressors). He had returned a few years earlier from a highly productive postdoc at NIH where he developed a cell-based expression screen for the suppressors of Ras-transformed fibroblasts. He had identified a set of potential suppressor cDNAs, which when expressed in Ras-transformed cells led to reversion of the transformed phenotype to flat, 'normal' looking fibroblasts. Given the technical challenge of selecting the slow-growing potential 'flat revertants' from a population of fast-growing cells, Noda was well know in the field for doing the 'impossible' experiment. So I started my first experiments in Japan in his laboratory, working on one of the uncharacterised genes he had found to cause 'flat reversion'."

Looking for the neuronal holy grail

During the first few weeks at RIKEN Sharad also met Yasuhiro Tomooka - a cell biologist who spent his days (and nights) culturing cells from newly formed mouse embryonic neural plates. He called them neural precursor cells (NPC), as they had the ability to differentiate into neurons in defined culture conditions. This was incredibly labour-intensive work that involved dissecting out 100s of mouse embryos to get enough cells to culture. "Tomooka was really ahead of his time – he was also culturing these cells in 3D systems into structures now often termed neurospheres."

This was all not long after MyoD was identified as the muscle differentiation factor and the idea emerged of master control genes that determine lineage differentiation. Sharad decided there must also be a critical gene that turns precursors into neurons. "So, I asked Tomooka about using his system to explore my idea of finding genes for lineage determination, development and differentiation of the central nervous system (CNS). He is a really friendly and fascinating guy – and not being a molecular biologist, he was also very keen for me to work with him. So I started this second project with the exciting idea (although rather naive in hindsight) that I could use Noda's expression cloning approach to discover the 'master control gene(s)' that drive a precursor cell into a neuron."

Technically, Sharad's simple hypothesis turned out to be very challenging, partly because selecting differentiated neurons that had stopped dividing from a population of growing cells was like finding a needle in a haystack. This is where one of Sharad's golden rules came in – having a plan B. Being very driven in those days by new technology, he thought he would try subtraction cloning, one of the new kids off the molecular biology block. "I made a cDNA library from Tomooka's NPCs and subtracted it using cDNA libraries prepared from foetal and post-natal brain, thinking I would identify populations of genes important for regulating development and differentiation of neurons."

Sharad's subtraction cloning approach isolated 10 novel genes that showed developmentally down-regulated expression in the CNS. He named them "*Nedds*", for "***N***PC ***e***xpressed ***d***evelopmentally ***d***own-regulated (genes) – "a bit of a daggy name I know, but it was the best I could come up with at the time!" Since Sharad's original isolation, various groups have identified

Nedd genes in different functional screens and it eventually became clear that these developmentally regulated genes encode functionally diverse proteins that are involved in many cellular pathways, both in embryonic and adult tissues. So maybe daggy, but this was a family of genes that would underpin Sharad's future scientific career.

By late 1991, Sharad's Fellowship tenure was almost over just as he was set to start characterising his *Nedd* genes and reaping some rewards from his 2-year solo effort in the lab. Fortunately, Makoto Noda who had just been offered a position at the very prestigious Cancer Institute in Tokyo, asked Sharad to join him there as the first non-Japanese ever appointed to the faculty of the Cancer Institute. Sharad was a little sad to swap Tsukuba for the noisy and crowded Tokyo, but also knew it was a great opportunity to continue the story he had only just started to write.

"That was also around the time that the first programmed cell death genes were cloned in *C. elegans* by Bob Horwitz at MIT (who went on to share the 2002 Physiology or Medicine Nobel prize with Sydney Brenner and John Sulston)." One of the first *C. elegans* cell death genes cloned, *ced-3* showed sequence similarity to Nedd2, suggesting that Nedd2 might be a mammalian homologue of *ced-3* and thus a mediator for cell death. This turned out to be the case, Nedd2 became one of the first and most conserved mammalian caspases (now called caspase-2) and suddenly, Sharad found himself right in the middle of one of the hottest fields in biology! He was also ready to head home.

Welcome home

Despite offers from many places around the globe, mid-1994 found Sharad heading back down under…and to Adelaide. "For some strange reason I really wanted to come back here – crazy I know. I brought my *Nedd* projects with me, but decided to focus initially on Nedd2 (which by now was confirmed as a mammalian caspase) and Nedd4, which based on the structure of the protein, looked really interesting. It had all these novel domains that nobody had described before, and of course it turned out to be the prototypic member of a new family of E3 ubiquitin ligases implicated in the regulation of several proteins, virus budding, and protein trafficking."

He set up a new research laboratory at the Hanson Centre for Cancer Research within the IMVS. His group in 1995 comprised one technician and Sharad, trying to compete in one of fastest moving fields in biology - apoptosis. "A little later I was immensely fortunate to have the two Harveys (Natasha & Kieran) in my laboratory, who joined me as PhD and Hons students, respectively (followed by many talented students and postdocs including Loretta Dorstyn and Paul Colussi)." Both Kieran and Natasha now have thriving research laboratories with many key discoveries under their belt.

Natasha Harvey was pleased to reciprocate Sharad's kind words, describing him as a great teacher during her PhD days, and as a great mentor and friend since returning to Adelaide from her postdoctoral work overseas. "Sharad was always a brilliant example of how to do top-quality research. He has established a diverse, vibrant research program and the optimal collaborations to get the job done right. His ability to support his research team via the preparation of multiple grants each year is inspiring!" On a non-science note, Sharad is also much valued by Harvey (and many others) as a dinner companion – "he is passionate about good food and wine, and you can be sure of stimulating, entertaining conversation…and much laughter!"

In 1995 Sharad obtained the prestigious Wellcome Fellowship in Medical

Science. "In many ways this Fellowship really changed my life, certainly cementing my place back here in Australia. Indeed, the last 16 years since then have been the most productive years of my scientific life." The Fellowship provided 5 years funding and importantly, it helped raise Sharad's profile after returning from overseas.

"There was also this select network of current and past Wellcome Fellows and many of those were immensely helpful in helping me settle back in those early make-or-break years." One member of that Wellcome 'family' was Jenny Stow at The University of Queensland (now Deputy Director of Research at the Institute for Molecular Bioscience, UQ). She fondly remembers those days when they all helped each other get established back home. Indeed, she and Sharad have maintained their contact since across several arenas – in cell biology land, on funding panels, even as collaborators on cell trafficking projects. "Basically, I love Sharad to pieces," says Stow. " He has become one of Australia's most eminent researchers - a key figure in the national fabric of biomedical research. As an internationally recognized scientist he has also provided strong leadership for research in Adelaide."

His newly found Wellcome Fellowship network also led Sharad to Helena Richardson, just right across the road at Adelaide University and an enduring several-year dream collaboration. "With the caspase 2 (Nedd2) story, my group needed a different model system to study the mechanisms of developmental cell death, partly to avoid competing with others already well entrenched in cell death using mouse models. Helena was working on cell cycle regulation in *Drosophila*." According to Richardson, she first got talking with Sharad at Melbourne airport coming back from a Lorne Cancer meeting in 1998. "We discussed the possibility of collaborating, using the awesome power of *Drosophila* genetics to interrogate the regulation of programmed cell death. Soon after, our groups got together and began systematically cloning and analysing novel *Drosophila* caspases and the Bcl-2-related homologues. We obtained 2 grants together to support this work and the group expanded to include students and research assistants."

Although the collaboration eventually ended when Richardson moved in a new direction, the project has continued in Sharad's lab ever since. "*Drosophila* has taught us some fascinating stuff about the regulation of cell death in development with many landmark discoveries," says Sharad. "And now everything new we do on mammalian cell death or whatever, we check it out in the fly and can go back and forth – a fantastic tool for genetic studies."

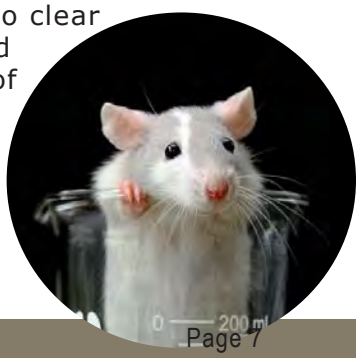
Richardson was keen to add that Sharad was an inspiring collaborator. "Sharad has made seminal contributions to the field (just look at his publications)…plus he is just a really great guy - down to earth, modest, easy to talk to, and willing to put himself out to help his friends/colleagues when needed. He is also very interested in the politics of science and often sends me interesting articles that pose new perspectives on science."

That was then, this is now

Sharad has continued to work on programmed cell death in *Drosophila* and mammals. "Caspase-2 turned out to be the most enigmatic caspase, despite it actually being the most conserved during evolution. In fact, the caspase-2 knockout mouse showed no overt phenotype, which was a big surprise but there are lots of subtle abnormalities caused by caspase-2 deficiency and we have been studying those, including potential tumour suppressor and anti-aging functions of caspase-2."

Nedd4 turned out to be one of a really exciting family of ubiquitin ligases, just as Sharad predicted, with nine Nedd4 family members identified in mammals. Sharad's group have continued to work on the original Nedd4 and its close relative Nedd4-2, which is critical for the regulation of many membrane-associated transporters and ion channels. Earlier work from Sharad's group with his long-term collaborator David Cook, a leading epithelial physiologist, showed that one of the potential targets of Nedd4-2 is the epithelial sodium channel. This has now been confirmed in a very recent paper from his research team involving several collaborators and published recently in *Nature Communications.* "The epithelial sodium channels are critical for sodium reabsorption in various epithelia. This is particularly so in the kidney, where the channels are responsible for regulating the reabsorption of Na^+ and maintaining sodium homeostasis and blood pressure. And Nedd4-2 is absolutely critical for the regulation of this channel."

The Nedd4-2 knockout mice were therefore predicted to show deregulated Na^+ channels, with associated pathologies…and in fact, that is exactly what happens. The animals die at birth of respiratory distress because a major function of sodium channels is to clear the lung fluid at the time of birth. "What happened in these animals was that with very high



channel activity, their lungs dry out and fail to inflate at birth. Some of the mice that survive birth seems to show a cystic fibrosis-type phenotype, and die due to severely inflamed lungs within 22 days."

With Nedd4, which is the main ligase of the family, he recently published a study with Baoli Yang (Iowa) and Roger Daly (Garvan Institute) in *Science Signaling* to show that Nedd4 is a critical regulator of growth signalling through IGF1. Nedd4 knockout mice have multiple other developmental phenotypes including defects in CNS development (making it a real Nedd).

"We are also doing other collaborative studies with some of the leading physiologists and neuroscientists around (such as Phil Porronik, Grigori Rychkov, David Adams and Seong-Seng Tan) because these ligases are also critical in regulating several channels in the CNS and appear to be important for neuronal survival following stroke and ischemia."

Wisdom drawn from broad experience

Sharad's career and research interests have certainly spanned a huge variety of fields, countries, and collaborators – from physiology and molecular biology to cancer, cell trafficking and development. "I think that is one of the things that makes it really exciting for me - never a dull moment for my neurons (or whatever remains of them). Of course both cell death and ubiquitination are fairly hot and competitive areas so that also keeps me on my toes, although within this field we try to work on niche areas – based mostly on our own discoveries."

As far as advice goes, Sharad's is clear - write up papers! "You need to demonstrate that your life in science has been productive." To help with this, Sharad advises postdocs to work on at least two projects (the golden plans A and B) – "you can have a big ambitious project but always have one on the side on something less ambitious that will lead to a publication or two. You don't want to go and do a 2-3-year postdoc in some hot area of science and only to come back with nothing to show for it."

Sharad also tries to keep people around him motivated and encourage them that this is a profession worth spending their life in. "Doing science is a privilege…doing it as a profession is just a bonus. If in the end you can make discoveries that stand the test of time and change dogma or alleviate human suffering in some small way, you can't ask for anything else."

The (few) quieter moments

Sharad and his wife are currently split between cities, so a lot of his spare time is spent catching up with her. "My wife – Graziella Capra-relli - is a geochemist who now works in planetary sciences – more specifically, she works on the geology of Mars. We met and married in Japan - she is Italian and is passionate about science. Graziella fascinates me because I learn so much from her (she is one of the most prolific readers I have ever known) and she thinks from a completely different perspective being a physical scientist."

Sharad is a great reader, and particularly a self-confessed biography junkie (although most these days are of other scientists in the form of grant applications and manuscripts). "This stemmed largely from my time in Japan. Our lab meeting often included a discussion of the history of science because Makoto Noda was an avid reader – this was a lot of fun and it started me on reading biographies in particular."

He is particularly fascinated by the story of Rosalind Franklin, having read at least three different biographies of her life. "I admire people who succeed against the odds to do fantastic work. Franklin had to prevail against the male-dominated scientific establishment, and of course her discovery was a critical part of the Watson and Crick DNA model. She is definitely one of my many scientific heroes."

"I also greatly admire Srinivasa Ramanujan (1887-1920), an Indian mathematician who came from a poor family and had no formal training. He sent some of his work to one of the best mathematicians of that time at Cambridge (GH Hardy), who immediately recognised the brilliance of Ramanujan's work and invited him to England. Ramanujan died at the age of 32 of TB, but in that short time he did some of the classical work in mathematics." Despite his very humble roots Ramanujan become the youngest ever Fellow of the Royal Society and the first Indian to be elected as a fellow of the Trinity College, Cambridge.

"I think it is important to realise that many of the great scientists came from very humble backgrounds to make enormous contributions – it reminds us that we all have the inner abilities to do things in life. It is always hard to predict where a life in science can take us, but it is easy to say that it will never be a boring journey, provided you have chosen a somewhat untrodden path, collect a few good companions and collaborators, and you don't mind a few bumps on the way…"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ComBio2011 PROVISIONAL TIMETABLE

MONDAY 26 September

07:30 - 08:30	Registration
08:30 - 08:45	Conference Opening and *ASBMB 50-year Membership Presentation*
08:45 - 09:30	Plenary 1: David Teplow; Plenary 2: David G. Drubin
09:35 - 10:20	Plenary 3: Natalie Strynadka; Plenary 4: Julian Hibberd
10:20 - 10:50	Morning Tea/Exhibition/Posters
10:50 - 12:30	Concurrent Symposia 1
12:30 - 13:30	Lunch/Exhibition/Posters
12:45 - 14:20	Education Symposium (including *Life Technologies Education Award Presentation*)
13:30 - 14:30	**POSTER SESSION A**
14:30 - 15:15	Plenary 5: Roger Tsien
15:20 - 16:05	Plenary 6: Hans Clevers; Plenary 7: *ASPS Annals of Botany Lecture*: Carroll P Vance
16:05 - 16:40	Afternoon Tea/Exhibition/Posters
16:40 - 18:20	Concurrent Symposia 2
18:20 - 19:45	Welcome Mixer/Exhibition/Posters

TUESDAY 27 September

08:30 - 09:20	Plenary 8: *ASBMB Merck Medal Presentation and Lecture*: Stuart Pitson; Plenary 9: Matthew Scott
09:20 - 09:30	*ASBMB Beckman Coulter Award Presentation and Boomerang Award Presentation; ASPS Best Paper Award Presentation and Teaching Award Presentation*
09:30 - 10:20	Plenary 10: *ASBMB Lemberg Medal Presentation and Lecture*: Michael W. Parker; Plenary 11: *ASPS JG Wood Presentation and Lecture*: Susanne von Caemerer
10:20 - 10:50	Morning Tea/Exhibition/Posters
10:50 - 12:30	Concurrent Symposia 3
12:30 - 13:00	Lunch/Exhibition/Posters
13:00 - 14:00	**POSTER SESSION B**
14:00 - 15:30	Concurrent Colloquia
15:30 - 16:00	Afternoon Tea/Exhibition/Posters
16:00 - 17:40	Concurrent Symposia 4
17:40 - 19:15	Cocktail Party/Exhibition/Posters

WEDNESDAY 28 September

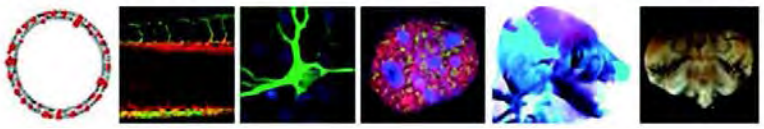
08:30 - 09:15	Plenary 12: Andrej Sali; Plenary 13: Hiroshi Ohno
09:20 - 09:30	*ASBMB Life Technologies Edman Award Presentation and Bioplatforms Australia Presentation; ANZSCDB Young Investigator Award Presentation*
09:30 - 10:20	Plenary 14: *ASPS Peter Goldacre Presentation and Lecture* Plenary 15: *ANZSCDB Presidents Medal Presentation and Lecture*
10:20 - 10:50	Morning Tea/Exhibition/Posters
10:50 - 12:30	Concurrent Symposia 5
12:30 - 13:00	Lunch/Exhibition/Posters
12:45 - 13:45	Student Lunch with the Overseas Speakers
13:00 - 14:00	**POSTER SESSION C**
14:00 - 14:45	Plenary 16: Hartmut Luecke; Plenary 17: Margaret Fuller
14:50 - 15:35	Plenary 18: Howard Riezman; Plenary 19: Lawren Sack
15:35 - 16:10	Afternoon Tea/Exhibition/Posters
16:10 - 17:50	Concurrent Symposia 6
17:50 - 18:30	Annual General Meetings
19:30 - 23:30	CONFERENCE DINNER - Hilton Cairns Hotel

THURSDAY 29 September

08:40 - 10:20	**Concurrent Symposia 7**
10:20 - 10:50	**Morning** Tea
10:50 - 12:30	Concurrent Symposia 8
12:30 - 13:30	Lunch Break
13:30 - 14:15	Plenary 20: Stephen Kowalczykowski; Plenary 21: Glaucia Medez Souza
14:20 - 15:05	Plenary 22: Nenad Ban; Plenary 23: To be Advised
15:10 - 15:40	CLOSING CEREMONY AND AWARD PRESENTATIONS
15:40 - 16:45	Closing Drinks
16:45 - 18:45	Career Development Forum: Speed Networking and More Networking

ANZSCDB

Australia and New Zealand Society for Cell and Developmental Biology, Inc



Australia and New Zealand Society for Cell and Developmental Biology presents the:

1st Adelaide Cell and Developmental Biology Meeting

Tuesday November 22, 2011

9:30AM - 5:30PM
Robson Lecture Theatre,
Eleanor Harrald Building, SA Pathology, RAH campus

Plenary Speakers:

Prof Patrick Tam
MCRI, Sydney

Dr Will Hughes
Garvan Institute, Sydney

Registration is free

12 abstracts will be chosen for 15 minute talks.
Other abstracts will be presented at the poster session.
The best student and Post Doc talks / posters will receive cash prizes.

Please submit 100-200 word abstracts by **October 28** to:
Quenten Schwarz- quenten.schwarz@health.sa.gov.au
Yeesim Khew-Goodall- yeesim.khew-goodall@health.sa.gov.au

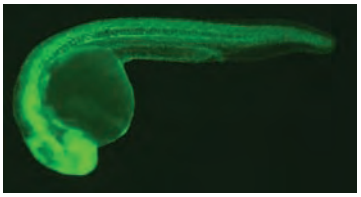
Lunch, afternoon tea, drinks and prizes will be provided by:

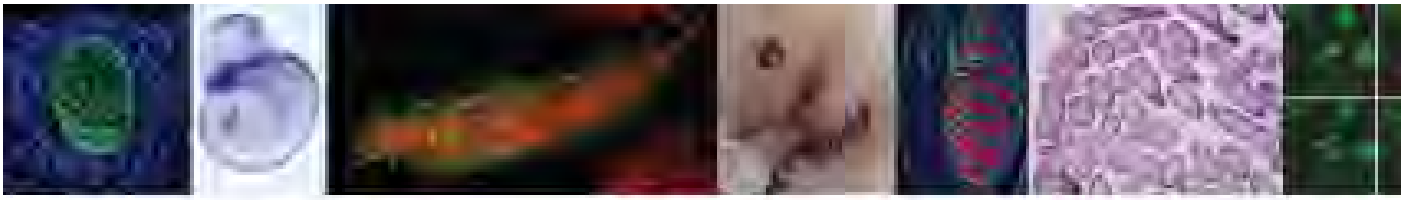
Centre for Cancer Biology

THE UNIVERSITY of ADELAIDE

SA PATHOLOGY







Brisbane Cell & Developmental Biology Meeting

October 14

2011

9am-5:30pm

Institute for Molecular Bioscience
The University of Queensland
St Lucia, Australia

Assoc. Prof. Peter Dearden, University of Otago
"The evolution of axis formation"

Assoc. Prof. Kat Gaus, University of New South Wales
"Molecular mechanisms of T cell activation"

Dr. Edwina McGlinn, Australian Regenerative Medicine Institute
"Patterning in the developing limb bud"

5 postdocs and 5 PhD students will be chosen from abstracts to present a 15 minute talk: PRIZES WILL BE AWARDED TO THE BEST TALKS AND POSTERS

Registration is FREE
Abstract submission will open soon

Refreshments and prizes provided by our sponsors

The University of Queensland IMB Institute for Molecular Bioscience

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School of Biomedical Sciences

CBSM 2011

21st Annual Combined Biological Sciences Meeting

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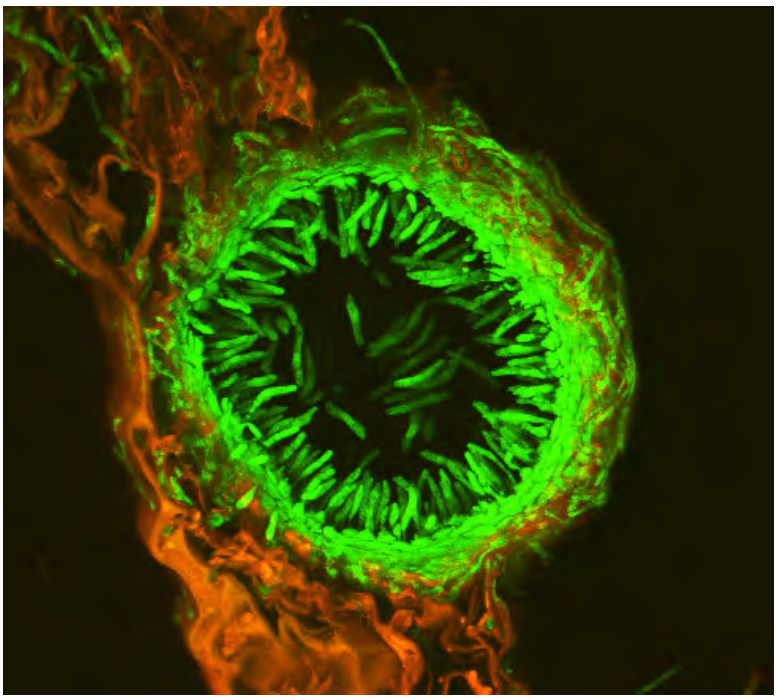
The University Club, University of Western Australia

26th August 2011



LMG Image Award 2010
Kasia Rybak, *'Stagonospora nodorum mature pycnidia'*
Australian Centre for Necrotrophic Fungal Pathogens
State Agricultural and Biotechnology Centre, Murdoch University

INVITED SPEAKERS

Dr Peter Boag, Department of Biochemistry & Molecular Biology, Monash University
Associate Professor Robin Anderson, Peter MacCallum Cancer Centre
Professor Justin Marshall, Queensland Brain Institute,UQ
Associate Professor David Edwards, School of Land, Crop & Food Sciences, UQ
Assistant Professor Beth Shapiro, Penn State University

ORGANISING COMMITTEE

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Marilyn Bennet-Chambers, (Curtin University)

Awards for student and early career researcher oral and poster presentations

Information and registration on-line ***http://www.cbsmwa.org.au***

Registration and abstract submission close 5th August 2011

email: cbsm@cbsmwa.org.au

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Government of Western Australia Department of Health

AUSTRALIA & NEW ZEALAND SOCIETY for CELL & DEVELOPMENTAL BIOLOGY INCORPORATED

THE UNIVERSITY OF WESTERN AUSTRALIA

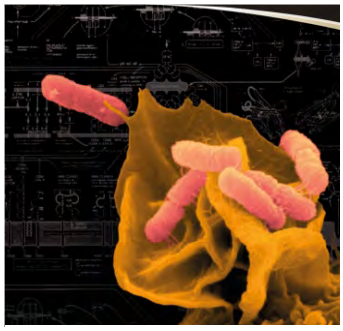
Australian Neuromuscular Research Institute

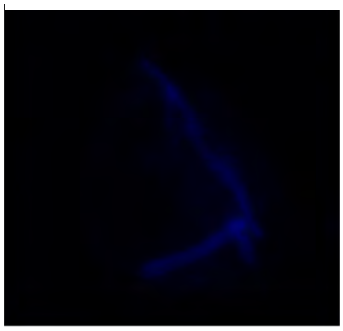
Australian Academy of Science Boden Research Conference

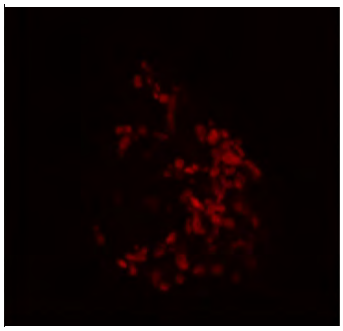
on Bacterial Cell Biology:

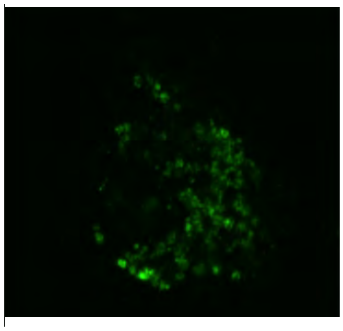
New Insights on Host-Pathogen interactions

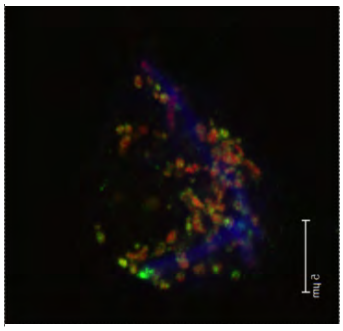
October 18th-21st 2011,
The Shine Dome, Canberra, Australia











This conference will bring together leading experts in imaging of eukaryotic cellular ultrastructure (cryo-electron microscopy, atomic force microscopy, single particle electron microscopy, super-resolution microscopy) and cell biology (protein trafficking, signaling and regulated gene expression), with experts in microbiology (both bacterial pathogens and model systems) to specifically address the ultrastructure of bacterial cells and host cells.

Themes:

Bacterial cell compartments and spatial control of gene expression; Assembly of bacterial cell surface structures, interactions with host cells; New methods for imaging host-pathogen interactions.

Sponsored by:

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Monash University
Australian Society for Microbiology (ASM)
Australian & New Zealand Society for Cell & Developmental Biology (ANZSCDB)
NHMRC Program in Cellular Microbiology

Invited speakers:

Chris Whitfield (University of Guelph)
Cynthia Whitchurch (University Technology Sydney)
Damien Devos (EMBL)
Mark Leake (Oxford University)
Mark Schembri (University of Queensland)
Michelle Gee (University of Melbourne)
Michael Jennings (Griffith University)
Rohan Teasdale (University of Queensland)
Sigal Ben-Yehuda (Hebrew University of Jerusalem)
Terry Kwok-Schuelein (Monash University)
Thomas Marlovits (IMB Austria)

Conference organizers:

Trevor Lithgow (Monash University)
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For further details, please contact Yvonne.Dooley@monash.edu

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KEYNOTE ADDRESS

- **Molecules and Systems: Our Quest for a Physiology of the Cell**
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- Molecular Mechanisms
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- Cellular Networks and Information Processing
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- Complex Cellular Functions: Linking Networks and Structures
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Development of a Career

Fiona Wylie

With 53 publications under her belt and career funding totalling over $2 million, the ANZSCDB Young Investigator Award winner for 2011 wants just one thing right now – to get back into the lab and get her hands dirty for a while.

After a particularly busy few years fulfilling some of the professional duties and privileges of being a new group leader, Dr Dagmar Wilhelm of the Institute for Molecular Bioscience (IMB) at The University of Queensland can see a short window of opportunity in the next few months for actually spending time at the bench, and she can't wait.

Dr Dagmar Wilhelm

Wilhelm's current research integrates molecular and developmental biology to study mechanisms of gene regulation by non-coding (nc) RNAs during sex determination and gonad development, using the mouse as a model system. Her big picture aim is to establish a more complete picture of this pivotal process and in doing so, generate new knowledge about gene regulatory mechanisms in general, the mammalian transcriptome, and about just what these fairly new and sometimes controversial ncRNAs might be doing in cells.

Where it all began

Wilhelm originally hails from Germany, where she did undergraduate science at the ours in Karlsruhe on cancer genetics. At the end of what is a 7-year intensive process in Germany, Wilhelm decided to take a break, taking off to see the world for 6 months or so. It was on this trip that she first visited Australia and it did cross her mind at the time that she wouldn't mind returning one day for a longer stay (little did she know).

By the middle of 1993, it was time to get serious again and Wilhelm returned home to start a PhD at the German Cancer Research Centre in Heidelberg, again in the area of cancer research and specifically the MAPK signalling pathways involved in cell transformation and tumour formation. It turned out to be a very successful and productive start to Wilhelm's research career. "My aim was to identify the Jun-N-terminal kinases (JNKs), which were not known back then. I found out that there were two and I knew their sizes, but then was scooped at the last hurdle. So, I started purifying them and went on to show that ATF-2 is phosphorylated by the same kinases, so in the end it worked out quite well." This is somewhat of an understatement as that piece of research led to two major papers (EMBO J 1995, Mol Cell Biol 1996), which together have attracted over 650 citations, and the finding is now

part of textbook science.

Not finished yet, Wilhelm also worked out the role of MAPK pathways in apoptosis induced by commonly used anti-cancer drugs (EMBO J, 1997; Cell Death and Differentiation, 1999). These findings emphasised the complexity of cancer treatment-induced cell death and provided a starting point into studies on cancer therapy resistance.

From cancer to sex

After her PhD (and a brief stint in Nursing), Wilhelm took up a postdoctoral position at the Institute for Genetics in Karlsruhe in 1999, working in developmental biology and sex determination. Wilhelm jokes that she just sort of stumbled into this research field that was to become so pivotal to her career. "In fact, I was never all that fond of developmental biology – hox and sox and all that. But when I started working in the area I was hooked!" She describes that time as probably the most enjoyable of her career so far. "It was a lot of fun and a great grounding. Being only responsible for myself and my work, I could just work hard, write papers and I did not have to worry about applying for grants or fellowships." Within 2 years, Wilhelm again had a major publication (Genes Devt 2002) after finding a fundamental and early role for the Wilms' tumour suppressor gene in gonad development.

At the end of her first postdoc and on the eve of taking up a new position in Munich, Wilhelm went to a talk by Peter Koopman that was to launch her next career stage… and return to Australia. "Working in sex determination I couldn't miss hearing Koops speak and I had never heard him before." To cut a long story short, Wilhelm took up a position in Koopman's group at the IMB in November 2002, and stayed there for over 5 years as a Research Officer and then Senior Research Officer.

Wilhelm recalls that she started with no real desire to become a group leader. "But over time as I took on more responsibility and more group leader-type jobs, the idea began to grow on me. Once I got the NIH grant (2005), things just kept going from there." Wilhelm was awarded an NHMRC CDA level II Research Fellowship in 2008, and then in 2009 was appointed as Senior Research Fellow and Group Leader in her own right at the IMB.

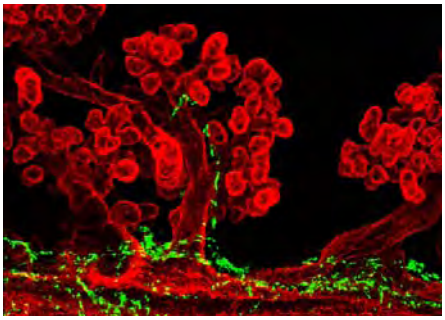
The journey continues

Over the past 3 years, Wilhelm has embarked on the ncRNA work and carved her own niche between this new and exciting area of genetics and her first love of developmental biology. "I am really intrigued by what these ncRNAs might be doing during development in the embryo, and gonad development is a really neat model system for finding out. You have this unique situation of a common precursor developing into completely different organs – the testis and ovaries. I collaborate quite a bit now with John Mattick here at the IMB – he is such an enthusiastic guy to do science with and our combinations of backgrounds and skills complement each other and work well for both of us – he is focussed more on the informatics side and my group looks at the in vivo experimental side of the question."

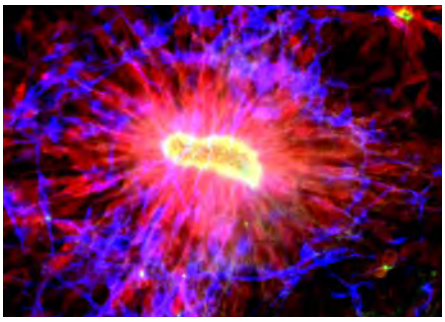
"So far we have identified a number of long ncRNAs that are differentially expressed in testis and we will test these in our system – for example, see what happens if we express them in the ovary (does it turn into a testis?) or knock them out in the testis – (does it turn into an ovary?). We are working with the hypothesis that a nearby gene will be regulated either positively or negatively through the action of these ncRNAs…and I suspect that eventually this work might take us into the epigenetics field…which is another fascinating area." Sounds like many more journeys ahead.

Institute for Molecular Bioscience, University of Queensland

Web Banner Photograph Competition Winners

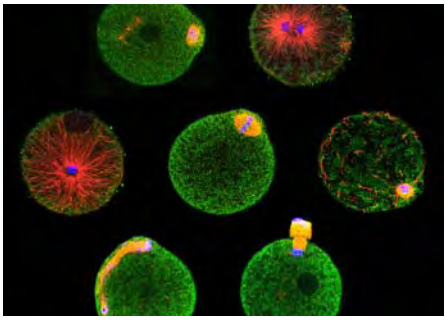


KELLY BETTERMAN
Lymphatic Development Laboratory, Centre for Cancer Biology, SA Pathology, Adelaide SA
Image Description:
A confocal z-stack image demonstrating that lymphatic vessels (green - stained with goat anti-mouse CCL21 (R&D Systems)) are intimately associated with mammary epithelial ducts (red - stained with Cy3-conjugated mouse monoclonal anti-alpha smooth muscle actin (Sigma-Aldrich)) in the pregnant mouse mammary gland.

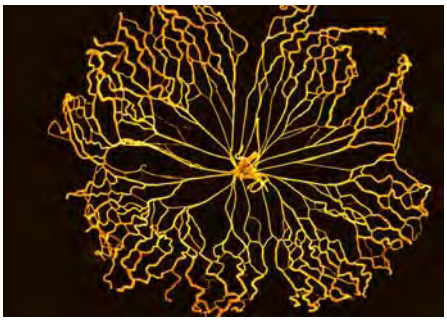


LACHLAN JOLLY
Neurogenetics Research Program, Womens and Childrens Hospital, North Adelaide SA
Image Description: Derivation of neural tube-like structure from embryonic stem cells (ESCs): Colonies of Neural Progenitor Cells (stained with anti-BLBP; red) derived from ESCs form a polarised pinwheel architecture that shares many features with the neural tube. These include the formation of a centralised 'apical-like' region delimited by cell-cell adhesion complexes (stained with anti-beta catenin; green) and a peripheral 'basal-like' compartment containing newly born neurons (stained with anti-betaIII-tubulin; blue).

VICKI METZIS
Developmental Genes and Human Disease Unit, Institute for Molecular Bioscience, University of Queensland, St Lucia QLD
Image Description:
Scanning electron micrograph of the face of an embryonic mouse at mid-gestation (10.5dpc). This corresponds to approximately the 6th week in humans. The image illustrates the facial primordia which surround the primitive mouth, prior to their fusion to form a lip, nose and jaw.



MATTAN LEVI
Shalgi Laboratory, Dept of Cell & Developmental Biology, Sackler Medical School, Tel Aviv University
Tel Aviv, Israel
Image Description:
The effect of Fyn-kinase inhibitor on cytoskeleton organization in rat oocytes. Fyn-kinase (green); microtubules (red); chromosomes (blue).



LEIGH COULTAS
Cancer and Hematology Division, Walter and Eliza Hall Institute of Medical Research, Parkville VIC
Image Description:
The hyaloid vasculature is a transient blood vessel network that nourishes the eye during development then regresses by apoptosis shortly after birth. We are using hyaloid vessel regression as a model for studying the role of the Bcl-2 family of apoptosis regulators in endothelial cell death. Pictured is a fluorescence image of the hyaloid vessel network stained for the endothelial cell-specific marker PECAM-1.

ARC Boden Conference

Genome Biology of Corals and Their Relatives

ARC Centre of Excellence for Coral Reef Studies

David Miller

Peppers Blue on Blue resort on Magnetic Island (North Queensland) was the venue for the ARC Boden Conference "Genomics of Corals and their Relatives" which was held on March 6-9, 2011 and sponsored by The ARC Centre of Excellence, James Cook University and The Australian Academy of Sciences with the support of the ANZSCDB. The focal point of the meeting was the imminent release of the whole genome sequences of two corals – that of Acropora millepora will be the first fully "home-grown" complex genome project (i.e. the first animal whose genome has been sequenced and assembled entirely locally, thanks to support from the Australian Genome Research Facility and Illumina). The genome of a second Acropora species is being sequenced by a Japanese team at the Okinawa Institute of Science and Technology (OIST). Nori Satoh, who leads the Japanese team, was a Keynote speaker at the meeting.

Fifty delegates, including members of the ARC Centre of Excellence for Coral Reef Studies and six Australian universities were involved, along with 15 overseas speakers from eight institutions. The meeting featured an eclectic mixture of scientists from bioinformatics, genomics, developmental biology, physiology and microbiology, united by a common interest in corals, their relatives and their symbionts.

Of the international speakers, Prof Thomas Bosch (Kiel, Germany) was the ANZSCDB invitee.

Bosch is a leading figure in the German academic system and the cnidarian biology community world-wide, and is his group is perhaps best known for developing transgenic technology for Hydra and other cnidarians. Other key international speakers were Dr Konstantin Khalturin (Kiel), Prof Nori Satoh (OIST), Prof Angela Douglas (Cornell), Dr Rebecca Vega-Thurber (Florida) and Dr Allen Chen (Academia Sinica).

One of the main themes of the meeting was the application of "next-generation" DNA sequencing technology to coral biology, and the power of using these methods coupled to the reference genomes and transcriptomes. Nori Satoh and members of his group outlined the assembly and main findings from the Japanese genome sequencing project, and Sylvain Foret and David Miller described the Australian genome and transcriptome work. Experiments making use of these latter resources formed the basis of talks from Aurelie Moya and Yvonne Weiss on ocean acidification effects on early coral life history stages and coral immunity respectively. A second major theme of the meeting was the interaction of the coral animal with microbes and viruses. David Bourne (AIMS) and Bette Willis outlined the microbiology and ecology of coral disease, while Becky Vega-Thurber

Continued on Page 20

Delegates at the ARC Boden Conference

Continued from Page 19

and Adrienne Correa (Florida) talked about the viruses associated with corals. The interactions of Hydra with its microflora were elegantly outlined by Thomas Bosch, and Angela Douglas gave a wonderfully clear description of the pea aphid – Buchnera symbiosis, which in many ways resembles the coral-dinoflagellate symbiois.

Particularly valuable were the contributions of the OIST, Kiel and Academia Sinica groups – a total of nine attendees. The meeting helped to forge stronger Australian links with these institutions, as well as collaborations between individual researchers.

The timing of the meeting - early March, a month after the region had been devastated by cyclone Yasi and still during the peak of the cyclone season – was a factor in the selection of the Peppers resort to hold the meeting. However, Peppers proved to be an excellent choice as a venue given the ease of access and standard of accommodation. The only casualties were a few cases of seasickness caused by the ferry trip to the island and the odd case of overindulgence in Margaret River reds.

Organising committee: Line Bay, Sylvain Foret, David Miller and Janet Swanson ■

Prof Thomas Bosch - ANZSCDB Invitee

New South Wales Cell and Developmental Biology Meeting

Thomas Fath

This year's 17th New South Wales Cell and Developmental Biology Meeting was held on 25 March at the Garvan Research Institute and attracted over 80 researchers from around New South Wales. The meeting was organised by Thomas Fath and Anthony Kee, the current New South Wales State Representatives of ANZSCDB. The meeting was jointly organised with the Australian Society for Biochemistry and Molecular Biology.

There was a truly outstanding line-up of world-renowned international, interstate and local speakers, including nine excellent presentations by PhD students and Postdocs from institutes around New South Wales, including the University of Newcastle, The University of Sydney, the University of New South Wales, the Kolling Institute for Medical Research and the Garvan Institute. As plenary Speaker Prof Kai Simons, Director of the Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany (sponsored by The Hunter Cell Biology Meeting) presented an exciting overview on the biology of lipid rafts and their function as membrane organizing principle. The meeting was opened with a key lecture by Prof Patrick Tam from the Children's Medical Research Institute, Westmead who discussed his lab's ongoing work on gene activity in the mouse embryonic foregut. A/Prof Peter Noakes from the Queensland Brain Institute, University of Queensland introduced the second session of the meeting with his talk about the function of neuregulin in agrin-induced acetylcholine receptor clustering. Following the tradition from last year's NSW CDB meeting, awards sponsored by ANZSCDB for the best PhD/Postdoc presentations were given. First prize went to Dr Lowenna Holt for her presentation "*Specific ablation of β1 integrin in prostate epithelium: a surprising role in seminal vesicle differentiation*" and the second prize was awarded to Mr Matt Dunn for his talk entitled "*The CCT/TRiC complex is involved in mediating sperm-oocyte interaction*".

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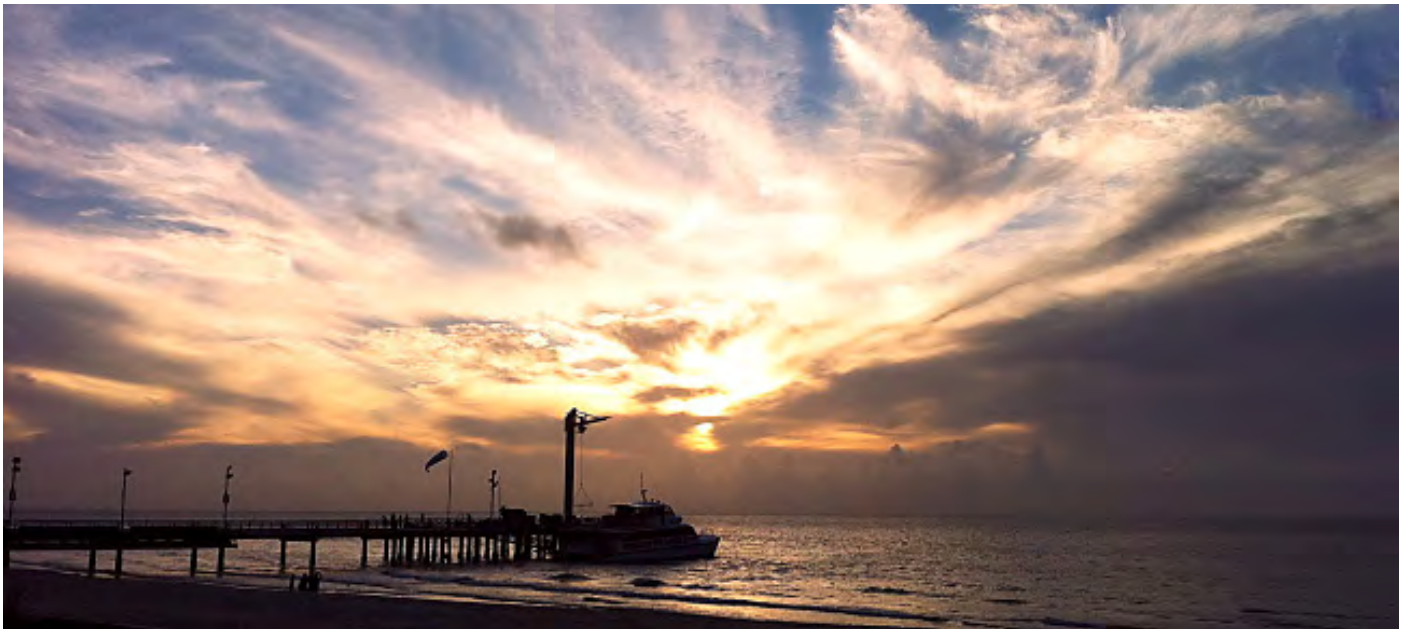
12th Australia and New Zealand Zebrafish Meeting

Ben Hogan

Institute for Molecular Bioscience, University of Queensland



Feb 6th-9th , Moreton Island, Brisbane, Australia

The annual Australia New Zealand Zebrafish meeting saw its 12th year this February in a meeting held on Moreton Island, just out of Brisbane. Each year, this meeting brings together researchers working with the zebrafish model, both from established labs and those starting out in zebrafish. This years meeting ran over 3 days from February 6th to the 9th, attracted over 65 delegates and covered diverse topics in zebrafish research. Traditionally, this meeting has been a gathering of a close-knit research community with open discussions of delegate's research and a strong social program – this year was no exception.

The meeting has always brought prominent international speakers to Australia and New Zealand, giving students and postdocs an opportunity to interact with leaders in the field and this year we were very pleased to host four wonderful international guests – Scott Fraser (Caltech, USA), Lalita Ramakrishnan (University of Wahington, USA), Steve Wilson (UCL, UK) and Andy Oates (MPICBG, Dresden, Germany). The contributions of our international speakers throughout the meeting helped to create an interactive and social atmosphere and we thank them for their efforts!

The meeting began on a hot and very humid Queensland Sunday afternoon with a ferry ride to the island followed immediately by the first session of the meeting. The meeting kicked off with a session on neurobiology followed by our opening plenary lecture (the EMBO plenary) from Steve Wilson. Professor Wilson presented his work on the genetic regulation of asymmetry in the zebrafish brain with a particular focus on the neuronal organization and connectivity in the epithalamus. His imaging of individual axon tracts and cell behaviour set the scene for a meeting that heavily featured imaging approaches. Following the talk, it was a very short stroll to the white sand of the resort beach to open the social program with a couple of cold drinks.

On the Monday, we had sessions on gene regulation, behavioural biology and blood, immunity and circulation. Throughout the meeting, these main sessions consisted of 15 minute talks from Australian and New Zealand students and postdocs with 4-6 talks per session. Felix Ellett, a PhD student from Graham Lieschke's laboratory (ARMI), presented his work on zebrafish macrophages and neutrophils during host pathogen interactions. He reported the construction of

Continued on Page 22

Continued from Page 21

a transgenic reporter line that selectively labels macrophages and compared the behaviours of macrophages and neutrophils during wound healing and fungal infections using live imaging approaches. He won the 2011 ANZSCDB student prize for his presentation.

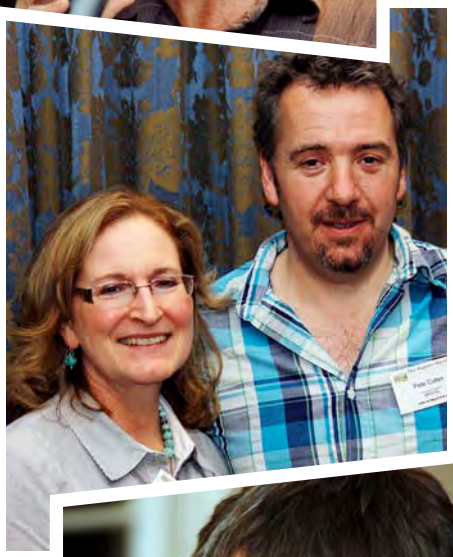
We heard from our second plenary speaker Professor Lalita Ramakrishnan in the afternoon. Professor Ramakrishnan uses the zebrafish to study the role of the granuloma in the progression of tuberculosis infection. She told us about the fruits of a forward genetic screen that identified a new susceptibility locus for tuberculosis infection (LTA4H) using a susceptible zebrafish infection mutant. The translational aspects of her work were particularly strong with LTA4H shown to be linked to TB susceptibility in humans.

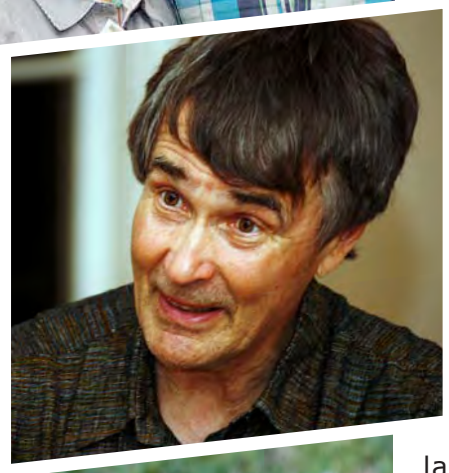
On the Tuesday, we had sessions on zebrafish models of disease, tissue morphogenesis and cancer. In the morphogenesis session, Emily Don from Nick Cole's laboratory (University of Sydney) presented work from the beginning of her PhD studies on a novel zebrafish mutant that specifically fails to form pelvic fins. She gave a wonderful talk for which she was awarded runner up for the student prize and received a cash award sponsored by the ANZSCDB. On this final day, we also heard from our final two plenary speakers. Dr Andy Oates told us about his work on the segmentation of the vertebrate body plan and the role of oscillator period in defining somite size and number. His quantitative modeling of oscillator function during somitogenesis predicted the genetics that followed as he described the first oscillator period mutant, a zebrafish mutant that formed fewer somites due to a slowed oscillator and lengthened period. His work served as an example of the depth of mechanistic insight that comes with quantitative developmental biology.

Following the last session on cancer biology, we heard from our final plenary speaker, Professor Scott Fraser. Professor Fraser described new techniques and technologies his lab is developing for both imaging and functional studies in the zebrafish. He described the design of a new microscope that combines multi-photon with light sheet scanning properties in order to produce significantly higher quality 3D images of whole embryos. He also took time to highlight the toxic effects that long-term timelapse imaging can have on developing cells, even when it is not outwardly obvious. In a multi-staged presentation, he presented a novel method for performing enhancer trapping of genes in the zebrafish genome called "flip-trap" that can be used to create gene trapped alleles that are Cre-recombinase inducible null alleles and that create direct fusion proteins with the trapped gene product. He finished up by presenting a method for multi-colour fluorescent in situ hybridization, whereby up to 5 gene expression patterns can be imaged simultaneously in fixed embryos.

The meeting concluded with the conference dinner and awards ceremony followed the next morning by a queezy boat ride on a choppy Moreton bay back to the mainland. We look forward to the 2012 meeting to be held in Melbourne!

The organizers would like to thank our sponsors for their kind support of the meeting (EMBO, ANZSCDB, Tecniplast, Aquatic habitats, LSE, Sigma-Aldrich, IDT, Olympus, Eppendorf and Genesearch). Organising committee: Ben Hogan, Ethan Scott, Kelly Smith, Angela Lawton and Susan Nixon.





The Hunter Meeting

Peter Gunning

The 2011 Hunter Meeting, chaired by Professor Philip Robinson, CMRI, co-Chair, Professor Peter Gunning, UNSW, was an exciting mix of established researchers and young investigators with new stories to tell. We are grateful to the ANZSCDB (Australia and New Zealand Society for Cell and Developmental Biology) for their continuing sponsorship of the Hunter Meetings, in 2011 bringing to Australia for the first time, Professor Pete Cullen from Bristol University. Pete delivered the Keith Stanley Lecture, the opening presentation of the meeting, on phosphoinositide regulation of the endosomal network which set the scene for a great meeting and demonstrated the strong links between signalling, cell biology and developmental biology. He also visited Labs at Monash University, the University of Melbourne and the University of Queensland. Professor Kai Simons (Max Planck Institute, Dresden, Germany) delivered the Hunter Lecture and inspired everyone with his account of the lipid raft theory and how it has developed over several decades of research.

The attendance of Professor Jean-Paul Thiery (IMB, Singapore) and Dr Daniel Constam (Swiss Institute for Experimental Cancer Research, Switzerland) was generously sponsored by the ISD (International Society for Differentiation). Jean-Paul Thiery's work on the neural crest is without parallel internationally and his talk was inspiring. Excellent presentations also came from our other international speakers: Caroline Hill (Cancer Research UK London Research Institute), Andras Nagy (Samuel Lunenfeld Institute, Canada), Peter ten Dijk (Leiden University Medical Centre), Jens Rettig (Universität des Saarlandes, Germany), George Banting (Bristol University, UK), Volke Haucke (Berlin, Germany).

Topics and themes were carried through the sessions by excellent national presenters together with talks chosen from abstracts.

Major sponsors were ANZSCDB (Peter Cullen, presenter); the ISD; Olympus (Main Program Workshop), and TGR BioSciences, PerkinElmer and Merck (Pre-conference Imaging Workshop)

The 12th Hunter Meeting, Incorporating the 5th Imaging Workshop

Tuesday March 27 - Friday March 30, 2012

The Sebel - Kirkton Park, Hunter Valley ~ Oakey Creek Road, Pokolbin, NSW, Australia (Pokolbin ~ NSW premium wine district)

Convenor: Professor Peter Gunning

Co-convenor: Professor Jennifer Stow

The 12th Hunter Meeting will continue the tradition of the meeting with a combination of great international and national speakers. Our internationals will include Bart Vanhaesebroeck (Signalling), Valerie Weaver (Cancer Cell

From Top to Bottom: Phil Robinson (Convenor), Edna Hardeman and Peter Cullen, Kai Simons, Jean-Paul Thiery and Jens Rettig

Biology), Philippe Sansonetti (Host-Pathogen Interactions), Anna Akhmanova (BioArchitecture), Nobutaka Hirokawa (Neuronal Development), Fiona Watt (Regenerative Medicine) and Dennis Brown (Trafficking).

The program will move from molecular mechanisms of signalling and cell proliferation through organisation of cellular space to movement through the cytoplasm and on to mechanisms of differentiation and morphogenesis. We will finish with consideration of the interface between cell and developmental biology and emerging implications for medicine. You are invited to submit your new exciting data for consideration for presentation from selected abstracts.

The Hunter Meeting will be preceded by an imaging workshop built around the themes of imaging at the level of the whole organism all the way through to single molecular events within cells.

The Hunter meeting is limited in capacity to 170 registrants. You are encouraged to register early to avoid disappointment for what will be a genuine highlight of 2012 Conference Calendar.

Visit the website for further details
http://hcbm.mtci.com.au/

IMPORTANT DATES:

- June, 2011

Registration open; abstract submissions accepted

- November 11, 2011

Close of abstract submission for selection for Platform/ Poster presentation

- November 11, 2011

Due date for payment of deposit for Exhibition and Sponsorship

- January 13, 2012

Full payment of Exhibition and Sponsorship fee

- January 13, 2012

Notification of acceptance for Platform/Poster presentation

6th International Congress of Cell Biology

Cynthia Jensen

University of Auckland

Left to right: Denys Wheatley (UK, President of International Federation for Cell Biology and Editor-in Chief, Cell Biology International), Cynthia Jensen (New Zealand), Nobutaka Hirokawa (Japan), Yoshihiro Yoneda (Japan), Kazuhiro Nagata (Japan), J Park (Korea)

The 6th International Congress of Cell Biology (APOCB) was held from 25-28 February at the EDSA Shangri-La Hotel in Manila, Philippines. The Australia and New Zealand Society for Cell Biology is a member of the APOCB, as are the other cell biology societies in the Asia-Pacific region. The APOCB congresses are held every four years. The congress was attended by 233 delegates, 107 of them from the Philippines and the others from other countries in the Asia-Pacific region (including Australia and New Zealand), as well as beyond.

The theme of the Congress was "Challenges in Cell Biology: Health, Agriculture, Industry and Education". The Congress included 11 plenary sessions (with speakers from the USA, UK and Germany as well as the Asia Pacific region), a symposium on "Cell Biology Education" (which I organised and chaired) as well as oral presentations and poster sessions.

Extremely valuable and interesting parts of the Congress were the two half-day workshops held immediately prior to the Congress. For the morning workshop on "Teaching Cell Biology with Limited Resources" Dr Omar Harb from the University of Pennsylvania, USA ran a very useful hands-on workshop on teaching bioinformatics, in which the participants worked on exercises with their own laptops. The afternoon workshop on "Scientific Writing and Publishing for Non-native Speakers of English" was run by Dr Denys Wheatley (Editor-in Chief of Cell Biology International and President of the International Federation for Cell Biology) In addition, Dr Kurt Albertine, Editor-in-Chief of The Anatomical Record presented sessions on "How to Teach Students to Teach" and "Ethics in Scientific Writing". Both of these workshops would be excellent to repeat at other conferences.

During the Congress I represented the ANZSCDB at the Executive Meeting of the APOCB and also attended as an APOCB Vice-President. New officers were elected and Singapore was confirmed as the venue of the next Congress of the APOCB, to be held in 2014.

The Congress organizers and hosts went out of their way to make everyone feel welcome, perhaps the most valuable and memorable aspects of any conference. And in addition to the excellent science, we were hosted at several events that involved the fascinating local culture.

Dancing to orchestra of local instruments. Nobutaka Hirokawa with Wendy Bayona, graduate student from the Philippines

Membership In The News

Australian Academy of Science

Leading Australian scientists were honoured on 23 March by election to the Australian Academy of Science (AAS). Election to the AAS recognises a career that has significantly advanced, and continues to advance, the world's scientific knowledge.

Professor Emma Whitelaw's work in epigenetics saw her join this elite group of Australian scientists in March 2011.

Professor Whitelaw is honoured to be elected an Australian Academy of Science Fellow. "I am delighted to be elected into the Australian Academy of Science. It is an enormous honour to be recognised among some of Australia's most talented researchers. I hope that I can contribute to the work of the Academy in promoting science within Australia.

I would also like to take the opportunity to thank many of my colleagues for their support, in particular all of the past and present members of my laboratory. I stand on their shoulders."

AAS Academy President Professor Suzanne Cory warmly welcomed the 17 new Fellows. 'I congratulate all of our new Fellows on their stellar scientific achievements and this well-deserved recognition,' she said.

'I look forward to welcoming them at our annual Science at the Shine Dome event in Canberra this May, during which they will speak about their research.'

Professor Whitelaw is current chair of the Queensland Institute of Medical Research (QIMR) Division of Genetics and Population Health, Head of QIMR's Epigenetics Laboratory and is an Australian Fellow. Emma wa the ANZSCDB President's Medalist in 2010

The Australian Academy of Science invited nominations from young Australian scientists, preferably in the final years of their PhD, to attend the 61st Meeting of Nobel Laureates in Lindau, Germany 26 June – 1 July 2011. Natasha Behrendorff from the School of Biomedical Sciences, University of Queensland and ANZSCDB member is very proud to have been selected to attend.

She says, "I'm an MBBS/PhD student in the lab of Assoc. Prof Peter Thorn. Our lab researches secretion in the exocrine pancreas - specifically how pancreatic acinar cells regulate the release of digestive enzymes via exocytosis. We use two-photon microscopy to follow the process in real-time in live cells."

Following is the section that Natashas wrote for about her motivation in applying for the Lindau 2011:

"I had the pleasure of meeting Prof. Barry Marshall, who won the 2005 Nobel prize in Physiology for his work on linking Helicobacter Pylori and peptic ulcers. Marshall is a prime example of how basic science can be linked with clinical practice to result in better outcomes for patients. As someone who is doing a dual Medicine/PhD program, I am intrinsically interested on how best to translate my research on a cellular level to better treatments and diagnoses. The opposite also applies - I want to know how to approach medicine from an evidence-based mindset. Prof. Marshall and Warren challenged the status quo of the peptic ulcer field which was convinced that peptic ulcers were primarily the result of stress, acid and other factors. By building up a solid argument they were able to eventually convince the field that not only could Helicobacter survive in the stomach, but it was capable of causing ulcers (when Marshall exposed himself to it). Extreme - but novel and convincing evidence."

Deserved congratulations to Natasha and we look forward to hearing about the Lindau experience in the next edition of the ANZSCDB newsletter.

Membership In The News

Australian Academy of Science Fellows Elected to Royal Society

Four Fellows of the Australian Academy of Science have been elected to the prestigious Royal Society of London, the oldest scientific academy in continous existence.

Australian Academy of Science President professor Suzanne Cory congratulated the four on their election.

"To be honoured and recognised by one of the world's most prestigious scientific academies is a significant achievement, and well deserved by each of these Fellows of the Austrlaia Academy of Science," Professor Cory said.

Dr Patrick Tam is a senior principal research fellow at the Children's Medical Research Institute at the University of Sydney. The was elected to the Royal Society for advancing the understanding of early embryonic development and orginis of congenital malformations.

The new Fellows were formally admitted to the royal Society on the 15th July 2011.

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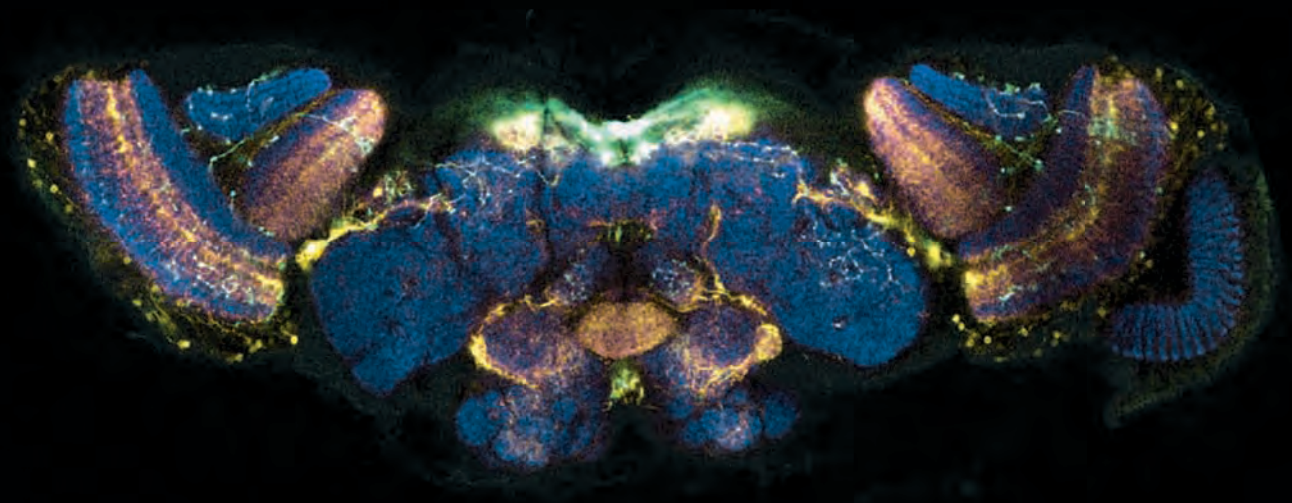

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MIRANDA GROUNDS

Miranda has focussed on factors controlling the repair of damaged skeletal muscle and on potential treatments for muscle diseases such as Duchenne's muscular dystrophy and muscle wasting. Her research has pioneered many studies into factors controlling skeletal muscle regeneration with a particular emphasis on myogenesis in post-natal skeletal muscle in vivo, and an ongoing interest in the role of the extracellular matrix. Research on cell therapies developed the Y-chromosome probe for tracking male nuclei and identified the massive and rapid death of injected donor cells in Myoblast Transfer Therapy. Current research includes the in vivo role of IGF-1 isoforms, inflammation and anti-cytokine therapies, metabolism, oxidative stress, all with applications to skeletal muscle wasting with ageing, muscular dystrophy and especially age-related loss of muscle mass and function (Sarcopenia).

CHRISTINA MITCHELL

The research group led by Christina is currently pursuing the identification and characterization of novel proteins that regulate cell growth and differentiation. The team has two major fields of research; 1) characterizing several lipid phosphatases that terminate signals generated by the proto-oncogene PI 3-kinase. These projects aim to determine the intracellular location of these enzymes using real time imaging in live cells, characterize substrate specificity and investigate the effect on cell growth and differentiation in various cellular models, in which these signal terminating enzymes are over, or under expressed. 2) We have cloned and characterized a recently identified family of proteins, comprising four and a half LIM domains, which are predominantly expressed in skeletal muscle.

RICHARD HARVEY

The molecular dissection of heart development is important not only for understanding congenital heart disease causation and approaches to amelioration, but also to adult heart adaptation, stem cell deployment and disease. The aim of the Developmental and Stem Cell Biology Division at the Victor Chang Cardiac Research Institute is to understand how different genes work together individually and in networks to guide development of an animal and its organs, and how pathways might be augmented, particularly in regeneration.

PHIL CROSIER

Phil is Professor of Molecular Medicine at the School of Medical Sciences, The University of Auckland, New Zealand. He is involved in numerous professional activities such as grant reviewing for funding agencies in New Zealand and Australia, he has served on the Development Committee of the International Society for Stem Cell Research and NZ representative of the Australia New Zealand Society for Cell and Developmental Biology. His major research interest is in the regulation of cell growth and differentiation, and lineage commitment. In this research he uses the zebrafish model system to investigate the transcriptional regulation of stem cell function and the development of the innate and adaptive immune systems. In this work the zebrafish system is also being used to model insights into human disease and utilize these systems in chemical genetics screens.

Your Committee Members

ALPHA YAP

My laboratory studies one set of cell-to-cell interactions, those that occur when cells attach to one another. We focus on the cadherin family of cell-cell adhesion receptors. These critically determine the ability of cells to recognise one another and organise into coherent tissues. The importance of these receptors is emphasised by the fact that loss of cadherin function promotes cancer progression in epithelial tissues (such as the breast and colon) – the commonest form of human cancers. Cadherin dysfunction also contributes to the breakdown of epithelial barriers during inflammation, notably in chronic disease of the intestine. By understanding the basic biological mechanisms of cadherin-mediated cell recognition, we thus hope to provide vital insights into the basis of developmental patterning and common human diseases.

PETER KOOPMAN

Our group focuses on genes controlling the formation of various organs in the developing embryo. Our main interest is striving to understand the events that determine whether an embryo develops as a male or a female. We are studying the gene SRY, the Y-chromosome maleness gene, and how it controls the genetic and cellular events leading to testis development and male sex determination. We also specialise in the identification and characterisation of other sex development genes using techniques such as microarray screening and transgenic mouse models, and studying how these affect sex development. Ultimately we hope to better understand the causes of human disorders of sex development. We are also interested in how an embryonic cell type known as germ cells comes to eventually develop as sperm in males or eggs in females.

SHARAD KUMAR

The two major interests of our laboratory are: (1) the study of programmed cell death and (2) regulation of protein stability and trafficking by ubiquitination. Apoptosis plays a fundamental role in cell and tissue homeostasis and its misregulation results in a variety of human diseases including many types of cancer. We are studying the function and regulation of caspases, a group of proteases that act as effectors of apoptosis. Ubiquitin-mediated protein modification plays an essential role in cellular regulation. Recent studies suggest that ubiquitination is a major regulator of many ion channels, receptors and transporters. We are studying the function of a group of ubiquitin-protein ligating enzymes (Nedd4-like proteins). The Nedd4 family of ubiquitin ligases belongs to the HECT class of E3s. We are also studying a group of proteins that regulate the function of the Nedd4 family of E3s.

Your Executive Team

President

EDNA HARDEMAN
Dept of Anatomy
School of Medical Sciences
Wallace Wurth Building, G27
The University of New South Wales NSW 2052
Tel: 02 9385 3760
Fax: 02 9385 8016
e.hardeman@unsw.edu.au

President Elect

PETER CURRIE
Australian Regenerative Medicine Institute
Monash University
Clayton VIC
p.currie@victorchang.unsw.edu.au

Immediate Past President

ALPHA YAP
Institute for Molecular Bioscience
The University of Queensland
St Lucia QLD 4072
Tel: 07 3346 2013
a.yap@imb.uq.edu.au

Treasurer

KIERAN HARVEY

Cell Growth & Proliferation
Peter MacCallum Cancer Centre
Melbourne VIC
Tel: 03 9656 1291
Kieran.Harvey@petermac.org

Secretary

IAN SMYTH
Biochemistry and Molecular Biology
Monash University
Clayton VIC 2145
Tel: 03 9905 1051
ian.smyth@med.monash.edu.au

Secretariat ANZSCDB

ROS BARRETT-LENNARD
Magic Touch Consultancies
Tel: 02 9524 1744
Mob: 0419 688 581
anzscdb@mtci.com.au

Newsletter Editor

SUSAN DACRE
School of Medical Sciences
University of New South Wales
Tel: 02 9385 2531
s.dacre@unsw.edu.au

Your State & NZ Members

NSW

Dr Thomas Fath
School of Medical Sciences
The University of New South Wales
Tel: +61 2 9385 8495
t.fath@unsw.edu.au
http://www.med.unsw.edu.au/somsweb.nsf/page/resinterestsshowperson?OpenDocument&StaffID=3270828

Dr Anthony Kee
School of Medical Sciences
The University of New South Wales
Tel: +61 2 9385 8494
a.kee@unsw.edu.au
http://medicalsciences.med.unsw.edu.au/SOMSWeb.nsf/page/showpersonlist?OpenDocument&staffid=3151161

QLD

Dr Eva Kovacs
Institute for Molecular Bioscience
University of Queensland
Tel: +61 7 3346 2333
e.kovacs@uq.edu.au

Dr Michael Piper
Queensland Brain Institute
University of Queensland
Tel: +61 7 3346 6337
m.piper@uq.edu.au
http://www.corpuscallosum.org.au/Site/Mike_Piper_3.html

VIC

Dr Peter Farlie
Murdoch Children's Research Institute
Tel: +61 3 8341 6409
peter.farlie@mcri.edu.au
http://www.mcri.edu.au/pages/research/research-group.asp?G=14

Dr Julian Heng
Australian Regenerative Medicine Institute
Monash University
Tel: +61 3 9902 9719
Julian.Heng@monash.edu
http://www.armi.org.au/Research1/Research_Groups/Heng1.aspx

SA

Dr Yeesim Khew-Goodall
Centre for Cancer Biology
SA Pathology
Tel: +61 8 8222 3410
Yeesim.KHEW-GOODALL@health.sa.gov.au
http://www.cntreforcancerbiology.org.au/cellsig.htm

Dr Quenten Schwarz
Centre for Cancer Biology
SA Pathology
quenten.schwarz@health.sa.gov.au
http://www.entreforcancerbiology.org.au/index.htm

WA

Dr Aleksandra Filipovska
Western Australian Institute for Medical Research
Tel: +61 8 9224 0330
afilipov@waimr.uwa.edu.au
http://www.waimr.uwa.edu.au/team/afilipovska.html

A/Prof Evan Ingley
Western Australian Institute for Medical Research
Tel: +61 8 9224 0326
eingley@waimr.uwa.edu.au
http://www.waimr.uwa.edu.au/team/eingley.html

NZ

A/Prof Peter Dearden
Biochemistry Department
University of OtagoTel: +64 3 479 7832
peter.dearden@stonebow.otago.ac.nz
http://biochem.otago.ac.nz/deardenlab/index.html
http://www.growthcentre.ac.nz/

Dr Justin O'Sullivan
Institute of Natural Sciences
Massey University
Tel: +64 9 4140 800 extn 9811
j.m.osullivan@massey.ac.nz

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