ANZSCDB Newsletter

Australia and New Zealand Society for Cell and Developmental Biology INCORPORATED

Winter 2012

Read Up On:

President's Report

Welcome to the mid year issue of the ANZSCDB newsletter. It has already been a busy year of activities and meetings so far for the society, and we round up some of the activities that have occurred and highlight upcoming meetings and society related events. In this issue we take some time to celebrate one of the senior members of the ANZSCDB community, Patrick Tam. Patrick has reached the age where the combination of experience and wisdom peak, and it is only right and fitting that we acknowledge the important contributions Patrick has made to our discipline throughout his career. We preview COMBIO in Adelaide and celebrate the awarding of the society's top awards for 2012.

In this newsletter we also launch a new section called "Your Opinion" where members can have a say about issues relevant to the society, with our first opinion piece by Professor Jenny Stow, who tackles issues relevant to all over-committed academics and researchers.

State/NZ Chapter Activities

A real effort has been placed on trying to build the activity of the society locally through the use of the society's state and territory representatives. The society's local reps play an extremely important role in coordinating and delivering the "grass roots" activities of the society. Regional meetings are the real focus and it is pleasing to see the 4 stand alone meetings in Victoria, NSW Queensland and South Australia going so well. These meetings provide a real chance for post docs and students to strut their stuff and get noticed locally. We are very happy to support these initiatives, a process I witnessed first hand at the NSW meeting in March this year. The increased funding for the yearly state meetings has allowed the invitation of interstate speakers, which has proved a bit of a draw card for these meetings. In the next few weeks we will be calling for new representatives. Each year one of the state/NZ representatives steps down and we are now calling for nominations for keen and engaged new representatives, in particular from the ACT and from Tasmania (who are currently not represented). This opportunity is an excellent way to engage with your peers, to advance and promote wider interest in our field and to serve the Society. It also provides the chance to "tick the box" on society and committee involvement for your CV come grant and fellowship time. Please contact me or the Secretary Ian Smyth if you are interested in being a local society Rep.

COMBIO2012

COMBIO, our annual meeting, will be held in Adelaide at the Adelaide Convention Centre 23 - 27 September. This COMBIO is building as one of the strongest line-ups of international speakers that we have ever had at our annual meeting. International speakers we have confirmed for the meeting so far include:

· Brenda Andrews, University of Toronto, Canada

· Ted Baker, University of Auckland, New Zealand

Continued from Page 1

· Gerald Crabtree, Stanford University, USA
· Raymond J. Deshaies, Howard Hughes Medical Institute, California Institute of Technology, USA
· Richard Dixon, Samuel Roberts Noble Foundation, Ardmore, OK, USA
· Seth Grant, The University of Edinburgh, UK
· Jeff Hasty, University of California San Diego, La Jolla, USA
· James Hurley, National Institutes of Health, Bethesda, USA
· Michael Karin, University of California San Diego, La Jolla, USA
· David Kramer, Michigan State University, USA
· Robin Lovell-Badge, National Institute for Medical Research, London, UK
· Chris Marshall, Institute of Cancer research, London, UK
· Susan McCouch, Cornell University, Ithica, USA
· Andrew McMahon, Harvard University, USA
· Anne Osbourn, John Innes Centre, Norwich, UK
· Dale Sanders ,John Innes Centre, Norwich, UK
· John D Scott, Howard Hughes Medical Institute, University of Washington, Seattle, USA
· Michael Shen, Columbia University, USA

As you can see there is a dazzling array of international speakers in the area of cell and developmental biology and as such this meeting offers extraordinary value for the range and depth of speakers that are on offer. Well done to the organizers and stream coordinators for pulling together such a strong plenary and symposia program. If you have not registered, do so! I look forward to seeing you all at COMBIO.

President's Medal

Annoucement of Awards

It is a great pleasure to announce the awarding of the Society's two awards, the President's Medal and the ANZSCDB Young Investigator Award. The President's Medal is the highest honour that the Society bestows on its most highly acclaimed members and this year's highly worthy winner is **Prof Marilyn Renfree.**

A full account of Marilyn's research contributions will appear in the December Newsletter as part of our annual COMBIO round-up and Marilyn will present a retrospective of her career in research and hopefully, a view of things to come in the ANZSCDB President's Medal Plenary lecture at ComBio2012. However a brief précis of Marilyn's scientific contributions is outlined here. Marilyn is a University Laureate Professor and the Ian Potter Chair of Zoology at the Department of Zoology, The University of Melbourne. The central focus of research of her laboratory is to understand the control of reproduction and development in mammals. The laboratory studies a wide range of mammals, from wallabies to women, with an emphasis on Australian mammalian fauna, particularly marsupials and monotremes and the evolution of reproduction. She has received numerous previous awards including the Gottschalk Medal (Australian Academy of Science), the Mueller Medal (ANZAAS) and the Gold Conservation Medal for 2000 of the Zoological Society of San Diego. She received the Whitley Book award in 1987 with Hugh Tyndale-Biscoe for their textbook Reproductive Physiology of Marsupials. She was elected a Fellow of the Australian Academy of Science in 1997, and a Fellow of the Australian Institute of Biology in 1998. She currently serves as the Vice President and Secretary (Biological Sciences) of the Australian Academy of

Science. I warmly congratulate Prof Renfree on her award.

The ANZSCDB Young Investigator Award recognises the up-and- coming leaders in the discipline of Cell and Developmental Biology. The aim of the YIA is to draw attention to the achievements of our best and brightest and provide a bit of a leg up in the tough funding milieu that we all face. This year's winner is **Dr Aleksandra Filipovska.**

Aleksandra is an ARC Future Fellow at the Centre for Medical Research at the University of Western Australia. Her work has been focused on identifying mammalian mitochondrial RNA-binding proteins and investigating their role in RNA metabolism in healthy cells and cell models of disease. She has published a number of high profile papers in this area of research recently. Aleksandra has been an active member of the society acting as a WA representative of ANZSCDB. We look forward to her talk and congratulate her on her achievements.

Membership Issues

Membership remains a central focus of the ANZSCDB executive and growing the membership remains the most effective way of building the Society's influence and strengthening its ability to advance the discipline of cell and developmental biology. I urge everyone to try and help with this issue and become an advocate for the Society. Membership does have its privileges! Travel support to COMBIO for PhD students and eligibility for the society's prizes are dependent on individuals being active members of the Society. On the other end of the spectrum we have also recently developed a new category of membership for the Society, that of the emeritus member. We acknowledge that it is often difficult for previous members who have retired to maintain their membership. We therefore have introduced the emeritus category of membership whereby individuals who retire from their positions and who have maintained 5 years of continuous membership prior to their retirement can be recognized as emeritus members where membership fees to the society are waived. I would like to thank Cynthia Jensen for bringing this concept to our attention, which I think is a great initiative. If you think you would like to take advantage of this please contact the secretariat to arrange. As always new members and renewals can join online at http://www.anzscdb.org/ANZSCDB-Membership.html.

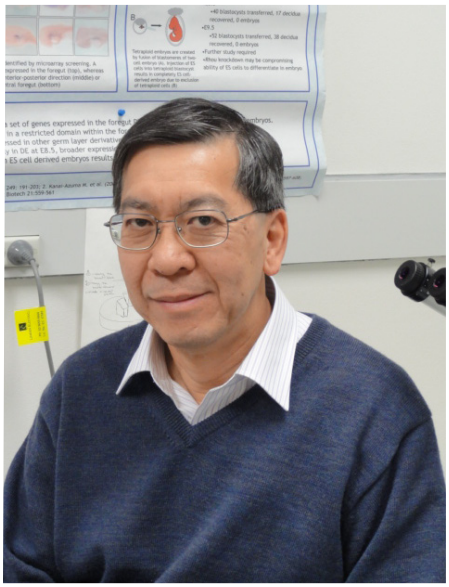
Mapping his own fate

Fiona Wylie

Let's face it, most of us are happy if we end up even partially reaching the lofty research goals set in our early academic years. But to completely answer the major question set at the beginning of one's career and in a way that impacts on almost every other researcher in that field…well, that is just showing off!!

In November of this year the Hong Kong Society of Developmental Biology will host a two-day Symposium entitled From Embryology to Disease Mechanisms. The line-up of speakers comprises leading scientists from around the world presenting on a range of topics including gastrulation, organogenesis and developmental disorders. And it is all to honour the 60th birthday of one of science's most successful and favourite developmental biologists… Patrick Tam, who is "60 years & still gastrulating".

Born and raised in Hong Kong, Patrick has called Australia home for over 20 years, joining the Children's Medical Research Institute (CMRI) in Sydney to establish a research program on mammalian embryology in 1991. He is now Head of the Embryology Research Unit and the Deputy Director of CMRI, as well as an NHMRC Senior Principal Research Fellow and a Professor in the Sydney Medical School of the University of Sydney. Patrick's international recognition in the field of developmental biology stems from two major contributions - pioneering the application of micromanipulation and whole mouse embryo culture in experimental embryology and unravelling the cellular and molecular mechanisms of cell fate determination and body patterning during embryonic development.



Setting the bar high from the start

Patrick's research goal from almost day one was to understand how genes and cellular signals in the developing embryo work together to assemble the required cells and tissues in the places they are supposed to be and doing the task for which they are assigned. Indeed, his PhD project undertaken in the late 70s was "to characterise the developmental fate of an active multiplying population of cells in the epiblast of the gastrulating mouse embryo." And, over the ensuing 30 years, that is precisely what he did.

According to fellow developmental biologist Peter Koopman, Patrick Tam is the only scientist he knows who started out with such a lofty and difficult goal, and can say that the task is now complete. "Patrick now knows what every group of cells in the gastrulating mouse embryo is fated to become and where it will end up. How many of us can say that their job is done and dusted? What a wonderful feeling that must be!"

Minding the gap

It was during Patrick's undergraduate days in Hong Kong that his future career path and perhaps the path of mouse embryology were set. His education at the University of Hong Kong started with a Bachelor of Science in Zoology and Human Neuroscience. However, according to Patrick, something was amiss. "I noticed that a particular discipline, in those days called Embryology, was missing from the curriculum at my university. I had found one book on it in the library there by Boris Ivan Balinsky entitled An Introduction to Embryology, and that was all." Patrick went to the Department of Zoology about a possible course, only to find that nobody in the whole place had expertise in this area. So, Patrick decided that this was just not right, and that he had to learn something about this 'missing' subject.

At that time, students such as Patrick thinking about heading overseas to pursue post-graduate research had to have a Masters level degree to be competitive for the highly sought-after British Commonwealth Scholarship. So, Patrick went to a professor who was working on sex reversal in fish, which was at least an area related to developmental biology, if not exactly embryology. However, not really wanting to study fish biology, Patrick proposed that he should work instead on mammalian development, and so was sent to the animal house to find something to work on. "There I saw the rats and thought: Okay I'll study rat embryos, and that is basically how I started." Mice were not even featured on his horizon then.

Place and timing are everything

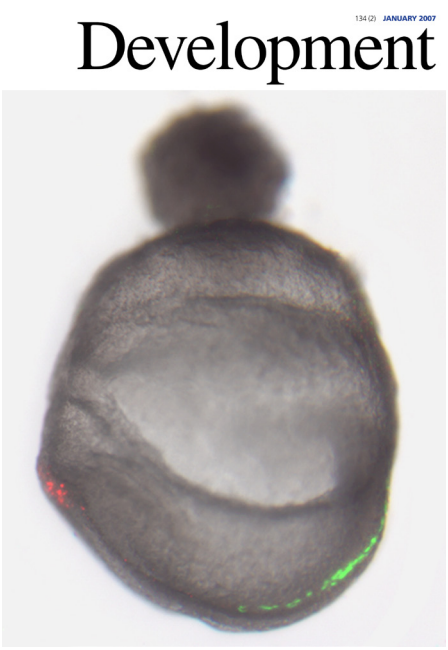
After completing his Masters in Reproductive Physiology in 1977, Patrick secured his

scholarship and travelled to England to take up a PhD at the University College London (UCL). "At that time one of the giants of developmental biology, Anne McLaren, had moved from Edinburgh University to UCL to set up the Medical Research Council Mammalian Development Unit, and I joined the Unit as the first student in her new lab," recalls Patrick. "The scientist I actually worked with directly was Michael Snow, who is as accomplished a comedian as he is a scientist. He was incredibly fun to work and interact with in the lab. I also remember that his radio was on all the time, and during the cricket season, he listened continuously to the games at the Lords and tried to bring me up to speed with this sport, although I was never converted."

"I was very fortunate in that when I joined the field of mammalian development in the late 70s, it had just started to bloom. At that time, you could count on a few hands the number of people working in the field and there were three major centres in the UK working on mouse development. There was Richard Gardner's lab in Oxford where he, Janet Rossant and Ginny Papaioannou were transplanting inner cell mass cells into the mouse blastocyst for lineage analysis. Then we had Martin Johnston in Cambridge studying the polarisation of blastomeres and testing the inside-outside model for pre-implantation development. And the third was Anne's Unit in London, focussing on germ cell differentiation, gastrulation (Mike Snow), X-chromosome inactivation (Marilyn Monk), parthenogenesis and embryo cryopreservation (David Whittingham). These groups were jokingly known as the Oxford, Cambridge and London "mafia" of mammalian development.

When Patrick joined the McLaren lab, Mike Snow had recently identified a small group of cells in the 6.5-day-old mouse embryo that he reckoned was the soul of the embryo. So, with no thesis committees or neatly planned-out projects in those days, Patrick's PhD instructions were as follows: "Here is the lab and there is the library, so go and find out - What are these cells doing there?" And nearly 30 years later, when Patrick and his team managed to do just that, he remembers feeling exquisitely satisfied.

On that same note, Patrick recalls an event in 2007 at Cambridge University to celebrate Anne McLaren's 80th birthday where he gave a talk on his career work. "Anne gave me a big thumbs-up and a wide grin at the end of my talk, while Mike Snow, who was retired from science for a long time by then, came up to me after the talk and told me that I may have got the right answer to his question. It was great to be recognised that I'd done something useful, and it's always good to hear that from your mentors!



A fatemapping experiment revealing the contribution by different groups of endoderm cells (red versus green fluorescence) to the tissue of the embryonic gut

A key developmental figure

One of the most important and pivotal interactions that Patrick set up at that time was with one of the Oxford 'mob', Rosa Beddington, who had started her PhD in the same year as Patrick. "I heard on the grapevine that there was another student in a different city working on gastrulation, but our two supervisors weren't in regular communication. So I contacted Rosa and suggested that we should meet, and Rosa came back to me and said "Yes, Patrick, we should meet, but not in Oxford or London - let's meet in Cambridge." So, we met up in a pub and talked about science, deciding then and there on what we would pursue while not treading on each other's toes. That was a truly great beginning of a lasting friendship."

Rosa Beddington was to be one of Patrick's major scientific influences, particularly in his work on embryo manipulation. "After I had graduated and taken up a faculty position back in Hong Kong, I spent a sabbatical year in Oxford with Richard Gardner in the mid-80s. I actually worked a lot with Rosa because I was struggling to learn how to do the micromanipulation. She was a step ahead in using Richard's technology and adapting it to do cell transplantation in post-implantation mouse embryos. Before that time, most experiments on embryos at this developmental stage were done inside the animal. So Rosa and I worked out how to culture the embryos and perform the micromanipulation to test cell fates. That changed my whole career - I learnt so much and I am eternally grateful to her."

Mastering the technique of in vitro embryo manipulation and culturing opened up a whole new world in finding out what a cell does in a different place and how it does it. Embryo micromanipulation remains a very powerful part of the developmental biologist's toolkit. It provides the flexibility to transplant cells of different types into an embryonic environment and test the impact of genetic backgrounds, functional attributes and lineage potentials on cell and tissue differentiation

in a developmental context.

The Australian phase

After working in Hong Kong for nine years following his PhD and a postdoctoral stint in the University of Texas, Patrick started to think about heading to Australia, to either the CMRI or Monash University. Mouse development had not gained a hold down under at that stage and he knew of only a couple of labs engaging in developmental biology. But he also knew that some key people were returning from stints overseas about that same time, including household names like Peter Koopman, Richard Harvey and Seong-Seng Tan. "Gradually the field built up from then, and it is very pleasing to see that we now have a thriving community, working on many areas of development."

Richard Harvey also recalls the slow start that developmental biology had in Australia and how Patrick became one of its significant fathers, with his deep appreciation of the embryo and its patterning processes. "Patrick's work significantly influenced the way we all think about the origin of organ systems and their function, and organ regeneration. Patrick is respected internationally for his experimental skills, and for the insights and attitude he brings to scientific problems and collaborations. He has also helped to teach a generation of young embryologists in Australia and overseas. His influence on many aspects of Australian science continues to be strong. "

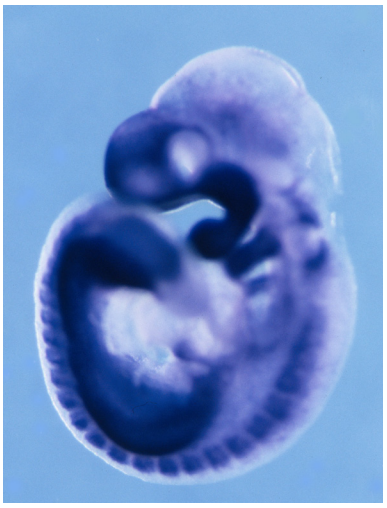
One of those he has influenced directly is David Loebel, who has worked with Patrick in Sydney for over a decade after returning from postdoctoral work overseas. "Patrick Tam is synonymous with hard work and dedication – both to his own research and to science in general (although I think he has given up expecting anyone else to work as long and hard as he does). In the lab, Patrick has never lost his genuine excitement for interesting new results or ideas, happy to have long discussions about some new data or concept from a paper or from our lab."

Indeed, according to Peter Koopman, Patrick is often able to fully understand the significance of other people's data better than the people who did the work. "This is simply because Patrick knows so much and is able to slot every new observation into the complex matrix of existing knowledge - he lives and breathes developmental biology."

An impressive and important body of work

Amongst many findings along the way, Patrick's three decades of research has given the developmental field a complete geographical map depicting the location of every progenitor cell of the mouse embryonic germ layers, and how they got there during gastrulation and early organogenesis. He also uncovered a quite surprising phenomenon that cells moved to a new location in the embryo can adapt to their new environment and acquire new cell fates, even well into the gastrulation process – that is, they maintain a high degree of plasticity. It turns out that it is not where the cells come from or how they get to their final location during gastrulation that determines their final functions, but rather what happens to them with respect to inductive signalling at their destination.

Patrick's career body of work on embryonic patterning and progenitor cell lineage not only contributes an enormous amount of knowledge to basic science as a whole, but also potentially translates to advances in stem cell differentiation and technologies for regenerative and genetic therapies of developmental disorders. And this side of the coin is increasingly important in Patrick's current work. "Something I have learned from being in medical research for all this time is that while you are immersed in basic research you cannot ignore what is the implication of the knowledge that you glean from your research and how that may be relevant to a medical and clinical setting." He emphasises how important and encouraging it is to interact with the clinical colleagues whose patients his research might eventually impact. "Our program here at CMRI can provide pointers for the clinical research, and in turn, the feedback from clinical science can tell us if we are heading in the right direction."



Expression of the Twist1 gene, the study of its function in craniofacial morphogenesis and limb development is a major research focus of the CMRI Embryology Unit.

Not finished yet

"We now have a pretty good knowledge of the basic body plan of the mouse embryo through the fate-mapping studies," Patrick explains, "and the work that we are continuing from this will address the developmental basis of birth defects and the molecular mechanism of transcriptional regulation and signalling in development. My team at CMRI is currently studying how the embryonic head develops and what are the genetic and signalling switches that drive early development of the craniofacial structures."

Craniofacial abnormalities, both major and minor, are common

features of human birth defects. The clinicians sometimes ask Patrick what is the point of working on a mutation that causes embryonic death or a defect not compatible with life. "I point out to them that it is important to study the full outcome and strongest impact of genetic changes on development. The philosophy of studying the effect of genetic modifications in the animal model is that it is imperative to know what are the most dramatic effects and the worst scenario, so that we can piece together with some certainty the critical downstream activity that leads to that scenario. Hopefully by doing that we will start to understand some of the less life-threatening (the so called non-lethal) forms of the related birth defects that could be detected and possibly treated."

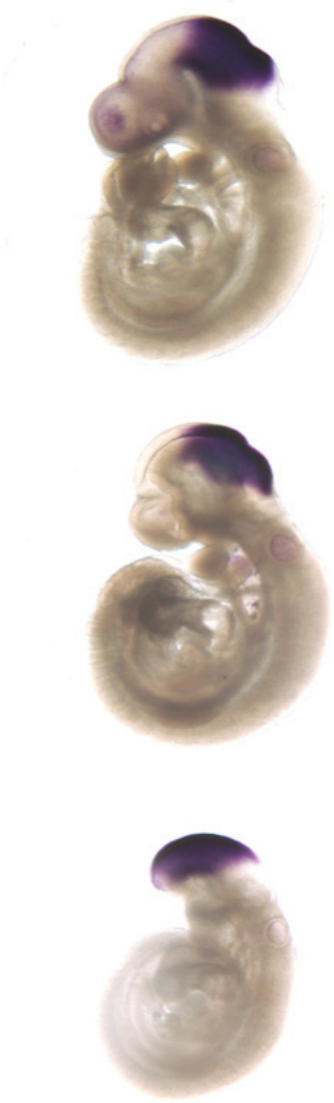
To this end, Patrick's team is deriving multipotent stem cells from the epiblast of the mouse embryo as resources to study gastrulation in culture, in the context of lineage specification and differentiation. While the epiblast-derived stem cells are somewhat temperamental in culture, they are unique in resembling more of the germ layer progenitor cells. The goal is to test these stem cell lines for any bias towards, for example, ectodermal (therefore neural), mesodermal (bone and cartilage), or endodermal (pancreas and liver) differentiation. By identifying the signature of such lineage-bias stem cells, we hope to enable the isolation of an enriched population of specific progenitor cells from the pluripotent stem cell populations. We would thereby bypass the first steps in applying cell-based therapies by harvesting only those cells that are amenable to a directed differentiation protocol."

On cell-based therapies, Patrick's team is collaborating with the Gene Therapy Unit of CMRI and the Children's Hospital at Westmead, headed by Professor Ian Alexander. The immediate aim is to generate hepatocyte progenitors for transplantation into children born with liver enzyme deficiency, for which the only treatment to date is liver transplantation. "The potential efficacy of this cell-based therapy lies in the ability to deliver a clinical outcome by engrafting a relatively small number of functional cells rather than numbers in the range of many millions cells." Success in this aim could see direct clinical translation built on Patrick and his team's many years of basic scientific discovery.

"Also on the translational side, I have within my Unit a Clinical Eye Genetics group headed by Robyn Jamieson, a clinical geneticist and a specialist in ophthalmology at the Children's Hospital, who sees patients with congenital cataracts and anterior segment defects of the eye. These congenital eye disorders are rare and seldom caused by the same mutation across patients, so conventional population-wide linkage analysis is not practical." Following genetic screening and mutation analysis of patient materials, animal models are created for an in-depth study of the genotype-phenotype relationship and for functional investigations. An immediate application of this knowledge is to offer better-informed genetic counselling for the patients. For Patrick, it is also exciting to see such immediate translational benefits of their studies.

Mapping the development of others

As Patrick looks back on an enormously successful career in science, he finds that the advice he would give to up and coming scientists has changed little over the years. "Don't give up on your passion, but persist and follow it through. At the same time, be realistic and vigilant about how you set things up and chart the progress." He acknowledges the difficulty in obtaining funding, particularly with the bigger objectives in mind, but believes that with the right team of people who can work together with the same values and priorities, "the funding will follow". He stresses that reaching scientific goals needs a long-term commitment and a dogged focus…and what better example of the success of this approach than Patrick Tam himself!



Truncation of the embryonic head caused by the loss of function of an antagonist of WNT signalling activity.

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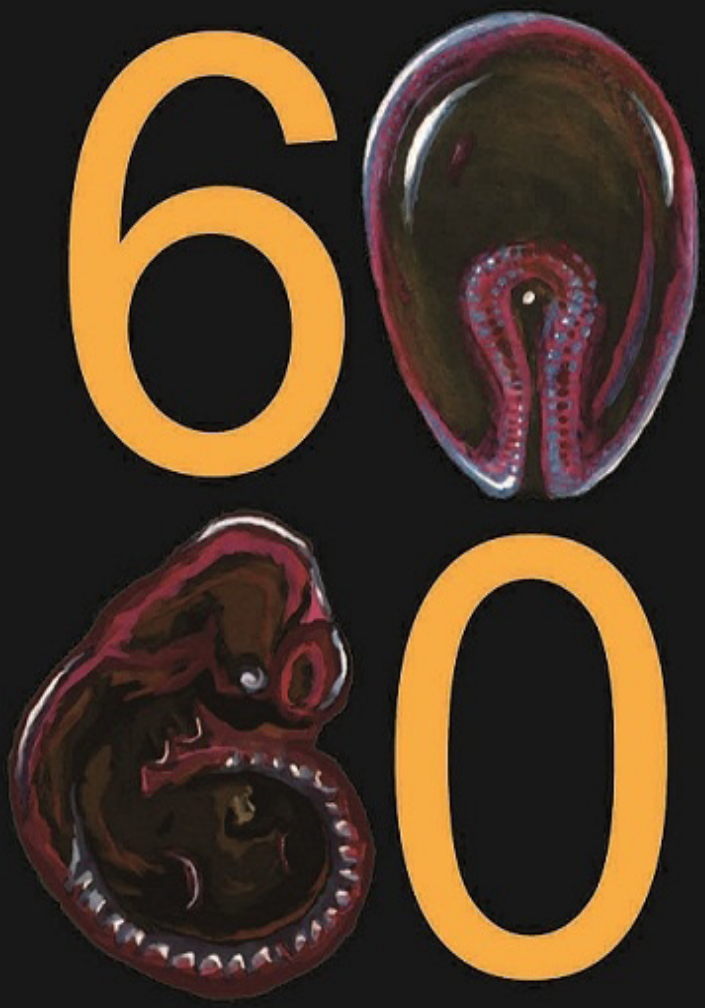
Hong Kong Society for
Developmental Biology Symposium

From Embryology to Disease Mechanisms

In honor of Patrick Tam
"60 Years & Still Gastrulating"



The Hong Kong Academy of Medicine
Hong Kong SAR, China

November 26-27, 2012

For more information, please visit:
http://www.biochem.hku.hk/hksdb/events/nov_2012.html

Special Topics:

Gastrulation
Organogenesis
Progenitor, stem cells & cell fate
Development & diseases

Key Speakers:

Richard Behringer
Kathryn Cheah
Sally Dunwoodie
Hiroshi Hamada
Kat Hadjantonakis
Richard Harvey
Hisato Kondoh
Peter Koopman
Heiko Lickert
Robin Lovell-Badge
Andras Nagy
Shinichi Nishikawa
Marilyn Renfree
Jamie Rivera
Janet Rossant
Hiroshi Sasaki
Phil Soriano
Claudio Stern
Andrea Streit
Patrick Tam
Seong-Seng Tan
Paul Trainor
Carol Wicking

Deadline for Early Bird Registration:

July 31, 2012

Organized by:

Hong Kong Society for
Developmental Biology (HKSDB)

Contact:

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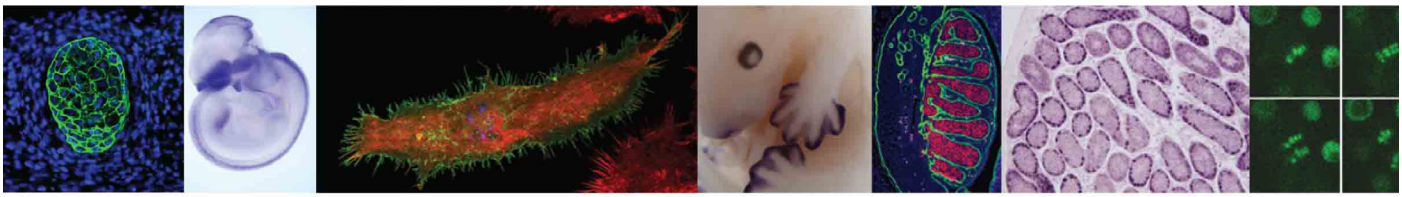


Brisbane Cell & Developmental Biology Meeting

October 4

2012

9am-5pm

Queensland Brain Institute
The University of Queensland
St Lucia, Australia

Prof. Robin Lovell-Badge, NIMR, UK
"The control of neural stem cell fate"

Dr. Quenten Schwarz, University of Adelaide
"Neuronal migration in the CNS and PNS "

Dr. Michael Samuel, The University of Adelaide
"Insights into intra-cellular tension and
the inter-cellular microenvironment in tumorigenesis"

4 postdocs and 4 PhD students will be chosen from abstracts to present a 15 minute talk: PRIZES WILL BE AWARDED TO THE BEST TALKS AND POSTERS

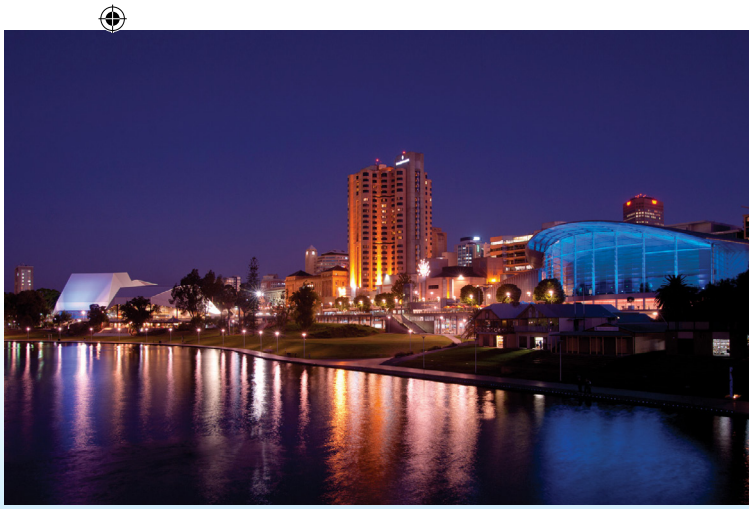
Registration is FREE and abstract submission is now open
Please register and submit abstracts at:

http://www.imb.uq.edu.au/cell-and-developmental-biology-meeting

Abstract submission closes Friday 31st August

Refreshments and prizes provided by our sponsors

ComBio 2012



ComBio2012 23 to 27 September 2012

Adelaide Convention Centre, Adelaide, South Australia

Confirmed Plenary Speakers at this time:

- **Brenda Andrews** Univ Toronto, Canada
- **Gerald Crabtree** Stanford Univ, USA
- **Raymond Deshaies** Cal Tech, USA
- **Richard Dixon** Noble Foundation, USA
- **Seth Grant** Sanger Inst, UK
- **Jeff Hasty** UCSD, USA
- **Douglas Hilton** WEHI, Aust
- **James Hurley** NIH, USA
- **Michael Karin** UCSD, USA
- **Ryan Lister** Univ WA, Aust
- **Robin Lovell-Badge** Nat Inst Med Res, UK
- **Chris Marshall** Inst Cancer Research, UK
- **Susan McCouch** Cornell Univ, USA
- **Andrew McMahon** Harvard Univ, USA
- **John Patrick** Univ Newcastle, Aust
- **Anne Osbourn** John Innes Centre, UK
- **Dale Sanders** John Innes Centre, UK
- **John D Scott** Univ Washington, USA
- **Michael Shen** Columbia University, USA
- **James Whisstock** Monash Univ, Aust

Confirmed International Symposium Speakers at this time:

- **Artem Barski** Cincinnati Children's Hosp, USA
- **David Chagne** Plant & Food Research, NZ
- **Danny Huang** Beatson Inst Cancer Res, UK
- **Randall Johnson** Cambridge Univ, UK
- **Philip Kaldis** Inst Molec Cell Biol, Singapore
- **Corby Kistler** USDA, USA
- **John Ladbury** Univ Texas, USA
- **Markus Landthaler** Max Delbruck Centre Molec Med, Germany
- **Andy Leadbeater** Syngenta Crop Protection, Switzerland
- **Jessica Mar** Albert Einstein College Med, USA
- **Charles Mullighan** St Jude Children's Res Hosp, USA
- **Osamu Nureki** Univ Tokyo, Japan
- **Chris Overall** Univ British Columbia, Canada
- **Ray Reeves** Washington State Univ, USA
- **Paul Robson** Genome Inst Singapore
- **Chiara Sabatti** Stanford Univ, USA
- **Barry Scott** Massey Univ, NZ
- **Vinay Tergoanker** Inst Molec Cell Biol, Singapore
- **Frank van den Bosch** Rothamsted Research, UK
- **Kenneth Walsh** Whitaker Cardiovascular Inst, USA
- **Roberto Weigert** NIH, USA
- **Shimon Weiss** UCLA, USA
- **Brande Wulff** Sainsbury Laboratory, UK

Further information: **www.asbmb.org.au/combio2012**

Conference: Stuart Pitson
stuart.pitson@health.sa.gov.au

Registration/Exhibition: Sally Jay
combio@asbmb.org.au

17th International Congress of the World Muscle Society

9-13 October 2012 • Perth, Western Australia

Spring in Perth is a lovely time to visit with average temperatures of 22 degrees Celsius and blooming wildflowers, the Congress provides the perfect opportunity to visit this beautiful state.

Venture beyond the city to the South West with its pristine beaches, dramatic coastline, stunning forests, unique flora and fauna and delicious fresh food and wine it's no wonder this region was voted by Lonely Planet in 2010 as one of the world's top 10 regions to visit.

Mark your diary now for what promises to be a great Congress.

Call for Abstracts Closes: 31 March 2012

Early Bird Registration Closes: 30 April 2012

Registration & Abstracts Now Open

www.wms2012.com






WMS World Muscle Society

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The 13th Hunter Meeting

Convenors:
Sally Dunwoodie | Jennifer Stow

March 19-22, 2013

The Sebel Kirkton Park, Pokolbin, NSW, Australia

Australia's Premier Meeting of cell and developmental biologists
~ in NSW's Premium Wine-growing district

Confirmed Plenary Speakers

Sergio Grinstein
(Canada)

Didier Stainier
(USA)

Marcos González-Gaitán
(Switzerland)

Amira Klip
(Canada)

Raphael Kopan
(USA)

Wieland Huttner
(Germany)

Fred Maxfield
(USA)

Yoshinori Ohsumi
(Japan)

Ralf Adams
(Germany)

AUSTRALIA & NEW ZEALAND SOCIETY for CELL & DEVELOPMENTAL BIOLOGY INCORPORATED

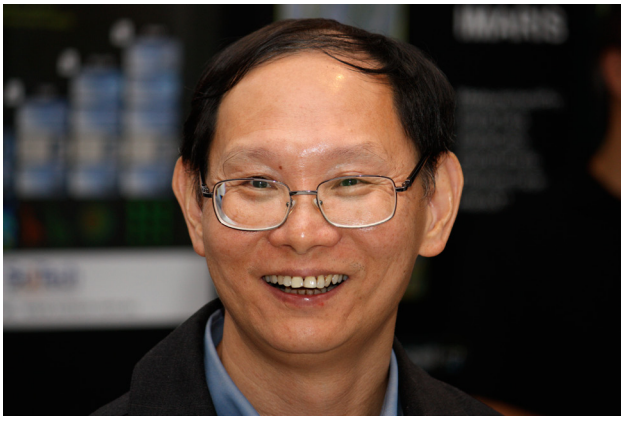
Registration http://hcbm.mtci.com.au

on-Line registration ~ Close of abstract submission for oral presentation: November 14, 2012
close of Early-Bird registration: January 11, 2013
Close of abstracts for inclusion as posters in the printed program: February 22, 2013

Hunter Meeting

Convenor: Professor Peter Gunning (UNSW, Australia)
Co-convenor: Professor Jennifer Stow, (IMB, University of Queensland, Australia)

March 27-30, 2012, The Sebel-Kirkton Park, Hunter Valley, NSW, Australia



International Committee member, Wanjin Hong from Singapore

The Hunter Meeting began with a half-day pre-conference imaging workshop leading straight into a plenary talk and poster/exhibition sessions and continued through until Friday lunchtime with plenary and symposium presentations. 10 invited international presenters and company-sponsored international speakers presented in the imaging and main program workshops and the scientific program. Social activities included the Bar-B-Q Under the Stars and Rose Garden dinners held at the Sebel Kirkton Park and conference Dinner held at Tempus Two Winery. Post-meeting social events included a boutique winery tour and vineyard restaurant dinner. Invited international speakers were presented with a bottle of a select Hunter Valley red from award-winning Saddlers Creek winery. The Cellular Biology Meeting Inc is grateful to our continuing sponsors, the ANZSCDB and EMBO for major Plenary Lecture support and to our Exhibitors and Workshop sponsors.

The 5th Pre-conference Imaging Workshop was sponsored by Perkin Elmer, Thermo Fisher Scientific and Carl Zeiss. The three session themes were:

1. Clinical/Preclinical imaging

2. Whole organisms

3. Super Resolution and Atomic Force Microscopy

Presenters in **Clinical/ Preclinical imaging** included: Linda Richards (QBI) - Wiring the developing brain, Carleen Cullinane (PeterMac) - Preclinical PET imaging in the development of cancer therapeutics, Phil Hogg (UNSW) - Non-Invasive Imaging of Cell Death Using a Hsp90 Ligand, and international company presenter, Wael Yared, Head of R&D for Perkin Elmer - Fluorescent Molecular Tomography, Quantitative Pre-clinical imaging: Technological foundations, current results and future directions.

Session II, **Whole organisms,** included presentations by: Nicholas Plachta (EMBL Australia, ARMI - Australian Regenerative Medicine Institute) on the topic of Imaging transcription factors kinetics in the mouse embryo; Matt Francois (the University of Queensland) on Segmental territories along the cardinal veins generate lymph sacs via a ballooning mechanism during embryonic lymphangiogenesis in mice; Scott Mueller (The University of Melbourne) on Intravital 2-photon microscopy of anti-viral T cell responses in the skin; Andrey Kan (The University of Melbourne) elucidated A one parameter automated cell tracking system with no-reference track quality metric; international company presenter, Kevin Francis (Divisional Vice President, Caliper – a PerkinElmer Company) presented on Non-invasive Monitoring of Disease States in Live Animals using Optical Imaging and X-ray Computed Tomography.

The **Super Resolution and Atomic Force Microscopy** included talks by: Kat Gaus (The

University of New South Wales - UNSW) - Single molecule imaging in cells; Jake Baum (Walter and Eliza Hall Institute) - High definition imaging of malaria parasite infection of the human red blood cell – achieving "Superb" resolution; Cynthia Whitchurch (University of Technology, Sydney) - Fast, Live Structured Illumination Microscopy; international speaker, Ueli Aebi (Mueller Inst, Biozentrum Uni, Basel, Switzerland) - Imaging the polymer systems of the cell using AFM; and Carl Zeiss Australia specialist Dr Simon Kinder, presented on Super-resolution imaging using the Zeiss Elyra PS1 instrument

The Keith Stanley Lecture was presented by Fiona Watt, Cancer Research UK Cambridge Research Institute, on the subject of Regulation of epidermal stem cell fate by intrinsic and extrinsic signals. This session and speaker were generously sponsored by the ANZSCDB, and immediate Past-President, Edna Hardeman chaired the session. There were two major evening Poster sessions held with the Exhibition, one following the Keith Stanley Lecture and another on the Tuesday evening.

The **Signalling Mechanisms** session was chaired by Christina Mitchell. The phosphoinositide 3-kinase (PI3K) signalling pathway impacts on both human cancer and inflammation by regulating cell growth, proliferation, survival, angiogenesis, and metabolism. Mammalian cells express up to eight distinct PI3-kinase isoforms. Oncogenic mutations in the Class I p110 subunit of PI3K (encoded by the gene PIK3CA) are frequent in human cancers and represent an emerging therapeutic target. In this session Dr Wayne Phillips (Peter MacCullum) presented recent data of a conditional inducible knock-in mouse with an activating mutation, Pik3ca-H1047R. These studies reveal Pik3ca mutation induced premalignant hyperplasia in ovarian surface epithelium, but did not induce cancer. However, Pik3ca mutation plus deletion of the phosphoinositide phosphatase which opposes PI3-kinase signalling, PTEN, (or K-ras mutation) promoted progression to ovarian serous adenocarcinomas and granulosa cell tumours within 6 months. These studies reveal PIK3CA oncogenic mutation alone may not be sufficient to lead to oncogenic transformation.

In addition to regulating primary tumour growth PI3Kinase signalling regulates immune function and immune responses to tumours. Broad spectrum PI3K inhibition is predicted to suppress immune surveillance. The p110-PI3K delta isoform is expressed highly in leukocytes and modulates immune function. Bart Vanhaesebroeck, Centre for Cell Signalling, Queen Mary University of London, examined the functional consequences of p110-inactivation in mice on the growth of solid tumours and metastasis. These studies reveal a potential role for p110-inhibition as a druggable target to suppress tumour growth, rather than induce immunosupression, as a consequence of improved T cell-dependent antitumour responses.

Dr Quentan Schwarz Centre for Cancer Biology SA Pathology discussed the role PI3K plays in regulating angiogenesis, following its activation by angiogenesis inducers such as vascular endothelial growth factor (VEGF). During embryonic development the migration of specialized endothelial cells called tip cells may be modulated by PI3K/Akt signalling. In his presentation Dr Schwarz revealed sustained endothelial activation of Akt induces the formation of structurally abnormal blood vessels due to defects in endothelial cell migration and tube formation, revealing that both loss of PI3K-signalling or amplified Akt signalling may lead to abnormal endothelial responses that impair angiogenesis

PI3-kinase gamma activation downstream of G-protein coupled receptors, functions in leukocytes to regulate cell migration. Dr Manuela Klingler-Hoffmann, Department of Microbiology & Immunology, University of Adelaide has identified a novel mechanism that controls PI3K-gamma activity. The regulatory subunit p101 undergoes transient phosphorylation which regulates subcellular localisation of the catalytic subunit p110 gamma and access to its subcellular substrates. These intermolecular interactions which occur in response to chemokine stimulation, may in turn contribute to the regulation of

leukocyte chemotaxis.

Cancer cells interact with the surrounding stromal microenvironment to impact on the tumour phenotype. Signalling by the Hedgehog (Hh) family of morphogens is an emerging therapeutic target in several malignancies and work was presented by Dr A. Swarbrick, Garvan Institute, Sydney which reveals paracrine signalling by Hh ligand predicts for an increased risk of breast cancer metastasis, breast cancer-specific death, and a basal-like phenotype in invasive ductal breast cancer. Inhibition of Hh signalling with a monoclonal antibody (5E1) reduced tumour growth and metastasis, revealing epithelial to stromal Hh signalling, promotes breast cancer growth and metastasis, suggesting the future clinical utility of hedgehog-directed therapies in breast cancer.

The **Stem Cell Biology** session was chaired by Richard Harvey and included presentations by invited international presenter, Hideyuki Okano (Keio University, Japan) - Regeneration of the damaged CNS using human iPSCs-derived neural progenitor cells. Perry Bartlett (QBI, The University of Queensland, Australia) - Activation of different neurogenic precursor populations in the hippocampus; Anne Voss (Walter and Eliza Hall Institute, Australia) - Regulation of stem cell function through chromatin modifications; and Helen Abud (Monash University) - Functional analysis of the Snail family of transcription factors in stem cell populations

Host-Pathogen Interactions was chaired by Rohan Teasedale Alan Cowman (Walter and Eliza Hall Institute of Medical Research, Australia), presented a talk with the tantalising title of Moving in and renovating: invasion and remodeling of the human erythrocyte by the malaria parasite. Trevor Lithgow (Monash University, Australia) , spoke on The assembly of surface-exposed membrane proteins in bacterial pathogens; Matt Sweet (IMB, University of Queensland, Australia) Mapping human macrophage anti-microbial pathways to Gram-negative bacterial pathogens.

NewSpec Sponsored late-afternoon drinks and the Main Program Workshop. Chaired by Thomas Zhang, Newspec who introduced International company presenter Dr Wanxin Sun of Bruker Nano-Surface, who spoke on Quantitative Characterization of Biomaterials and Molecular Recognition Based on SPM Technology.

The **EMBO Plenary Lecture** followed immediately and was delivered by Philippe Sansonetti (Institut Pasteur, Paris). His talk, "Microbiota and pathogens: War and Peace at mucosal surfaces", provided remarkable insights into the cell biology of the host pathogen interaction in the gut.

The **Bioarchitecture** session chaired by Helena Richardson, focused on the regulation of cellular architecture (structure), ranging from cell-cell junctions, microtubules, filamentous actin, centrosomes to nuclear bodies. Professor Alpha Yap (Institute Molecular Biology, University of Queensland, Brisbane) opened the session with an elegant description of his lab's research on the interaction of E-cadherin at the cell-cell junctions with the microtubule network and Rho family regulators. Dr Weiping Han (Metabolic Medicine Lab, Singapore Bioimaging Consortium) followed, with a description of the function of Tropomodulin 3 in the regulation of cortical F-actin and exocytosis in response to Insulin signalling. Dr Archa Fox (University of WA, Perth) then spoke about newly discovered RNA-protein nuclear bodies termed paraspeckles, which are formed around long non-coding RNAs. Dr Dominic Ng (Biochemistry and Molecular Biology Dept, University of Melbourne) then described the role of WDR62 in centrosome function and mitotic progression. The session finished with an

impressive talk by Professor Anna Akhmanova (Cell Biology Dept, Utrecht University, The Netherlands) on the analysis of the regulation of microtubule dynamics at the cell cortex by a novel protein complex. The session highlighted the importance of combining cutting-edge imaging techniques with biochemical approaches in understanding the regulation of cellular architecture.

The **Trafficking** session was chaired by Jenny Stow. Invited international presenter, Dennis Brown (Harvard Medical School, USA), spoke on New insights into the regulation of water and acid/base homeostasis by protein trafficking in renal epithelial cells. Brett Collins (University of Queensland, Australia) PX family proteins at the interface between intracellular trafficking and signalling; Phil Robinson (Children's Medical Research Institute, Australia) Dynamin Modulators: Inhibitors of endocytosis and activators of the actin cytoskeleton; David Williams (UCLA School of Medicine, USA) spoke on Trafficking of the light receptor, rhodopsin, to and along the cilium of photoreceptor cells.

Differentiation and Morphogenesis was chaired by Sally Dunwoodie and Peter Currie. This session demonstrated the great value of in vivo models for the investigation of differentiation and morphogenesis with respect to tissue growth and regeneration in the adult, embryonic development, and epithelial to mesenchymal transition in cancer. Kazu Kikuchi (Victor Chang Cardiac Research Institute, Sydney) described a model of cardiac regeneration in the adult zebrafish. Up to 60% of the ventricular myocardium can be removed and the injury repaired with fully functional cardiac muscle cells within 30 days. Kikuchi is working towards defining the origin of these reparatory cardiac muscle cells using sophisticated transgenic cell lineage tracing approaches. Christophe Marcelle (Australian Regenerative Medicine Institute, Melbourne) demonstrated with an elaborate video how skeletal muscle develops from the dermomyotome of somites in the chicken embryo. He described how neural crest cells, which migrate past the dorsomedial lip of the dermomyotome, activate a subset of muscle progenitors to differentiation in the dermomyotome, and how this process is dependent on Notch signal transduction. Yeesim Khew-Goodall (Centre for Cancer Biology, SA Pathology, Adelaide) demonstrated that a double-negative feedback loop involving the miR-200 family and ZEB (zinc finger E-box-binding homeobox) transcription factors control the balance between epithelial and mesenchymal states. One of the key findings was that miR-200 affected more than a single step involved in epithelial to mesenchymal transition. Linda Parsons (Peter MacCallum Cancer Centre, Melbourne) described how in Drosophila the basal polarity determinant lethal-2-giant-larvae (lgl) regulates the Salvador Warts Hippo pathway by favouring the formation of inactive Hpo/Rassf over active Hpo/Sav protein complexes. Parsons is addressing the importance of endocytosis in this process.

The **Hunter Plenary Lecture**, chair Peter Gunning. Professor Nobutaka Hirokawa gave the Hunter Plenary Lecture on 'Intracellular transport and kinesin superfamily molecular motors (KIFs): Key regulators for neuronal function, development and tumorigenesis'. The talk was the epitome of great Hunter talks; taking us from the molecular dissection of kinesin motors to their role in trafficking and on to new insights into fundamental developmental processes. His work highlighted the power of molecular genetics approaches, in the context of organism biology, to reveal fundamental mechanisms of cell and developmental biology.

Trevor Lithgow chaired the session **Integrating Pathways in Cell Biology**. Georg Ramm (Monash University), spoke on the Regulation of the ULK1 kinase complex by AMPK. We welcomed back Nick Brown (University of Cambridge) who spoke on Building integrin adhesions in vivo: a systems approach; Marc Wilkins UNSW (University of New South Wales, Australia) -The Dynamics of Protein Interaction Networks; Phil Hodgkin (Walter and Eliza Hall Institute, Australia) - Building a quantitative systems-wide understanding of the immune response; invited international presenter, Michael Snyder (Stanford University, USA) , spoke on The evolutionary rewiring of biological networks.

Linda Richards (pictured below) chaired the **Cancer Cell Biology** session. Invited international speaker, Valerie Weaver (University of California San Francisco, USA) spoke on Dynamic and reciprocal cell-ECM forces regulate tumor progression. Liz Musgrove (Garvan Institute of Medical Research, Australia) spoke on Estrogen-regulated genes as markers and mediators of endocrine resistance in breast cancer; David Huang (Walter & Eliza Hall Institute, Australia) - Molecular control of cell survival by the Bcl-2 protein family; Sharad Kumar (SA Pathology, Australia) - Caspase-2 function in tumour suppression and oxidative stress regulation.

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18th NSW Cell and Developmental Biology Meeting

The annual NSW Cell and Developmental Biology Meeting was held on the 26th of March this year at the Garvan Institute of Medical Research in Sydney. This was the 18th of these meetings and was attended by approximately 80 researchers from the local research community and not so local. It was great to see colleagues from University of Western Sydney, University of Wollongong, Australian National University and Monash University. We were lucky enough to persuade Peter Currie (Australian Regenerative Medicine Institute, Monash University), Han Weiping (Singapore Bioimaging Consortium) and Ueli Aebi (M.E. Müller Institute for Structural Biology, Biozentrum, University of Basel) to come and give keynote presentations and these formed the backbone of the meeting.

Peter Currie kicked off talking about the 'development and evolution of the muscles of the fins and limbs' and this was followed by four talks chosen from the extensive collection of submitted abstracts continuing the developmental biology theme. Han Weiping talked about 'the molecular control of calcium-dependent hormone secretion' in various tissues before four more talks from abstracts, this time with a focus more on functions at a cellular level. The formal part of the meeting was concluded by Ueli Abi who talked about the mechanobiology of the cytoskeleton and how it impacts on cell and tissue plasticity'.

The meeting was sponsored by ANZSCDB and ASBMB and at the end of the meeting Peter Currie (ANZSCDB) and Peter Gunning (ASBMB) presented prizes on behalf of these societies to Dr. Heidi Bildsoe (Children's Medical Research Institute) and Dr. Shixiong Tan (Garvan Institute of Medical Research) for their outstanding presentations.

The organizers would like to thank the Hunter Meeting for supporting Ueli Abi's at this meeting. The meeting was also sponsored by Leica Microsystems, Carl Zeiss, Olympus and Coherent Scientific (for Nikon) who displayed their latest wares and joined us all for drinks and nibbles during the evening. The organisers would like to again thank the societies and trade sponsors – the day would not have been possible without their support.

We would also like to thank those who attended and particularly everyone who submitted abstracts.

We'll be aiming to sort out the 19th Meeting for a similar time next year.

William E Hughes & Anthony Kee.

Your opinion

A time for change

by Jennifer Stow, PhD

The way we do scientific research is changing dramatically and evolving rapidly. Even over the past two decades, vast arrays of data have become available for analysis and technology has developed at break-neck speed. However, one aspect of science has remained curiously unchanged for past two hundred years. And, that is - the format of a research lab.

A prototypical research lab has its roots in the 1800s when professors, academics or gentlemen(!) scientists – notwithstanding the dedication and brilliance of some - would pursue their own ideas and passions with the help of a small coterie of students and assistants. Inexplicably, today we still have the same model for a research lab, one in which there is a singular lab head and a small team of students, postdocs and technicians. We base academic and research careers around this model, we use it to fund research, to publish research and even to fashion research buildings!

So, in an age where research now demands large diverse teams of scientists, the expertise of many specialists, collaborations, networks, even consortia – why do we stay wedded to the single lab head / small (isolated) lab model? Quixotic to be sure, and patently unsuitable for today's science, this tradition has an unintended and sinister effect – it is driving young people out of research careers.

There are two problems with today's 'old' research lab model. The first is that it can't keep pace with the 'big' science of today, where ever-more complex, technically challenging and data-rich research endeavours require large numbers of contributors to execute projects. As in most fields, in the cellular and molecular sciences, a research project tackled by one or two people is rapidly becoming untenable, as evidenced by the growing lists of authors and collaborators on most papers now being published. Yet, most of our major grants still fund only one, or maybe two salaries, and a very small amount of research money.

Science is now a team sport, and this must be acknowledged in the ways we set up research labs and fund research. Although program grants (in various guises) are heading in the right direction, these still fund a collection of small labs instead of offering the flexibility and scope that is increasingly needed to fund project-specific teams.

The second problem with our research labs, is that in the current model, being a lab head is increasingly viewed as being a relentlessly competitive, difficult and lonely job. The never-ending focus on the track record of the lab head for funding, space, recognition and to keep a lab going, no doubt deters many young scientists from research careers. Tradition aside, there is no overt reason why the job of a lab head has to be performed by one individual. There are indeed many reasons why a modern-day lab should have two or even more lab heads.

The pressure on lab heads to perform as individuals has increased BUT at the same time, so have the number of tasks (many unpaid) required of this job. So, a current lab head devises and oversees research projects, supervises staff, trains students and postdocs, applies for funding, writes papers, peer reviews grants and papers, attends conferences, sits on committees, does lots of administration and manages collaborations with other labs and/or industry and clinicians, etc. Clearly with this many tasks assigned to the lab head, having more than one person to share the load would be advantageous. The need to keep all these balls in the air over time, and survive constant performance assessment (track records

for grants and fellowships), makes it difficult to take time out – for instance, to raise families. With two lab heads, the job of keeping the research going while having time off to have kids or just coping with families, would be much more achievable. We now live in a very interactive society and to keep abreast of this trend, research has to ensure that it offers interactive, collaborative careers. For instance, I believe that the opportunity to share the load of running a research lab would keep many more young women in the workplace at more senior levels.

So is this achievable? Of course, and there are already many examples of married couples or close collaborators who have run joint labs over the years – even Nobel prize winning combinations – from the Curie family to the likes of Brown and Goldstein, and others! So the notion of having two or more lab heads is clearly tenable, it is possible in our current research and academic settings, and the 'joint- lab head' model simply needs to be encouraged and offered – or requested- more often. Our funding models need to keep pace with the need for highly collaborative research, particularly fellowships, which focus so narrowly on individual performance.

The physicists routinely publish hundred-author papers and increasingly large consortia are publishing the big human genetics and genome sequencing studies. To tackle the big projects of the future, cell and developmental biologists will likely need to consider big, collaborative networks as an alternative to the 'small lab' tradition. There is still plenty of scope for ambition, accolades and achievement in these collaborative settings. Science after all, is pursuit of knowledge for the common good – not pursuit of an individual CV.

Finally, it is of utmost importance that we create attractive and effective careers to move research into this century. This means rethinking our narrow definition of a research lab, which only offers a career for a single lab head with no other role in the lab offering a formal career position. Flexible research teams with two or more heads, project managers, supervisors, 'lieutenants' and technical specialists are really more suited to today's science. There are no rules about how to do research or set up labs, only dogma and tradition, and we need to encourage and support younger scientists to think 'outside the box' in establishing their niche careers in research

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Membership News

Nature or nurture...turns out to be both!

Professor Sally Dunwoodie, Head of the Embryology Laboratory at the Victor Chang Cardiac Research Institute in Sydney, is the senior author on a landmark study published in the April 13 issue of Cell (Sparrow et al. Cell 2012; 149: 295-305). Together with collaborators from around the world, Dunwoodie's team showed for the first time how both 'nature' and 'nurture' could interact to increase the likelihood of sporadic congenital birth defects. Their study indicates that defects ranging from spinal malformations to heart abnormalities could be brought on by low oxygen levels or hypoxia during early pregnancy, even for brief periods, and therefore, that many of these defects could be prevented.

Dunwoodie and her colleagues studied individuals with congenital scoliosis (lateral curvature of the spine) and found that having just one, instead of two functioning copies of a Notch signaling pathway gene that governs cell division was a major risk factor for the abnormal formation of vertebrae in embryonic development. Knowing that gestational hypoxia can disrupt embryonic development, the researchers then used a mouse model genetically altered to carry the scoliosis mutation in combination with the environmental 'insult' of hypoxia. Surprisingly, they found a marked increase in both the incidence of spinal abnormalities in the offspring and the severity of the defects. In humans, congenital scoliosis occurs in around 1 in 1000 live births.

The results potentially provide a mechanism by which interactions between altered genes and the environment, as opposed to one or the other, could drive the development of many common congenital abnormalities including different forms of heart disease and conditions like cleft palate. Indeed, the same molecular pathway disrupted by the period of hypoxia, in this case FGF signalling, has key roles in many other processes during embryogenesis.

Dunwoodie says the findings may help us to pinpoint why some people in families develop diseases and others don't, and importantly, how we could develop simple strategies that mothers could adopt to decrease the chance of such defects occurring.

The research team have begun similar studies on congenital heart defects, which affect around 1 in every 100 babies born in Australia every year.

The glue that binds us

A research team from The University of Queensland's Institute for Molecular Bioscience (IMB) led by Professor Alpha Yap, Dr Aparna Ratheesh and Dr Guillermo Gomez have discovered the driving signals for adhesion proteins to 'glue' cells together into tissues. Their findings were recently published in Nature Cell Biology (Yap et al. Nat Cell Biol. 2012 Jul; doi: 10.1038/ncb2532).

"Healthy tissues require their component cells to recognise and adhere to one another," Professor Yap said. "This adhesion is achieved through specialised bundles of proteins whose formation is promoted by a signalling protein called Rho." Rho is concentrated at the cell-cell junctions of interphase epithelial cells, in which Rho signalling activity is necessary for coordinating cell-cell integrity…"like the conductor of an orchestra, making sure that all the players work together."

Following major discoveries in 2010 and 2011 by the Yap lab on how this adhesion integrity breaks down, this latest research has pinpointed a network of proteins that ensures Rho is activated at the right place and at the right time. In summary the team implicated the centralspindlin complex acting together with the cadherin-associated protein, α-catenin, to regulate Rho signaling at the interphase zonula adherens.

"Many of the proteins in this network have been implicated in cancer, meaning this discovery will provide valuable insights into how adhesion in healthy tissues is disturbed in diseases such as cancer and inflammation," Professor Yap said.

This work was financially supported by the Human Frontiers Science Program, the National Health and Medical Research Council of Australia, the Australian Research Council, and the Oncology

A message from our Secretary...

The ANZSCDB is represented in each state/territory/NZ by two members, typically appointed out of synch for 2 year terms. These representatives serve on the National Council of the Society and are charged with advancing the fields of Cell and Developmental Biology at a local level. Increasingly this has involved organizing a yearly symposium with the Society's support, as well as promoting the opportunities afforded by membership.

Each year at the AGM one of the state/NZ representatives steps down. **We are now calling for nominations for keen and engaged new representatives in each state and territory** and in particular from the ACT and from Tasmania (who are currently not represented). This opportunity is an excellent way to engage with your peers, to advance and promote wider interest in our fields and to serve the Society.

Applications will be accepted before the 1st of September to the Society secretary (ian.smyth@monash.edu). Candidates may join the Society at the time of application if they are not already members. Please include a 3-4 line summary of your research interests and the name of a nominating Society member.

Also, as required by our Constitution, **I hereby announce that the 2012 ANZSCDB Annual General Meeting will be held at 6pm on Wednesday, September 26th** as part of the ComBio meeting in the Adelaide Convention Centre. Relevant documents/room information will be circulated to members beforehand.

We look forward to seeing you there!

Ian Smyth
Secretary, ANZSCDBI

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