

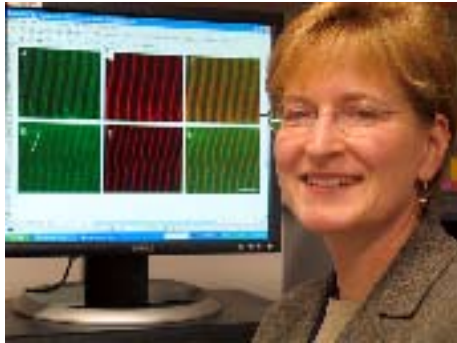
Australia and New Zealand Society for Cell and Developmental Biology

INCORPORATED



NEWSLETTER - November 2009 Volume 2 of 3

www.anzscdb.org



Edna Hardeman

ANNOUNCEMENT: Recipient of the ANZSCDB President's Medal for 2009

The President's Medal is the highest honour that our Society bestows. Choosing the recipient is one of the major responsibilities, and pleasures, of the President. I am delighted to announce that the ANZSCDB President's medalist for 2009 is Professor Richard Harvey from the Victor Chang Cardiac Institute, Sydney, NSW.

Richard Harvey is one of ANZSCDB's pioneers in terms of his contributions to both cardiac research and the development of our society. His original landmark finding was the discovery that the transcription factor Nkx 2.5 plays an essential role in the initial formation of the mammalian heart. This work led to a completely revised understanding of cardiac embryology. Rather than the then conventional view that the heart chambers develop from a segmental cellular pre-pattern, Richard's work demonstrated that the chambers are regional specialisations within the forming heart tube. Like all great basic science, this not only led to a new way of thinking about cardiac development, but also served as a paradigm for understanding how gene regulation builds complex organs (or is it a tissue?) like the heart and how defects in gene function can lead

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President's Report

to structural defects in the heart. Richard has also had a long standing interest in stem cell biology and recently published a pivotal paper defining the existence and location of cardiac stem cells in the adult heart. This has major implications for understanding cardiac repair and unleashing their potential to help treat cardiac disease.

Richard has also played a significant role in the growth of our society and has a leadership role in the discipline of Developmental Biology nationally and internationally. We look forward to his plenary talk at ComBio2009 entitled "The Developing Heart – Ancient Core, Fragile Form" that encompasses his journey of discovery and contribution. You can look forward to an indepth account of his ca-

reer accomplishments in the next newsletter.

Recent activities with affiliated societies:

ASMR: The ASMR has commissioned an economic modelling on the Health and Medical Research Community for a pre-2010/2011 Federal Budget submission. The ASMR believes, and the ANZSCDB Executive concurs, that "this modelling is a crucial part of the supporting data needed for the 2010/11 Federal Budget Submission and to move forward the strategic push towards [ASMR's] long term goal of developing a viable policy for sustainable investment in Health and Medical Research in Australia and the implementa-

tion of such a policy.” We joined with other affiliated societies in providing financial support for this modelling exercise to express our unreserved support for this very worthwhile endeavour to achieve an increase in the NHMRC budget and ensure that the Federal Government maintains a commitment to health and medical research. Needless to say we support the current ASMR letter writing campaign aimed at federal parliamentarians and urge you to take the relatively brief amount of time to tailor the example letter provided in our email broadcast and email it to the addresses provided.

International Society for Developmental Biology (ISDB): Recently, the ANZSCDB became a paying member of the ISDB as it was decided that this elevation in membership status is in keeping with the ANZSCDB’s prominence in this discipline in the Australasian region. We join fellow societies: SDB (USA), BSDB (UK), JSDB (Japan), GfE (Germany), SFBD (France) and LASDB (Latin America). Entitlements include the right to nominate and vote in election of the ISDB president, the right to nominate and vote in selection of ISDB Congress venue, and a seat on the ISDB Board. As a member of the Board, we take part in the review and funding of proposals from meeting and workshop organizers either in the form of direct support for a meeting, or in the form of travel awards, as well as other related activities.

National Committee for Biomedical Sciences of the Australian Academy of Science: Because ANZSCDB is a corresponding society of the NCBS, we are able to offer the opportunity to our student members to be considered for the 60th meeting of Nobel Laureates in Lindau, Germany from June 27 to July 2, 2010. “The annual Lindau Nobel Laureate Meetings provide a globally recognised forum for the transfer of knowledge between generations of scientists. They inspire and motivate Nobel Laureates and international Best Talents. Lectures of Nobel Laureates reflect current scientific topics and present relevant fields of research of the future. In panel discussions, seminars and during the various

events of the social programme young researchers nominated by a worldwide network of Academic Partners interact with Nobel Laureates.” The decision making is a 3 step process: the ANZSCDB Executive nominated student members from applications received to the NCBS committee, which then nominates 3 candidates from all corresponding Australian societies to the Council for Lindau Nobel Laureate Meetings, which then selects up to 10 candidates from all corresponding Academies of Science with an even representation across the disciplines of Medicine or Physiology, Chemistry and Physics. Prior to the Lindau meeting, the successful candidate(s) is invited and expected to attend Science at the Shine Dome, the annual celebration of science held at the Academy of Science, Canberra, 5-7 May 2010. Expenses are paid by the Australian Academy of Science and the Lindau Committee.

International Society for Molecular and Cell Biology and Biotechnology Protocols and Research (ISMCBPR): ANZSCDB members have responded enthusiastically so far to the call for nominations for “Molecule of the Year 2009”. The criteria for nomination is that the first peer reviewed published report of the molecule must occur between late 2008 until the first week of December 2009 and all nominated molecules must have a press release that can be viewed online. As a voting member, the ANZSCDB Executive looks forward to participating in this intriguing activity.

State representative and local chapter activities:

Congratulations to our state representatives and local chapters for promoting our disciplines this year in ANZSCDB sponsored state and local meetings. With the ever increasing number of symposia and meetings and because our disciplines are present in so many venues, we have decided that the most effective way to promote and support our disciplines is to provide sponsorship for established meetings as well as society-based meetings.

EDITOR’S COLUMN

There’s lots to read in this issue, so please enjoy!

Want to get more involved in the society? Then how about being a State or NZ Representative. If you are interested please fill in a nomination form and send to Geraldine O’Neill (geraldio@chw.edu.au) by 23rd November.

Please keep me updated with any comments, news and research advances that you would like to share with other ANZSCDB members.

*Megan Chircop
(nee Fabbro)
mchircop@cmri.com.au*

Queenstown Developmental Biology Symposium – Christine Jasoni was our member on the organising committee. September 3-6, 2009, Queenstown, NZ.

19th Annual Combined Biological Sciences Meeting – Megan Lloyd was our member on the organising committee. Friday August 28th 2009, University of Western Australia, WA.

2nd Melbourne Cell and Developmental Symposium – Plenary Speakers: Dr Nicolas Tapon, Cancer Research UK, London and Dr Carol Wicking, IMB, Brisbane. Organised by Kieran Harvey (Peter Mac) and Ian Smythe (Monash). Friday, November 13th 2009, Peter MacCallum Cancer Centre VIC.

NSW Cell and Developmental Biology Meeting – Keynote Lecture: Vishva Dixit, Genentech, USA. Organised by Jacqueline Stoeckli (Garvan) and Thomas Fath (UNSW). Tuesday November 24th 2009, Garvan Institute of Medical Research, NSW.

See you at ComBio2009 in Christchurch, NZ. Please join us at the ANZSCDB society dinner at “The George”, Christchurch, Tuesday Dec 8 2009 – details for online booking to follow soon.



Professor Phil Crosier

*Molecular Medicine & Pathology
School of Medical Sciences*

*The University of Auckland,
New Zealand*

Profile

drug addiction. “It’s an exciting and very fascinating area. It still amazes me just how powerful the zebrafish system is and where the field is heading. In reality it is simply observational research, but it utilises all the contemporary tools of genomics, genetics, cell and molecular biology. Mind you, I’m still convinced the best discoveries in the system are made by talented people looking down a microscope and observing what cells are doing, where they are moving to or

how they are changing.”

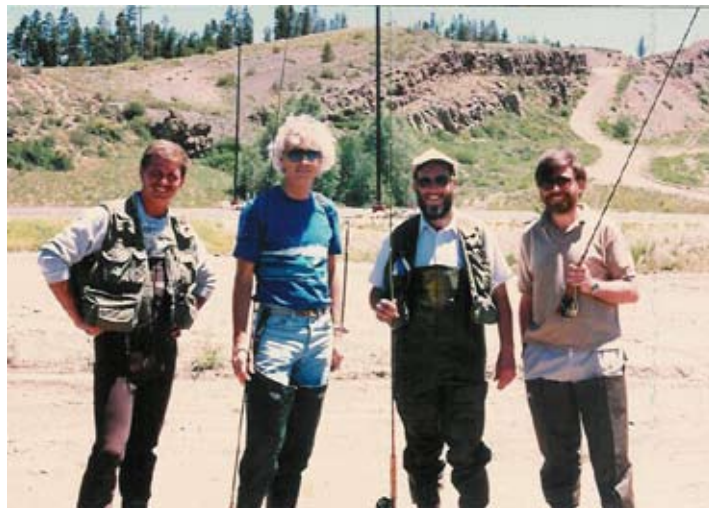
Moving forward, Crosier wants to also take their work into the area of drug discovery using the group’s various disease-related zebrafish models. He is particularly encouraged in this endeavour by the significant growth of labs now using zebrafish in small-molecule screens for clinical application. “To me the holy grail is understanding tissue repair and regeneration and whether this represents a viable base upon which to

treat some human disease. If this approach can be coupled with the use of small-molecule intervention to direct cell development then many opportunities become open...maybe one day we can direct stem cell fate via cocktails of small molecules. The truly amazing thing is to see how significant the underpinning of database and technological platforms is now for biological research such as this.”

PHIL CROSIER

When Professor Phil Crosier moved back to his home country of New Zealand in the late 1970s from several years working in Europe, he had a clear research goal - “discovering cytokines that regulate haematopoietic stem cell development.” Thirty years later, Crosier looks back at just how that self-confessed idealistic goal has panned out and how checking out a few zebrafish has helped along the way.

Nowadays, Crosier runs one of the leading zebrafish research groups in the world at The University of Auckland in New Zealand, working together with Professor Kathy Crosier (Phil’s wife), who is also a clinical haematologist. Their major goal remains to better understand the developmental pathways that regulate hematopoiesis, vasculogenesis and immunity using zebrafish model genetics. “We have a particular interest in the Runx family of transcription factors and are investigating their roles in developmental processes and diseases such as Crohn’s disease and cancer. The zebrafish as a model system offers powerful genetic and embryological experimental approaches for vertebrate biology.”



Why fishing is good for your health

Pondering his current research focus, Crosier explains that “the major challenge still for us and indeed many in the field is understanding multi-gene complex traits especially in relation to human disease. I’m intrigued by how the central genetic pathways important in development re-emerge as targets in human disease.” Crosier sees this crossover as an area in which genetics models are crucial for finding some of the answers. Already, the zebrafish system has been used to model aspects of obesity/metabolic disease, cancer pathogenesis, learning disorders and even

From birds to fish – a life driven by curiosity

Phil Crosier hails from Christchurch in the South Island where he attended Shirley Boy’s High School. “It was a relatively new high school with enthusiastic teachers and an innovative head master.” Some of these teachers were clearly early influences on his later life and career pursuits, including “incredibly good science teachers, a fabulous biology teacher and a fanatical art teacher who ran the Natural History Club. I also became totally enthralled with school tramping (or bushwalking to us Aussies) trips that opened up opportunities to traverse through diverse landscapes.”

In fact, Crosier really was one of those kids always out the back collecting things, from insects to fossils. Interested in natural history from an early age, he became an avid bird watcher as a teenager and

joined several expeditions to New Zealand's offshore islands for bird watching and banding with the NZ Ornithological Society. This passion was the source of many cherished moments for Crosier such as working with world-famous 'birdies' and even helping Sir Peter Scott (the son of Robert Falcon Scott) in filming movies around parts of the NZ South Island.

In Crosier's last year at school, an animal ecologist called Graeme Caughley had a profound influence on his interest in research. Caughley was working in the former New Zealand Forest Service Research Section and actually went on to be the Chief Research Scientist in the CSIRO Wildlife and Ecology division in Canberra. At the time, Caughley was researching some of the animals introduced into New Zealand such as the red deer, chamois and Himalayan Tahr – how they spread into new niches and how these new food sources affected their reproductive capacity. "Graeme put together a small group of outdoorsy-type university students to work for him in the Southern Alps during their vacations and I was fortunate enough to be part of this group. I learned how good it was to spend my time doing something I was passionate about and Graeme had this view that anything was achievable."

Getting serious

After school, Crosier headed north to go to university with many passions and interests, but no clear idea of what to do. Things became clearer over the next several years of tertiary study. First came a BSc in Botany and Zoology followed closely by an MSc, both at The University of Auckland, before shifting across the country to the home of great Pinot Noir wines and the Otago University for his PhD in Medicine investigating the role of immuno-regulatory cells and their secreted factors in cellular immune responses. A turning point that opened a significant door was the MSc thesis work Crosier undertook with Sir John Staveley at the Blood Transfusion Centre where he described the HLA antigens in Polynesian populations. This work also involved modelling population expansion in the Pacific Islands.

In 1974, Crosier secured a Fellowship from the French Ministry of Foreign Affairs and headed off to Paris to undertake postdoctoral work with immunologist Professor Jean Dausset at the Institut de Recherches sur les Mâladies du Sang. Here he continued working on the genetics of the human major histocompatibility complex (MHC). "This was a truly amazing time when new aspects of the MHC were being unravelled each month. Dausset had built up this unique collection of families within France and North Africa with various recombination events within their MHC. Lymphoblastoid cell lines were made from the family blood samples and DNA from these lines was used to map the human genome by linkage. The lines were distributed worldwide and contributed in part to the early stages of the International Genome Project."

Jean Dausset was one of Crosier's most significant

scientific influences and certainly a worthy role model for any young scientist. In 1980, Dausset received the Nobel Prize in Medicine for his work describing the MHC, and in particular, for demonstrating that HLA antigens on the surface of cells determine an individual's immune response. This finding was pivotal in facilitating successful organ transplantation. "It was a privilege working in Dausset's group," says Crosier. "He was a strong mentor with diverse interests in human genetics, treating disease and human suffering, world history, anthropology, art and literature. He was also an exceptionally kind humanitarian and we became very good friends." Dausset died in June of this year at the age of 92.

The call of the kiwi

Crosier returned to NZ in the late 1970s to a position at the Christchurch Clinical School in the Dept of Medicine headed by Prof Sir Don Beaven. There he started a small group working on the regulation of immune responses and embarked on the steep learning curve of grant writing and building an independent research career. "My job was to undertake biomedical research and teach medical students – I felt like the tame scientist working in this department of pre-eminent physicians." It just so happened that the cytokine field was really taking off about that time, and Crosier decided to exploit this to understand more about blood cell development. "Rather naively at the time, I decided to use mouse factor-dependent cell lines as a screen to discover cytokines that might function in haematopoiesis across species. Around the same time, New Zealander Jim Watson moved back to Auckland from UC Irvine where he was Prof of Immunology and Microbiology, and seeking further opportunities towards my research goal, I moved again to join Jim's group at The University of Auckland in 1985."

It was back up north that Crosier met his future wife Kathy who was completing her PhD and finishing her FRACP and FRCPA. "In 1989 we moved to Boston for Kathy to take up a Fellowship at the Children's Hospital, and Genetics Institute (GI) created a position for me as a visiting scientist in the haematopoiesis group." GI was still a relatively small biotech company in those days, having been founded in 1980 by Harvard molecular biologists, Thomas Maniatis and Mark Ptashne, who were still involved in the company along with their respective Harvard teaching and research commitments during the time Crosier worked there. It was at GI that Crosier started to develop an interest in model system genetics and in particular the use of zebrafish. This interest was further cemented by interactions with other scientists around Boston, including the German developmental biologist Wolfgang Driever, who at the time was conducting one of the world's first forward-genetics zebrafish screens in Mark Fishman's group at Massachusetts General Hospital.

Gone fishin' – pushing the scientific comfort zones

Crosier cites the most challenging and most rewarding period of his career as this decision to embark on model systems genetics. Although conceived in the US, the decision did not start to take form until he and Kathy returned to Auckland to establish their own joint research group. It seems that Crosier has always liked to challenge himself in all aspects of life and stepping beyond your scientific comfort zone is also one of the main pieces of advice he offers to younger scientists. This stage was obviously when he lived that advice as the Crosiers soon found out, getting a new system, and in particular zebrafish genetics, working in the isolation of Auckland was another thing altogether from what he had seen in Boston, with no experienced and world-famous labs 'down the corridor' to consult. "We started from scratch buying several 40-gallon tanks from the local pet shop and some 'danios' to begin our venture. These were set up in the lab and away we went...and with significant perseverance by a group of talented individuals, we are now achieving what I had hoped for when we started down this path."

Australian friend and fellow fish fanatic, Joan Heath from the Ludwig Institute in Melbourne, echoes the extent of Crosier's achievements and standing in the field. Heath met Crosier over a decade ago when she was also trying to get a foothold in the zebrafish field. "Phil had great faith in what we were doing and went out of his way to create opportunities for me and provide advice whenever needed...he was particularly helpful on where to find funding for Zebrafish research. Phil is one of my favourite colleagues and has become a very good friend." According to Heath and others close to him, Crosier worked solidly to pioneer zebrafish research in New Zealand (and together with Graham Lieschke in the Southern Hemisphere) and his lab is now considered one of the leaders in the field. From the few stories related, it also seems that Crosier and his NZ contingent are always a source of good food, wine and conversation for Heath at conferences, as well as the odd spot of Shakespearean audience participation!

Influencing others is one of the joys

These days, Crosier occasionally has time to reflect on 'the journey' with all its ups and downs and one of the main things he relishes about his position now is having some positive influence on the career development of young people. "A real thrill for me is seeing individuals who have trained or worked in our group achieve success in whatever they are pursuing." This dedication to his team was a common theme in comments from Crosier's colleagues and friends. In fact, according to Heath, "one of the keys to Phil's success is the loyalty both he and Kathy engender from members of their team. No-one ever wants to leave, which is great for maintaining the momentum."

One such Crosier 'groupee' and now a highly successful senior researcher in her own right is Maria Flores and she also describes Crosier's leadership

style in glowing terms. Joining the group in 2000 as a Research Fellow, Flores attests her subsequent decision to make a career of Developmental Biology in zebrafish directly to Phil's dedication and example as a scientist and lab head. "It was clear from the start that Phil and Kathy were interested in both your productivity as a scientist and your personal career development." Flores is also constantly impressed by Crosier's ability to live another of his pieces of advice in fostering important and lasting collegial interactions. "In his quiet and unassuming manner, Phil has maintained a breadth and depth of contacts (in the majority of cases true friendships) worldwide that form the basis of concrete scientific collaborations."

According to Crosier, another "real joy" in his working life is co-directing the research group with his wife!! "Kathy is a physician scientist and sometimes sees things in a refreshingly different way from me. We have a very nice and productive way of running the group bringing into it our respective backgrounds and experience. It is challenging and rewarding to build a productive group who work cooperatively and collaboratively." He adds that it is also a privilege to spend largely public funds on something you're passionate about!



Outside of the lab, Crosier's first priority is family (sort of inside the lab as well). As well, he retains his great passion for the New Zealand outdoors, and whenever possible also relishes catching up with mountaineering friends, sailing, collecting and periodically drinking wine, cooking and travelling.

Not all Sav Blanc and skittles

On the less rosy side, Crosier admits that New Zealand's isolation from the large scientific hubs of biomedical research is sometimes a problem in this game, although the same isolation has also spawned creative thinking and ventures into new research avenues. In fact, according to Flores, "Phil is a true DIY Kiwi who firmly believes in the talent and ingenuity of NZ scientists...and he has dedicated his career to establishing a state-of-the-art laboratory where this can flourish and make significant contributions to the wider scientific community."

“One of major early challenges for our group was obtaining grant funding for biomedical research in New Zealand - getting people accustomed to the value and potential of zebrafish models in biomedical research. After several failed grant attempts the Crosiers received their first fish-orientated grant for 3 years, followed by a 5-year project grant to undertake their first forward genetic screen. “I recall one very early referee’s report that seriously wondered if I had ventured into the scientific wilderness with an application to use a fish in medical research. This referee went onto to vigorously question the role of a fish in this type of research. Oh, how times have changed!! Thankfully.”

Joan Heath recalls that Crosier and another of her mentors in Australia, Graham Lieschke, realised early on that a formal event was needed to bring the Australia and New Zealand zebrafish community together regularly to share ideas, attract international attention and work towards community resources. They conceived and convened the first annual Australia and New Zealand zebrafish workshop in 1999 - a one-day event held in a small room at the University of Melbourne. “The meeting has blossomed over the intervening years and we celebrated our tenth anniversary last year. It is generally agreed though that the two meetings Phil organised on Waiheke Island (in 2003 and 2008) have been outstanding scientifically and the most enjoyable.”

Fiona Wylie

MEMBERS IN THE NEWS

Peter Koopman, member, organiser of the Cell & Dev Biol stream in ComBio2009 and winner of the 2007 President’s Medal has won ASBMB’s Lemberg Medal which he will receive at ComBio2009.



ANZSCDB Student Travel Awards to attend ComBio2009 were awarded to **Nadia Sadli**, Centre of Cellular and Molecular Biology, School of Life and Environmental Sciences, Deakin University and **Claire Martin**, Oncology Research Unit, School of Medical Sciences, University of NSW.



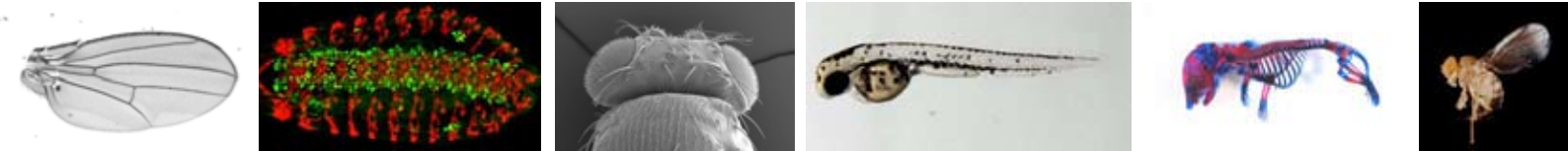
ANZSCDB’s Student Exchange Scheme scholarship was awarded to **Jessie Zhong**, PhD student in the Focal Adhesion Biology Group, Children’s Hospital at Westmead to visit Professor Pankaj Sah’s laboratory at the Queensland Brain Institute in Brisbane.



A/Prof Phil Crosier has been promoted to full Professor (Dept of Molecular Medicine & Pathology, The University of Auckland).



A/Prof Cynthia Jensen (Dept of Anatomy with Radiology, The University of Auckland) was presented the 2009 Butland Award for Sustained Teaching Excellence (a prestigious faculty award).



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

Second Annual Melbourne Cell and Developmental Biology Meeting

Friday November 13 2009

9:30AM - 5:30PM

Jack Brockhoff Lecture Theatre,
Level 3, **Peter MacCallum Cancer Centre**

Plenary Speakers:

Dr Nicolas Tapon, Cancer Research UK, London
"The Hippo tumour suppressor pathway"

Dr Carol Wicking, IMB, Brisbane
"Hedgehog signalling and the primary cilium"

8 postdocs and 8 PhD students will be chosen from
abstracts to present 15 minute talks.

The best talks will receive cash prizes.

Please submit 100-200 word abstracts by **October 16** to either:
Kieran Harvey - kieran.harvey@petermac.org
Ian Smyth - ian.smyth@med.monash.edu.au

Registration is free - please do so by emailing Kieran or Ian

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



Fourth Barossa Meeting

Cell Signalling in Cancer and Development

18 - 21 November 2009 Barossa Valley, South Australia

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REGISTRATION AND ABSTRACT DEADLINE

28th August 2009, limit first 100 registrations.

A number of abstracts will be selected for oral and poster presentations.

CONFERENCE THEMES

MicroRNAs, 3D view of cytokine receptor signalling, Apoptosis, Cancer stem cells, Signalling circuits in immunity, Phospholipids in cell signalling, Signalling in vascular development, Signalling in morphogenesis, Novel therapeutics, Global regulation of signalling.

CONFIRMED SPEAKERS

RUSSELL BASSER, CSL LTD, MELBOURNE

CHRISTER BETSHOLTZ, KAROLINKSA INSTITUTE, STOCKHOLM, SWEDEN

ANDREW BOYD, QIMR, BRISBANE

BLANCHE CAPEL, DUKE UNIVERSITY MEDICAL CENTRE, DURHAM, USA

JOHN E DICK, UNIVERSITY OF TORONTO, ONTARIO, CANADA

VISHVA DIXIT, GENENTECH INC, SAN FRANCISCO, USA

MARK FEBBRAIO, BAKER INSTITUTE, MELBOURNE

CHRISTOPHER GARCIA, STANFORD UNIVERSITY, STANFORD, USA

ANTONIO GIRALDEZ, YALE UNIVERSITY, NEW HAVEN, USA

YUSUF HANNUN, MEDICAL UNIVERSITY OF SOUTH CAROLINA, CHARLESTON, USA

DOUG HILTON, WEHI, MELBOURNE

TIM HLA, UNIVERSITY OF CONNECTICUT, HARTFORD, USA

DAVID HUANG, WEHI, MELBOURNE

LINA OBEID, MEDICAL UNIVERSITY OF SOUTH CAROLINA, CHARLESTON, USA

MICHAEL PARKER, SVIMR, MELBOURNE

ROB PARTON, IMB, BRISBANE

JOHN D SCOTT, UNIVERSITY OF WASHINGTON, SEATTLE, USA

FRANCES SHANNON, JCSMR, ANU, CANBERRA

STEVEN STACKER, LUDWIG, MELBOURNE

ALEX SWARBRICK, GARVAN INSTITUTE, SYDNEY

VINAY TERGAONKAR, INSTITUTE OF MOLECULAR AND CELL BIOLOGY, SINGAPORE

MIKE TYERS, SAMUEL LUNENFELD RESEARCH INSTITUTE, TORONTO, CANADA

CAROLA VINUESA, JCSMR, ANU, CANBERRA

BRANDON WAINWRIGHT, IMB, BRISBANE.

REGISTRATION OF INTEREST

Regular updates on the meeting will be available at www.sapmea.asn.au/signalling09

Log on and register your interest to attend the meeting.

ORGANISING COMMITTEE

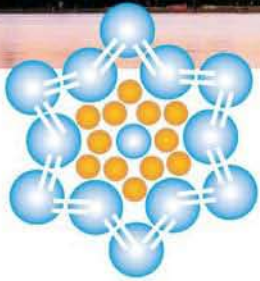
Angel Lopez (Chair), Claudine Bonder, Michael Brown, Greg Goodall, Michele Grimaldeston, Mark Guthridge, Natasha Harvey, Tim Hughes, Yeesim Khew-Goodall, Stuart Pitson, Paul Thomas, Jo Woodcock, Anna Nitschke.

MEETING SECRETARIAT

SAPMEA Meetings Management
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Phone – 08 8274 6048
Email – signalling09@sapmea.asn.au
Web – www.sapmea.asn.au/signalling09

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Australian Scientific Conference
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themes

- Imprinting
- Non coding RNAs
- Cancer Epigenetics
- Nuclear Architecture
- Epigenomic Technologies
- Developmental Epigenetics
- Epigenetics and Environment
- Epigenomics of Human Disease
- Epigenomics of plants and animals

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Early Bird registration deadline 4th September
Abstract deadline 30th October

speakers

- David Allis, (USA)
- Steven Baylin, (USA)
- Wendy Bickmore, (UK)
- Vicki Chandler (USA)
- Sue Clark (Aus)
- Thomas Down, (UK)
- Jean Finnegan (Aus)
- Peter Gluckman (NZ)
- Moshe Szyf (Canada)
- Peter Jones, (USA)
- John Mattick (Aus)
- Art Petronis, (Canada)
- Scott Poethig (USA)
- Marilyn Renfree (Aus)
- David Tremethick (Aus)
- Benjamin Tycko, (USA)
- Emma Whitelaw (Aus)
- Jingde Zhu, (China)
- Haruhiko Koseki (Japan)
- Sung He Baek (South Korea)
- Kazu Ushijima (Japan)



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COMBIO 2009

CHRISTCHURCH CONVENTION CENTRE
CHRISTCHURCH, NEW ZEALAND, 6 –10 DECEMBER, 2009

Matthew Turnbull (NZSPB/ASPS) and David Palmer (NZSBMB) invite you to join us at ComBio2009 in Christchurch. We are planning a comprehensive and wide ranging scientific programme with plenty of the traditional ComBio features. We also hope that you will take the opportunity to use Christchurch as a gateway to the fantastic New Zealand landscape.



Protein Structure and Function	Cells and Development	Signal Transduction and Gene Regulation		Genetics and Genomics
Emily Parker/Juliet Gerrard (U Canterbury)	Phil Crosier (U Auckland), Ian McLennan (Otago U)	Pete Shephard (U Auckland)	Jack Heinemann (U Canterbury)	Tony Merriman (U Otago)
Bostjan Kobe/Jenny Martin (U Queensland)	Peter Gunning (Westmead), Peter Koopman (U Queensland)	Phil Robinson (CMRI)/Christina Mitchell (Monash U)	Merlin Crossley (U Sydney)	Christine Wells (Griffith U)
Plant Biology	Plant Ecophysiology and Global Change Biology	Microbiology	Agricultural and Horticultural Science	Medical Science
David Collings (U Canterbury)	Margaret Barbour (Landcare Research, NZ)	Andrew Hudson (ESR, NZ)	Jon Hickford (Lincoln U)	Allan Herbison (U Otago)
Steve Tyerman (U Adelaide)	Owen Atkin (ANU)	Hatch Stokes (Macquarie U)	Julian Heyes (Crop + Food Research, NZ)	Phil Hogg (UNSW)

International Speakers

Sir John Walker FRS	Nobel Prize in Chemistry 1997	Michael Karin	Signalling in inflammation	Yair Shachar-Hill	Plant central metabolism and biomass production - metabolic flux analysis
		Doug Eaton	Why we don't drown every day; a new paradigm for lung fluid balance		
Vern L. Schramm	Enzymatic transition states and inhibitor design	Misha Perouansky	Mechanisms of anesthetic action	John Grace	Nitrogen and carbon cycles under climate change
Janet L. Smith	Enzyme domains in assembly lines for antibiotic biosynthesis	Caroline McMillen	Fetal and postnatal programming of obesity and metabolic disease	Guillaume Tcherkez	Isotopic fractionation in plant metabolism
David Ornitz	Fibroblast growth factors in development and disease	Pankaj Sah	Generation of patterned neuronal activity in the brain	Brent Helliker	Oxygen isotopes and the temperature of tree canopies
Benjamin Geiger	Mechanisms underlying environmental sensing via focal adhesions	Tim Wiltshire	Genetic variation in mice: modeling disease, pharmacogenetics, and basic biology	Aled Edwards	Genome-scale studies of the structure and function of protein families
Nadia Rosenthal	Regeneration of muscle in mice	Wan Lam	Title to be advised	Terry Yamaguchi	Wnt signaling in morphogenesis
		Chris Hawes	Imaging secretory pathway dynamics in living cells	Rudi Amman	Analyzing the microbial catalysis of biogeochemical cycles
Peter Lobel	Lysosomal Proteomics and Disease				

Earlybird Registration closes 21 August 2009

Registration information and on-line registration: www.conference.canterbury.ac.nz/combio09

Enquiries – Email: combio09@uco.canterbury.ac.nz, **Phone:** +64 3 364 2534

COMBIO2009 Invited Speaker Profiles

Cell & Development Plenary Speakers



Prof. David Ornitz

Washington University
School of Medicine
USA

“Fibroblast Growth Factors in Development and Disease”

David Ornitz is an Alumni Endowed Professor in the Department of Developmental Biology at Washington University School of Medicine in St. Louis, Missouri, USA. Dr. Ornitz received his B.S. degree from the University of California, Davis and his MD and Ph.D. from the University of Washington, Seattle. Postdoctoral training was in the laboratory of Dr. Philip Leder in the Genetics Department at Harvard Medical School. Dr. Ornitz's main interests have related to the function of genes in mouse development and physiology and the generation and analysis of mouse models for human disease. Dr. Ornitz is currently serving as an associate editor for *Developmental Dynamics*.

The Ornitz laboratory has primarily focused on the function of Fibroblast Growth Factors (FGFs), which are essential molecules for development, physiology and response to injury. FGF signaling pathways interact with other signaling pathways to regulate cell proliferation, migration and differentiation. Loss of function of genes encoding FGFs and FGF receptors (FGFRs) result in embryonic lethality, developmental defects, physiological abnormalities and neurological dysfunction. Additionally, gain of function mutations in FGFRs result in hereditary craniofacial and skeletal dysplasia syndromes in humans. Current studies are examining FGFs, FGF receptors and a variety of other interacting signaling pathways (hedgehog, Wnt, BMP, TGF β , VEGF) in the mouse embryo and in adult mice, with a focus on skeletal, cardiovascular and pulmonary development and physiology. Using knockout and conditional knockout technology the Ornitz laboratory has constructed FGF and FGF receptor mutants with defects in these and other organ systems. Mutant mice are being studied as genetic and developmental model systems for mesodermal and epithelial patterning and growth.

Recent work in the Ornitz lab has uncovered a unique subfamily of FGFs that act intracellularly (iFGF) in neurons and are important for neuronal signal trans-

duction. Disruption of the intracellular signaling molecule, FGF14 results in an anatomically normal mouse with severe neurobehavioral phenotypes including ataxia, seizure, paroxysmal dystonia and cognitive impairment. A mutation in FGF14 in humans is the cause of a dominant progressive spinocerebellar ataxia syndrome, SCA27. Current studies are investigating the role of FGF14 as a regulator of neuronal excitability, the mechanism of action of the SCA27 mutation in FGF14, and the role of FGF14 as an intracellular regulator of voltage gated sodium channel function.



Prof. Benjamin Geiger

Weizmann Institute
Israel

“Mechanisms underlying environmental sensing via focal adhesions”

Prof. Benjamin Geiger currently serves as Dean of the Faculty of Biology, Weizmann Institute of Science, a post he has held since 2003. He also serves as Director of the Clore Center for Biological Physics (since 2000), and Director of the Kirk Center for Childhood Cancer and Immunological Disorders (since 2006). On the Israeli national scene, Prof. Geiger chairs the Life and Medical Sciences Sections of the Israel Science Foundation, and is actively involved in several national forums concerning science and technology education, and the promotion of art and culture. Prof. Geiger is an elected member of the European Molecular Biology Organization (EMBO) and past president of the European Cytoskeletal Forum (2001-2005). He is the incumbent of the Erwin Neter Professorial Chair in Cell and Tumor Biology.

Prof. Geiger explores the mechanisms responsible for communication between cells, both normal and cancerous. He works to identify and trace the specific molecules involved in intercellular recognition and communication, and to investigate the signaling processes that regulate such interactions. In his research, he focuses on the role of cell adhesion and migration in a wide range of situations in both health and disease. His main achievements include the discovery of previously unknown adhesion molecules and mechanisms, characterization of their roles in cancer development, and investigations into the ma-

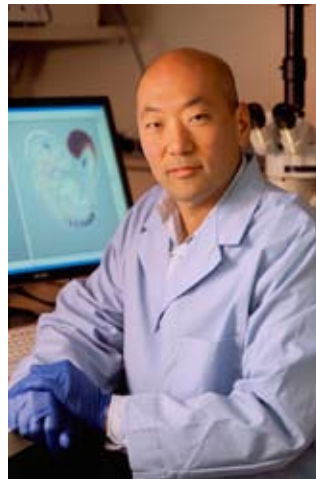
for mechanisms underlying adhesion-related signal transmission. When adhesion molecules lose their ability to hold cells together, the cells become disorganized, change shape, and may become more migratory and invasive – hallmarks of cancer cells. Prof. Geiger studies the ways in which adhesion processes become disrupted in instances of cancer. In one collaborative project with physicians, he investigated the spread of multiple myeloma cells into bones. In another, he applied his knowledge of cell adhesion to glaucoma, proposing new therapeutic approaches that would enhance fluid outflow from the eye.

Professor Rosenthal is a member of the ANZSCDB for whom she designed the prestigious Presidents Medal, and is a Visiting Professor at University of Western Australia. She spearheaded the election of Australia as the first EMBL Associate Member, was appointed Founding Director of the Australian Regenerative Medicine Institute at Monash University, and holds an Australia Fellowship.



Prof. Nadia Rosenthal

EMBL, Monterotondo
Italy



Dr Terry Yamaguchi

National Cancer Institute
Frederick MD
USA

“Enhancing mammalian regeneration”

Born in the US, Nadia Rosenthal obtained her PhD in 1981 from Harvard Medical School and trained as a postdoctoral fellow at NIH, then directed a biomedical research laboratory at Harvard Medical School. Her research focuses on developmental genetics of heart and skeletal muscle, the molecular biology of ageing and the role of growth factors and stem cells in tissue regeneration. She edited the definitive text Heart Development with Richard Harvey and served for a decade at the New England Journal of Medicine as editor of the Molecular Medicine series. Since 2001 she has been Head of the EMBL Mouse Biology Unit in Rome, holds a Professorship of Cardiovascular Science at Imperial College London, was awarded EMBO membership and the Ferrari-Soave Prize in Cell Biology. She serves on numerous international grant review committees, advisory panels and editorial boards and coordinates several major EU consortia on mouse genetics and disease models. In Australia,

“Wnt, Notch and the transcriptional networks that control mesodermal stem cell homeostasis”

Dr. Terry Yamaguchi received his Ph.D. from the University of Toronto where, with Dr. Janet Rossant, he studied the function of FGF and VEGF signaling pathways in mouse and embryonic stem cell development. He began studying the Wnt family of signaling molecules while an International Human Frontier Science Program Fellow and Medical Research Council of Canada Fellow with Dr. Andrew P. McMahon at Harvard University. Dr. Yamaguchi joined the National Cancer Institute-Frederick, National Institutes of Health in 2000, where he established the Cell Signaling in Vertebrate Development Section. He is taking genetic and genomics approaches to understand how embryonic and adult stem cell potency and lineage determination are regulated by Wnt signals.



The Molecules of Life - from Discovery to Biotechnology

Melbourne Convention and Exhibition Centre 26 September - 1 October, 2010

www.ozbio2010.com

ASBMB Lemberg Medalist



Prof. Peter Koopman

IMB
University of
Queensland,
Australia

recognised as one of the leaders in the field internationally, through invitations to speak at major international conferences and to contribute reviews for leading journals and monographs.

One of his most significant contributions is the discovery of Sox9, a pivotal regulator of skeletal development and also a critical sex-determining gene in all vertebrates. Sox9 is now the focus of intense international research and commercial development, with over 1000 papers published. Research on Sry and Sox9 has led Peter's team to discover a number of other Sox genes that are significant as master transcriptional regulators of cell differentiation, and mutations of which underlie several human disorders. Last year, his group published in Nature the discovery that Sox18 is the master regulator of the development of the lymphatic system.

Peter is author of more than 160 papers, including five in Nature, seven in Nature Genetics, and others in Cell, Science and Genes and Development, which together have been cited over 7,000 times in the literature. He has given over 200 invited conference papers and seminars and is on the editorial board of six international journals.

Peter received the Julian Wells Medal in 1998, the ASBMB Amersham Pharmacia Biotech Award in 2002, the ANZSCBD President's Medal in 2005, and the GSK Award for Research Excellence in 2007. He is Head of the Division of Molecular Genetics and Development at IMB, an ARC Federation Fellow, and a Fellow of the Australian Academy of Science.

Peter Koopman received a BSc(Hons) and BA from the University of Melbourne, and in 1986, obtained a PhD in stem cell biology at what is now the Murdoch Institute at Melbourne's Royal Children's Hospital.

He worked in London for six years as a postdoc at the Medical Research Council, with Dr Anne McLaren and Dr Robin Lovell-Badge. During this time, he investigated the molecular basis of mouse embryo development and is perhaps best known for his role in discovering the Y-chromosomal sex-determining gene Sry, widely acclaimed as a landmark in molecular genetics and resulting in a string of papers in the leading journal Nature.

Peter leads a team of some 20 researchers at the Institute for Molecular Bioscience (IMB) at the University of Queensland. He has continued to focus on the molecular genetics of sexual development, sex reversal and intersex disorders, which are among the most common congenital disorders worldwide. He is

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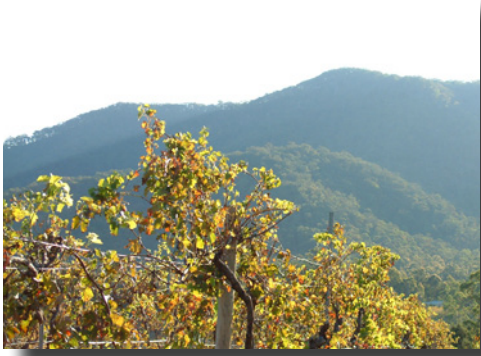
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10th Anniversary Meeting

The **10th Hunter Cellular Biology Meeting**

The Sebel Kirkton Park, Pokolbin, NSW, Australia

Australia's Premier Cellular Biology Meeting ~ in NSW's Premium Wine-growing district

March 16-19, 2010

on-Line Abstract submission until November 20, 2009

Sandy Schmid

The Scripps Research Institute

Michael Way

Cancer Research UK

Martin Schwartz

The University of Virginia

Frances Brodsky

UCSF Comprehensive Cancer Center

Margaret Frame,

The University of Edinburgh

Cayetano Gonzalez

IRB-Barcelona, Spain

Anna-Katerina

Hadjantonakis

Memorial Sloan-Kettering Cancer Center

Carl-Phillip Heisenberg

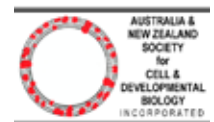
Max-Planck-Institute of Molecular Cell Biology
and Genetics/ Dresden

William E. Balch

The Scripps Research Institute

Ed Munro

Friday Harbor Labs, University
of Washington



Mark Peifer

The University of North Carolina at Chapel Hill

Convenors:

Alpha Yap, Phil Robinson

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

The 10th Hunter Cellular Biology Meeting

The Hunter Cellular Biology Meeting is one of the year's regular opportunities for Cell and Developmental Biologists to get together and exchange ideas, all in the bucolic surrounds of the Hunter Valley. The forthcoming 2010 meeting will be held from March 16th to March 19th, 2010. The meeting proper will begin on the evening of March 16th, with the Keith Stanley Lecture. It will also be preceded by an Imaging Workshop being organized by Will Hughes and Sally Dunwoodie, the third of a series that have proven consistently stimulating and popular.

The 2010 Hunter Meeting celebrates the 10th anniversary of the conference. We have assembled an exciting roster of international speakers. They include Sandra Schmid (Scripps), Martin Schwartz (University of Virginia), Caeytano Gonzalez (IRB-Barcelona), Mark Peifer (University of North Carolina), Michael Way (CR-UK), Margaret Frame (University of Edinburgh), Ed Munro (University of Chicago), Frances Brodsky (UCSF), Carl-Phillipe Heisenberg (Max-Planck Institute, Dresden) and Anna-Katerina Hadjantonakis (Sloan-Kettering). Themes introduced by international guests will be complemented by a range of established and up-and-coming national speakers.

Some of the themes that the meeting will develop include membrane trafficking in metabolism and disease, cell signaling and cancer, the cytoskeleton in host-pathogen interactions, regulation of cell migration, cell and developmental biology of the vascular system, asymmetric cell division, modelling in experimental systems biology, and morphogenesis. Our aim is to explore the interconnections between cell and developmental biology, and also to examine how understanding basic mechanisms forms the foundation for analysing disease and pathology.

We encourage you to register and submit abstracts on line at: <http://hcbm.mtci.com.au/HM10-Abstracts.htm>. The deadline for abstracts is November 20th, 2009. There will be ample time for poster presentations and a number of talks will be selected from the submitted abstracts.

We look forward to seeing you in 2010.

Alpha Yap and Phil Robinson (Convenors)

ANZSCDB Sponsored Speaker



Ed Munro

University of Chicago

Ed Munro's work attempts: a) to turn empirical descriptions of how things might work into mathematical ones and thence into detailed computer models, and b) to pursue descriptive and experimental studies that inform or test these models in the context of specific case studies of developmental processes. Modern microscopy is applied to living and fixed embryos with micromanipulation, molecular and genetic perturbations and computational modeling. Some specific current interests include:

Mechanochemical networks underlying cell polarization and asymmetric cell divisions in early *C. elegans* embryos: How mixed networks of regulatory and cytoskeletal proteins interact biochemically and mechanically to bring about the cortical and cytoplasmic reorganizations that establish and maintain cellular polarities, position spindles, and set up asymmetric cell divisions.

Cytomechanics and morphogenesis: How the same conserved cytomolecular modules that endow individual cells with the abilities to adhere and crawl and change shape also endow embryonic tissues with their abilities to rearrange or deform themselves in characteristic ways.

Gene networks and patterned cell fate specification: How networks of interacting gene products operating within each of many embryonic cells adopt the specific spatially patterned states that underlie regional cell fate specification in developing embryos.



NSW Cell and Developmental Biology Meeting



Tuesday November 24th 2009
Garvan Institute of Medical Research

- 12:15 Jacqueline Stoeckli (Garvan) and Thomas Fath (UNSW)
Welcome
- 12:30 – 2:10 Session 1, Chair: TBA
- 12:30 – 12:55 James Burchfield, Garvan
Zooming in on GLUT4 Exocytosis
- 12:55 – 1:20 Megan Chircop, CMRI
Role of endocytic proteins during a mitotic division
- 1:20 – 1:45 Justin Lees, Kids Research Institute
The role of tropomyosins in regulating cell migration within solid tissue
- 1:45 – 2:10 Invitrogen
TBA
- 2:10 – 2:40 Tea sponsored by Invitrogen, Applied Systems and ANZSCDB
- 2:40 – 3:55 Session 2, Chair: Will Hughes (Garvan)
- 2:40 – 3:05 Traude Beilharz, Victor Chang
What the length of the poly(A)-tail can tell us about regulated translation
- 3:05 – 3:30 Cathy Leamy, Univ. Sydney
TBA
- 3:30 – 3:55 Thomas Fath, UNSW
Tropomyosins in neuronal development and disease
- 4:00 – 5:00 Keynote Lecture, Chair: David James (Garvan)
- 4:00 – 5:00  **Vishva Dixit, Genentech, USA**
Ubiquitin Editing & Inflammasome Function
- 5:00 Jacqueline Stoeckli (Garvan) *Closing remarks*
Drinks sponsored by Invitrogen, Applied Systems and ANZSCDB





AWTRS 2010 ~ *Crossing the Boundaries*

22-24 March, 2010 ~ Perth Convention and Exhibition Centre
Western Australia

We invite you to Register on-Line for the exciting AWTRS 2010 meeting and pre-conference Workshop/Master Class, March 22-24, 2010.

Important dates:

- **November 27, 2009: Registration and submission of abstracts** to be considered for Oral/Poster presentation selection
- **January 8, 2010: Close of Early Bird registration**

Proceedings published in *Wound Repair and Regeneration*

AWTRS 2010 is followed by the Australian Wound Management Association (AWMA) 2010 Conference with attractive reciprocal membership discounts.

Professor Jeffrey Hubbell
(Switzerland) *Tissue engineering*

Professor Paul Martin (UK)
Wound healing and inflammation

Professor Fiona Wood (Aus)
Systemic responses to burn injury

Professor Prue Hart (Aus)
The skin immune system

Professor Rob Short (Aus)
Surface engineering technologies - for cell therapy, tissue engineering and life science research tools

PRESENTERS include

A/Professor Allison Cowin (Aus)

A/Professor Ian Darby (Aus)

Professor Sarah Dunlop (Aus)

Dr Laura Edsberg (USA)

Dr Mark Fear (Aus)

Professor Hans Griesser (Aus)

A/Professor Chris Jackson (Aus)

Dr Pritinder Kaur (Aus)

Dr Susan McLennan (Aus)

Dr James McMillan (Aus)

Dr Rachael Murray (Aus)

A/Professor Steve Mutsaers (Aus)

Professor Cees Oomens (The Netherlands)

Professor Laura Poole-Warren (Aus)

Professor Zee Upton (Aus)

Dr Hilary Wallace (Aus)

Dr Jerome Werkmeister (Aus)

Convenors: **Dr Hilary Wallace**, University of Western Australia
Secretariat: awtrs2010@mtci.com.au

Dr Mark Fear, McComb Foundation



<http://awtrs2010.mtci.com.au>

INTERNATIONAL SOCIETY OF DEVELOPMENTAL BIOLOGISTS CONGRESS

Edinburgh, Scotland September 6-10, 2009

I attended the ISDB Congress in Edinburgh from 6th-10th September 2009 and, on behalf of ANZSCDB, the board meeting of the ISDB Executive. It was a suburb meeting with a record attendance of around 1500 delegates. The fusion of cell and developmental biology was highly visible at this meeting, with incredible progress being made over recent years in areas such as control of actomyosin tension in epithelia as a driver of morphogenetic processes including planar cell polarity and involution during gastrulation, and the signalling function of cilia. The Ross Harrison Prize of the ISDB this year went to Eddy De Robertis from UCLA for his contributions to understanding axis formation in *Xenopus* embryos, in particular how signalling systems on opposite poles of the embryo talk to one another during patterning and perturbations that result in regulation. The Waddington Medal of the British Society of Developmental Biology, the host society for the meeting, went to Liz Robertson for her work on gene targeting in embryonic stem cells and dissection of TGF β /BMP pathways in mouse development.

The current Chairman of ISDB, Masatoshi Takeuchi, presided over the board meeting, attended by delegates from Developmental Biology societies of Latin America/Mexico, United States, Japan, Asia Pacific, UK, Germany, France, Israel, Spain, India, Hong Kong, and Australia and New Zealand. Currently, ANZSCDB is a non-paying member of ISDB, so we have active but non-voting rights at the meeting. The main business of the meeting revolved around the election of a new ISDB President and the nomination of Claudio Stern was unanimously supported. Stern is the JZ Professor and Head of the Research Department of Cell and Developmental Biology at University College London, and Chair of the UCL Centre for Stem Cells and Regenerative Medicine. He is a Fellow of the Royal Society, Academy of Medical Sciences, Institute of Biology and Latin-American Academy of Sciences, and member of EMBO. He is also a former winner of the Waddington Medal of the BSDB, and is currently Editor of the *Mechanisms of Development*, the official journal of ISDB published by Elsevier. His research revolves around investigating the mechanism of embryonic polarity and patterning in the chick system, and the origins of the nervous system. Professor Stern will take the reins as ISDB President in 2010.

The other issue of relevance was the site for the next

ISDB Congress. A bid was heard from Juan Riesgo from the Latin-American Society of Developmental Biology and was accepted. The next meeting will therefore be held in Cancun, Mexico, in 2013, hosted by the LASDB and the Mexican Society of Developmental Biology, and possibly also the Society of Developmental Biology (USA). It should be a great meeting in an exotic location.

A new website has been created for the ISDB (<http://www.developmental-biology.org/>). ISDB supports international developmental biology meetings and makes various travel awards.

Richard Harvey
Victor Chang Cardiac Research Institute, NSW

AMERICAN SOCIETY FOR CELL BIOLOGY / RIKEN CENTER FOR DEVELOPMENTAL BIOLOGY / JAPANESE SOCIETY OF CELL BIOLOGY MEETING

MORPHOGENESIS IN KYOTO

Building the Body Plan: How Cell Adhesion, Signaling and Cytoskeletal Regulation Shape Morphogenesis

Kyoto, Japan September 21-23, 2009

How are the body plans of organisms constructed? What are the cellular and molecular mechanisms that build and maintain tissue patterns? What is the link between tissue organization and disease? Questions such as these lie at the heart of the problem of morphogenesis. Over 150 scientists from Asia, Europe, Australia and the USA recently travelled to Kyoto to discuss just these issues, as they grappled with "Building the Body Plan: How cell adhesion, signaling and cytoskeletal regulation shape morphogenesis". This joint meeting of the ASCB, Japan Society for Cell Biology and RIKEN Center for Developmental Biology was sponsored by the ANZSCDB. Indeed, a key theme of the meeting, organized by Mark Peifer, Masatoshi Takeuchi and Sachiko Tsukita, was how different disciplines could productively collaborate to address these profound biological questions.

The value of multidisciplinary was highlighted by the session sponsored by ANZSCDB on "Adhesion and cytoskeletal regulation during Development". John Wallingford (University of Texas, Austin) reported on his lab's efforts to understand better why depletion of the novel Planar Cell Polarity (PCP) "effector" pro-

tein, Fuzzy (Fuz) in *Xenopus* caused a phenotype more similar to that of disordered hedgehog signaling, rather than that PCP disruption. This is because Fuz acts to control trafficking during the biogenesis of primary cilia, which are necessary for hedgehog signaling. The study thus adds a new cell biological insight into the link between two fundamental signaling pathways in development. Mark Peifer (University of North Carolina, Chapel Hill) told us about how the adherens junction protein, canoe, contributes to the earliest stages of gastrulation in the *Drosophila* embryo, while Christine Petit (Institut Pasteur) used mouse models to analyse the cooperation between atypical cadherin adhesion molecules and the actin cytoskeleton in hair cells of the inner ear. In this session animal models were used to identify cellular mechanisms during development, while cellular systems were employed to dissect molecular mechanisms relevant to morphogenesis. It ideally demonstrated how these analytic approaches are vital complements when it comes to tackling the large problem of morphogenesis.

This multidisciplinary theme continued throughout all the talks and poster sessions at this exciting meeting. Key topics included the regulation of planar polarity, coordination of cell-on-cell rearrangements in tissues, the genetic and cellular mechanisms that establish patterning in the nervous system, signaling by junctional proteins, and how abnormal morphogenesis contributes to disease. The three days were a superb opportunity to survey current progress in elucidating one of the largest problems in biology.

Alpha Yap
IMB, University of Queensland

DEVELOPMENTAL BIOLOGY

is developing well at Monash!

The past few years has witnessed strong growth of developmental biology research and education at Monash University. This has mostly occurred in the newly-named Department of Anatomy and Developmental Biology (ADB), a member of the School of Biomedical Sciences in the Faculty of Medicine, Nursing and Health Sciences. In November last year, this growth culminated in relocation of most of the developmental biology research groups in ADB, as well as developmental biologists from the Department of Biochemistry and Molecular Biology, to the recently completed STRIP2 (Science Technology Research and Innovation Precinct) Building on the Clayton campus.

More than 90 developmental biologists are now based on the Developmental Biology (3rd) floor of STRIP2. Lab heads are Dr Helen Abud, Dr James Armitage, Prof John Bertram, Assoc Prof Jane Black, Dr Peter Boag, Assoc Prof Tim Cole, Dr Marie Gibbs, Prof Richard Harding, Assoc Prof Jeff Kerr, Assoc

Prof Kate Loveland, Assoc Prof Moira O'Bryan, Dr Melanie Pritchard and Dr Ian Smyth. Research interests can be broadly classified into the following fields: developmental genetics; developmental origins of adult health and disease; causes and consequences of premature birth; stem cell biology; and reproductive biology. Research is conducted on a range of model organisms including *C. elegans*, chick, mouse, rat, sheep and human.

This development has occurred at the same time as the establishment and growth of the Australian Regenerative Medicine Institute (ARMI) which is located in the neighbouring building. Under Director Professor Nadia Rosenthal, ARMI has recruited Prof Peter Currie, Dr James Bourne, Assoc Prof Tiziano Barberi and Prof Christophe Marcelle. Developmental biology research is also strong in the School of Biological Sciences, with lab heads including Prof David Smyth, Dr Heather Verkade, Dr Richard Burke and Dr Alistair Evans.

Developmental biology research at Monash is underpinned by a number of outstanding platform technologies, including Monash MicroImaging, Monash Mouseworks, the Monash Antibody Technology Facility, Flowcore and the Monash Zebrafish Facility. Details of these facilities can be found on pages 66-69 of the School of Biomedical Sciences Annual Report (2008) at <http://www.med.monash.edu.au/sobs/docs/biomed-2008-annual-report.pdf>



In terms of undergraduate education, in 2007 the Department of Anatomy and Developmental Biology introduced Australia's first BSc major in developmental biology. Bachelor of Biomedical Science students can take these units as electives. The Major in Developmental Biology is undertaken in years 2 and 3 and includes 4 core Developmental Biology (DEV) units: DEV2011 (Early human development from cells to tissues), DEV2022 (Principles of organ and body design), DEV3011 (Fundamentals of developmental processes) and DEV3022 (Developmental pathways to health and disease). DEV3032 (Stem cells and regeneration), DEV3990 (Action in developmental biology research project), GEN3030 (Genetics of development), PHY3082 (Developmental physiology) and BCH3021 (Cellular organisation: organelle struc-

ture and function in health and disease) are available as elective units. The major units provide foundation learning in fertilisation, blastocyst formation and implantation, formation of the germ layers, histology and anatomy, and then more advanced learning in principles of experimental embryology, techniques of developmental biology, genetic regulation of development, generation of pattern and shape, genetic and environmental errors in development and fetal programming. DEV3032 (Stem cells and regeneration) is co-taught by ADB research staff as well as researchers from the Australian Stem Cell Centre, Monash Immunology and Stem Cell Laboratories and the Monash Centre for Reproduction and Development. Full details of the DEV units can be found at <http://www.med.monash.edu.au/anatomy/dev-units/>

More than 150 students are taking each of the 2nd year units, and 3rd year numbers are about 40 students per unit. Student evaluations are excellent, and resulting in excellent Honours enrolments, the highest for 10 years. Some of our 2008 Developmental Biology Honours students are pictured.

John Bertram
Head, Department of Anatomy and Developmental Biology, Monash University

INAUGURAL 2009 INTERNATIONAL FEDERATION OF CELL BIOLOGY (IFCB) TRAINING PROGRAM IN CELLULAR AND MOLECULAR BIOLOGY

CELL BIOLOGY, SYNTAX AND SIMULATED EARTHQUAKES IN THE FAR EAST

What do you do when you've exhausted all your travel funds but the conference bug bites and you find yourself pining for keynote plenaries and 'social hours w/ bites'. I was lamenting this exact problem to a colleague when I received notice from our esteemed president, Prof. Edna Hardeman, inviting registrants for the inaugural 2009 International Federation of Cell Biology (IFCB) Training Program in Cellular and Molecular Biology (herein referred to as the 'training program') to be held in Taiwan. Here was an opportunity to spend 2 weeks in the Far East while honing my skills as a cell biologist. I flinched instinctively as I clicked on to the registration information but was pleasantly surprised to learn that accepted applicants would be provided full registration, hotel accommodation and all meals at no cost. And if they REALLY liked your resume they'd even reimburse your flights. So I scored a free trip to Taiwan and staved off wanderlust for 2009. Looking back at my acceptance letter I learn that fewer than 8 percent of applicants (500 total) were accepted into the program. So I feel extremely fortunate to have been selected and many

thanks to ANZSCDBI for sponsoring my application.

In the opening address, former IFCB president Prof. Kenneth Wu welcomed us to the training program which is his brainchild. Invited luminaries, Prof. Tony Hunter (Salk) delivered a keynote speech on kinome function in cancer, followed by Prof. Eric Davidson (Caltech) speaking on global gene regulatory networks. This sets up the main themes of cancer cell, systems and developmental biology for the training program. During the welcome dinner, each of the 40 participants took turns at the mike for introductions and I learn that 25 different countries were represented with qualifications ranging from graduate students to junior faculty and with backgrounds as diverse as a public health immunologist from Sweden to a forensic entomologist from Malaysia. The extent of the professional and cultural diversity was unique, unlike any conference I'd attended, which I found very refreshing. Many a lunch break was spent comparing our native tongues. I did not know that there are 6 different tones in the Thai language. Or that in Javanese, some nouns differ depending on the seniority of the person being addressed. I won't complain about having to learn mandarin again!



Front Row (from left): Profs Lu-Hai Wang, Kenneth Wu, Tony Hunter, Eric Davidson, Chiou-Hwa Yuh and Jeng-Jiann Chiu.

The training program comprised a mix of instructional lectures and experimental "wet" labwork. Unlike the focus workshops I am used to, the content covered was extensive and addressed what seemed like every aspect of molecular cell biology; from the basics of small regulatory RNAs, protein modifications, intracellular signaling, and cell cycle to more advanced topics in capture sequencing, in vivo transgenic models, dynamic transcriptional networks, iPS and neural stem cell repair to name a few. In the laboratory component, we tackled cell culture (eg. multiple cell invasion/migration assays), fluorescent microscopy (confocal/live cell), in vivo techniques (eg. zebrafish embryo microinjection), systems biology (BioTapestry), proteomics (eg. 2D-PAGE) and genomics (microarrays). The level of instruction was

comprehensive for each area. For example, for the microarrays we were 'hands-on' at every step from performing RNA preps (from our cell invasion assays), quality control (Agilent Bioanalyzer), chip hybridization/scanning (Affymetrix GeneChip ST Array) through to data preprocessing and analysis (Expression Console, Treeview and Gene Spring). As a result the daily schedule was punishing beginning at 8 am and running to between 9-10pm. I believe on one particular night, we were all reduced to walking zombies, returning to our hotel at midnight.

The weekends however were a chance to socialize and see Taiwan. The organizers arranged for us to tour historical and religious sites in the older southern part of Taiwan, visit night markets and Taipei 101 (the tallest building in the world). A highlight was a ride on an earthquake simulator set at 7.3 on the Richter scale. As an island located in a complex tectonic region and with a history of geological instability, I found the long queues at an earthquake simulator particularly puzzling. We were treated to sumptuous buffets, 10 course seafood banquets and put up at international class hotels throughout our stay. We were all very impressed as clearly no expense was spared throughout the program.

The training program was quite unlike any conference or workshop I had been to previously and the experience was truly unique. I was surprised at just how well funded it was. I'm almost certain gene chips are as expensive in Taiwan as it is here. And judging from the feedback from participants and organizers at the closing dinner (amid spontaneous eruptions of Russian folk and traditional Vietnamese love songs), the training program looks set to become an annual event in Taiwan. I fully expect the number of applicants to increase exponentially in 2010. Regardless, I highly recommend the program to all early career researchers, cash strapped or otherwise, as there is nothing to lose and plenty to be gained.

Taiwan: An Asian Tiger roars in Biomedical Research.

One begs the question, "What does Taiwan stand to gain in conducting a cell biology program to train young scientists from countries as far flung as Belarus and Argentina?" Besides genuine altruistic motives, a spin-off was certainly an increase in profile of Taiwanese research in the biomedical sciences. As part of the training program we were given the opportunity to visit a number of core research facilities. This was a chance to really demonstrate the research capabilities on this small island that has long struggled for international recognition. During our "scientific sight-seeing", I was quickly impressed by the cutting edge science being performed. These were avant-garde technologies that could not have been incorporated into our "hands-on" component, no matter how well funded the program was.

To begin with, our lectures and labs were conducted at the National Health Research Institutes (NHRI) sit-

uated in serene countryside 2 hours outside of Taipei. Taiwan's equivalent of the NIH, the NHRI is home to over 1000 researchers, and since it is not a teaching institution, the labs are populated primarily with post-docs. From there we visited many institutions spread around Taiwan. At the Genome Research Centre, one of many institutes within Academia Sinica, we were shown their high-throughput genotyping system (SEQUENOM MassARRAY™ System) and gene sequencing capabilities using Roche 454 and Illumina/Solexa technology. In the same centre, I was particularly impressed by the Super High-Throughput Drug Screening System capable of screening 1 million targets a day using live cell culture on 1536 well format. The screening capacity of this system matches those utilized by big pharmaceutical companies and, at the time of our visit, the system was busily screening novel compounds to kill liver cancer cells. Taken to another floor, we were then shown their high throughput (do you sense a theme here?) mass spectrometry facility which includes, amongst a cacophony of MS machines, a hybrid linear trap quadrupole fourier transform (LTQ-FT) Ultra mass spectrometer. Did I mention that this can all be found in a single research institute located in a network of 28 institutes within Academia Sinica?



National Health Research Institute situated in Zhunan about 2 hours from Taipei.

At the National Yang Ming University Biophotonics Institute we were shown a "home made" super resolution stimulated emission depletion (STED) microscope put together at the fraction of the cost of purchasing a commercially available system. There were demonstrations of magnetic resonance imaging (MRI) and micro positron emission tomography (microPET), complete with anaesthetized rats, for research utilizing non-invasive small animal imaging. We visited a second proteomics facility at the National Cheng Kung University which just took fresh delivery of a LTQ Orbitrap mass spectrometer. At the Synchrotron Radiation Research Centre, we were given the opportunity to loop and mount crystals on to X-ray diffractometers. At National Tsing Hua University Brain Research Centre, we donned 3D glasses to visualize dynamic in vivo neural cell networks in

the drosophila brain in 4-dimension (xyzt).

It is evident that the academic standard is high in Taiwan, the facilities are state-of-the-art and research is well funded by the government. It was also clear to me that a goal had been set to increase the numbers of young international researchers; a sentiment recently expressed by Academia Sinica president, Chi-Huey Wong, in a Nature article. To this end, the training program had more than fulfilled its objective as we were all very impressed with what we saw during our short stay. There was also the ubiquitous public relations marketing spiel from each institution and the Taiwan International Graduate Program (TIGP) was promoted heavily, amid a lavish banquet of course. But the message was clear, students, post-docs, visitors and collaborators were invited and very welcome. Although Taiwan is a small island, its population (23 million) matches closely to Australia and so does its science. Thus there are opportunities for international collaborative links with a progressive and dynamic Asian Tiger making an impact in biotechnology and biomedical research.

Dominic Chi Hiung Ng
University of Melbourne

Important websites:

National Health Research Institutes
<http://english.nhri.org.tw/>

Academia Sinica
http://www.sinica.edu.tw/main_e.shtml

Genome Research Centre
<http://www.genomics.sinica.edu.tw/index.php>

Brain Research Centre
<http://brc.life.nthu.edu.tw/index.html>

Synchrotron Radiation Research Centre
<http://www.srrc.gov.tw/>

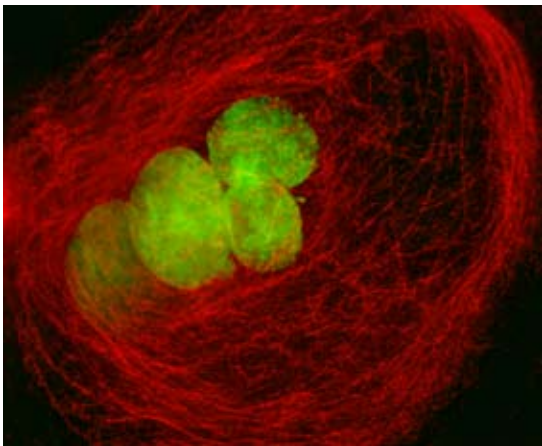
National Yang-Ming University
<http://nymu-e.web.ym.edu.tw/front/bin/home.phtml>

National Cheng Kung University
<http://english.web.ncku.edu.tw/bin/home.php>

TIGP
<http://tigp.sinica.edu.tw/>



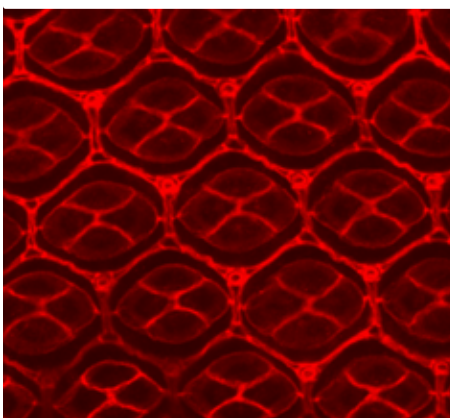
Robotic arm of the Super High Throughput Drug Screening System at



NEST OF EGGS: In an experiment on subcellular localisation of mammalian proteins, two proteins that localised to the cytoplasm in HeLa cells were co-transfected into MCF7 cells as full length myc and v5-tagged fusion proteins. Expression of proteins was detected 24 hours later by immunolabeling with antibodies. Among the cells co-expressing the two proteins were a few abnormal cells with striking fluorescence both in the nuclei and the cytoplasm; like the one shown here. I captured it for its artistic appearance.

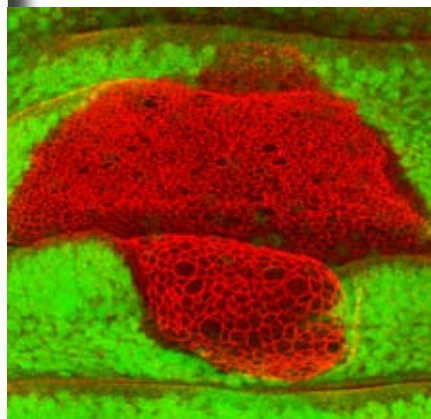
Seetha Karunaratne
IMB, University of Queensland

Winners of the “Call for Images for the Website”

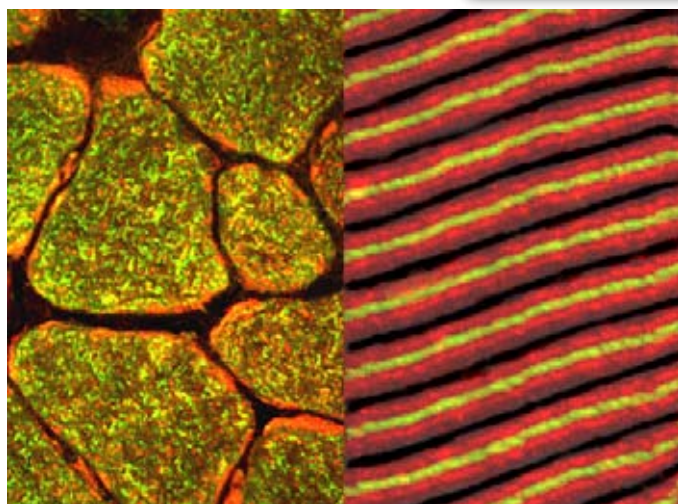


Left: Ordered array of cells in the *Drosophila* eye at the pupal stage of development. Visible are ommatidial clusters which each contain four cone cells that secrete the lens. The cone cells are surrounded by a single layer of interommatidial cells which include mechano-sensory bristles, and cells that produce pigment to optically insulate the eye.

Right: Expression of Expanded protein (red) is elevated in *Drosophila* epithelial tissues that lack activity of the Salvador/Warts/Hippo pathway, which fails to express green fluorescent protein (green).



Kieran Harvey
Peter MacCallum Cancer Centre

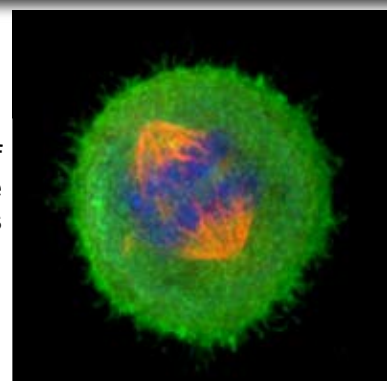


Confocal image of mouse skeletal muscle showing the presence of novel cytoskeletal actin-based filament systems. These filaments are defined by the actin associated protein tropomyosin 5NM1 (red) and are located in close proximity to the Z-line (green), a prominent structure of the muscle sarcomere. Disruption of these filaments leads to disruption of the T-tubules, altered glucose uptake and can cause dystrophic features. Lefthand: muscle cross section. Righthand: muscle longitudinal section.

Stephen Robinson
University of New South Wales

The distinct spatial organisation of microtubules and an integral component of the actin cytoskeleton, Tropomyosin. The chromosomes (blue) aided by the microtubules (red) are pulled apart during mitosis, the actin cytoskeleton is marked by tropomyosin (green).

Galina Schevzov
University of New South Wales



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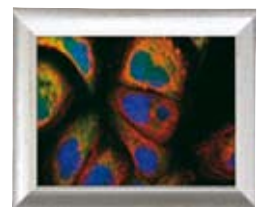
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