

Biomed Benchmark

December 2011, Issue 15

New Faculty Dean appointed

Professor Christina Mitchell, former Head of the School of Biomedical Sciences, is the new Dean of Medicine, Nursing and Health Sciences. She succeeds Professor Steve Wesselingh, who has been appointed Foundation Executive Director at the South Australian Health and Medical Research Institute.

Professor Mitchell brings to her role a wealth of experience as a researcher, clinician and administrator.

During her leadership as Head of the School of Biomedical Sciences, grant income from NHMRC, ARC and other national and international funding agencies has increased from \$39.2 million in 2006 to an estimated \$50.0 million in 2011. Professor Mitchell also oversaw the completion of two new buildings for the School of Biomedical Sciences in 2010, which has benefitted researchers in many ways, says Professor John Davies, the outgoing Head of the Department of Microbiology.

“There’s more interaction between the departments because we aren’t physically separated as we once were,” he says.

“With her personality and drive, Professor Mitchell has also encouraged departments to think more broadly, so we now have joint appointments and a more cohesive School.”

Professor John Bertram, Head of the Department of Anatomy and Developmental Biology, also credits Professor Mitchell for his success in hiring new researchers.

“With her assistance, we were able to grow,” he says.

“Professor Mitchell helped me recruit people, and our research income has quadrupled under her leadership as Head of School.”

Professor Christina Mitchell, who commenced as Dean in October, continues to lead a research team at the School, investigating how signal terminating enzymes known as phosphoinositide phosphatases regulate cancer cell growth, proliferation and cell death in breast and prostate cancer. Her lab also works on the role of FHL family proteins in muscular dystrophy, a muscle wasting disease.

Professor Phillip Bird, from the Department of Biochemistry and Molecular Biology, is acting Head of School until a successor is appointed.

“With her personality and drive, Professor Mitchell has also encouraged departments to think more broadly, so we now have joint appointments and a more cohesive School.”



Professor Christina Mitchell. Image: Greg Ford.



Professor Claude Bernard (4th from left) and School Heads of Departments with Professor Christina Mitchell. Image: Phillip Nagley.



MONASH University

M8Alliance

Grants success

In the latest round of funding announcements, School of Biomedical Sciences researchers are successful recipients of \$17.6 million of funding from NHMRC commencing in 2012. This includes support for 29 project grants and 7 fellowships.

In addition, our researchers secured \$6.9 million of funding from ARC. This includes support for 11 project grants,

1 infrastructure grant, 3 early career researcher awards and 2 future fellowships.

Several scientists achieved outstanding results. Head of Department of Physiology, Professor Iain Clarke scored 3 grants worth \$1.5 million from ARC and NHMRC, while 6 researchers were awarded 2 grants each. A summary of the 5 highest funded grant recipients is listed.

Researchers with Highest Combined Funding*

	Name	Amount (\$ million)	Grants received
1	Professor Iain Clarke	1.5	3
2	Associate Professor Ramesh Rajan	1.3	2
3	Professor David Jans	1.2	2
4	Dr Zane Andrews	1.0	2
5	Professor Moira O'Bryan	0.9	2

*Funding sources: NMHRC and ARC, announced October/November 2011



Cryo-electron microscopy centre for Victoria

Victorian scientists are one step closer to accessing a dedicated structural cryo-electron microscopy facility, with \$1 million of funding committed by Ramaciotti Foundations and an additional \$640,000 from the Australian Research Council.

The Clive and Vera Ramaciotti Centre for Structural Cryo-Electron Microscopy, which will be built at Monash University, will allow scientists to answer structural biology questions that are traditionally difficult to solve using conventional approaches such as protein crystallography and nuclear magnetic resonance. Researchers will be able to study how the human immune system recognises and eliminates foreign molecules, how large multi-protein complexes assemble in cancer, how cell surface receptors interact with their protein

ligands and how monoclonal antibodies interact and interfere with protein cell-surface function.

The centre, to be led by Monash School of Biomedical Sciences Professors James Whisstock and Ian Smith, and Associate Professor Michael Lawrence from the Walter and Eliza Hall Institute, will also include collaborators from the University of Melbourne, La Trobe University, Burnet Institute and Peter MacCallum Cancer Centre.

“We are delighted that we are able to establish this state-of-the-art centre,” says Professor James Whisstock.

“It will allow us to build a community of structural biologists with expertise in cryo-EM and compete on the world stage with facilities in Europe, United States and Asia.

“We also hope that younger researchers will use cryo-EM

and obtain preliminary data suitable for attracting competitive commonwealth funding.”

A governance committee, initially chaired by Professor Whisstock, will oversee the construction of the centre and instrument installation on the Monash

Clayton campus. The facility is scheduled for completion in 2012.

The \$1 million Ramaciotti Biomedical Research Award is granted every two years by Ramaciotti Foundations and managed by Perpetual.



Ramaciotti Biomedical Research awardees. From left to right: Dr George Ramm (Monash University), Professor Jamie Rossjohn (Monash University), Professor Ian Smith (Monash University), Associate Professor Michael Lawrence (WEHI), Professor Michael Parker (St Vincent's Institute), Professor James Whisstock (Monash University), Professor Michael Ryan (La Trobe University) and Professor Joe Trapani (Peter MacCallum Cancer Centre). Image: Nic Long.

Of mosquitoes, parasites and man

Professor Christian Doerig enjoys a challenge, having left the world of viruses behind in the '90s for the neglected field of malaria research. Recently, he left his tenured position at INSERM in Switzerland for Melbourne to take up the role of Head of Department of Microbiology at the School of Biomedical Sciences, and also set up a new lab.

Professor Doerig talks to *Biomed Benchmark* about malaria and his new appointment.

Malaria is an infectious disease involving complex relationships between three parties. A parasite called *Plasmodium falciparum* hitches a ride on the *Anopheles* mosquito, which draws blood from an infected person. Inside the mosquito, malarial parasites develop and accumulate in the insect's salivary glands, and are then transmitted to a new human host during the next meal. There, the parasite invades and replicates in the liver, then infects red blood cells, where it proliferates with deadly results, killing one million people each year predominantly in developing countries.

Professor Doerig studies the molecular switches that trigger the deadly asexual replication of malarial parasites in human blood. He is interested in a family of enzymes known as protein kinases, which regulate cellular growth and proliferation by modifying other proteins in a process called phosphorylation.

After the *P. falciparum* genome sequence became available, Professor Doerig used bioinformatics approaches to show that 85 genes encode the parasite's protein kinases. Recently, he led an international team that revealed which of these genes are essential for the parasite's survival in red blood cells.

"We now know that 36 kinases are crucial for the parasite to proliferate in humans," Professor Doerig says.

"Also, with Professor Andrew Tobin, from Leicester University in the UK, we identified several



Professor Christian Doerig.

hundred phosphorylation sites on *Plasmodium* proteins, and demonstrated for the first time that tyrosine phosphorylation occurs in the parasite on regulatory sites of kinases, work that was published last month in the prestigious journal *Nature Communications*."

From a treatment perspective, it may be possible to develop selective inhibitors of these important malarial enzymes.

"We can now screen molecules to find inhibitors of these protein kinases," says Professor Doerig, who will collaborate with Professor Andrew Wilks (Monash Institute of Medical Research), Dr Isabelle Lucet (Department of Biochemistry and Molecular Biology), Professor Brian Cooke (a malaria researcher at the Department of Microbiology) and GlaxoSmithKline, a pharmaceutical company that has a 'malaria box' containing 13,500 compounds that kill malaria parasites. He hopes

that novel kinase inhibitors will be found among these drug-like compounds with anti-malarial activity.

"As the malaria parasite quickly develops drug resistance, we need a constant pipeline of new antimalarials with different modes of action," Professor Doerig says.

"Kinase inhibitors represent one approach. However, it's likely that the parasite will also become resistant to them. So even if we are successful, the story won't end here."

Aside from his malaria research, Professor Doerig is leading the Department of Microbiology, where scientists study pathogenic bacteria, viruses and parasites. While it's early days in the job, his goals are clear.

"I want our basic research to have a clinical impact in the long term," he says.

"Drug and vaccine discovery are dependent on understanding

how pathogens proliferate and interact with human or animal hosts. Therefore, I wish to build on the strong fundamental research skills from our Department and support translational projects with university, industry and clinical partners.

"There are also opportunities for synergistic interactions with other School departments in the areas of structural biology and developmental biology."

"As the malaria parasite quickly develops drug resistance, we need a constant pipeline of new antimalarials with different modes of action."

Department of Biochemistry and Molecular Biology celebrates

On 1 June about 200 past and present members of the Department of Biochemistry and Molecular Biology gathered together to celebrate 50 years at Monash University at a convivial event at the Melbourne Convention and Exhibition Centre (MCEC).

During the mini-symposium that marked this occasion, Professors Robert Pike (Head of Department) and Christina Mitchell (Faculty Dean and former Head of the department) gave a lively and humorous overview of the development of biochemistry at Monash from its early beginnings to the present day.

The speeches were followed by a lecture by Professor John Mattick AO, a 1974 PhD graduate from the department, who discussed the role of non-coding RNAs in the evolution and development of complex organisms, and how they control gene expression.

After two brief talks from Clive Dwyer (MCEC) and event sponsor Melissa Holdsworth (Melbourne Convention and Visitors Bureau), guests mingled over savouries and drinks, with many animated discussions and

enjoyable reunions. Many former members of the department came, including academic and professional staff, as well as well-wishers from other departments and institutes in Melbourne.

For more information:

www.med.monash.edu.au/biochem/biochem-history-part-one.pdf

www.med.monash.edu.au/biochem/biochem-history-part-two.pdf



1) Professor Robert Pike, Head of the Department of Biochemistry and Molecular Biology. 2) From left to right: PhD students Susan Berkowicz, Anthony Matthews and Monica Prakash with Professor Phillip Bird, Acting Head of School. 3) Professor John Mattick AO. 4) From left to right: Associate Professor Merrill Rowley, Dr Senga Whittingham and Dr Marie-Paule van Damme. 5) From left to right: Former staff members Bruce Lukins and Clem Robinson. 6) From left to right: Former staff members Manfred Beilharz and Tony Linnane. 7) From left to right: Associate Professor Timothy Cole, Dr Craig Clements and Rebecca Bamert. Images: Phillip Nagley.

Department of Anatomy and Developmental Biology also celebrates

A second School of Biomedical Sciences department celebrated a milestone this year. This time, past and present staff of the Department of Anatomy and Developmental Biology, and friends convened on 10 November to celebrate 50 years of teaching and research success at Monash University.

Faculty Dean Professor Christina Mitchell, who opened proceedings, acknowledged the importance of anatomy teaching for students studying medicine, physiotherapy, radiography, medical imaging and biomedical science.

"It's a core experience which they take with them and never forget," she said.

"That experience in anatomy is central to their memories and experiences in later life and the impact it has on student learning, education and life-long learning cannot be underestimated."

As Director of the Centre for Human Anatomy Education, Professor Paul McMenemy believes that anatomy education

needs to be innovative and inspiring for students, and fun. Currently, Monash students integrate body painting with teaching of clinical skills and clinical examination. But Professor McMenemy has bigger plans: to incorporate educational videos and interactive websites in anatomy education, increase teaching of radiography and medical imaging for medical students, create interpersonal learning opportunities and improve teaching infrastructure at the Clayton campus.

Head of the Department of Anatomy and Developmental Biology, Professor John Bertram paid tribute to the founding pioneers of anatomy teaching

and research here: Professors Graeme Schofield, Eric Glasgow and David de Kretser, former Head of Department, Governor of Victoria and recent recruit. He discussed the developmental biology research activities of the department, which also teaches BSc students majoring in developmental biology.

Before and after the speeches, there were opportunities for guests to tour the anatomy teaching, research and histology laboratories and mingle informally.



1) Professor Christina Mitchell, Dean of Medicine, Nursing and Health Sciences. 2) From left to right: Professor Paul McMenemy, Associate Professor Marilyn Baird, Professor John Bertram, Dr Sally Cockburn, Professor Ross Coppel, Sir John Monash Professor David de Kretser, The Hon Dr Kay Patterson and Professor Ben Canny. 3) Anatomy images projected onto a live volunteer. 4) Professor Tony Buzzard with Professor David de Kretser. 5) Guests mingling. 6) From left to right: Dr Peter Tutton, The Hon Dr Kay Patterson, Professor Iain Clarke and Professor John Bertram.

News in brief



Eureka Prize for Science Photography winners. From left to right: Damon Wilder (second place), Jason Edwards (first place) and Dr Ian Smyth (third place). Image: Australian Museum Eureka Prizes and www.247studios.com.au.

Dr Travis Beddoe and Professor Jamie Rossjohn (Department of Biochemistry and Molecular Biology)

together with Professor James Paton and Dr Adrienne Paton (University of Adelaide) were selected as finalists for the 2011 Eureka Prize for Infectious Diseases Research. **Dr Ian Smyth** (joint appointments at the Departments of Anatomy and Developmental Biology, and Biochemistry and Molecular Biology) was third-placed in the 2011 New Scientist Eureka Prize for Science photography. He received \$2000 prize money on 6 September for his digital image showing how the fetal lung of a mouse branches to form airways.

PhD student Victoria Hewitt (Department of Biochemistry and Molecular Biology) received the 2011 Adam J Berry Memorial Fund. The award aims to assist one early-career Australian to work at the National Institutes of Health, in the US. Victoria conducted mitochondrial research at the National Institute of Diabetes and Kidney Diseases for 12 weeks.



Victoria Hewitt. Image: Kip Gabriel.



Associate Professor Sharon Ricardo.

Associate Professor Sharon Ricardo (Monash Immunology and Stem Cell Laboratories) received the Amgen Basic Science Award for her research into the generation of stem cells from patients with kidney disease. She received a cash prize of \$3,300 to develop patient-specific stem cell lines for disease modelling and targeted drug treatments.

MBio Graduate School hosted the Three Minute Thesis competition for higher degree students. Mohsin Sarwar (Department of Pharmacology) was the winner. Second and third places were awarded to Priyangi Alwis (Department of Microbiology) and Sarah Wilkinson (Department of Anatomy and Developmental Biology), respectively. First and second prize-winners went on to represent the School in the Faculty final.



Three minute thesis winners. From left to right: Priyangi Alwis (2nd), Mohsin Sarwar (1st) and Sarah Wilkinson (3rd).



Dr Jeremy Smith (left) and Associate Professor Stephen Tong (right) are joint winners of the 2011 Newcastle Reproduction Emerging Research Leader Award. Image: Society for Reproductive Biology.

Professors Iain Clarke (Head, Department of Physiology) and **Moira O'Bryan** (Deputy Head,

Department of Anatomy and Developmental Biology) were appointed fellows of the Society for Reproductive Biology at the 2011 Annual Society for Reproductive Biology meeting, in Cairns.

Also, **Dr Jeremy Smith** (Department of Physiology) was the joint winner of the 2011 Newcastle Reproduction Emerging Research Leader Award together with Associate Professor Stephen Tong (University of Melbourne).

Professor Michael Cowley (Department of Physiology and Director, Monash Obesity and Diabetes Institute) was nominated a Fellow of the esteemed Australian Academy of Technological Sciences and Engineering. The prestigious Academy has approximately 800 members who are peer nominated to Fellowship in recognition of their impact and excellence of achievement.



Professor Michael Cowley.



The ARC Centre of Excellence in Structural and Functional Microbial Genomics organised a public lecture on 16 August at BMW Edge, Federation Square, as part of National Science Week. Dr Paul Johnson from Austin Health presented the lecture: *The end of antibiotics*. The lecture was followed by a panel discussion comprising of staff from the Monash Department of Microbiology.

Dr Anton Peleg (Department of Microbiology) received the Frank Fenner Award for Advanced Research in Infectious Diseases at the Australasian Society of Infectious Diseases Annual Scientific Meeting, in Lorne, Victoria. Dr Peleg, a physician and scientist, was recognised for his pioneering infectious diseases research on the hospital-acquired pathogens *Acinetobacter baumannii* and *Staphylococcus aureus*, and infections in immunocompromised patients.



Dr Anton Peleg (right) was awarded the Frank Fenner Award for Advanced Research in Infectious Diseases. Image: ASID.

Flying high for science

Three Monash PhD students are successful recipients of the inaugural Anthony Koelmeyer International PhD Excellence awards.

Andrew Clarke, Jeffrey Moore and Sarah Haas Lockie from the School of Biomedical Sciences have each received \$1500 towards international travel and laboratory visits, and they are delighted.

"This award gives me the opportunity to present my research to an international audience, representing Monash University and Australian science," says expat Brit Andrew Clarke, who will attend an immunology conference in Mykonos, in Greece, before visiting labs in England, Scotland and Wales, where he hopes to set up research partnerships and explore funding opportunities.

Meanwhile, hypertension researcher Jeffrey Moore has the US in his sights. He will fly to Orlando, Florida to attend the American Heart Association's High Blood Pressure Research Scientific Sessions, visit colleagues at Emory University, in Atlanta, and consider postdoctoral studies there.

"It's important for PhD candidates to attend

international meetings and visit different labs, which is difficult without external funding," Jeffrey Moore says.

Sarah Haas Lockie agrees.

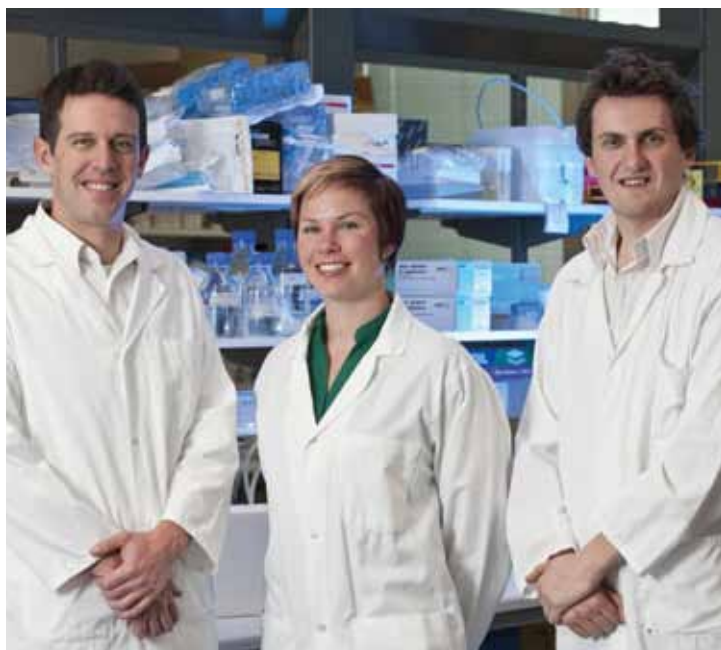
"I'm planning to stay in science at a post-doctoral level so having support to explore my options and extend my network overseas is great," says the obesity researcher, who has returned from a Society for Ingestive Behaviour meeting, also in Florida, and lab visits in Michigan and Ohio.

Apart from the networking benefits that international travel brings, MBio Graduate School director Associate Professor Sharon Ricardo believes that the awards help higher degree students develop confidence and presentation skills, whilst simultaneously broadening their horizons.

"It's a wonderful way to enhance opportunities for PhD students here at the School of Biomedical Sciences and Australian Regenerative Medicine Institute," she says.

"This fledgling program is unique and I hope that our research stars of the future will benefit from this experience as will Andrew, Jeffrey and Sarah."

For more information:
www.med.monash.edu.au/mbio-gradschool/



From left to right: Jeffrey Moore, Sarah Haas Lockie and Andrew Clarke.

School groups supporting HDRs and postdocs

MBio Graduate School

The MBio Graduate School provides scientific and professional development training for the 263 Higher Degree Research (HDR) students currently enrolled in the School of Biomedical Sciences and Australian Regenerative Medicine Institute, at the Monash Clayton campus.

MBio Graduate School:

- Publishes an e-bulletin for HDR students, promoting HDR activities and events;
- Hosts the Anthony Koelmeyer International PhD Excellence Awards;
- Hosts the annual Three Minute Thesis competition;

- Runs special seminars for staff and students and sponsors HDR social events;
- Provides a PhD Leadership Program, together with the Biomedical Education Advancement Unit, for HDR students to mentor high school students from John Monash Science School;
- Provides dedicated writing spaces for students to complete their theses; and
- Develops guidelines to ensure consistent training and support for students across departments.

For more information:
www.med.monash.edu.au/mbio-gradschool/

NOT-PRoFS

NOT-PRoFS supports interaction and networking opportunities for Early Career Researchers (ECR) at the School of Biomedical Sciences.

The group aims to maximise research productivity of ECRs and to aid their progression from postdoctoral fellows to independently funded researchers within the School.

NOT-PRoFS hosts seminars, science communication and social events. It also provides web updates about workplace policies, a blog about professional development, members' list and information about grants.

NOT-PRoFS members have less than 10 years post PhD submission work experience or the equivalent excluding careers breaks.

For more information:
<https://sites.google.com/site/notprofs/>

MUMPS, Physiology HDR Committee and NOTDRS

MUMPS, Physiology HDR Committee and NOTDRS are postgraduate student groups that organise social activities and speaking opportunities for higher

degree research students at the Departments of Microbiology, Physiology, and Biochemistry and Molecular Biology, respectively.

Stem Cell Awareness Day 2011

Monash Immunology and Stem Cell Laboratories (MISCL) hosted the fourth public Stem Cell Awareness Day event on 7 October at BMW Edge, at Federation Square.

This year the focus was on stem cell therapy approaches for osteoarthritis and neurological disorders, including Multiple Sclerosis, spinal cord injury, and Alzheimer's and Parkinson's Diseases, with presentations by research leaders in these fields.

Guest speakers included MISCL director Professor Richard Boyd; industry partner and Mesoblast CEO Professor Silviu Itescu; stem cell researchers Professor Andrew Elefanty, Professor Ed Stanley,

Professor Colin Poulton and Dr Martin Short; neurosurgeons Professor Jeff Rosenfeld and Dr Tony Goldschlager; and North Melbourne Football Club doctor, Dr Dan Bates.

The event, which generated media coverage on TV and radio, was promoted on Twitter, Facebook and the website www.stemcellawarenessday.com. Last year the event was run as an online forum with streaming presentations and these remain on the website.

Now in its fourth year, Stem Cell Awareness Day organisers hope to promote a better understanding of stem cells and their potential to treat a wide range of debilitating diseases.



Dr Martin Short, a PhD student at MISCL, discusses the use of stem cells to treat Multiple Sclerosis at Stem Cell Awareness Day.

Winding back the clock with kidney stem cells

Stem cell research courts both controversy and support in the community – depending on your viewpoint.

Now, for the first time, scientists from the Monash Immunology and Stem Cell Laboratories have shown that they can make human stem cells from healthy adult kidneys without working on human embryos, circumventing ethical concerns around this research.

This achievement will allow group leader Associate Professor Sharon Ricardo and her team to model genetic kidney diseases in the laboratory and tease out the mechanisms that control these difficult-to-treat disorders.

"We're taking human kidney cells and winding back the clock to make their early precursors," Associate Professor Ricardo said.

For the challenging project, which was published in the *Journal of the American Society of Nephrology*, the Monash researchers started with healthy adult kidney cells, which they reprogrammed back to an embryonic-like state, then compared these kidney stem cells with off-the-shelf embryonic stem cells, and showed that both could form different

embryonic tissue types, with their genetic features preserved.

"These kidney cells had their slate wiped clean. Now that gives us the opportunity to change that kidney precursor into all kidney cell types," Associate Professor Ricardo said.

In collaboration with Professor Peter Kerr from Monash Medical Centre, the research team has now generated four stem cell lines from patients with polycystic kidney disease and Alport syndrome, two leading genetic kidney disorders.

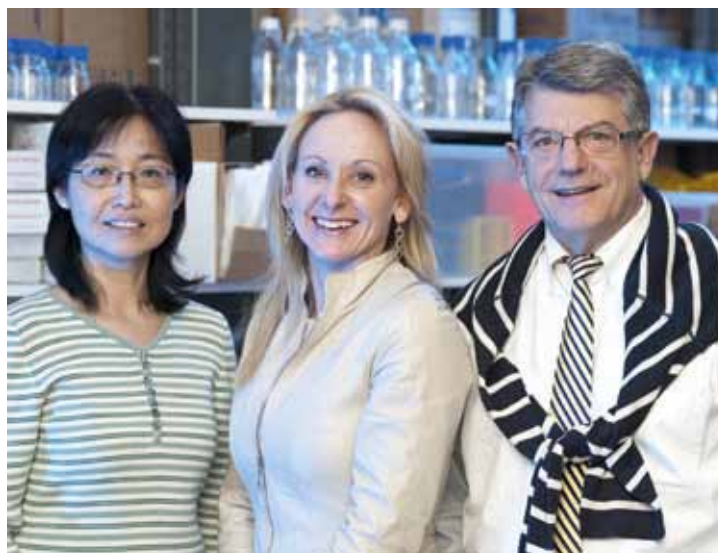
"As these stem cells can divide indefinitely in a culture dish, we can make a limitless source of patient-specific stem cells, make kidney cysts and screen drugs on those cells," Associate Professor Sharon Ricardo said.

"Our ultimate goal is to make off-the-shelf mature kidney cells that patients can use for drug testing and disease modelling."

Associate Professor Ricardo, who is approaching pharmaceutical companies to screen drugs on the kidney stem cells, believes that this personalised medicine approach will produce safer medicines in the future.

But in the short-term, the Monash researcher plans to continue work on the kidney stem cells to study how environmental factors influence how kidney cells behave, tests drugs for their ability to reduce kidney cyst formation and cell proliferation, and better understand how genetic kidney disorders develop in the first place.

Associate Professor Ricardo, who was funded by the Australian Stem Cell Centre and Alport Foundation, Australia, collaborated with six Monash researchers including lead author Bi Song and Professor Claude Bernard; Professor Peter Kerr, Monash Medical Centre; and Dr Andrew Laslett from CSIRO Molecular and Health Technologies, also in Clayton.



Associate Professor Sharon Ricardo (centre) with Ms Bi Song (left) and Professor Claude Bernard (right).

Synchrotron tour for talented students

On 5 May, the Biomedical Sciences Talented Students visited the Australian Synchrotron to see first-hand how the theory they learn in undergraduate classes is applied practically in a research environment. Located down the road from the Monash Clayton campus, the synchrotron is a highly sophisticated facility, which produces high-resolution images of proteins and cells by passing different energy light beams through them at immense speed.

Now in its second year, the Biomedical Sciences Talented Students' Program selects high achieving students who are interested in pursuing a research career. As part of the program, students are provided with a personal academic mentor and, as a group, tour significant scientific facilities and hear about the latest research projects being conducted there.

As well as the Australian Synchrotron tour, the group listened to two presentations from PhD students, who use the Australian Synchrotron facilities for their research.

Recently graduated PhD student Dr Melissa Siew, from the Monash Institute of Medical

Research, demonstrated how she used the synchrotron to obtain images of lungs of rabbit pups as they take their first breaths of life. Dr Siew is interested in how the lungs of premature babies could be affected by different ventilation strategies administered. From her synchrotron images, Dr Siew can determine which parts of the lung experience the most force or stretch. Also, third year PhD student Min Yap, from the Department of Biochemistry and Molecular Biology, discussed how she used the synchrotron to determine the 3-dimensional structure of a bacterial protein.

Dr Peter Boag, who is a coordinator of the Monash program, believes these expeditions are a valuable way to engage students and develop their interests.

"Undergraduate teaching can be a bit dry and I think seeing a scientific facility and hearing a talk afterwards is a really nice way of developing the connection between the research output and how the research data was generated in the first place," he says.

"I think these students crave the big picture of how things operate, and what the potentials are."



The Australian Synchrotron. Image: Australian Synchrotron



Dr Richard Loiacono (right) receives his award from former Dean Professor Steve Wesselingh.

Excellence in teaching award for Dr Richard Loiacono

Dr Richard Loiacono from the Department of Pharmacology is this year's recipient of the Dean's Award for Excellence in Education. Selected across the entire Monash academic population, the Dean's Awards recognise high performance in areas including: administration, workplace excellence and equity, education and research.

While grateful, if not a little embarrassed, by the public recognition, Dr Loiacono says the award has reassured him of the effectiveness of his teaching methods to modern students.

"I'm really pleased because you're not always sure you've taken the most effective approach. You don't usually ask your peers, 'am I good or not?', but the award solidifies that you're making a positive difference to student learning," he says.

As one of the highest student rated lecturers within the School of Biomedical Sciences, Dr Loiacono believes that much of the success he has with students

has been a result of breaking down the barriers of the traditional lecture.

"I try and devote some time in the lecture to something that isn't just the didactic," he says.

"I talk to students and get them to think about a concept without me giving the answer. It can get students thinking about the difference between repeating something and actually understanding it."

Aside from his teaching duties, Dr Loiacono is also part of an NHMRC program grant investigating drug targeting for neurological disorders such as Alzheimer's disease and schizophrenia. Maintaining this research component of his work, Dr Loiacono says, is integral to his confidence when interacting with students.

"My research focus adds to my teaching," he says.

"I think in order to be a good teacher you need to draw on that experience, otherwise lecturers become a text book.

"If I didn't do it I would feel inadequate, unprepared, and it would be a disservice to the students."

Introducing Dr Siew Yeen Chai

As new staff recruits go, Dr Siew Yeen Chai's addition to the Department of Physiology was inspired timing. After accepting a senior lecturing position at the School late last year, Dr Chai subsequently went on to receive an NHMRC research fellowship as well as an NHMRC project grant, investigating the role of the enzyme IRAP in memory processing.

Dr Chai says that on a personal level her decision to leave the Florey Neuroscience Institutes was largely driven by a desire to teach.

"I'd dabbled in teaching before but never in a formal setting and this Monash role is an academic position with job security," she says.

"It's a steep learning curve, especially since I'm convening the first year biomedical science human neurobiology unit, but I've received a lot of help from more established colleagues in the department and so far, I've enjoyed it."

On the more familiar research front, Dr Chai has recently obtained some promising findings on a new class of drugs developed in her laboratory that has the potential to reduce Alzheimer's disease pathology. Dr Chai's PhD student, Holly Yatemán, found that inhibitors of the enzyme IRAP, when infused into the brains of a mouse model of Alzheimer's disease, caused a 50 per cent reduction in amyloid plaque deposits and improved cognitive function. These findings were recently presented at the International Conference for Alzheimer's Disease in Paris.

"The data was well received and I have been contacted by three pharmaceutical companies who are interested in learning more about the program," says Dr Chai.

"We have also received a grant from Commercialisation Australia and are working with a business development



Dr Siew Yeen Chai

company called Biolink to try and find a commercial partner for the project."

Aside from the work, Dr Chai's move to Monash is also one of domestic convenience. She now enjoys a short commute to the Clayton campus, sometimes with one of her two daughters, who are both Monash students studying Arts/Law and Physiotherapy.

Looking to the future, Dr Chai hopes to combine her love of research with her new role as an educator, and inspire students towards a career in biomedical research.

"We have received a grant from Commercialisation Australia and are working with business development company Biolink to find a commercial partner."

3-minute thesis competition

On 18 July, Mohsin Sarwar from the Department of Pharmacology won the School of Biomedical Sciences leg of the Monash University three-minute thesis competition. Open to honours and PhD students throughout the university, the competition requires participants to summarise their PhD thesis in three minutes, using plain language.

Adopting a unique approach, Mohsin enacted a conversation between a doctor and patient following an episode of heart failure. Using this scenario, Mohsin was able to introduce the focus of his PhD thesis: how the hormone relaxin relaxes blood vessels and increases blood flow to the heart.

Ordinarily, relaxin is produced by reproductive organs in humans. However, scientists are interested in how its beneficial cardiovascular effects can be used for the treatment of heart failure. Mohsin studies how relaxin functions at the cellular level in humans by determining the signalling pathways that are activated in its presence.

In order to win the School competition, Mohsin first had to progress through a departmental heat.

At this stage however, Mohsin's presentation was deemed too technical by the judges.

"With my first presentation, I didn't know what I had to do. So I just came up with a basic summary of my research," Mohsin says.

"The feedback I got was 'don't use big scientific words'. From this, I came up with the doctor-patient scenario which I then presented to my cousin, who knows nothing about my research, and he understood it, so I guessed it would be fine."

On the day of the School final, Mohsin presented in front of a packed lecture theatre with researchers, John Monash Science School students, three independent judges, and academics.

"At the start I was nervous but things soon began to flow and I just said everything that came to mind. I was also playing both parts of the conversation and I think people found it funny," says Mohsin.

For his win at the School competition, Mohsin received a \$600 travel voucher, which will help fund a trip to the Keystone Symposia on Molecular and Cellular Biology in Canada in February.



Mohsin with the three-minute thesis judges. From left to right: Dr Keith McLean (CSIRO), Dr Rebecca Skinner (from the former Australian Stem Cell Centre), Mohsin Sarwar and Professor Paul Hertzog (Monash Institute of Medical Research).

Taking science to the classroom

Primary and secondary school students are becoming increasingly disengaged with classroom science. To help overcome this problem, Michael Spiegel from the Australian Regenerative Medicine Institute and Dr Sharon Flecknoe from the Biomedical Education Advancement Unit have designed a new program tailored for students. The program, called BioEYES Australia, motivates students to become interested in biomedical sciences and empowers their teachers to confidently teach hands-on, currently relevant content. Also, students perform their own experiments whilst being introduced to the latest research at Monash University.

Created at the University of Pennsylvania, BioEYES consists of a week-long experiment that has reached over 50,000 students throughout the US.

During the program, students breed zebrafish and observe the development of their offspring under the microscope. The children are ecstatic as they witness development in real time, the beating heart and very first embryonic movements.

For many students, this is the first opportunity to develop skills in scientific methodology. They formulate hypotheses and methods, record observations, analyze data, and finally draw conclusions from their experiment. Students are also introduced to biomedical science disciplines, including: developmental biology, stem cells, genetics and systems physiology. Immersing researchers in the classroom promotes discussions about biomedical science and regenerative medicine, an opportunity that Sharon says “enlightens students and generates an enormous amount of curiosity and excitement”.

As part of its goal to provide students with a specialist science curriculum, the John Monash Science School (JMSS) was the first secondary school in Australia to trial BioEYES Australia. Daniel Webber, a teacher at JMSS says the program is suited to students at all levels.

“Kids love using microscopes but what’s hard is focusing in on small bits of detail. With BioEYES it’s got enough difficulty to be challenging but it can be modified to fit with any program,” he says.

With the success of BioEYES at JMSS and other primary and secondary schools, Michael and Sharon are keen to have the program implemented nationally. And they have the support of former Federal Minister for Health and Ageing, and BioEYES Australia Patron, The Hon Dr Kay Patterson.

“It’s absolutely vital that Australia continues leading in science,” she says.

“We’ve batted above our weight in medical science and we need programs like this to make kids enthusiastic about science so that we can keep making these discoveries.”

The value of this initiative was recently acknowledged by the Australian Government Department of Innovation, Industry, Science and Research, which has provided funding for BioEYES Australia for two years. While BioEYES Australia is seeking additional financial support for further expansion, administrators are doing everything they can to continue to take this program to local schools and educate students about the enjoyment and importance of biomedical research.

For more information, email sharon.flecknoe@monash.edu or michael.spiegel@monash.edu.



1) John Monash Science School students who trialled the BioEYES Australia Program. 2) Zebrafish: the stars of the show. 3) Engrossed in science. 4) Team work in the lab.

Open Day 2011

Once again Open Day proved to be a huge success, with approximately 28,000 potential students and their parents visiting the Monash Clayton campus on 7 August.

School of Biomedical Sciences departments were represented by booths in the foyer of buildings 76/77. These booths provided an opportunity for the public to engage in interactive activities, learn about each of the discipline areas represented, and

speak with researchers working at Monash University.

Prospective students, who required specific information about the degree programs on offer (Bachelor of Biomedical Science and the associated double degrees, Bachelor of Radiography and Medical Imaging, Masters of Medical Radiations) or who wish to undertake Biomedical Science subjects through a Bachelor of Science, were directed to

stalls in building 64. These stalls were manned by researchers, academics, professional staff and student volunteers. Students were also referred to information sessions about the Bachelor of Biomedical Science and Medical Imaging courses throughout the day. Each session was well attended, with the lecture theatre packed to capacity.

The success of Open Day relies heavily on staff and students, who volunteer their time on

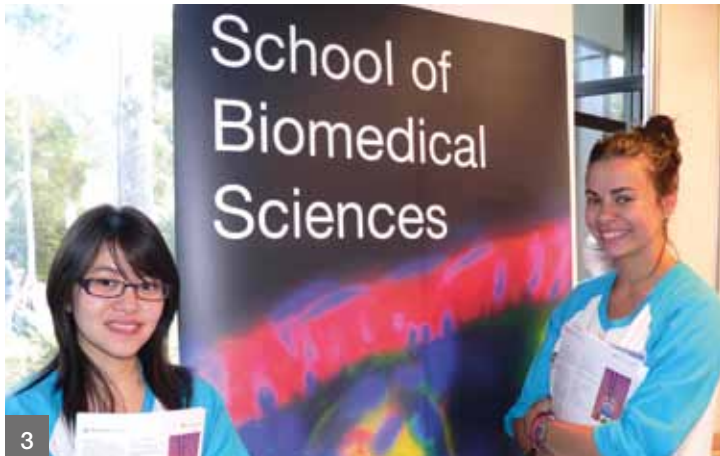
the day and assist with event planning before-hand. This year 42 staff and 72 students worked to ensure that Open Day ran smoothly. Special thanks go to Jane Sun, Dr Yvonne Hodgson and her team, the departmental representatives and the 114 staff and student volunteers, who provided an opportunity for the public to learn more about the educational and research activities here at the Monash School of Biomedical Sciences.



1



2



3



4

1) In depth Q and A. 2) Decision time for prospective students. 3) Biomedical science student volunteers. 4) Awesome foursome radiography students on duty. Images: Leanne Sultana.

Biomed Benchmark

Editor/Writer: Vicki Burkitt

Writer: Thomas Dillane

Contributors: Professor Phillip Nagley and Dr Sharon Flecknoe

Address: School of Biomedical Sciences, Ground Floor, Building 77, Monash University, Clayton, Victoria 3800

Telephone: +61 3 9902 9407

Email: Biomed.Communication@med.monash.edu.au

Website: www.med.monash.edu.au/sobs