MONASH University

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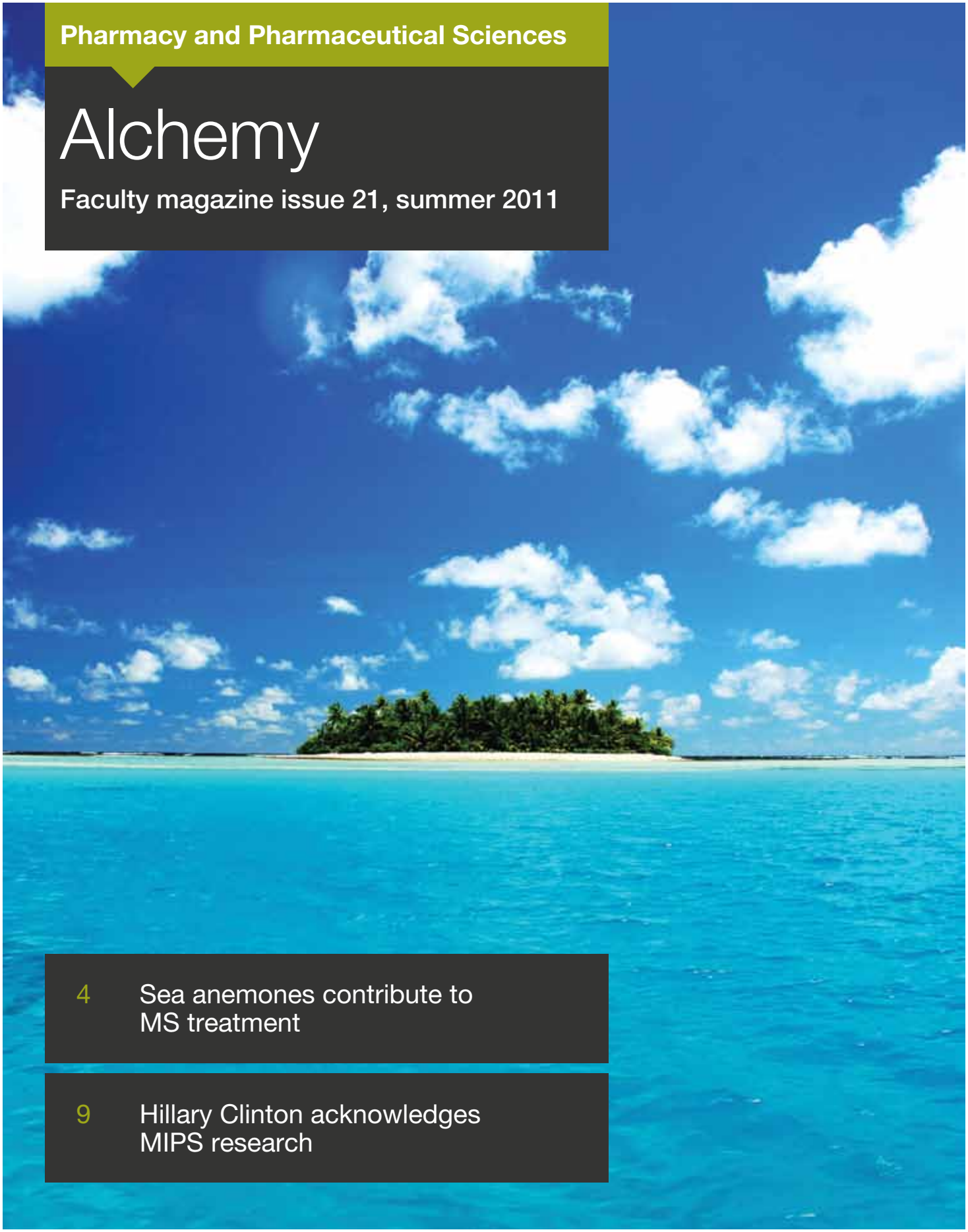
Pharmacy and Pharmaceutical Sciences

Alchemy

Faculty magazine issue 21, summer 2011



Alchemy
Issue 21

Cover image: Taken by Mathew Peck Travelling Scholar Alex Bongers while he was in Tonga. Read more on page 6.

Alchemy, the alumni magazine of the Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, is published twice a year. The next issue is due for publication in June 2012. The magazine is published for the faculty community, which includes alumni (both pre and post the Monash amalgamation), current and former staff, students and their families, and friends of the faculty.

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From the dean

Since becoming dean in 2007, it has been my great pleasure and privilege to work with an amazing team of people, here in the faculty and within Monash University. We have challenged ourselves to provide opportunities so our students and staff can excel at a national and international level. I am proud that the faculty provides a creative and nurturing environment where we continually challenge ourselves to achieve new and better outcomes in our education and research pursuits. Recently, the University offered me a further five-year term as dean, which I have enthusiastically and gratefully accepted.

Our progress over the last five years has been significant. The Monash Institute of Pharmaceutical Sciences (MIPS) has clearly established itself as a leading pharmaceutical sciences research centre. On page 9 you can read how our research is attracting international attention, including recognition from the US Secretary of State Hillary Clinton. And, with the recent appointment of Professor Carl Kirkpatrick, the Centre for Medicine Use and Safety (CMUS) is building a reputation as a national and international leader in the areas of pharmacy practice and pharmacometrics.

We continue to develop and offer our students a world-class education. At the recent Emeritus Professor Barry L Reed Distinguished Lecture, Peter Cook (Managing Director and CEO, Biota and graduate of this institution) described the value and range of exciting career possibilities that result from a quality education.

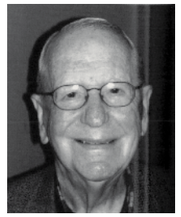
At Monash, we provide excellent learning environments (supported by an investment of over $70 million over the past five years) to enable our approximately 50 highly qualified academic staff to offer the best possible education. We also prepare our high quality students to enhance current practices within Australian pharmacy and healthcare. In this edition you can read more about the leadership skills our students are gaining through experiences such as the Victorian College of Pharmacy Foundation Student Leadership Forum (page 12).

Looking forward, there are many untapped opportunities – and we will deliberately position ourselves to create new and exciting education and research outcomes. I look forward to sharing this journey with you.

Professor William N Charman
BPharm (1981), PhD

L–R: Professor William Charman, Peter Cook and Emeritus Professor Barry Reed.

Remembering Bevan Warland-Browne



Images courtesy of *Australian Pharmacist*

On 20 April 2011 the faculty mourned the passing of an exemplary alumnus, pharmacist and a great Australian in war and peace.

Bevan Warland-Browne (PhC 1937) (1 July 1915 to 20 April 2011) graduated from the Victorian College of Pharmacy in 1937 and went to war as a staff sergeant in the 2/4th Casualty Clearing Station, a medical unit formed from Tasmanian volunteers. Following capture, he endured three years as a prisoner of war on the notorious Burma–Thai Railway. Bevan was a key member of a small team of prisoners with a medical background tasked with treating the rapidly ailing prisoner population in the camp. Faced with exhaustion, malnutrition, a host of unfamiliar tropical diseases and an acute shortage of even the most basic medical supplies, Bevan's training and resourcefulness enabled him to develop and extend the range of pain relief and disease treatments available in the camp, easing the suffering of thousands.

Throughout this time and his subsequent life and career as a pharmacist, Bevan exemplified the true spirit of generosity, compassion and strength.

"Enduring some of the worst conditions imaginable, dad learnt not to hate those who were trying to do him harm," said his son Andrew. "After 1200 days as a POW in Changi and on the Burma Railway he emerged a shadow of his former self, yet he continued to possess his sense of humour, a sense of purpose and the undying belief that hate only destroys the hater."

Bevan's courage and wartime ingenuity were acknowledged by the then Governor-General Major General Michael Jeffery at a private morning tea in 2003 following the unveiling of the POW Memorial in Ballarat. His work in the camp brought him into contact with Lieutenant Colonel Edward 'Weary' Dunlop and most particularly Lieutenant Colonel Albert Coates, who stated that the role Bevan and his unit played helped halt the horrendous casualty toll among prisoners. Yet Bevan did not regard himself as a hero.

Following the war, his love of people and his profession saw him continue to practise pharmacy until the age of 87. He owned and operated three pharmacies in Launceston in partnership with his father Frank, later opening a small pharmacy on the Gold Coast before retiring in Launceston.

Andrew fondly remembers visiting the Surfers Paradise pharmacy as a young boy and watching people interact with his father.

"Dad used well-chosen words of advice and gentle persuasion to get some patients to take their medicine. However, there was always one thing I noticed – they were treating him with well-deserved respect. You could see it in their eyes. It was the respect that people showed him that made me smile. A respect every bit deserved."

Bevan was a member of the Pharmaceutical Society of Australia from 1938 (for an astonishing 73 years) and practised pharmacy for 68 of those years. He was also actively involved with Rotary and is remembered as a great role model to many doctors and pharmacists. He is survived by his wife Jan and his children Andrew, Victoria and Elizabeth. •

A tradition of generosity

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Victorian College of Pharmacy Foundation

This year marks the tenth anniversary of the Victorian College of Pharmacy Foundation and its significant contribution to our faculty.

Prior to amalgamating with Monash University, the Victorian College of Pharmacy had built a tradition of 'looking after its own' through the financial generosity of staff, students and graduates.

In 2001, a body of graduates and current and former staff formed to raise funds for investment in special projects to directly benefit the faculty and the profession. In this way the Victorian College of Pharmacy Foundation was born with the mission 'to support the college to become one of the best schools of pharmacy in the world'.

Since its establishment, the Foundation has built relationships with graduates, the pharmacy profession and the pharmaceutical industry. Many individuals and organisations continue to donate generously to ensure that the college – now the Faculty of Pharmacy and Pharmaceutical Sciences – continues to grow and that its students, researchers and staff have access to the best facilities and equipment. Over $8 million has been raised so far, with much of this invested in an Endowment Fund. Projects supported include the Mathew Peck Travelling and Stan Robson Scholarships, the faculty's first Professor of Pharmacy Practice and the development of state-of-the-art teaching spaces. A generous number of bequests have also been made, all of which have enabled the Foundation to move closer to achieving its mission.

The Foundation invites you to consider helping the faculty to become one of the best schools of pharmacy in the world. Gift options include making a single personal gift, a pledged personal gift over a number of years, or perhaps a lasting legacy in the form of a gift in your Will. •

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Sea anemones contribute to MS treatment

In the first quarter of 2012, a potential new pharmaceutical treatment for multiple sclerosis (MS) will move into phase 1 clinical trials.

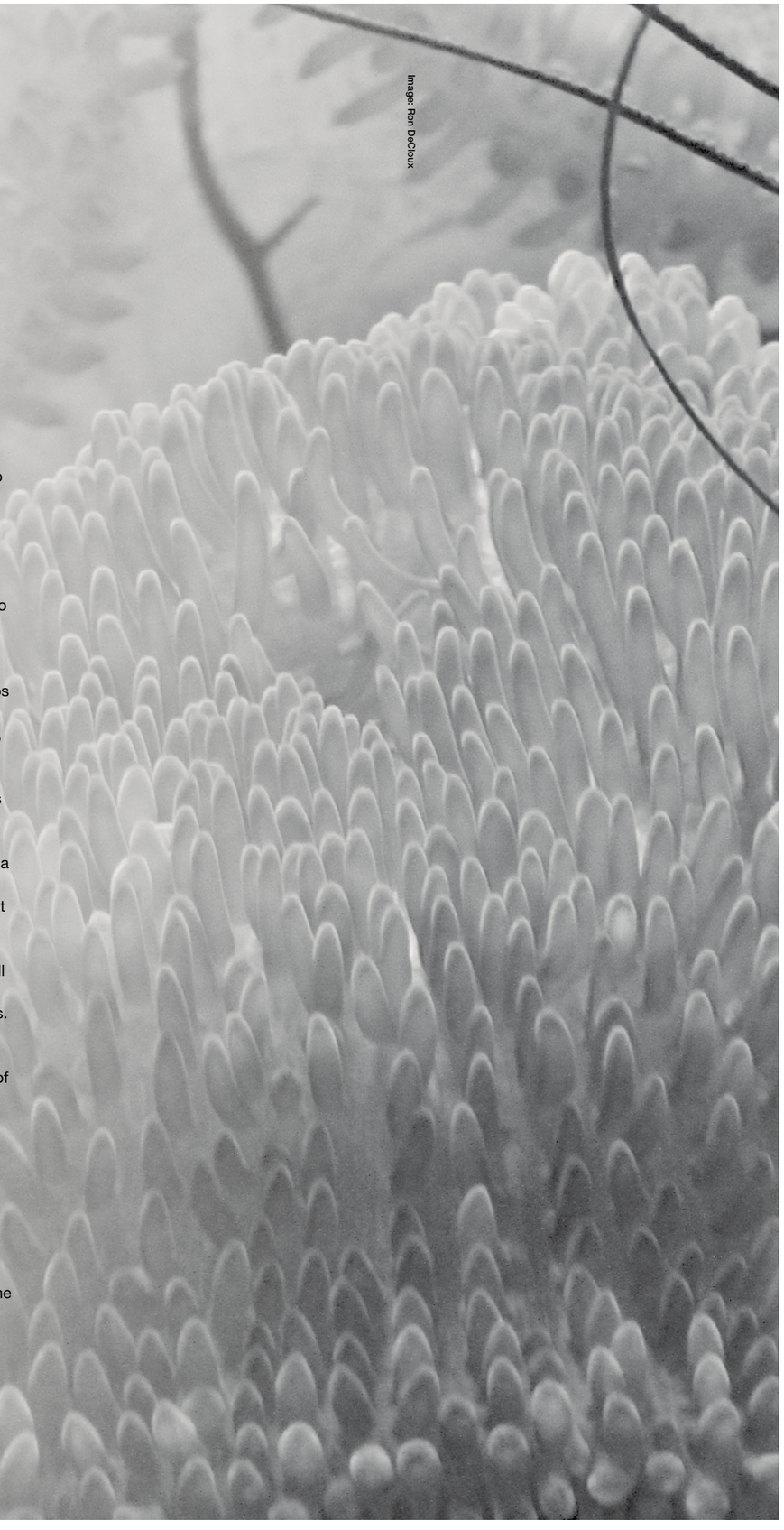


Image: Ron DeCloux

This potential new medicine began with a sea anemone and is the result of over a decade's investigation by Professor Ray Norton and his collaborators. Convinced he could create an even better medicine, this year Professor Norton embraced MIPS' philosophy of better medicines by design and secured research funding through a five-year National Institutes of Health grant from the the US Department of Health and Human Services.

In the mid-1990s Professor Norton and his team at the (then) Biomolecular Research Institute determined the structure of a peptide, known as ShK toxin, which is derived from a Caribbean sea anemone. This peptide was found to be a potent blocker of the voltage-gated potassium channel Kv1.3 present in a type of white blood cell known as T-cells.

At the same time, but independent from Professor Norton's team, Professor George Chandy in the USA was investigating potassium channels as targets for the design of immunosuppressive agents. He discovered that autoimmune diseases were very dependent on the voltage-gated potassium channel Kv1.3 to multiply and survive.

Together these findings had exciting potential and over the next decade collaboration between these scientists focused on developing a medicine for autoimmune diseases, in the first instance MS.

Potassium channels control all sorts of key functions in our bodies, including heartbeats and processes such as the discharge of hormones. Developing a drug without unwanted side effects could have been impossible had it not turned out that, in humans, the Kv1.3 potassium channel is only found on T-cells and in the nose. With such limited distribution, a drug targeting this channel could make a very selective immune suppressant.

Fast forward to today and the team of Professor George Chandy, Dr Mike Pennington, Assistant Professor Christine Beeton and Professor Ray Norton have developed a chemically modified derivative of the sea anemone peptide that acts only on the Kv1.3 channel. It is scheduled to go into phase 1 clinical trials in the first quarter of 2012 and will be an important proof of concept. However, Professor Norton and his collaborators are convinced they can develop an even more effective drug candidate.

"We think there is an opportunity to improve on the treatment moving into phase 1 clinical trials," explained Professor Norton. "The chemically modified version of the sea anemone toxin contains some modified amino acids. So it has to be synthesised and then chemically modified, which makes it more expensive to produce. It also means there is the potential that some of the chemical groups that have been added might themselves be recognised as foreign by the immune system, causing it to react against the treatment.

"Even though this treatment is an immunosuppressant, one of its advantages is that it doesn't shut down the whole immune system," he added. "It's very selective, targeting just the Kv1.3 channel. While this is a really big advantage over existing broad-spectrum immunosuppressants, it means that there are still potential side effects to using non-protein amino acids.

"The National Institutes of Health grant will enable us to make variations of this peptide that are based entirely on protein amino acids. We are also exploring opportunities to work with some of the other areas of expertise within MIPS to further enhance the potential of any future treatments."

Because the ShK analogues to be developed will be based entirely on protein amino acids, they can be produced by expression in bacteria, making them much cheaper to produce than synthetic peptides.

"We already have some analogues that are moving forward but we think that there is an opportunity to make better ones," said Professor Norton in summary. "And I guess the National Institutes of Health agree with us." •

An interest in structure based drug design

Dr Stephen Headey is interested in protein structures and interactions, and received the faculty's Early Career Research Award in 2010. But he did not come straight to research – after graduating from his Bachelor of Science with first class honours, he spent three years as a medical sales representative for Glaxo Wellcome Australia.

"While working in the medical sales role I missed the mental challenge of research and the research environment," says Dr Headey. "The things that probably annoy me most about research today are what I craved, the problems and difficulties you have to find a way to overcome. Research is like doing hurdles blindfolded; you're running along happily and then out of nowhere you hit a hurdle. You don't know how high it is or how wide. But before you can get any further you have to find your way over or around it. Quite often you only realise what the hurdle was after you've passed it."

While at Glaxo Wellcome he was exposed to the structure based drug design being done on Relenza, which kick-started his interest in this area. Structure based drug design uses knowledge of the three-dimensional shape of a protein to develop compounds that adjust the activity of a protein to obtain a desired response. The knowledge of the three dimensional structure is gathered using methods such as x-ray crystallography or nuclear magnetic resonance (NMR) spectroscopy.

"At the time there wasn't a lot of structure based drug design being done in Australia," explained Dr Headey. "So I started out working on structure determination, moving later to protein-protein interactions, protein-RNA interactions and finally protein-drug interactions."

In 2000 he began a PhD with Melbourne University and the Walter and Eliza Hall Institute under the supervision of Professors Ray Norton and Leon Bach. His project focused on the structure and function of insulin-like growth factor (IGF) binding proteins, which are the protein carriers of the IGF hormone responsible for regulating human growth and development. The project resulted in five publications, including the first structure of an IGF-binding protein C-domain, which appeared on the front cover of *Molecular Endocrinology*.

Following his PhD, Dr Headey took a research fellowship position at the Institute of Fundamental Sciences at Massey University in New Zealand with Associate Professor Steven Pascal. Among other publications, his work at Massey on the cold virus made the front cover of the *Journal of Structural Biology*.

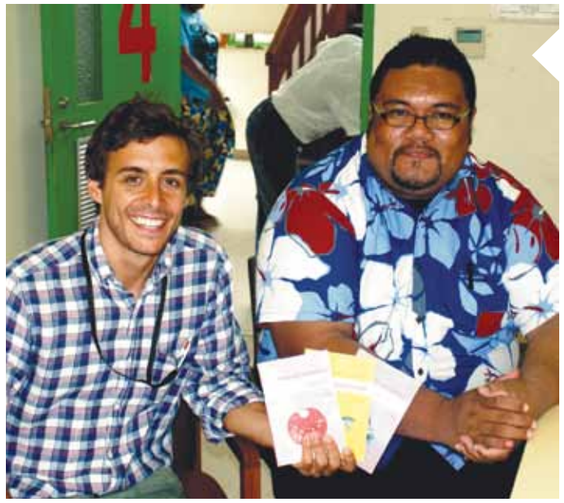
Dr Headey joined MIPS in mid-2007. With over 14 publications, many of which were in A/A* journals including the *Journal of Biological Chemistry* and *Proceedings of the National Academy of Sciences of the United States of America* (and featuring two front cover articles), he is exactly the kind of early career researcher who enables MIPS to undertake high impact drug discovery research.

Dr Headey is working with Professor Martin Scanlon's team on fragment based drug design, an emerging technique improving the chances of finding novel lead compounds.

"Australia has always been very good at basic research," says Dr Headey. "But until recently not enough has been done to take those key discoveries and progress them to treatments for diseases. Investment in infrastructure like the Synchrotron and the NMR cluster is vital, and MIPS is well placed to play a major role in this translational research." •

A scholarship worth travelling for

The Mathew Peck Travelling Scholarship is designed to provide Monash pharmacy students with experience, insight and education on how pharmacists can contribute to improving health services in developing countries. It enables recipients to develop contacts, experience and an increased understanding of international health situations, which places them in a strong position for future involvement. Alex Bongers (BPharm 2011) and Frances Cameron (BPharm(Hons) 2011) were the 2010 recipients of the scholarship. Alex travelled to Tuvalu in Polynesia and Frances travelled to Tonga.



Alex Bongers

"My trip was anything but what I expected. I was so naive about the challenges I would face – it was so much more than tropical fruit, palm trees and coconuts!

Tuvalu consists of the capital island, Funafuti, and eight outer islands. The fourth smallest country in the world, it has a population of just over 10,000 people and is very mountainous. Because of the lack of space, Tuvalu can't grow vegetables or fruit above negligible amounts. Combine that with the sedentary lifestyle of Pacific Islanders and you can imagine the size of people in this country – the national burden of non-communicable diseases, including hypertension and type 2 diabetes, is enormous. Healthcare is provided by the Princess Margaret Hospital in the capital, the only hospital in the country, while the health of people in the outer islands is managed by small medical clinics run by one or two nurses.

The issue of non-communicable diseases was the catalyst for my first project, which researched type 2 diabetes. Findings included widely uncontrolled blood glucose, lack of monitoring, few adjustments of medication and issues with risk factor management. The project also offered an incredible opportunity for health promotion. Following interviews, we dispersed diabetes pamphlets and educated patients. The first edition of the *Tuvalu Standard Treatment Guidelines* was released and we took copies to the outer islands. I trained nurses there on the diagnosis and management of diabetes using these guidelines.

Spending time at the Princess Margaret Hospital, issues with drug distribution became obvious. I redesigned drug lists, storage and ordering processes to improve distribution management.

I'm thankful for the opportunities I was offered and the contribution I was able to make – things I would never get a chance to do in Australia. On the third day I was put in charge of the pharmacy department because the pharmacist was sick. My first meeting about my study was with the Director of Health and the Director of Public Health for the country. I made recommendations on the management of type 2 diabetes for the country and was asked for my suggestions on the treatment guidelines. I convinced chiefs of islands to restart their medication and was involved in countless dose titrations and commencement of diabetic medicines. People came to the hospital to tell me they had started exercising and changed their attitudes towards their medication.

Words alone cannot describe how rewarding this experience was. The scholarship offered me an amazing opportunity to experience another culture and work in a dynamic and professionally challenging role."

Frances Cameron

"With less than two months of experience as an intern pharmacist, I departed for Tonga aiming to return with a greater awareness and understanding of what work in developing countries can entail.

For six weeks I was based at Vaiola Hospital, the main hospital. During my stay I conducted an audit on venous thromboembolism (VTE) prophylaxis to determine current practice in risk assessment, documentation and provision of prophylaxis for VTE in medical patients. None of the patients audited had a documented risk assessment for developing VTE. In addition, prophylaxis was not provided to any of the patients in the study despite 83 per cent having at least one moderate risk factor and only 10 per cent having contraindications to chemoprophylaxis.

Our findings were that a standardised risk assessment form for VTE should be completed for all patients on admission to aid selection of VTE prophylaxis, and to improve patient care and clinical outcomes. We also recommended the development of guidelines for using the form and regular education sessions for healthcare providers.

A major project for the pharmacy while I was there was World Health Day. This year the theme was 'combating antimicrobial resistance', so the pharmacy was very involved. I helped make pamphlets and posters, and gave presentations to nursing students on antimicrobial resistance.

Aside from the projects, I observed lectures to pharmacy technician students, and presented one. I helped manufacture chlorhexidine cream for the obstetrics ward and watched a caesarean section. I pre-packed in outpatients (and was horrified when asked to pre-pack aspirin from enormous tins, as in the Tongan heat and humidity it would be rapidly degraded and sub-therapeutic before it even reached the patients). It was very interesting to attend Tongan Medical Association, Pharmacy Board and Infectious Disease Control meetings, all of which were opened and closed by prayer. I attended a couple of ward rounds, spent time in the diabetes clinic and worked in a community pharmacy.

During my time in Tonga, I embraced the unpredictable functioning of electrical equipment and interruptions to gas and water supplies. I shared my bed with the occasional rat, spider and cockroach. I even enjoyed getting thoroughly drenched every now and then on my ride to or from the hospital and arriving a dishevelled mess. At work, getting simple things done sometimes involved a battle due to internet issues, printer breakdowns, being on the wrong side when the door was locked for lunchtime naps… this was tiring, particularly when it was 32°C with extreme humidity. But it taught me to be more resourceful and flexible.

My six weeks went incredibly quickly and there were a few adjustments to make on my return. Lunchtime no longer involved a nap, thongs were not acceptable at the hospital and ironing was no longer optional. What was slightly harder to readjust back to was the emphasis on consumerism in our society. I feel very privileged to have had this wonderful experience."

The 2011 Mathew Peck Travelling Scholarship recipient is fourth-year student Brigid McInerney, who travelled to the Solomon Islands before beginning an intern pharmacist position at the Royal Melbourne Hospital in 2012. •

NHMRC Fellow Nigel Bunnett investigates chronic pain and inflammation

Professor Nigel Bunnett recently joined Monash, from the University of California, San Francisco, as an NHMRC Australia Fellow. Professor Bunnett and his research team, who are interested in chronic inflammatory diseases and pain, have joined the Drug Discovery Biology theme in MIPS.

Chronic inflammatory diseases such as inflammatory bowel disease, arthritis, asthma and cardiovascular diseases related to obesity and diabetes are globally a major cause of human suffering and are often associated with pain. However, they are difficult to diagnose and treat.

"We try to understand the basic mechanisms that signal inflammation and normal pain and then to understand how in chronic disease they go awry," explained Professor Bunnett. "Pain and inflammation are normal and essential mechanisms for survival. For example inflammation can promote defence against infection and we avoid painful stimulants. However, in inflammatory diseases, this normal mechanism goes amiss."

Professor Bunnett and his team work at a molecular and cellular level with the aim of understanding how the normal mechanisms of pain and inflammation work.

"Our goal is to understand normal pain and inflammation mechanisms and how they go wrong in order to devise novel therapies either for treatment or diagnostic purposes," said Professor Bunnett. "The ultimate aim of these studies is to develop more selective and effective therapies and to devise new approaches to detection of the earliest stages of disease before irreversible organ damage has occurred."

Professor Bunnett's studies focus on signalling of proteases, neuropeptides, steroids and the G protein coupled receptors (GPCRs) and ion channels that they activate. His work is ideally suited to the research undertaken within the Drug Discovery Biology theme.

"The great expertise that MIPS has in GPCRs was a major attraction for me. The Drug Discovery Biology group led by Professors Patrick Sexton, Arthur Christopoulos (BPharm1990, PhD1999) and Roger Summers is world renowned and my work fits in extremely well," said Professor Bunnett. "MIPS also offers strengths in chemistry and drug development that are relevant to advancing my work."

"We are thrilled that Nigel and his team are joining Monash to collaboratively explore transformational pharmaceutical and biomedical opportunities at the interface of biology, medicinal chemistry and drug delivery," said Professor Bill Charman, Director of MIPS.

Professor Bunnett spent 25 years at the University of California, San Francisco, where he was Professor of Physiology and Surgery, Vice Chair of Surgery and Director of the Center for Neurobiology of Digestive Diseases. Throughout his career he has taught medical students and residents, and he will continue by contributing to undergraduate and postgraduate programs in pharmacy and medical education at Monash. •

Hillary Clinton acknowledges MIPS research

US Secretary of State Hillary Clinton has highlighted the impact of a Monash project that is developing a life-saving new drug dose to reduce maternal deaths.

Saving Lives at Birth, a collaboration between USAID, the Bill & Melinda Gates Foundation, the Government of Norway, Grand Challenges Canada and the World Bank, sent out a global call for innovative prevention and treatment approaches for pregnant women and newborns in rural, low-resource settings.

Monash's response was a low cost, needle-free and non-refrigerated treatment for postpartum haemorrhage, the potentially fatal loss of blood after birth.

The Monash team, comprising researchers from MIPS and the Faculty of Medicine, Nursing and Health Sciences, plans to engineer an oxytocin powder that will allow patients to replace needles with an inhalable drug.

In her speech, Hillary Clinton said: "If you are dealing with the very common problem of bleeding during childbirth the most common treatment, a drug called oxytocin, is delivered by injection.

"Converting that medical intervention into an aerosol spray that can be inhaled through a simple disposable device immediately after childbirth – no needles, no cold storage, no blood-borne diseases – has the potential to save many lives."

Currently, oxytocin can be delivered only by injection and must be kept refrigerated. This poses numerous barriers for women in rural low-resource settings, where refrigeration is limited and needle-stick injuries have the potential to increase the transmission of blood-borne viruses. Administration of oxytocin via injection also means a trained medical person must be present at the time of birth, yet in developing countries less than 50 per cent of women give birth in a hospital.

The product will be low-cost and the team hopes it will lead to an immediate and substantial reduction in maternal mortality rates. •

For more information
http://savinglivesatbirth.net/summaries/40

L–R: MIPS researchers Gemma Nassta, Dr Michelle McIntosh and Dr Richard Prankerd.

MIPS attracts in excess of $6 million in NHMRC and ARC grants

MIPS has again attracted in excess of $6 million in research funding through the prestigious National Health and Medical Research Council (NHMRC) project grant scheme and Australian Research Council (ARC) Discovery and Linkage grant schemes for funding commencing in 2012.

"This is a great reflection of the expertise that MIPS holds and its potential to advance pharmaceutical sciences," said Professor Chris Porter, Associate Dean of Research at the faculty. "I'm especially pleased to see funding awarded not only to our established investigators, but also to our early and mid-career researchers. The receipt of an NHMRC Career Development Award by Dr Lisa Kaminskas is a particular highlight. The grants also re-affirm the strength of MIPS in core research areas including drug discovery biology, drug design, lead optimisation and drug delivery."

Projects funded will work on treatments for lung cancers; developing anti-infective agents and anti-malarial agents; defining mechanisms of digestive and sensory disorders; enhancing treatment of superbugs; investigating treatments for chronic pain; improving drug delivery mechanisms including a multi-dose dry powder inhalation system; and investigating lipid nano-assembly for next generation functional foods and pharmaceutical products. •

For more information
www.pharm.monash.edu/news

Studying pharmacy at Monash in Malaysia

Parkville–Malaysia exchange program

Malaysian pharmacy students and Parkville exchange students gather on the last day of exams at the Monash Sunway campus.

Studying overseas as part of their Bachelor of Pharmacy has given five students from Monash's Parkville campus a fantastic opportunity to find their place in the global community.

Stephanie Horseman, Ann-Louise Slee, Stephen Wood, Jessica Rhodes and Hoang Mai Vo took part in the new intercampus exchange program between Monash Parkville and Monash Sunway Malaysia campuses.

Ann-Louise explained that a warm welcome from local students and staff made the Parkville students feel immediately at home and helped them plunge straight into an exciting social life.

"Before our classes started, we went to the Genting Highlands on a pharmacy orientation camp. We all came back with new friendships and a better insight into what was to follow," said Ann-Louise.

"A spontaneous trip to Penang came next – three days of great food, jet skiing and parasailing. Later that week a classmate gave us a three-day tour around Melaka, a World Heritage site. And that was just week one!"

The pharmacy program had only been running for two years in Malaysia before the Australian students arrived, and they noticed a few similarities and differences between the two programs.

"Students at the Malaysian campus study the same pharmacy course as we do in Australia. They sit the same exams and follow the same semester dates," said Mai.

"The main difference is that pharmacy lectures in Malaysia are more personal. Instead of having 200+ students in one year level, they only have about 40 to 50 students, and lectures are held in classrooms with a projector at the front. The students are always very punctual and no one dares to eat, sleep or talk during their lectures!"

Going on exchange also gave the students an opportunity to learn about the contrasts between pharmacy systems in Australia and Malaysia, and Ann-Louise described her placement at a prominent pharmacy near Kuala Lumpur.

"It was a shock when the Australian-educated owner told us that the number of prescriptions dispensed in his pharmacy each year was less than the daily number dispensed in an average sized pharmacy in Australia," she said.

"Pharmacists in Malaysia share the right to dispense with doctors. This means that most medicines are supplied during medical consultations. Separation of prescribing and dispensing is being debated, but the doctors are resisting."

Mai particularly appreciated meeting people from different countries.

"Now I have connections to almost every part of the world. I stayed with South Africans, made friends with the local Malay and Chinese, hung out with students from Korea, Italy and France, travelled around Asian countries, and listened to lecturers from India, Hong Kong, Japan, UK and USA."

Ann-Louise summed up the whole experience for the student group.

"This exchange has been the most amazing experience and there is nothing in the world I would trade it for," she said. "I only wish that more pharmacy students could have the opportunity to experience an exchange like this." •

Monash's Sunway campus in Malaysia.

Professor Val Stella earns Higuchi award

Prominent alumnus Professor Val Stella (BPharm 1968, HonLLD 1997) has been awarded the Takeru Higuchi Research Prize, which recognises the highest accomplishments in pharmaceutical sciences and is open to researchers from around the world.

Professor Stella was chosen for his significant research contributions to the pharmaceutical sciences including the novelty and originality of his research programs; his success in translating the findings into commercial products that are being used clinically to treat humans; the impact of his research findings on the industrial scientists who are responsible for discovering drugs and developing drug formulations; and his dedication and commitment to teaching and mentoring student pharmacists and visiting scientists.

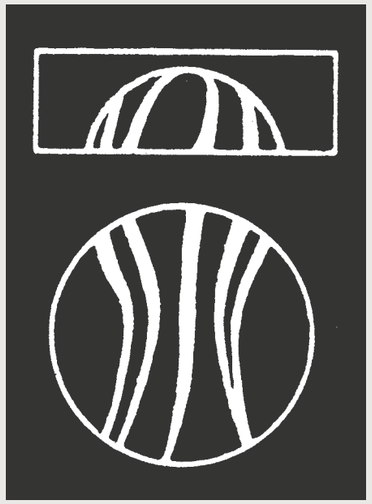
"Seldom in modern history has the pharmaceutical sciences field had a scientist who was able to so frequently translate research findings into commercial products used to treat humans," commented a colleague in his nomination letter. "His contributions to the pharmaceutical sciences through both basic and applied research have been significant and abundant. Among those working in the research areas of pharmaceutical cyclodextrin and prodrugs, Professor Stella would be considered one of the leading experts in the world."

Another colleague noted: "Val is an exceptional leader and a unique and accomplished professor. He is internationally known for his research in the area of drug degradation kinetics and for developing a new safe solubilising agent. His leadership is also evident in the student pharmacists he has trained. Graduates from his laboratory have gone on to occupy senior positions throughout academia and the pharmaceutical industry. Val is a man of great humanity and compassion. He sets a great example for all he interacts with."

Professor Stella is currently the University Distinguished Professor of Pharmaceutical Chemistry at the University of Kansas, as well as Adjunct Professor at our faculty. He is the inventor or co-inventor of 37 patented products, has delivered more than 500 invited lectures throughout his career and has authored, co-authored or edited more than 40 authoritative review articles and seven books over the past 40 years.

The award was established in 1981 in honour of Takeru Higuchi, the first president of the American Pharmacists Association Academy of Pharmaceutical Research and Science. Dr Higuchi, known as the father of physical pharmacy, was a pioneer of combining theoretical research with drug production, published more than 300 scientific papers and was awarded more than 50 patents. He was also Professor Stella's mentor.

"Tak was a great mentor and I am extremely honoured and humbled to be receiving this award," said Professor Stella. •



Higuchi Sculpture

The Higuchi Sculpture was designed and fashioned by Norma Redpath and is located on the eastern wall of the Manning building.

Commissioned by the then dean Nigel Manning, Eli Lilly & Co donated funds towards its commission. Dr Takeru Higuchi unveiled the sculpture on 23 February 1972 to coincide with the First Commonwealth Pharmaceutical Association Conference held in Melbourne.

The sculpture is made up of a disc and a rectangle. The gap between the two pieces represents the time students spend on placement gaining vital practical experience. The ridges on the disc represent the main streams of knowledge taught in the pharmaceutical sciences. These ridges fuse together in the rectangle to denote the competent pharmacist, when academic, practical and professional experiences become integrated into the whole and complete pharmacist. A fourth ridge appears on the left hand side of the rectangle to represent administrative pharmacy and pharmacy management. The total design suggests an inverse mortar and pestle, and the symbolism is that of the heraldic academic medallion. •

The role of young leaders in effecting change

Say yes to everything, because you never know what might come out of it. And always ask questions – you may find your lack of experience gives you a unique viewpoint.

These were the messages from the 2011 Student Leadership Forum hosted by the Victorian College of Pharmacy Foundation, which aimed to inspire students to explore their leadership potential. This year's speakers included social change advocate and entrepreneur Nick Bearlin-Allardice, final year student Brigid McInerney and recent graduate Alex Bongers (BPharm 2011).

Speaking about the importance of leadership in shaping the future of pharmacy, Alex admitted his experience was limited but showed how this provoked questions about how the next generation of pharmacists can make a difference.

"I found that young people can get away with asking all sorts of questions!" said Alex.

And question is something he did. Alex asked students to think about what kind of pharmacist they want to be, what kind of service they want to provide and what they want the public to think of pharmacists.

"The public perception of our profession is often described to me as sticking labels on boxes. Although I may not agree with that view, I think the profession is only as good as consumers think it is."

Alex's internship reinforced for him that the pharmacy profession is all about patients.

"My view on pharmacy? A pharmacist's provision of a service should be determined by what the community needs," said Alex. "If we want to improve public perception of our profession, we must improve the lives of our customers to the point that they demand a quality professional service.

"I believe that pharmacists are under-utilised in the healthcare system. For example, we don't capitalise on the fact that we see most patients with a chronic disease 12 times a year where their doctor may only see them twice. We should take this opportunity to improve patient health literacy and positive health outcomes as well as offer comprehensive data to the managing doctor."

"Alex's speech was really good," said third-year student Lee Ross. "He made some points about things I hadn't thought of. He spoke about the ageing population and the economic burden this will present, but also the potential opportunities for our profession."

If Alex raised questions, Nick and Brigid highlighted the importance of 'having a go'.

A Monash arts/law graduate, Nick has been involved in leadership activities since before he left school. In year 11 he completed OzGreen's Youth LEAD program. Already pretty switched on to the woes of the world, he described himself as being socially aware but directionless.

OzGreen educates, engages and empowers people, corporations and communities to tackle critical environmental sustainability challenges and become leaders of positive change. And this is exactly what Nick has done. With a history of creating high impact national campaigns, he has worked with a host of leading organisations and helped dozens of community groups to increase exposure, run events and improve processes.

These include MAKEPOVERTYHISTORY, which secured a bipartisan commitment to increasing foreign aid by $4.3 billion, and the Live Below the Line campaign, which he cofounded in 2010. Live Below the Line, which calls for people to spend just $2 each day on food for a week, mobilised over 2000 people in its first year who raised over $520,000 in sponsorship.

"Nick told us that people aren't putting their hand up for leadership positions because they know what they're doing," said Senior Ambassador Kahlinda Mahoney. "They're just doing it… nobody has all the answers on how to be a leader."

Brigid McInerney is a fourth-year Bachelor of Pharmacy student, past Victorian Pharmacy Students' Association president and Senior Ambassador. Her message was also about being open to opportunities.

In 2009 Brigid travelled to Laos, which sent her looking for international pharmacy opportunities. Her chance came courtesy of the faculty's Mathew Peck Travelling Scholarship, of which she is the 2011 recipient.

"I've arranged to complete a project based on the use of zinc supplements in children in the Solomon Islands."

Brigid enjoyed listening to Nick, a young leader from outside the world she is familiar with.

"Nick reinforced for me the need to be flexible in terms of where you go with your career. If you combine this with Alex's encouragement to look outside the square, you get a really powerful message." •

Supporting Oaktree

Earlier this year the faculty backed Student Ambassador Chris Tsiavos to gather support for the Oaktree Foundation's Live Below the Line campaign. Held over five days in May, the campaign encouraged people to spend a maximum of $2 a day on food to increase awareness of the 1.4 billion people around the world who survive on less than that amount.

Alongside raising awareness of poverty, participants sought sponsorship. The funds raised will contribute to development projects in poverty stricken communities, particularly in Papua New Guinea and South-East Asia. To date, Live Below the Line has raised over $1 million.

For more information
www.livebelowtheline.com.au

Where are they now?

1950s

Dr Elizabeth Grant AM (nee Allen) (PhC 1951) was apprenticed to her father, Les Allen. After graduation she worked in retail pharmacy, opening the Briar Hill pharmacy in 1958. After five years Elizabeth continued as a locum in Mt Gambier and Gippsland, returning to Melbourne and finally moving to Canberra. She was elected as a member of the ACT House of Assembly for three years, and continued her involvement in community activities and membership of various committees of the NHMRC until recently. Elizabeth is director of a family information management business and has an interest and involvement in pharmacy, although is not practising. She received an Honorary Doctorate of Laws from Monash University in 2008.

1960s

Before owning and operating retail pharmacy businesses in East Oakleigh and Mossman (Qld), **Sue Need** (nee Muir) (PhC 1967, BPharm 1971) worked in hospital pharmacy. She also undertook locum work in remote areas of Far North Queensland. In Mossman, Sue was involved at committee level with various community groups including the Chamber of Commerce, Blue Care, the Police Consultative Committee and the Douglas Shire Tourism Association. She is now retired in Port Douglas and recently completed a Master of Professional Accounting. Sue's major interest is her garden, volunteering in the propagation of native plants for revegetation at the local council nursery, and helping set up a community garden.

Dr John McEwen (PhC 1962) completed his pharmacy training and worked in retail pharmacy while undertaking further studies in science and medicine, graduating in 1976. Following graduation he became a resident medical officer at the Royal Melbourne Hospital before joining the Commonwealth Department of Health. He lives in Canberra and works part-time as an adviser at the Therapeutic Goods Administration, from which he retired as Principal Medical Adviser in 2005. He teaches in the pharmacy course at the University of Canberra and gave an invited lecture at the International Society of Pharmacovigilance meeting in Istanbul in October 2011. His spare time is occupied with gardening and occasional trips to New Caledonia, where his wife was born.

1970s

After graduating, **Penny Thornton** (BPharm 1971) was state relieving pharmacist for the Hospitals and Charities Commission and held senior positions at Woden Valley Hospital, ACT. In 1983 she became Deputy Director of Pharmacy at Sydney's Westmead Hospital and, after 20 years, Pharmacy Services Manager at The Children's Hospital, Westmead, before being appointed Principal Advisor in Medication Safety, NSW Department of Health. In 2011 she became Principal Consultant for Quality Assurance in Medication Safety Pty Ltd. Penny served on medication working parties, and advisory and review committees, and lectures in medication safety. She was Australian liaison pharmacist for the Institute for Safe Medication Practices, USA, and represented Australia at the International Network for Safe Medication Practice Centres in Spain in 2006.

1980s

Carolyn Rutherford (BPharm 1989) undertook her traineeship at Prince Henry's Hospital and worked as a clinical pharmacist at The Alfred for the next five years. In 1995 she was appointed Health Economist at Glaxo Wellcome/GlaxoSmithKline where she worked for seven years before joining CSL in the same position for a year. She is currently undertaking consultancy work as a health economist for KMC Healthcare. Throughout her professional career Carolyn has also worked in various retail and hospital pharmacy positions and continues to do so today in a part-time capacity. In addition to her pharmacy qualifications, she holds a Master of Business Administration, a Graduate Diploma of Epidemiology and Biostatistics, and a Certificate of Health Economics.

Following graduation, **George Tambassis** (BPharm 1986) worked in community pharmacy before, in 1988, purchasing the first of a group of five pharmacies he currently owns. He was recently appointed President of the Pharmacy Guild of Australia, Victorian branch. For the past five years he has also been a member of the Australian Community Pharmacy Authority, a government body that oversees licensing requirements for the establishment of new pharmacies or the relocation of existing ones. In 2010 he was a member of the organising committee for the inaugural Pharmacy Guild of Australia Offshore Business Conference held in Penang. George balances the busy schedule of owning and operating five community pharmacies with an interest in cycling and soccer.

What are you doing now? We'd love to hear your story. If you would like to be included here, email vcp.foundation@monash.edu with your name and a short description of what you've done since graduating.

1990s

Since childhood, **Melissa Anderson** (BPharm 1997) dreamed of singing opera. After graduating from pharmacy, she completed a Bachelor of Music Performance (Opera) at VCA. Following this she travelled to Scotland and Singapore where she lived for the next five years, working as a pharmacist and managing an opportunity shop. She completed a Masters in Counselling at UniSA Singapore before returning to Melbourne in 2006. As a pharmacist and counsellor, Melissa observed an over-reliance on prescription medication and a limited commitment to developing key life skills. So she established resilience and leadership training providers Shine Academy for Girls and Longford & Fraser Leadership Academy for Boys in 2009. In addition to teaching and counselling commitments, Melissa still undertakes locum pharmacy work.

Dr Greg Kossena (BPharm 1999, BPharmSc(Hons) 2001, PhD 2006) completed his internship in hospital pharmacy at Monash Medical Centre in 2000, followed by an honours year in pharmaceutical research. This led to a PhD looking at the use of lipid based formulations to enhance the bioavailability of poorly water-soluble drugs, and travelling to Glasgow, where he was involved in a GlaxoSmithKline funded human trial assessing the bio-transit of lipid based formulations. After graduating with a PhD in pharmaceutics, he underwent a complete change of direction when the opportunity arose for an early 'sea change', going into partnership with his former retail pharmacy bosses by purchasing the busy Cowes Pharmacy on Phillip Island.

2000s

Carol Gee (BFormSc 2007, BFormSc(Hons) 2008) undertook an honours research year before commencing a PhD to research the in vivo dynamics of non-occlusive transdermal drug delivery systems. She has travelled abroad to meet experts in the field of transdermal drug delivery, attending a conference in France in 2010 and presenting her research at the Gordon Research Conference for Barrier Function of Mammalian Skin in New Hampshire, USA, in 2011. She also spent two weeks at the Colorado School of Mines on collaboration work. During her PhD, Carol has been President of the American Association of Pharmaceutical Sciences Monash University Student Chapter. She is also a member of the Chinese Youth Society of Melbourne, which celebrates and promotes all aspects of Chinese culture.

After being awarded an Academic Staff Training Scheme Fellowship from the Universiti Sains Malaysia, where he completed his undergraduate degree and masters, **Dr Mohamed Azmi Ahmad Hassali** (PhD 2006) obtained his PhD from Monash. He was appointed lecturer at the School of Pharmaceutical Sciences, Universiti Sains Malaysia, a position he balances with his commitments as Head of Department for the Discipline of Social and Administrative Pharmacy. Dr Hassali is actively involved with many international organisations and heads the country group for the International Network for Rational Use of Drugs. He holds visiting researcher and lecturer appointments at medical and pharmacy institutions in Nepal, India and Pakistan, and is an external postgraduate thesis examiner for universities in Australia, NZ and the UK.

Melanie Jeyasingham (BPharm 2004) completed her traineeship at Austin Health in 2004, and worked there for three years as a clinical ward pharmacist and in the outreach pharmacy service. During this time, she also worked casually in community pharmacies. In 2008, she commenced a Master of Public Health. As part of her research project, she is evaluating the uptake and usage of eTG complete, the Therapeutic Guidelines Limited (TGL) electronic product for desktop computers, through the Practice Incentives Program eHealth Incentive. Melanie has worked at TGL since 2008 and was editor for version 14 of the antibiotic guidelines (2010). She is currently working on version 2 of the oral and dental guidelines, which is scheduled for publication in March 2012.

Continued international recognition for malaria research

Malaria research by the Centre for Drug Candidate Optimisation (CDCO) and its collaborators continues to receive international recognition.

Earlier this year, research on a promising new antimalarial compound – OZ439 – was published in the prestigious *Proceedings of the National Academy of Sciences*. The research is being carried out in collaboration with the Medicines for Malaria Venture (MMV) in Geneva, Switzerland, and academic groups at the University of Nebraska and the Swiss Tropical and Public Health Institute.

"The paper describes for the first time the design of an antimalarial drug candidate that offers the hope of a single, oral dose cure for malaria, a disease that kills almost one million people a year," said director of the CDCO and lead author Professor Susan Charman.

She went on to highlight the exceptional features of OZ439 that make it stand out from the available antimalarial drugs.

"OZ439 has outstanding efficacy in animal models of malaria and cures mice with a single oral dose. This is a feature that we haven't seen with comparator drugs tested at equivalent or higher doses in the same model. OZ439 has the added bonus of being completely synthetic and inexpensive to produce, which is critical for any new antimalarial drug candidate."

OZ439 has recently been shown to be safe at doses up to 1600 mg when administered to healthy volunteers, and is currently being evaluated in a phase 2 clinical trial in malaria patients.

More recently, the CDCO and its international collaborators were awarded the coveted MMV Project of the Year award. Presented by Tanzanian President Kikwete, the award recognises significant progress in developing an anti-malarial drug candidate that targets the parasite enzyme dihydroorotate dehydrogenase (DHODH), a new target in the fight against malaria. It is the fourth time in 10 years that CDCO researchers have received the accolade for their collaborative drug discovery research.

"Malaria parasites are completely dependent on the DHODH enzyme for their survival. We've been developing inhibitors that target the DHODH enzyme, which will stop the malaria parasite in its tracks," said Professor Susan Charman.

"What's really encouraging is that, due to biological differences in the DHODH enzyme between humans and malaria parasites, we are confident that our new DHODH targeted medicines will not have adverse effects for people."

This project has seen high levels of continued cooperation, as researchers from around the world combine their expertise in pursuit of an important common goal.

"There is still much to be done but our work strongly supports DHODH as a new antimalarial drug target. Our lead candidate is currently being tested in preclinical safety studies and, if all goes well, it could enter human clinical trials in 12 to 18 months."

The CDCO is collaborating on this project with experts from the University of Texas Southwestern Medical Center, where the overall project was led by Professor Meg Phillips, the University of Washington, GlaxoSmithKline in Tres Cantos (Spain) and MMV. The project was funded by a grant from the National Institutes of Health in the USA. •

Vice-Chancellor's Awards

Excellence in innovation and collaboration

Professor Susan Charman has been awarded the Vice-Chancellor's Award for Excellence in Innovation and Collaboration. The award recognises excellence by researchers who have progressed or extended the outreach of their research through engagement with external partner organisations and is given to one researcher from across Monash each year.

Professor Charman's team at the CDCO has had significant national and international impact on translational drug discovery and development. The CDCO was conceived to foster scientific innovation in drug discovery and development through large multi-disciplinary collaborative programs. Specifically, it integrates leading edge biopharmaceutical and translational drug discovery principles with existing chemistry and biology programs to create new intellectual property and commercial value in drug candidates being advanced for clinical development.

As a founding and continuing director of the CDCO, Professor Charman's research has developed a highly successful model for collaborative, multidisciplinary translational research that seeks to address a knowledge gap in one of the most challenging arenas of 'big science' – drug discovery. This program is an outstanding example of strong relationships that provide benefits to both MIPS and external partner organisations. •

Citation for Outstanding Contributions to Student Learning

Monash has recognised Dr Daniel Malone (BPharm 1994, BPharm(Hons) 1996, PhD 2001) for excellence in teaching with a 2011 Vice-Chancellor's Citation for Outstanding Contributions to Student Learning. Dr Malone received this annual acknowledgement for his exceptional, innovative and enthusiastic approach to teaching using practical analogies and examples, including websites and animations.

"An outstanding academic teacher committed to good student learning, Dan engages his students by using relevant examples obtained from his own experience as a pharmacist," said Professor Peter Stewart, Deputy Dean. "He is reflective. He is concerned about developing strategies to enhance student learning and he is highly respected by both students and staff."

Nominated in the category 'Approaches to the support of learning and teaching that influence, motivate and inspire students to learn', Dr Malone also received a 2011 faculty citation. The award comes with a grant of $5000 from the University to be used to further his teaching interests.

In other 2011 awards for excellence in teaching, the faculty recognised the exemplary teaching of the Pharmville team and Dr Michelle McIntosh (BPharm 1995, BPharm(Hons) 1996, PhD 2000).

Dr McIntosh received a Faculty Citation for Outstanding Contribution to Student Learning for her role in establishing the Monash University Student Chapter of the American Association of Pharmaceutical Scientists (AAPS).

Dr McIntosh's nominators observed that her pivotal role in the establishment of the AAPS Monash University Student Chapter inspired students to develop the skills and outlook that would enable them to compete effectively with international peers. They noted that she contributes to aspects of learning that are absolutely essential in the cultivation of well-rounded young researchers.

The Pharmville team, which includes Associate Professor Jennifer Marriott (BPharm 1971), Jenny McDowell (BPharm1985), Marian Costelloe, Deborah Horne and Kim Styles, received the Programs that Enhance Learning award for its role in linking science and professional concepts in pharmacy. Pharmville is a fictional community of families and individuals – each with video vignettes, photographs, and medical and social histories – that provides a context to teaching. Student feedback on Pharmville included comments such as "It makes me feel connected to this community – just like a real pharmacist would be towards their community." •

Helping fast-track the drug discovery process

Researchers from MIPS have made a significant contribution to the development of methodology for determining the three-dimensional structure of proteins and the complexes they form with other molecules.

Such methodology is important in many fields of research, but is particularly valuable to those working within the field of drug discovery. The development of new drugs requires the identification and optimisation of compounds that are able to bind to a specific enzyme or receptor in a highly selective manner. Without a detailed knowledge of the structure of a protein target and a means of determining where molecules bind to it, this can be an extremely arduous process.

Dr James Swarbrick and Dr Bim Graham, together with PhD students Phuc Ung (BMedChem(Hons) 2009) and Sandeep Chhabra, have developed a number of new tools that will help fast-track the structural analysis of proteins and their complexes. The tools are small synthetic tags that are able to bind specific metal ions, known as lanthanides, to the surface of a protein. These ions influence the magnetic properties of the atoms within the protein, leading to a range of interesting effects that are observable by NMR spectroscopy. Analysis of these effects provides information that is extremely useful in helping to determine the structure of the protein, either alone or interacting with another molecule.

"While other lanthanide-binding tags have been developed, one of our tags is the first that is suitable for use in what is known as exchange NMR spectroscopy," explained Dr Swarbrick. "The measurement of exchange spectra allows complex spectral data to be deciphered rapidly and without reliance on an initial protein model. As a result, it has great potential in the determination of protein structures from minimal NMR experiments."

Using another of the tags, Dr Swarbrick and Sandeep have been able to unambiguously establish that binding of a new inhibitor to a kinase antimicrobial drug target (HPPK) leads to 'locking down' of a critical loop over the active site, a fact that was not evident from the crystal structure of the HPPK-inhibitor complex and which could not be shown using any other known NMR method.

The researchers are now hoping to employ the new tag and associated methodology in a range of drug screening and structural biology projects at MIPS.

"This is a good example of what multidisciplinary research can deliver," noted Professor Peter Scammells, the Medicinal Chemistry and Drug Action theme leader at MIPS. "The unique synergy between Dr Graham's synthetic knowledge and Dr Swarbrick's expertise in biomolecular NMR spectroscopy has produced some exciting discoveries that will assist with the design of more effective pharmaceutical agents."

The work has been recently published in leading scientific journals, *Angewandte Chemie*, *International Edition* (2011, 50, 4403-4406), *Chemical Communications* (2011, 47, 7368-7370) and *Bioconjugate Chemistry* (2011, ASAP article). •

Better manufacturing methods for opioid pharmaceuticals

MIPS chemists, working with the ARC Centre of Excellence for Free Radical Chemistry and Biotechnology, have improved production of opiate-derived anti-addiction medications using the humble paper clip.

"It was quite a fortuitous discovery," revealed Professor Peter Scammells. "One night, quite by accident, a member of our group left a stainless steel spatula in a flask with one of the starting materials. In the morning we found a high amount of the desired product. We subsequently discovered that paper clips catalyse this reaction also!"

Since then a significant amount of experimental work has been conducted by the research team, and research fellow Dr Gaik Kok in particular, to optimise this reaction and assess its scope for the synthesis of opioid pharmaceuticals.

Now Professor Peter Scammells and Dr Bim Graham from the Medicinal Chemistry and Drug Action theme at MIPS and Dr Campbell Scott along with partner/collaborator GlaxoSmithKline, have been awarded $210,000 via the ARC Linkage scheme to investigate further. The project is titled 'New methodology for the manufacture of opioid pharmaceuticals and the discovery of novel opiate receptor ligands'.

The project will investigate novel ways of manufacturing semi-synthetic opiates, such as naltrexone and buprenorphine, which are important analgesic agents and are also used in the treatment of alcohol and opiate dependence. Currently, there are a number of steps involved in producing semi-synthetic opiates and one step is particularly difficult to undertake.

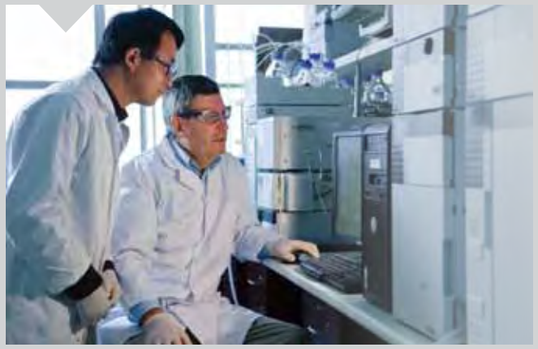
This project will focus on simplifying that step and applying new, greener and more efficient methods for the synthesis of these medicinal agents. The result will be cheaper production processes. The new methods will also be used to prepare fluorescently labelled opiates that will be used for studying drug-receptor interactions and opiate pharmacology.

"Our new method uses free radical chemistry and stainless steel to increase the opiate yield," Professor Scammells explained. "It dispenses with the costly, less safe and difficult to work with chemicals used in older methods."

Australia currently supplies 25 per cent of the world's medicinal opiate needs. The complex manufacturing process means the cost of producing these medications is significant.

"We hope that our new method will provide an economic advantage to this important Australian export industry," he added. •

Stepping up the fight against superbugs



Doctors can now more confidently administer a drug that protects against bacterial superbugs thanks to the development of scientifically based dosing guidelines for the antibiotic colistin.

Colistin treats serious infections in critically ill patients, including those with kidney failure who are receiving dialysis. The guidelines, developed by MIPS researchers as part of an international team, will allow for more effective use of the antibiotic and reduce the likelihood of bacteria developing resistance to it.

The team's research paper, along with the new guidelines, was published in the July issue of the international journal *Antimicrobial Agents and Chemotherapy*. It has recently been judged to be in the top five research papers in antibacterial pharmacokinetics and pharmacodynamics in 2011.

MIPS researchers Professor Roger Nation and Associate Professor Jian Li played a key role in initiating the international research effort that led to the study. They said colistin was increasingly the last option available to treat seriously ill patients who have infections caused by an important class of antibiotic-resistant bacteria known as Gram-negative superbugs.

"The rise of antibiotic-resistant bacteria, combined with very few new antibiotics in development, has meant colistin is often the only treatment that hospital physicians can use in critically ill patients who are most at risk from a superbug infection," Professor Nation said.

"Unfortunately, colistin was developed more than 50 years ago when manufacturers were not required to provide accurate dosing guidelines. This has meant doctors are often shooting in the dark with respect to how much colistin should be administered to individual patients."

Professor Nation said insufficient dosage could leave patients vulnerable to infection and enable bacteria to become resistant, which could lead to more powerful superbugs in the future.

The international research team was able to develop a dosing formula for colistin based on their results from 105 critically ill patients administered the antibiotic.

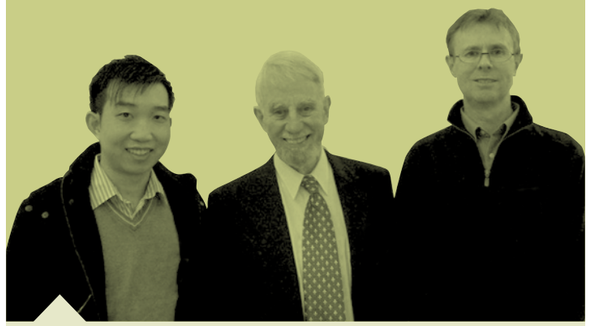
All the patients were receiving colistin for either a blood infection or pneumonia due to multi-drug resistant bacteria. The patients were located at hospitals in Thailand or the USA.

Associate Professor Li, who has worked with Professor Nation on colistin for more than 13 years, said the new guidelines would improve patient care.

"These scientifically based guidelines will allow doctors to better use this very important last-line antibiotic and minimise the emergence of resistance," he said.

Professor Nation and Associate Professor Li collaborated on the study with experts from the University of Pittsburgh (Dr Fernanda Silveira), University of Queensland (Professor David Paterson), Mahidol University in Thailand (Professor Visanu Thamlikitkul) and the State University of New York at Buffalo (Professor Alan Forrest). The study was funded by the US National Institutes of Health. •

Supporting new uses for old drugs



L–R: Will Nguyen, Roger Riordan and Dr David Manallack.

Thanks to a scholarship from the Cybec Foundation, PhD student William Nguyen (BMedChem 2007, BMedChem(Hons) 2008) has taken a drug currently used to treat diarrhoea and developed it into a potential treatment for psoriasis.

The story behind Will's PhD project started in the late 1970s, when a US physician prescribed his patient diphenoxylate to treat her diarrhoea. The patient, who also suffered from psoriasis, reported a few months later that her psoriasis had cleared up. The physician subsequently ran a trial which showed that diphenoxylate cream successfully treated psoriasis patients but this research was never followed up.

Psoriasis is a common autoimmune disorder that causes red patches of skin often covered with silvery scales. This disorder has a significant impact on quality of life and current treatments are inadequate.

Fast-forward 30 years and nothing much had happened until researchers from MIPS began to study the active molecule – diphenoxylate. This was supported by the Cybec Foundation which provided a PhD scholarship, including both a stipend for Will and funding for chemicals and equipment.

Dr David Manallack (BPharm 1982, MPharm 1985) explained the benefit of this philanthropic support.

"The Cybec scholarship has made a tremendous impact on our ability to achieve success in this project," he said. "We've been able to take an old drug and improve it considerably. We're seeking to patent the findings and look forward to finding a commercial partner."

The Cybec Foundation was established by Roger Riordan, who developed a successful business based on software he wrote to combat a virus that had infected the computers in his workplace. After the sale of the business in 1999, Roger and his wife set up the foundation to support projects that encourage academic excellence and assist the less fortunate.

Will is the recipient of a Cybec scholarship that has allowed him to investigate diphenoxylate. Over the three years of his PhD Will, his supervisors Dr David Manallack, Associate Professor Philip Thompson and Dr Paul White (PhD 1997), and their international collaborator Dr Heike Wulff from the University of California, Davis, have designed compounds that are significantly more potent than diphenoxylate. Importantly, they have found that these compounds block a key potassium channel (Kv1.3) associated with the immune system and this project may result in better treatments for psoriasis. More importantly, this project could potentially lead to treatments for other autoimmune diseases such as multiple sclerosis, type 1 diabetes and rheumatoid arthritis. •

Stan Robson Scholarship to be offered annually

Stan Robson circa 1930s.

The continuing support of donor Dr Graeme Robson will enable one of the faculty's most generous scholarships to be awarded on an annual basis from next year.

Dr Robson established the scholarship in 2009 in honour of his late father Stan George Robson (PhC 1931), a much-respected pharmacist who operated pharmacies in Hamilton, Western Victoria, from 1935 until his passing in 1995.

By offering the scholarship on an annual basis, Dr Robson hopes to create a culture of reciprocal responsibility, where young scholars are encouraged to share ideas, resources and personal connections that reinforce the capacity of each person to add real value to the life, direction and opportunities of others. He also hopes to encourage prospective donors to consider the benefits of supporting the faculty.

The Stan Robson Rural Pharmacy Equity Scholarship is awarded to a first year-pharmacy student from a rural or isolated area. For more information on this scholarship, visit www.pharm.monash.edu.au/futurestudents/robson-scholarship.

Scholarships and bursaries are highly valued by students and can be designed to reflect your particular interests.

You can establish a scholarship or bursary in your own name or in memory of a loved one to assist students with their fees, study resources or living expenses, or to inspire talented young people to pursue a career in pharmacy. •

For more information
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Monash success at IPSF congress

L–R: Clinical Skills competition winners David, Michelle, Diana and Scott.

Faculty students took out the top prizes in the Clinical Skills competition at the 2011 International Pharmaceutical Students' Federation (IPSF) World Congress in Thailand.

Running from 3 to 13 August, the congress attracted 415 delegates from 51 countries including 10 students from Australia, and provided a world view on the practice of pharmacy.

The Clinical Skills competition focused on ways to identify and solve drug related problems in clinical practice. Michelle Garner, fourth-year Bachelor of Pharmacy student, won the individual Clinical Skills event and the team event was won by Monash students Diana Sandulache, David Vien, Michelle Garner and Scott Joseph.

Associate Professor Jennifer Marriott (BPharm 1971), delivered an opening address on behalf of the International Pharmaceutical Federation, delivered two keynote addresses on pharmacy education at the congress and conducted two workshops.

"The congress is a unique opportunity for students to meet with peers from all over the world to share their experiences." said Associate Professor Marriott. "It's also fantastic for the speakers to meet so many pharmacy students who share a passion for improving public health and pharmacy practice in an international context."

While at the congress, fourth-year pharmacy student Diana Sandulache took on the role of 2011–2012 chairperson for IPSF's Development Fund Committee. Established in 1969, the fund aims to give every pharmacy student an equal opportunity to participate in IPSF activities.

"I've always been involved with local and national pharmacy student associations and I really wanted to get involved with IPSF," said Diana. "It brings together students from around the world, all connected by pharmacy, and offers a great networking and social opportunity."

Michelle Garner has taken on a role on the IPSF Editorial Board. IPSF publications range from news updates to educational publications.

"The IPSF World Congress was a fantastic experience," said Michelle. "I've been inspired to get involved because I think it's a great place to share ideas for the practice of pharmacy and to provide support and resources for students in countries that are still transitioning to a more clinical pharmacy role."

IPSF was founded in 1949 by eight pharmacy student associations in London and is the oldest international student organisation in the world. As the leading international advocacy organisation for pharmacy students, it represents approximately 350,000 students and recent graduates in 70 countries worldwide. It promotes improved public health through provision of information, education, networking, and a range of publications and professional activities. •

In brief

Welcome to the Cossar Club

Keith Smith (PHC 1950) was recently welcomed as one of three new members of the Cossar Club by Professor Bill Charman, and Chairman of the Victorian College of Pharmacy Foundation, Alistair Lloyd AO RFD ED.

"My wife and I wanted to make a bequest to the faculty, as we thought there might be a need for extra funds for research and to continually improve pharmacy knowledge," said Keith. "So we organised our affairs and let the Foundation know."

Keith and his wife Elizabeth (PHC 1956) met while he was working as a fellow by examination at the college. They owned a number of pharmacies over the years and were very active in the profession.

The Victorian College of Pharmacy Foundation established the Cossar Club to thank those who support the faculty through bequests. •

For more information
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In just three minutes…

PhD candidate Julia Gilmartin (BPharm(Hons) 2009) from CMUS took second place in Monash University's annual Three Minute Thesis competition. Having won the faculty heat, Julia and eight other finalists from across the University had the difficult task of pitching their highly complex research to a non-specialist audience in only three minutes. To be successful, finalists were required to communicate the importance, relevance and likely long-term impact of their research in jargon-free language.

"Being able to explain your work in less than three minutes in a simple way is a skill," said the faculty's Associate Dean of Research, Associate Professor Philip Thompson. "Julia told us that medication delivery to our senior citizens was everyone's problem but assured us that help was on its way."

"I was very excited to be given the opportunity to represent the faculty," said Julia. "It was a fabulous experience to see the representatives from other faculties present and to be awarded second place." •

Queen's birthday honours

Congratulations to Brian Hawdon OAM (PhC 1957) who was recognised in the 2011 Queen's Birthday Honours List. Brian was awarded a Medal of the Order of Australia (OAM) for service to the community through fundraising roles.

"I was honoured to think that some of my peers considered what I had done relevant enough to nominate me," said Brian.

Brian has been fundraising for various organisations for over 30 years. In the 1980s he was involved in Rotary's mobile diabetes diagnostic caravan, which travelled around the state offering free diabetes testing. More recently, he has been involved with The Alfred Foundation for the last 15 years. •

Faculty's Early Career Research Award

Dr Erica Sloan has been awarded the faculty's Early Career Research Award, which is given annually to a pharmaceutical research scientist less than 10 years post PhD completion.

Dr Sloan is a highly motivated researcher whose research program focuses on the importance of the neural components of the tumour microenvironment in regulating breast cancer progression. Erica has attracted funding from the National Institutes of Health, US Department of Health and Human Services and other significant funding bodies and has several papers in high quality journals. She has encouraged high quality undergraduate students to participate in research on a part-time basis. •

A rural flavour

The faculty's Student Ambassadors demonstrated their leadership and organisational skills by project managing several events designed to expose current students to rural pharmacy.

The students were set the challenge to deliver a project that connected students to students, students to the faculty or the faculty to the community. In 2011, each of the events had a rural flavour. Students were supported with project management training over a series of months.

Kahlinda Mahoney, Lee Ross, Amy Scott, Nadera Rahmani, Dennison Cheung and Vanessa Kleijn made up one team, while Lisa Hui, Brigid McInerney, Shin Liau, Kenneth Khoo, Christine Wun and Kenneth Lee made up the second team. Their activities ranged from road trips to Shepparton and Sale and a fundraising BBQ for the Royal Flying Doctor Service, to a boomerang and didgeridoo demonstration (from world boomerang throwing champion Rob Croll) and guest speakers on issues such as Indigenous health and rural internships.

"My involvement in the Student Ambassador project management training really highlighted how using initiative can help to reach goals," said Senior Ambassador Vanessa Kleijn. "The best part of Rural Week was seeing the enthusiasm from the participating students. It was great to see so much interest in an area that the team was passionate about."

"It's impressive to see such resourcefulness," said Faculty Manager Marian Costelloe when congratulating the students on the completion of their projects. "Both teams have drawn on a variety of contacts in the community to bring their projects together." •

Helping patients to stop smoking

CMUS researchers Dr Johnson George (PhD 2005), Professor Michael Dooley (BPharm 1987, GradDipHospPharm 1993) and Gregory Weeks (BPharm 1974) and their collaborators have been awarded $271,853 via the ARC Linkage Project scheme to implement a smoking cessation program for smokers admitted to public hospitals.

The project will implement and evaluate a multidisciplinary healthcare intervention (titled 'Give up for Good') initiated by hospital pharmacists and followed up by primary health professionals to assist smokers admitted to three Victorian hospitals to give up smoking.

The rate of smoking among in-patients admitted to Australian hospitals ranges from 7 per cent to 35 per cent, and almost half of the participants in a recent pilot study showed interest in starting a smoking cessation program while in hospital. With tobacco smoking contributing to more than 15,500 deaths (11.7 per cent of total deaths) and 7.8 per cent of the total burden of disease and injury in Australia, this program could potentially reduce smoking-related death, illness and healthcare costs.

The partner/collaborating organisations for the project are Alfred Health, Austin Health and Barwon Health, and collaborators include Professor Michael Abramson (Department of Epidemiology and Preventive Medicine, Monash), Dr Billie Bonevski (University of Newcastle), Dr Simone Taylor (BPharm 1993) (Austin Health) and Susan Poole (BPharm 1989) (Alfred Health). •

Are you a practising pharmacist interested in sessional teaching?

The faculty's new integrated Bachelor of Pharmacy curriculum has created an opportunity for practising pharmacists to contribute their experiences to our future pharmacists. The use of pharmacists as sessional teaching staff provides students with context for the theory they are learning.

Teaching may also benefit practitioners by renewing their enthusiasm and it can be used as a CPD activity. Background reading and information sessions provided prior to classes are useful for 'brushing up' on old topics or adding new knowledge and ensure that practitioners know what to expect in the class.

Sessional staff may tutor (both in person and online), demonstrate in practical classes or assist with the assessment of assignments and examinations. Payment is based on university sessional salary rates. •

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Alumnus Megan Middleton named SHPA 2011 Young Achiever

The Victorian Branch of the Society of Hospital Pharmacists Australia (SHPA) named Megan Middleton (BPharm(Hons) 2003) as the William Mercer Young Achiever of 2011.

"Megan is a great example of a young pharmacist who has demonstrated leadership in the hospital pharmacy profession in the past and present – and I'm sure this will continue in the future," said Helen Matthews (PhC 1964), Chair of the SHPA Victorian Branch Committee on presenting the award.

Currently an SHPA Federal Councillor, Megan's involvement with SHPA goes back to her student days when she attended the SHPA Victorian Branch committee meetings as an observer.

Megan has been Deputy Director of Pharmacy – Medicines Evaluation at Eastern Health, where she was instrumental in improving the decision-making process around formulary management. Currently, she is the Project Pharmacist for the HealthSMART Clinical Systems Project at Eastern Health. She is also undertaking her Master of Health Services Management at Monash University. •

I am a pharmacist

I am your most accessible healthcare provider
I am a driving force behind discovering new medicines
I am the key that unlocks all you need to know about your medicines
I am with you in sickness and in health
I am a pharmacist

This is the premise behind the new International Pharmaceutical Federation project, *I am a pharmacist*. This project calls pharmacists from all over the world to record videos of themselves in their workplace and upload them to YouTube.

The videos are meant to showcase each pharmacist individually and as part of the whole profession, highlighting special experiences, initiatives, contributions to communities and, most importantly, the impact they have had on co-workers, healthcare and especially patients. The project hopes to generate pride, enthusiasm and recognition of the profession. •

For more information
www.iamapharmacist.com

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Student for a day
Pictured are alumni who became students for a day on Friday 28 October. Over 30 participants were immersed in a range of learning activities in the faculty's state-of-the-art teaching facilities.

Interested in taking part?
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