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From the dean

As you will be aware, the Faculty of Pharmacy and Pharmaceutical Sciences enjoys an outstanding reputation, both nationally and overseas.

This was recently brought home when the Excellence in Research for Australia assessment, conducted by the Australian Research Council, rated Monash University research in pharmacology and pharmaceutical sciences, and nanotechnology as 'well above world standard' (see article at right). These results are impressive news for the Monash Institute of Pharmaceutical Sciences (MIPS) and I sincerely thank our talented staff for their tireless efforts and desire to undertake research of the highest quality.

In education we also continue to lead the way in innovative learning, and are proud to be integrating our new professional practice suites and high performance liquid chromatography (HPLC) lab into our teaching program this semester. These new initiatives mark a major leap forward in teaching practices and one that will be of significant benefit to our students and the impact they have on our profession.

As always, I want to emphasise that our success is testament to the dedication of our staff, the talent of our students and the generosity of our donors. This year we celebrate 50 years at our Parkville location. As we look back, we should be proud of the enormous advances in pharmacy and pharmaceutical science education and research our faculty has spearheaded. That we continue to attract the best staff and the best students, who ultimately make a significant contribution to healthcare, both in Australia and around the world, is something everyone can be proud of.



Professor William N. Charman
BPharm (1981), PhD



Photo courtesy of Dr Richard Prankerd

Top score! Our research rated 5/5 by the Excellence in Research for Australia report

The Excellence in Research for Australia (ERA) assessment recently conducted by the Australian Research Council rated Monash University research in pharmacology and pharmaceutical sciences, and nanotechnology, as 5/5 – indicating that the research is 'well above world standard'.

These results are impressive news for MIPS and the faculty, whose strategic focus and strengths are concentrated in these fields. Another major area of research within MIPS – medicinal and biomolecular chemistry – scored highly at 4/5, indicating the research is 'above world standard'.

"These disciplines collectively underpin much of our research," said Professor Bill Charman, Director of MIPS and Dean, Faculty of Pharmacy and Pharmaceutical Sciences. "The ERA assessment identified our researchers as leading the field in Australia and competitive with the best in the world.

"I am particularly excited by the prospect of the next ERA assessment as we are in a period of significant growth, with many new staff and projects addressing major issues in health and pharmaceutical research," he added.

The areas in which the ERA results demonstrated the excellent quality of Monash's research closely match those areas where the majority of Monash research is undertaken. Over 80 per cent of Monash University's research income is concentrated in the Faculties of Medicine, Nursing and Health Sciences; Pharmacy and Pharmaceutical Sciences; Engineering and Science.

According to Vice-Chancellor Professor Ed Byrne AO, the ERA results reflect the University's efforts to concentrate on the most pressing challenges facing Australia.

"If you look at where Monash University has performed the best – nanotechnology, pharmacy, engineering and ecology – these are the fields where research has the greatest potential to deliver benefits to people here and around the world. This reflects our strategy of concentrating on the big problems where we can have the greatest impact," he said.

Fifty years, five deans, one vision

On 4 April the faculty passed a significant milestone – 50 years at its 381 Royal Parade Parkville site. The move from the (then) Victorian College of Pharmacy's former site in Swanston Street was more than geographical. It started a fundamental transformation in the design and delivery of pharmacy education in Victoria.



Toast to the graduating class of 2008 at Swish07.



Celebrating the last day of classes in 2005.



Bob and Val Constable at the Pharmacy Ball.

✂ -----
The Victorian College of Pharmacy Foundation plans to celebrate this milestone by inviting alumni from the past 50 years to sign up to be a student for a day on Friday 28 October 2011.

If you are interested in joining the celebrations and seeing some of the changes that have taken place since your time as a student, email iliana.findikakis@monash.edu or send us your details by returning the following to the Victorian College of Pharmacy Foundation, 381 Royal Parade, Parkville 3052.

Name

Graduation year

Address

Email

Contact number

As Chair of the Victorian College of Pharmacy Foundation it gives me great pride to see my pharmacy school reach international significance, acknowledged for development of world-leading teaching technologies and research, and excellent graduates.

In the 50 years since the move to Parkville, pharmacy education in Victoria has made enormous advances, which can clearly be seen in the breadth of courses now offered by the faculty, in the physical facilities and through the research success. The faculty (then college) has flourished under the leadership of five charismatic deans who each made significant contributions.

The Pharmaceutical Society of Victoria and dean ATS Sissons initiated a campaign to raise money from the profession and the pharmaceutical industry to build the facilities on Royal Parade. The assembly of a first-class academic staff and initiation of significant pharmaceutical research was begun by Manning and consolidated by Vaughan. The last stage of this journey was started by Watson who helped guide the difficult negotiations that led to the college's successful amalgamation with Monash University. Following him, Chapman finalised the deal.

Fifty years ago the college offered an apprentice style education. Today the faculty offers three bachelor degrees, seven postgraduate coursework programs and higher degrees by research. Sissons, Manning, Vaughan, Watson and Chapman each played a role in continuing to modernise the educational offerings to keep up with the profession's demands and academic standards.

Since 2007, Professor Bill Charman has kept up the tradition of outstanding leadership and continues to strengthen, grow and enhance the quality of the faculty's management, courses, research and staff at an outstanding pace. The profession can be rightly proud of how far the old college has progressed over its 50 years at Parkville.

**Alistair Lloyd AO RFD ED, Chair
 Victorian College of Pharmacy Foundation**

Where were you when...

With us		With the world	
1950s			
1951	<ul style="list-style-type: none">Land at Parkville bought by Pharmaceutical Society of Victoria with support of the profession and industry, £750,000 raised for new pharmacy school	1953	<ul style="list-style-type: none">Everest conquered
		1955	<ul style="list-style-type: none">Salk vaccine found effective against polio
1960s			
1960	<ul style="list-style-type: none">Privately run School of the Pharmaceutical Society of Victoria moves to new premises in Parkville; first year students begin course 4 April 1960Full-time three-year pharmacy course commenced	1960	<ul style="list-style-type: none">Birth control pill released
		1961	<ul style="list-style-type: none">Berlin Wall erectedAudrey Hepburn starred in <i>Breakfast at Tiffany's</i>
1963	<ul style="list-style-type: none">ATS Sissons retired, Nigel Manning appointed deanSissons Mural unveiled by Premier of Victoria Sir Henry Bolte	1963	<ul style="list-style-type: none">JFK assassinated
		1965	<ul style="list-style-type: none">Miniskirts appeared
1968	<ul style="list-style-type: none">Bachelor of Pharmacy became first non-university degree in Australia	1967	<ul style="list-style-type: none"><i>Rolling Stone</i> magazine launched
		1969	<ul style="list-style-type: none">Man landed on the moon
1970s			
1970	<ul style="list-style-type: none">Master of Pharmacy degree approvedIntersearch program developed between VCP and University of Kansas to award PhDs	1971	<ul style="list-style-type: none">CAT scan introduced
		1972	<ul style="list-style-type: none">Watergate scandal uncovered
		1976	<ul style="list-style-type: none">Chairman Mao diedFirst man-made gene created
1971	<ul style="list-style-type: none">Manning building opened: support from the profession enabled its construction and fit out		
		1977	<ul style="list-style-type: none">Elvis Presley died
1972	<ul style="list-style-type: none">Higuchi sculpture unveiled		
		1978	<ul style="list-style-type: none">First IVF baby born
1979	<ul style="list-style-type: none">Geoffrey Vaughan appointed dean		
1980s			
1981	<ul style="list-style-type: none">Acrux sculpture unveiled	1981	<ul style="list-style-type: none">PCs introduced
1986	<ul style="list-style-type: none">Relenza research started by Mark von Itzstein and colleaguesVCP recognised as department of University of Melbourne for the delivery of PhD training	1983	<ul style="list-style-type: none">America's Cup won by Australia
		1984	<ul style="list-style-type: none">AIDS virus identified
		1987	<ul style="list-style-type: none"><i>The Simpsons</i> aired
1988	<ul style="list-style-type: none">Tom Watson appointed dean and directorAmalgamation discussions between VCP and University of Melbourne begin – discussions terminated in 1990	1989	<ul style="list-style-type: none">Tiananmen Square revolt
1990s			
1991	<ul style="list-style-type: none">Colin Chapman appointed dean and director	1990	<ul style="list-style-type: none">Nelson Mandela freed
1992	<ul style="list-style-type: none">Merger of VCP with Monash University formalised	1995	<ul style="list-style-type: none">Java programming language invented
1995	<ul style="list-style-type: none">Graduate Diploma in Clinical Pharmacy introduced (now masters)	1996	<ul style="list-style-type: none">Dolly the sheep cloned
1997	<ul style="list-style-type: none">Four-year Bachelor of Pharmacy commenced	1997	<ul style="list-style-type: none">Princess Diana died
1998	<ul style="list-style-type: none">Bachelor of Pharmacy/Commerce degree commencedAcrux Limited founded out of research from VCP	1999	<ul style="list-style-type: none">Y2K scare occurred
2000s			
2000	<ul style="list-style-type: none">Bachelor of Formulation Science and Graduate Certificate in Wound Care commenced	2000	<ul style="list-style-type: none">Concorde aircraft crash
		2001	<ul style="list-style-type: none">September 11 terrorist attacks shocked world
2001	<ul style="list-style-type: none">Victorian College of Pharmacy Foundation established	2003	<ul style="list-style-type: none">Arnold Schwarzenegger elected governor of California
2002	<ul style="list-style-type: none">Centre for Drug Candidate Optimisation established	2004	<ul style="list-style-type: none">Boxing Day tsunami devastated Asia
2003	<ul style="list-style-type: none">Introduction of the Bachelor of Medicinal ChemistryMathew Peck Travelling Scholarship established	2005	<ul style="list-style-type: none">The Prince of Wales and Camilla Parker Bowles marry
		2008	<ul style="list-style-type: none">Australian Prime Minister apologised to Stolen Generations
2004	<ul style="list-style-type: none">First intake of students into Monash's Pre-registration course	2009	<ul style="list-style-type: none">Barack Obama inaugurated as US President
2006	<ul style="list-style-type: none">Introduction of Bachelor of Pharmaceutical Science and Bachelor of Engineering/Pharmaceutical Science		<ul style="list-style-type: none">Black Saturday bushfires devastated Victoria
2007	<ul style="list-style-type: none">Bill Charman appointed deanConstruction of fourth building at 399 Royal Parade completed		
2008	<ul style="list-style-type: none">Monash Institute of Pharmaceutical Sciences (MIPS) establishedVCP became Faculty of Pharmacy and Pharmaceutical Sciences		
2010–11			
2010	<ul style="list-style-type: none">National Alliance of Pharmacy Education formed	2010	<ul style="list-style-type: none">Functional synthetic genome created
2011	<ul style="list-style-type: none">Monash research in pharmacology and pharmaceutical sciences, and nanotechnology, scores 5/5 (see page 3)	2011	<ul style="list-style-type: none">Wikipedia turned 10

New drug dose to reduce maternal deaths

MIPS researchers Dr Michelle McIntosh (BPharm 1995, BPharm(Hons) 1996, PhD 2000), Dr Richard Pranker and Dr David Morton are working with the aid of a Bill and Melinda Gates Foundation grant to develop more accessible treatments for postpartum haemorrhaging, a complication that occurs following childbirth.

Every year 150,000 women, mostly in developing countries, die due to postpartum haemorrhaging. This figure represents one quarter of all maternal deaths worldwide, yet the condition is largely preventable with the administration of correct medication. The problem stopping more widespread use of the correct drugs is that they are not well suited to transportation, storage and administration in resource-poor countries.

"The drug of choice for treatment of postpartum haemorrhage is oxytocin, which is given via injection," said Dr McIntosh. "This presents complications in developing countries where it is often not possible to provide sterile equipment, clean water or trained medical personnel during childbirth. Also, the current injectable formulation needs electricity for refrigerated conditions to prevent drug degradation."

The \$100,000 Grand Challenges Exploration Grant will be used by the team at MIPS to develop a novel aerosol delivery system for oxytocin that can be inhaled by patients immediately after childbirth from a simple disposable device. This will remove the need for sterile conditions and cold-chain storage.

"The additional benefit of an aerosol delivery system is the elimination of the risk of needle-stick injuries, transmission of blood-borne viruses and the costs associated with the disposal of sharps and biohazard waste materials," explained Dr McIntosh.

Scientific literature from the 1960s indicates oxytocin can be successfully delivered via the lining of the nose and mouth, but this delivery method was not initially examined for clinical application. Injectable oxytocin proved effective in managing postpartum haemorrhage in developed nations, removing the driving force for these technologies to be developed further.

"Oxytocin is an ideal candidate for delivery via the lungs. It is a highly potent drug, so only a small amount would be required to enter the systemic circulation. And its demonstrated absorptiveness in the nose and mouth suggests a passage through the huge absorptive surface of the lung is unlikely to present obstacles," added Dr McIntosh.

"Also, there has been significant progress in aerosol powder development in recent years, as well as in medical device manufacture. This makes it feasible to produce simple, efficient delivery systems that could be used for drug administration by people living in remote areas."

The well-established safety and efficacy of oxytocin will fast-track development of the proposed treatment and, as a result, improved medication may be available within a short period of time.

Molecular Pharmacology of GPCRs Conference

The sixth annual Molecular Pharmacology of G Protein-Coupled Receptors (GPCRs) Conference, hosted by MIPS in December, attracted leading researchers from around the world to present on recent developments in the field.

The work of the MIPS Drug Discovery Biology theme was recognised when Dr Sebastian Furness received best postdoctorate poster. Dr Furness is a biochemist whose work focuses on applying new techniques to understanding how GPCRs function. In particular, he has been investigating the biochemical basis of how a single receptor can do different jobs. Dr Furness has developed biochemical techniques (not previously applied to GPCRs) that have enabled him to show that these receptors take several distinct forms. Further analysis aims to assist in understanding these biochemical differences and associated differences in their pharmacology.

Third year Drug Discovery Biology PhD student Cassandra Koole also added to the MIPS prizes, with best student poster for her work on polymorphisms of the glucagon-like peptide-1 (GLP1) receptor. A promising target for the treatment of type II diabetes, the GLP1 receptor plays a role in the regulation of insulin in the human body. Cassandra investigated naturally occurring variations in this receptor's protein sequence in the hope of understanding the influence these variations have on receptor function. Her work has revealed several major differences in pharmacological profiles between different polymorphic variants, with both pathway and ligand specific effects observed. There is also potential for allosteric modulation to partially rescue one loss of function polymorphic GLP1 receptor variant. These results highlight the advantages, challenges and complexities of using allostereism therapeutically.

Dr Tony Velkov receives NHMRC excellence award

The National Health and Medical Research Council (NHMRC), Australia's peak body for health and medical research, recently presented excellence awards that recognised scientific merit, innovation and research success.

Dr Tony Velkov, one of 10 researchers who received an NHMRC Achievement Award for Career Development, completed his doctoral training at Monash and has recently returned to work at MIPS.

Dr Velkov's research interests span a number of areas. His training fellowship evaluated the ways in which orally absorbed drugs are taken up across the small intestine and, in particular, the role of intracellular binding proteins as potentially novel mechanisms of drug transport across the intestine. More recently, his interests have expanded to include the design and development of novel anti-infective lipopeptides in collaboration with Professor Roger Nation and Associate Professor Jian Li at MIPS. The NHMRC career development award was for Dr Velkov's influenza research, which he is undertaking in collaboration with CSL Pty Ltd.

Faculty awards outstanding researchers

Each year, the faculty offers research awards that recognise the excellence of staff in a number of endeavours.

Congratulations to the 2010 winners:

- **2010 Early Career Research Award: Dr Stephen Headey**
Dr Headey's research will be featured in issue 21 of *Alchemy*
- **Inaugural Excellence in Research Innovation and External Collaboration: Associate Professor Martin Scanlon.**

Read more about Associate Professor Scanlon's work below.

Shortening the odds in drug design

Finding the ideal molecule with just the right binding properties from countless contenders is a daunting challenge for drug design. Associate Professor Martin Scanlon and his team are using the new fragment-based drug design to improve the odds.

The practice of seeking and refining chemical compounds to improve the human condition has been around since Adam discovered the benefits of apple juice and snake oil. The same ideals now fuel a multi-billion dollar pharmaceutical industry, underpinned by a staggering array of biological and chemical research. It is surprising, then, that over the last few decades pharmaceutical companies have been struggling a little to find enough 'new' drugs to meet the ever-increasing complexity of human disease and, of course, their projected bottom line.

A number of major technological and scientific advances over the last couple of decades, such as combinatorial chemistry, high-throughput screening and the sequencing of the human genome, have injected fresh ideas and techniques into drug development research. One of the newest kids on the block – fragment-based drug design – is further improving the chances of finding novel lead compounds. This approach relies on identifying low-molecular weight compounds that bind to a target protein. 'Hits' can then be modified or linked to other compounds to increase potency.

One of those employing this relatively new approach is Associate Professor Scanlon, who leads a research group in structure-based drug design at MIPS. He and his group are using fragment-based drug design to search for novel antimicrobial compounds and a way to combat the increasing problem of bacterial resistance.

"Our primary interest is in finding small molecules that selectively bind to therapeutically interesting protein targets and characterising their

interactions," says Associate Professor Scanlon.

"We chose to implement the fragment-based drug design approach in this work as an alternative to high-throughput screens (HTS), which requires a very large number of molecules to look for the one that presents itself in exactly the right orientation to bind optimally to the target protein. Even then the chances of a hit are actually incredibly remote."

By 'optimally', Associate Professor Scanlon means those small molecules that are both potent at their target and good drug-like candidates for therapeutics in terms of their physicochemical properties, such as solubility, lipophilicity and polarity.

"Back of the envelope calculations of just how many molecules would fulfill the standard criteria of being drug-like produce numbers like 10^{60} . People argue about this wildly, but even if they are out by an order of magnitude or two, it is still a very, very big number. Since your typical HTS library might have 10^6 compounds in it, the chances of finding the molecule that optimally binds to your protein is therefore miniscule, virtually nothing.

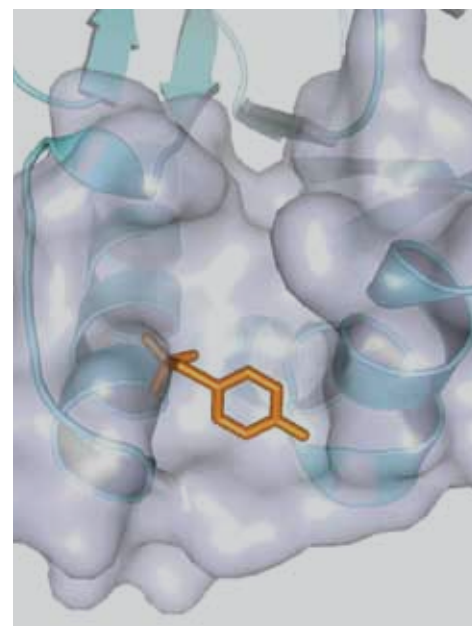
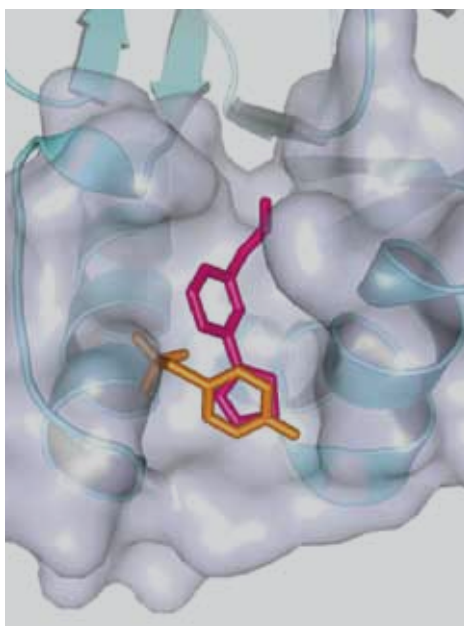
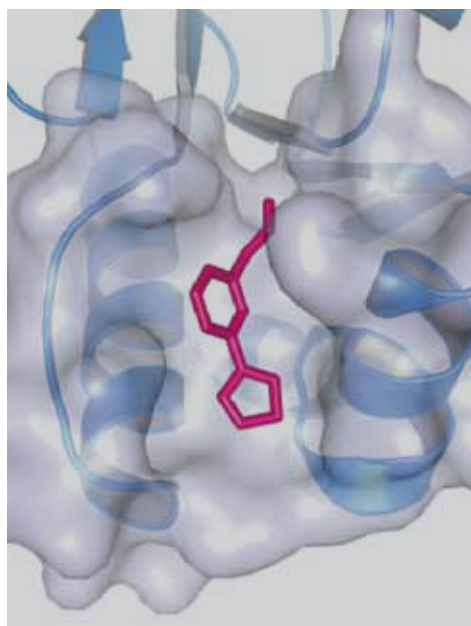
"This doesn't mean that nothing will bind in an HTS screen. Obviously, molecules do bind, but there will be many non-optimal hits. Those candidates then have to go through a modification process to meet the desired drug-like criteria.

"The problem with all of this, particularly in an academic environment, is that you need a very large library, lots of time and lots and lots of money, and all that with a very small chance of success. Not exactly a recipe for attracting grant funding!



Associate Professor Martin Scanlon.

"So we decided that rather than looking at drug-like molecules, we would look at fragments of such molecules that are much smaller than in a typical screening library, about the same size as each of the different epitopes that bind to your protein of interest. This means that the compound 'hits' almost always bind with only a low affinity or potency. However, because they are smaller and generally less complex than molecules you find on an HTS library for example, the chance of them binding optimally to the target protein is actually much higher.



"The positive hits in fragment-based screening can therefore generate some very efficient binding partners, and then you have to work at making them more potent. The big advantage is that it is much easier to make a molecule more complex and potent while maintaining the binding efficiency than the other way around," said Associate Professor Scanlon.

The end result with using smaller molecules is that far fewer compounds are needed in the initial screen to get a good coverage of the chemical space, and even with a library of around 1100-1200 molecules, you get much higher hit rates than people get typically in HTS.

Making resistance futile

Once the fragments that bind efficiently at a biophysical level are identified – by nuclear magnetic resonance (NMR) spectroscopy in Associate Professor Scanlon's case – the job to optimise potency and reach the desired biological activity for a drug-like molecule begins. According to Associate Professor Scanlon, the route taken to do this is what structure-based drug design is all about.

"We first rank the 'positive' fragments based on their binding efficiencies, and then enter the best ones into X-ray crystallography screens. The resultant structural data then drives a process of rational drug design to elaborate the different fragments and improve their potencies.

"The classical way to do this is by identifying two fragments that bind efficiently, and at two adjacent sites on the protein you're interested in. Those two fragments are then 'evolved' chemically to become a single, more potent molecule, such that each original 'fragment' can still bind optimally to its specific pocket. In this way, you effectively multiply the component affinities due to the relationship between energy of binding and the binding potency.

"Thus, two fragments with potencies of around 100 μ M and 1mM, respectively – which would not even be detected by HTS – become a new molecule with around 100nM binding affinity, and that is potentially the making of a lead series of therapeutic compounds."

A current theme within both Associate Professor Scanlon's group and MIPS is developing novel antimicrobial agents or novel strategies for the treatment of microbial infection to get around some of the problems of antimicrobial resistance.

"As one strategy to do this, we are screening potential targets in bacterial cells that regulate virulence. We know, for instance, that humans have all sorts of bacteria living on and in them without causing any problem, but also that, in response to some trigger, that bacterium can become virulent. Our idea is to turn these pathogenic bacteria back into commensals, so rather than trying to kill it or stop it growing, we just want to turn off the bacterial drive and/or ability to infect. We know that, to some extent, the development of resistance is inevitable, but by regulating virulence, we might slow down the rate at which resistance will develop. No such agents used in this way exist as yet."

The target used in Associate Professor Scanlon's fragment-based screening approach was carefully chosen to cause the biggest impact on virulence. Virulence mechanisms often act simultaneously, and shutting down only one or two at a time might not be sufficient to block infectivity. Many virulence factors are proteins that must get outside of a bacterial cell to work; they are either presented on the outer membrane or are secreted out of the bacteria via the cell's trafficking machinery.

Either route of exit requires correct protein folding which often relies on a specific oxidoreductase enzyme to make sure the secreted protein has all

its disulfide bonds present and correct. In other words, this enzyme is a key regulator of multiple bacterial mechanisms, and a perfect target. Gene deletion studies by various groups confirmed that bacteria lacking this enzyme still grow happily, but generally have no capacity for virulence.

Simply put, inhibiting this disulfide bond-forming oxidoreductase in bacteria inhibits oxidative protein folding, with the aim of simultaneously disrupting multiple different virulence pathways and hopefully enabling the bacterium to regenerate a commensal phenotype.

"So far our screens have identified quite a few compounds that bind, and we have some structural data for small molecules bound to our target enzyme," Associate Professor Scanlon said. "We have already improved the potency of some of these promising compounds and, with these, are reproducing some of the commensal phenotypes present in the knock-out strain."

This article first appeared in *Australian Life Scientist* Vol 8 Issue 1, www.lifescientist.com.au.

Partnership = new teaching facility



A five-year strategic partnership between MIPS and Shimadzu will provide Bachelor of Pharmaceutical Science students with a state-of-the-art analytical teaching facility (pictured).

The newly-renovated laboratory will add to the faculty's suite of innovative technologies and visionary learning spaces. Its design has been driven by pedagogy and the specific needs of pharmaceutical science students, with theory-only lectures replaced by practical learning and hands-on tutorials.

Dr Michelle McIntosh (BPharm 1995, BPharm(Hons) 1996, PhD 2000) and her team have been awarded a competitive Monash Linkage for Learning and Teaching grant for the project. This grant scheme is designed to support the development of alliances between Monash and relevant industries to enable curriculum redevelopment that responds to changing workforce needs.

Dr McIntosh and Dr Laurence Orlando are enthusiastic about the improved graduate skills that will result from this project.

"To be job ready, Bachelor of Pharmaceutical Science students must have the knowledge and practical skills that industry requires," explained Dr McIntosh. "Market analysis has shown us that pharmaceutical science graduates have to be competent in analytical chemistry, specifically that involving liquid chromatography.

"This facility will enable us to deliver a new semester-long unit dedicated to applied analytical methods, which will enhance the teaching of

quantitative analysis, method development and method validation using liquid chromatography."

Students will have more opportunities to develop their analytical and troubleshooting skills. By the time they graduate, they will be able to take responsibility for HPLC system maintenance, method development and validation from their first day on the job. Importantly, they will also be able to troubleshoot difficulties encountered in an analytical laboratory.

The laboratory's design was developed in conjunction with Kim Styles the faculty's Learning development coordinator, and will encourage small group problem-based learning and is suitable for classes of up to 20 students. A wet laboratory space featuring five HPLC/UPLC systems, four fume hoods, analytical balances and a MilliQ water purification system will be created around the outside of the room. The undergraduate HPLC teaching laboratory has also been supported by Eppendorf, who have donated benchtop centrifuges and pipettes. The centre of the laboratory will feature group workstations where students can view and discuss results from the instruments. This space will enable teaching staff to address the whole room and allow small groups to work together.

Another key feature of the room will be state-of-the-art interactive whiteboard and teaching

capabilities that enable students to undertake self-paced learning activities. Each student will have a keypad via which they can receive and answer questions, allowing them to work at their own pace. The responses they submit can be used by teaching staff to tailor discussion to the needs of that particular group.

"Shimadzu hopes that the facility will be a valuable resource for introducing undergraduate students to state-of-the-art liquid chromatography equipment, and for providing further education to postgraduates and industry participants who might otherwise be unable to update their training in new techniques," explained John Hewetson, Director and General Manager of Shimadzu Australasia.

"Partnerships such as this enable the faculty to invest in the best possible teaching facilities and opportunities," said Professor Bill Charman, Dean of the Faculty of Pharmacy and Pharmaceutical Sciences. "The faculty is grateful to Shimadzu for their investment in the next generation of pharmaceutical scientists."

Globally, Shimadzu has a long history and corporate philosophy of contributing to society through science and technology.

"These philosophies are also very important to Shimadzu locally and I can think of no better way of realising our goals than to take an active role in educating the scientists of the future," added John.

Welcome Professor Carl Kirkpatrick

The faculty welcomed Professor Carl Kirkpatrick in January as the new head of the Department of Pharmacy Practice and co-director of the Centre of Medicine Use and Safety (CMUS).



“I admire Monash’s commitment to ensuring education enhances the future of the pharmacy profession. I believe that the education we provide must advance the profession so our students become leaders and key contributors to the health sector.”

Professor Kirkpatrick comes to Monash from the University of Queensland, where he worked for the last nine years and was an Associate Professor in the School of Pharmacy. He completed a Bachelor of Pharmacy (Honours) and a PhD titled ‘Utilising the pharmacokinetic/pharmacodynamic relationships of aminoglycosides to optimise dosing’ at the University of Otago, New Zealand. Since graduating, he has worked in all aspects of community and hospital pharmacy.

Professor Kirkpatrick has been working closely with the faculty’s Postgraduate Studies and Professional Development Unit over the last 12 months on establishing the National Alliance for Pharmacy Education. He has a strong interest in education, particularly in ensuring that undergraduate and postgraduate education is clinically relevant and applicable to current and future practice.

“I admire Monash’s commitment to ensuring education enhances the future of the pharmacy profession. I believe that the education we provide must advance the profession so our students become leaders and key contributors to the health sector,” he said. “The programs offered by the faculty link undergraduate education with intern training and postgraduate qualifications, facilitating ongoing education and the advancement of pharmacy in Australia.”

In addition to his interest in education, Professor Kirkpatrick has a significant portfolio of research in optimising pharmacotherapy via pharmacokinetic/pharmacodynamic modelling techniques to improve patient outcomes. His interests include population pharmacokinetic and pharmacodynamic modelling, monitoring and bayesian optimisation of dosing of antibacterial agents (especially aminoglycosides), optimisation of dosing in renal dysfunction, pharmacokinetics and dosing in obesity, and drugs in breast milk.

Professor Kirkpatrick is also interested in the quality use of medicines and is a co-administrator on the Quality Use of Medicines Mapping project (QUMmap), which receives funding from the Department of Health and Ageing. QUMmap is a searchable database that provides a comprehensive map of QUM projects conducted in Australia. It contains information on existing resources, expertise and complementary work for

people in the area and assists policy makers to evaluate where QUM activity may be replicated or used to influence policy development. This project is conducted in partnership with the University of Queensland and University of South Australia.

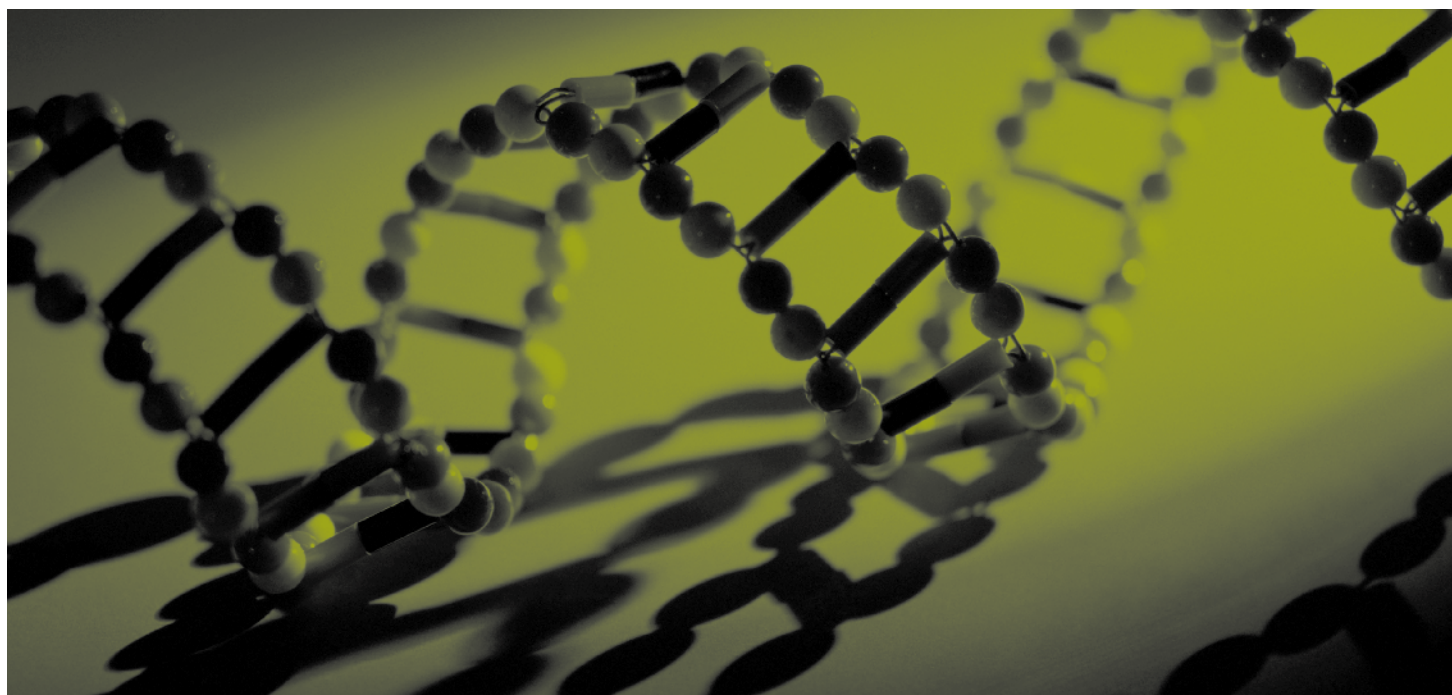
As co-director of CMUS, Professor Kirkpatrick hopes to grow existing collaborations and develop new ones.

“I’ve really enjoyed working with the different parties involved in QUMmap. This project is a good example of how academia and the profession can work together for the advancement of pharmacy practice,” he explained. “I look forward to collaborating with staff, practitioners from all areas of pharmacy and other health professionals to enhance the national and international impact of CMUS and contribute to optimising the safe and effective use of medicines.”

Professor Kirkpatrick is actively involved in a number of professional societies, including leading roles within the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists and the Population Approach Group Australia and New Zealand. He also sits on the Pharmaceutical Subcommittee of the Advisory Committee on Prescription Medicines, which makes recommendations on the pharmaceutical chemistry, quality control, bioavailability and pharmacokinetics of prescription medicines proposed for registration in Australia.

On Wednesday 10 August, see Professor Kirkpatrick present as part of the MIPS seminar program. For more details visit www.pharm.monash.edu.au/research/facultyseminarseries.

Drug discovery biology: new major for the Bachelor of Pharmaceutical Science



From 2012, students enrolling in the Bachelor of Pharmaceutical Science will be able to major in drug discovery biology, medicinal chemistry or formulation science.

The new drug discovery biology major is suited to students with a passion for biology and chemistry, and especially those wanting to work in the drug discovery field.

The curriculum will explore the biotechnology aspects of drug design and evaluation. Students will learn how to discover and evaluate new drugable targets and will study the biological effects of potential new drug therapies.

The faculty is in the unique position of being able to draw on the expertise of leading researchers and educators at MIPS who can impart insight and provide the innovation underpinning the design of the curriculum. Consultation with industry continues to ensure that the Bachelor of Pharmaceutical Science remains a job-ready science degree.

Graduates will have the skills to contribute to the development of new medicines and could be employed in the pharmaceutical industry, research institutes or government agencies.

For more information visit www.pharm.monash.edu.au/courses or to sign up for one of our fortnightly campus tours tel: +61 3 9903 9635.

Monash University Open Day

Saturday 6 August (Peninsula, Berwick, Gippsland)

Sunday 7 August (Clayton, Caulfield, Parkville)

A lot has changed at Monash University's Parkville campus in the last five years. Why not visit on Sunday 7 August and find out why Monash University is the first choice for pharmacy and pharmaceutical sciences?

Are you passionate about being a pharmacist?

Enclosed you will find a poster promoting pharmacy as a profession.

Experience has shown us that the next generation of pharmacists are most inspired when they hear from current practitioners. The poster is designed to encourage patients and their families to ask you about your role as a pharmacist. You can share your passion by hanging this poster in your workplace.

New spaces for world-leading education

This semester, students encountered the faculty's two new professional practice suites (pictured). These multi-purpose flexible spaces have been designed to support new ways of teaching, with each suite including a tutorial room for 30 students, a consulting suite with four consulting rooms and a social learning space for small informal group work. The professional practice suites will enable the introduction of objective structured clinical examinations, which is competency based assessment of students. You can read more about objective structured clinical examinations on page 17.

If you are interested in visiting our new spaces contact the Victorian College of Pharmacy Foundation, tel: +61 3 9903 9087.



MyDispense

On their own, new spaces do not improve learning. Best practice learning opportunities are created from a three-point foundation of pedagogy-driven curriculum development, thoughtful space design and appropriate teaching technology.

MyDispense, an educational dispensing program used in the professional practice suites, presents an example of progressive teaching technology that allows the three elements to synchronise and support world-class learning opportunities. MyDispense was designed by the faculty to support its learning objectives. It looks and works in a similar way to commercial dispensing programs, but also provides students with feedback on their dispensing performance.

"I describe MyDispense as 'dispensing with training wheels'," explains Associate Professor Jennifer Marriott (BPharm 1971), course director for the Bachelor of Pharmacy. "It offers students a safe opportunity to develop confidence and efficiency with the dispensing process and to practise communication, professional interactions and patient care activities."

When dispensing with MyDispense, a click of the computer mouse gives students access to read electronic references, view the dispensary computer screen, select a drug, access the drug safe, review labels, speak to the patient or call the patient's doctor. The program reinforces best practice dispensing sequences and, once a student has completed the dispensing process, MyDispense will provide them with feedback.

Towards the end of their degree the MyDispense 'training wheels' will be removed and students will graduate to dispensing with a range commercial dispensing software programs.

National Breast Cancer Foundation early career research fellowship

Dr Erica Sloan has been awarded a National Breast Cancer Foundation early career research fellowship valued at \$597,000 over four years.



The National Breast Cancer Foundation is the leading community-funded organisation in Australia raising money for research into the prevention, detection and treatment of breast cancer. Dr Sloan's research will focus on the importance of the neural components of the tumour microenvironment in regulating breast cancer progression.

"Recent studies have shown that chronic stress accelerates progression of breast cancer, but little is known about how this occurs," said Dr Sloan. "My studies aim to understand the information pipeline within our body that allows stress responses to impact on breast cancer metastasis."

Cutting edge optical imaging technology will be used to track the effect of stress neurotransmitters on tumour dynamics as they occur. Identifying the cellular and molecular mechanisms involved in these interactions enables existing and novel compounds to be tested for potential pharmacological intervention to prevent cancer metastasis. The results of these studies may also help to identify women during the early stages of breast cancer progression and

to help explain why breast cancer progresses more rapidly in some individuals.

Dr Sloan completed her doctoral research at the Peter MacCallum Cancer Centre in 2003. Her doctoral research identified new metastasis genes and characterised their role in breast cancer progression, ultimately seeking targets for anti-cancer therapies. Her work demonstrated that the breast tumour microenvironment provides clinical information that predicts patient outcomes. Following her PhD, Dr Sloan accepted a postdoctoral scholar position at the University of California in Los Angeles (UCLA).

"During my PhD I became interested in the capacity of psychosocial factors such as chronic stress to regulate progression of diseases such as breast cancer," said Dr Sloan. "To undertake additional training in the field of neuroimmunology, I accepted a postdoctoral fellowship at the UCLA Norman Cousins Center."

At UCLA, Dr Sloan challenged established thinking in the field of neuroscience by providing the first demonstration that chronic stress restructures peripheral neural networks that

were previously thought to be hardwired in fully developed adult primates. This work provided an anatomical basis for the effects of chronic stress on the pathobiology of diseases such as cancer, and was recognised by the US Academy of Behavioural Medicine Research with their New Investigator Award in 2008.

The fellowship will allow Dr Sloan to bring together important elements of both her doctoral training in molecular and cellular breast cancer biology and her postdoctoral training in neuroimmunology. Outcomes from this work include potential novel targets for new anti-cancer therapies that block neural stress responses.

"It is extremely gratifying to see such a talented early career researcher at MIPS," said Professor Chris Porter, Associate Dean of Research. "Dr Sloan's work is highly significant in its own right, and also adds a new level of complexity to the other programs at MIPS and across the broader University in oncology. This is a great result and the faculty congratulates Dr Sloan on her fantastic achievement."

Colin Chapman appointed Emeritus Professor

Colin Chapman (BPharm 1970), past dean of the Faculty of Pharmacy and Pharmaceutical Sciences, has been appointed an Emeritus Professor of Monash University in recognition of his dedicated service to the faculty and the University.

After graduating with a Bachelor of Pharmacy from what was then the Victorian College of Pharmacy in 1970, Emeritus Professor Chapman undertook pre-registration training in Geelong before serving in the Australian Regular Army. After completing further studies, including a Bachelor of Veterinary Science and a PhD, he joined the college as head of the Department of Pharmaceutics in 1987 and was appointed dean in 1991.

Emeritus Professor Chapman's contribution to the faculty has been substantial. He led the college through the period of amalgamation with Monash University, managed the extension of the Bachelor of Pharmacy from three to four years, introduced new undergraduate and postgraduate

coursework degrees and oversaw significant expansion of research activities. He was also responsible for developing and implementing a range of initiatives to attract and retain health professionals in rural communities.

Emeritus Professor Chapman contributed his time to many professional organisations and was chairman of the Therapeutic Goods Committee and chairman of the Committee of the Heads of Pharmacy Schools in Australia and New Zealand. In 1998 he was awarded an Honorary Fellowship of the Pharmaceutical Society of Australia.

Today Emeritus Professor Chapman continues his work in pharmacy education by consulting internationally on curriculum development and quality assurance, and undertaking research to promote the importance of pharmacy in primary healthcare.



NHMRC Senior Research Fellow



Associate Professor Jian Li has been awarded a prestigious Australian NHMRC Senior Research Fellowship valued at \$570,000 over five years.

The fellowship will be used by Associate Professor Li to work on addressing a critical global medical challenge – antibiotic resistance. According to the World Health Organization, antibiotic resistance is one of the three greatest threats to human health.

Associate Professor Li's research is focused on polymyxins, the last-line therapy against Gram-negative 'superbugs'. Polymyxins are a class of antibiotics with a general structure consisting of a cyclic peptide with a hydrophobic tail. He will work towards understanding polymyxin pharmacology, explicitly pharmacokinetics, pharmacodynamics and mechanisms of antibacterial activity, resistance and nephrotoxicity. Associate Professor Li has an internationally recognised track record in this area. The ultimate aim is the discovery and development of much-needed novel antibiotics for treating infections caused by Gram-negative 'superbugs' that are resistant to all current antibiotics.

"The NHMRC Research Fellowships Scheme aims to support Australia's very best medical and health research talent, usually in the top 10 per cent of

their field," explained the faculty's Associate Dean of Research, Professor Chris Porter.

"The awarding of this highly competitive and sought-after award is recognition of Jian's research independence and internationally-leading track record. I'm also delighted to take this opportunity to congratulate Jian on his recent promotion to Associate Professor. His promotion reflects in part his success in this fellowship scheme, but is also recognition of his broader accomplishments in research."

In 2002, Associate Professor Li started his postdoctoral training with the faculty and now works in the Drug Delivery, Disposition and Dynamics theme of MIPS. He is the first fellow to have 'grown up' in the faculty, securing an NHMRC R. Douglas Wright Fellowship in 2006. In addition to the NHMRC Senior Research Fellowship, he was also offered an Australian Research Council Future Fellowship in 2010.

Associate Professor Li has 72 publications in peer-reviewed journals, with 1255 citations since 2001, and 60 scientific presentations. He is an Associate Editor of *BMC Microbiology*. With his collaborators, Dr Li has attracted a large amount of research funding over the last seven

years, including \$4.2million from the Australian Government and international biotechnology companies, and US\$5.7million from the US National Institutes of Health.

"I'm thrilled to receive this prestigious fellowship," said Associate Professor Li. "I would like to thank MIPS for its continuing support, my mentors within and outside Monash (in particular Professor Roger Nation), my collaborators and especially my hard-working team."

Find out more about Associate Professor Li's research when he speaks on 2 November as part of the MIPS seminar program – visit www.pharm.monash.edu.au/research/facultyseminarseries.

Thea Pärnamäe Rural Pharmacy Bursary

Program management consultant and academic Dr Kersti Nogeste has generously established a new bursary in honour of her late aunt, Thea Pärnamäe, a respected pharmacist and believer in the role of pharmacy and education in improving lives.

Dr Nogeste was inspired to establish the bursary in Thea's memory because of their shared belief in the value of tertiary education and the sense of sharing and giving back, fostered by decades of regular communication that transcended age and geographical boundaries.

"Although Thea lived in Sweden, I shared a close bond with her and fondly remember her commitment to her profession," said Dr Nogeste. "Thea was keenly interested in the pursuit of education, since her own studies had been interrupted by World War II. Also, as she had grown up in a rural area during a tumultuous time, she had experienced first-hand the particular difficulties rural students face in furthering their education."

Thea was born in rural Estonia in January 1927 and fled to Sweden in 1944 as a refugee from World War II, together with her parents and two sisters. On completion of her secondary school studies in Sweden, she worked for the Swedish post office and then elected to enrol in the Farmaceutiska Institutet Pharmacy College in Stockholm. Thea chose to study pharmacy because she considered a career as a pharmacist to be one that was promising in terms of personal and societal benefits. A dedicated pharmacist, she saw her role as not only dispensing drugs but also ensuring the health and wellbeing of her clients.

Although not a pharmacy graduate herself, Dr Nogeste's recollection of what was then the Victorian College of Pharmacy led her to contact the Victorian College of Pharmacy Foundation to discuss making a donation in memory of her aunt.

"Establishing a pharmacy bursary honouring Thea's memory seemed to be the best way of acknowledging her commitment to the profession and the great personal influence she has had on me," explained Dr Nogeste. "She taught me the value of generosity of spirit and the importance of keeping in touch. From the time that I was a very young child, she sent me personally addressed mail and we maintained a regular correspondence for decades, until within weeks of her death late last year.

"The legacy of our relationship has influenced many of my other relationships. I wanted to acknowledge this by helping others achieve the professional and personal success and satisfaction Thea achieved in her life as a pharmacist."

The Thea Pärnamäe Rural Pharmacy Bursary supports female pharmacy students from rural and remote areas in Victoria and throughout Australia.

For more information on establishing a bursary contact Anne Gribbin, tel: +61 3 9903 9507 or email anne.gribbin@monash.edu.



Thea Pärnamäe.

Your generosity can help shape the future of pharmacy

The Victorian College of Pharmacy has been proudly educating Victorian pharmacists since 1881. Today, as the Faculty of Pharmacy and Pharmaceutical Sciences at Monash University, it continues to maintain its position as one of the country's pre-eminent pharmacy education and research institutions. Throughout the faculty's evolution, a proud tradition of philanthropy and giving has been the cornerstone of its success.

When you have done your best to provide for those close to you, a gift in your Will to the Victorian College of Pharmacy Foundation will enable you to join other committed individuals who are determined to make a difference to the future of pharmacy.

Your support will assist the faculty to invest in innovative teaching tools and spaces, expand scholarships, undertake ground-breaking pharmaceutical science research, and attract and retain world-class teaching and research staff.

For more information on leaving a bequest contact Anne Gribbin, tel: +61 3 9903 9507, email anne.gribbin@monash.edu or visit www.pharm.monash.edu.au/alumnifoundation.



2010 Tonkin Scholars announced

Clare Walsh (BPharm(Hons) 2009) and Kay Dunkley (BPharm 1983) were recently announced as the 2010 winners of the Cyril Tonkin Scholarship and Fellowship respectively.

Clare is undertaking a PhD under the supervision of Associate Professor Jennifer Marriott (BPharm 1971) on the development, implementation and evaluation of objective structured clinical examinations (OSCEs) to assess professional competence in pharmacy students.

Assessment of competence to practise is important for Bachelor of Pharmacy courses and registering authorities. Competence to practise encompasses the knowledge, skills and attitudes of a practising professional and can be difficult to measure using traditional methods of assessment such as written examinations. OSCE includes all functional areas of competence and is recognised worldwide as a valid and reliable method of assessing required skills, knowledge and attitudes.

"Use of OSCEs encourages learning and improves engagement with course material, contributing to the better preparation of graduates," Clare said. "I have a particular interest in pharmacy education and hope that my PhD will be the first step towards an academic career."

Winner of the Cyril Tonkin Travelling Fellowship, Kay Dunkley, is undertaking research that aims to improve and expand a support service for pharmacists. Kay is currently Program Coordinator of the Pharmacists Support Service (PSS), an independent body that provides support and assistance to Victorian, Tasmanian and South Australian pharmacists. As part of her fellowship, Kay travelled to the UK where she participated in a training weekend hosted by the UK Pharmacist Support group.

"The PSS needs to develop and expand to accommodate increasing requests for help," she said. "As the service grows, it will be required to recruit and train volunteers as well as review its services. My visit allowed me to observe how similar organisations operate in other countries."

Many PSS services are provided by trained volunteer pharmacists and other healthcare professionals. In the true spirit of a Tonkin Scholar, Kay is inspired by the commitment of the volunteer pharmacists she works with and wants to make her own contribution to the profession.

The Cyril Tonkin Scholarship is typically awarded every three years to a pharmacy graduate from Monash University undertaking a higher degree by research. The Cyril Tonkin Fellowship is offered on an occasional basis and is open to all Monash pharmacy graduates wishing to conduct research or acquire knowledge and expertise in emerging and/or prioritised areas of pharmacy practice.

For more information on the scholarship visit www.pharm.monash.edu.au/alumnifoundation/cyril-tonkin-fund.

Improving paediatric medication safety

Completing medication reconciliation on hospital discharge has the potential to reduce errors and improve medication safety, according to a project recently completed by Master of Clinical Pharmacy student Adela Vidicki-Mastilovich.

Adela has always been interested in paediatric pharmacy. She graduated from the University of Auckland and worked at the Auckland City Hospital and Starship Children's Hospital in New Zealand. On moving to Australia, she took up a position as a clinical pharmacist at the Royal Children's Hospital.

"I really enjoy my job because of its constant challenges, and I learn something new every day," she said. "Because medications and their dosage forms are generally made with the adult population in mind, we sometimes need to be a bit creative. Working closely with patients and their families to overcome challenges encountered with medications is very rewarding because they're so grateful for our input and advice."

As part of her masters studies with the faculty, Adela undertook a research project titled 'Completing the loop of medication reconciliation in a paediatric hospital by implementing medication reconciliation on discharge'. Her supervisors were the faculty's Associate Professor Kay Stewart and Brian Lilley, Director of Pharmacy at the Royal Children's Hospital.

The aim of the project was to set up standardised processes and forms to ensure that information on a patient's medications was as complete and accurate as possible on discharge, making a shift from reactive to proactive pharmacist involvement at this time. A previous masters project at the hospital had covered reconciliation on admission, so there was strong workplace support for a project that would help to 'close the loop'.

Adela explained that the processes she devised require the pharmacist to be involved before prescriptions are written. The pharmacist reviews the medications that the patient was admitted with, the medications prescribed during the admission and any changes that occurred. Then a simple discharge medication reconciliation form is completed. The form lists the medications that the patient is taking at the point of discharge with their dose and frequency as well as the Pharmaceutical Benefits Scheme quantities and authority requirements for each medicine. The form also allows the pharmacist to indicate which medicines require prescriptions on discharge.

"We talk to families about regular medications that are still required. For example, a doctor may prescribe a medication but the family may already have ample supplies of that medication at home, making a prescription unnecessary," she said. "This reduces the medication costs for families and saves doctors' and pharmacists' time.



It's also important to try to avoid oversupply of medication in a house with young children."

The project found that increased proactive pharmacist involvement in the discharge process was successful in significantly reducing the frequency of medication discrepancies and reducing their potential clinical significance.

"Discharge medication reconciliation has a positive impact and a place in the paediatric setting," said Adela. "In the future, I'd like to extend this process to all clinical areas of the hospital and to share our findings through publication of the results. This will help to fill the literature gap that exists in medication reconciliation in the paediatric setting."

While Adela had to sacrifice a lot to complete a masters while working full time, her hard work paid off. She won the faculty's Master of Clinical Pharmacy prize, which is awarded to the student who received the highest average mark across the duration of their course.

"Postgraduate study was really worthwhile," she said. "I'm definitely a better pharmacist now. I've

learned to manage my time better, improved my problem solving skills and gained a more structured approach to clinical questions.

"I'd encourage other pharmacists to take on further study and research and to share their findings. There's so much more we can do to improve medication safety."

Master of Clinical Pharmacy

This two-year postgraduate degree provides pharmacists working in clinical settings with the opportunity to develop their skills in evidence based practice, quality use of medicine, practice based research and provision of high level clinical pharmacy services. The course is offered via off-campus learning and its next intake will be February 2012.

For more information visit www.pharm.monash.edu.au/courses/.

Meet the 2010 Gold Medallists

Michael Lee, Bachelor of Pharmaceutical Science

What does 2011 hold for you?

I'm doing an honours degree, looking at multimodal nanoparticles for cancer imaging under the supervision of Dr Bim Graham.

Why pharmaceutical science?

It provides a nice mix of chemistry and biology related subjects that complement each other. The large number of pracs helps develop lab skills and consolidate lecture content. I studied the medicinal chemistry major because I enjoyed the organic chemistry side of things in first year. Also, NMR is very cool.

What's so special about our faculty?

Almost all our lecturers, tutors and demonstrators are actual researchers, and there's a great opportunity for collaborative work between different groups like medicinal chemistry, pharmacy, formulation science and more.

What's one big issue you think is facing drug discovery?

The focus big business has on repeating existing drugs like blood pressure medications, rather than genuinely innovative and needed drugs such as new antiviral/bacterials.

Catherine Downey, Bachelor of Pharmacy

Where are you doing your internship?

I'm working at Peter MacCallum Cancer Centre. It's a terrific hospital and a great place to continue my pharmacy education. I've already worked with pharmacists on the wards, in outpatients dispensing and in the drug information department. As interns we also rotate through nuclear medicine, working with one of Australia's only radio-pharmacists, which is very different to anything I've done before.

What was your favourite area of study?

Clinical pharmacy, because it makes you start to think like a pharmacist, considering the patient as a whole rather than focusing on individual medications or disease states.

What's so special about our faculty?

Its huge focus on the future of pharmacy and pharmaceutical science. Being a relatively small campus, you really feel like part of the family. And it's a place where you can unashamedly be a nerd!

What's one big issue you think is facing pharmacy?

The amount of (not always accurate or complete) information on the internet these days. People increasingly turn there for diagnosis and potential treatment instead of consulting healthcare professionals.

Exhibitions and awards for academic merit 2010

The faculty would like to thank all sponsors who supported the 2010 academic prizes.

	Recipient	Donated by	Prize
Bachelor of Pharmacy			
First year exhibition	Li San Yeoh	Pharmaceutical Defence Ltd	\$500
Second year exhibition	Yen Nie Yeoh	Pharmacy Guild of Australia	\$500
Third year exhibition	Yi Jun Pan	Society of Hospital Pharmacists of Australia (Victorian branch)	\$500
Fourth year exhibition	Catherine Downey	Guild Group	\$500
Neil Naismith award	Catherine Downey	Therapeutic Guidelines	Subscription
Bachelor of Pharmaceutical Science			
First year exhibition	Jackson Phillips	CSL	\$500
Second year exhibition	Yi Lee Loke	Australian Society of Cosmetic Chemists	\$500
Third year exhibition	Rohan Volpe	Monash Institute of Pharmaceutical Sciences	\$500
Gold Medallists			
Bachelor of Pharmacy	Catherine Downey	Pharmaceutical Society of Australia (Victorian branch)	\$500
Bachelor of Pharmaceutical Science	Michael Lee	GlaxoSmithKline	\$500
Postgraduate awards			
Monash Pharmacy Internship prize	Amanda May-Ling Tan	Pharmaceutical Defence Ltd	\$500
Master of Clinical Pharmacy prize	Adela Vidicki-Mastilovich	Society of Hospital Pharmacists of Australia (Victorian branch)	\$500
Master of Pharmacy Practice prize	Sarah Wang	Pharmacy Guild of Australia	\$500
Master of Wound Care prize	Scott Jen	Postgraduate Studies and Professional Development Unit	\$500
Faculty Honours prize	Gemma Ryan	Victorian College of Pharmacy Foundation	\$500
Monash Jubilee Scholarship	Rohan Volpe Luke Schembri	Monash University Monash University	Scholarship Scholarship
Monash Vice-Chancellor's Honours-PhD Scholarship	Michael Lee	Monash University	Scholarship
Dean's Commendation for Doctoral Thesis Excellence	Daoud Al Badriyeh	Faculty of Pharmacy and Pharmaceutical Sciences	Certificate
Mollie Holman Doctoral Medal	Robyn Brown	Monash University	Medal
Cyril Tonkin Scholarship	Clare Walsh	Amy Lloyd	Scholarship

Where are they now?

**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.**

50s

Dr Antony Lamb OAM (PhC 1959) became partner in a pharmacy after graduation and studied for a BA in politics and economics. He entered Federal Parliament in 1972 and completed two terms as Member for La Trobe. In 1975 he returned to pharmacy and completed a diploma of education before becoming a tutor at Swinburne CAE, lecturer at Swinburne TAFE and Secretary of the Tertiary Teachers Union. Returning to politics, he served a further two terms from 1984 to 1990 as a Member for Streecon. Antony then entered a pharmacy partnership in Canberra, working for six years with the Pharmacy Guild as Director of the Australian Institute of Pharmacy Management. Recently he completed a PhD in politics and plans to write biographies while continuing locum pharmacy.

60s

After graduating, Godfrey John Maxwell (PhC 1967, BPharm 1969) undertook locum work then joined his father as partner at GI & GJ Maxwell pharmacy in Collingwood where he remained until 1988. He joined the Regular Army Medical Corp and was appointed Captain in February 1990. He received a commission from the Governor-General in October 1991 then joined the Aboriginal Health Service as a pharmacist where he remained for three years. In 2007 he received accreditation from the Australian Association of Consultant Pharmacists. John continues to undertake locum work and conduct Home Medicines Reviews. He is a long-standing member of the Rotary Club of Camberwell.

70s

Mark Roberts (BPharm 1972) bought a pharmacy in Braybrook in 1978, which he ran for 17 years. For five years during that period he also owned a pharmacy in Essendon. A trip to Vietnam in 1992 lead him back to study – initially a BA in Asian Studies, then an honours year and finally a PhD, studying Australia's relationship with Vietnam during the Hawke-Keating years. He also filled a variety of roles in the Politics Department of La Trobe University during and following the PhD. After retiring in 2007, Mark lived in Vietnam doing voluntary work for Lifestart Foundation, a small Essendon-based charity. On returning home, he was approached by a travel agent friend and now leads tours to Vietnam.

80s

Lavinia Verduci (BPharm 1988, GradDipClinPharm 1999, MClinPharm 2007) completed her traineeship at St Vincent's Hospital where she still works today. She gained experience as a clinical pharmacist, most prominently in intensive care and cardiology, and was made a clinical educator in 2001. In 2004 she developed a medication review service for recently discharged patients and in 2005 initiated the pharmacist role in the heart failure outpatient clinic. In 2006 she became Chair of Outreach Medication Management, a special interest group under the auspices of the Society of Hospital Pharmacists of Australia. In her current position she is responsible for the provision of public education. Lavinia is Chair of the Abbeyfield North-West Melbourne House Committee and has completed a Certificate in Health Economics.

90s

Jenny Lopes-Han (BPharm 1996) completed her internship at the Monash Medical Centre and worked there for seven years. During that time, she took unpaid leave and travelled extensively throughout Australia while working in various hospital pharmacy departments. She lived in Launceston, the Sunshine Coast and Brisbane before travelling to the UK. There she worked as a pharmacist for six months before returning to Melbourne and joining Pharmore Pharmacy in Cranbourne, where she has worked for the past six years. She continues to enjoy travelling and hopes to focus a bit more on her other passion, golf.

00s

Justin Shi (BPharm 2003) worked part time throughout his degree for a pharmacy group in Melbourne's northern suburbs, doing deliveries, cleaning, customer service and stock control. This gave him valuable experience and an excellent insight into pharmacy work. It also reinforced his decision to build a career in community pharmacy, as he enjoyed developing a rapport and ongoing relationship with customers. In 2006 Justin bought into the partnership he works for, which currently has three pharmacies. He sees his future as firmly entrenched in community pharmacy and looks forward to being part of the group's expansion over the coming years.

Using a cognitive approach to pharmacy

Changing the face of pharmacy in the rural north of Melbourne was not easy, but Simon Yu (BPharm 1972) found a way. A quiet achiever, Simon launched the careers of many pharmaceutical high flyers who have gone on to practise worldwide – he has taken in over 30 interns during his career.

“One way of giving back to my profession is to help the next generation of pharmacists,” he said over the phone from his pharmacy in Kilmore.

For customers in Kilmore, Wallan, and the surrounding areas, Simon does not just supply medicine. He consults his patients, vets their medication regimes and compounds medications, all activities he was undertaking before Home Medicines Reviews became mainstream.

The medical profession in his region seems to be catching up with his methods, but Simon initially came up against considerable resistance from his clients and local doctors. He says he never wanted to challenge doctors, and went to great lengths to reassure them that, instead, he wanted to help.

“GPs are like you and I,” he said. “Nobody wants their work criticised.”

Simon was born in Hong Kong and came to Australia on his own in 1966 to go to university, but he had to finish high school first. He graduated from the Victorian College of Pharmacy in 1971, where he studied after completing matriculation at Camberwell High School. He remains a generous supporter of the faculty and continues to train interns, though with extra work generated by Home Medicines Reviews he does less of that now.

Simon said he went into pharmacy because, when he applied for a mechanical engineering course, he was told there was no demand for that profession. But there was a gap for pharmacists and in 1972 he was registered as a pharmacist and worked in suburban stores. In the mid-1980s he came to the conclusion that he had to move away from a ‘speed mode’ and develop a cognitive approach to patient counselling.

“I realised that we needed to be aware of what the patient’s circumstances were before we could offer them options,” he explained. “We needed to be very circumspect with our enquiries.”

In the beginning, the most common question patients asked was ‘how long do I have to wait for this?’ Simon added that it took about 18 months to get people used to his new system, and being in a rural setting, it helped him keep hold of their business.

“Initially it was considered interference, and from the consumer point of view it was slowing down the process,” he said. “It took a while for the mindset to change.”

Simon has trained pharmacists to go into hospitals both in Australia and overseas. Yuen Ming Tan, who is a senior pharmacist at the National University Hospital in Singapore, was employed by him in 1998 and 1999.

Working full time at the pharmacy in Kilmore she, like all his interns, spent three hours a week after closing in tutorials with Simon. She says her time in Kilmore left her with fond memories.

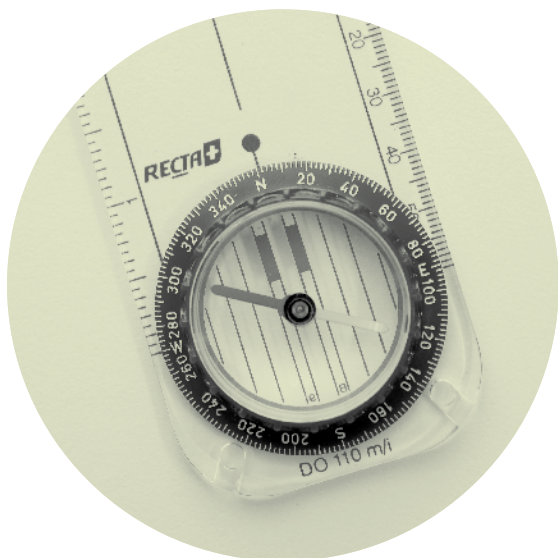
“Simon taught me how to look at a patient holistically,” she said. “And he always felt a sense of fulfilment when his patients returned with gratitude when they were well.”

“He provided me with varied experiences during my internship year. Other than reviewing and dispensing medications, I made extemporaneous preparations like creams and organised medications for nursing home patients. I also learned the intricacies of procuring medicines and managing inventory, as well as the importance of good customer service.”

Today Simon still trains interns when he can but he generally leaves it to his staff, most of whom are his former interns. And he can often be found checking up on medicines for his community clients.



In brief



Mentor a student leader

Mentoring a student is a great way of giving back to the profession. Pharmacist Michael Gray (BPharm 1994) found it also gave him an opportunity to get to know one of the faculty's best students, Alice Yuen, before employing her as an intern at his business.

Each year a select group of students are chosen to be student ambassadors for the faculty. As part of the program the ambassadors are matched with industry mentors.

"The best thing about the industry mentor program is meeting with someone who shares my strong interest in pharmacy and can answer the questions I'd always wanted to ask," said Alice.

"Michael and I met on a regular basis. On one of our first meetings he took me to see a number of the stores within the Prime group (in which he is a partner) as well as their head office, giving me an overview of community pharmacy from a business perspective," she added.

"Having Michael as my mentor gave me a chance to meet and network with a large variety of people and expanded my knowledge well beyond the scope of the classroom."

To become a mentor contact Jessica Rostas, tel: +61 3 9903 9504 or email jessica.rostas@monash.edu.



Marie Curie Fellowship recipient visits MIPS

Christel Bergström, Associate Professor in Pharmaceutics in the Department of Pharmacy at Uppsala University, Sweden, will spend 18 months at MIPS as part of a Marie Curie Fellowship. The fellowship is for the study of computational approaches that may be used to predict formulation strategies for poorly water-soluble compounds. Working with Professors Bill Charman, Chris Porter and Colin Pouton, Associate Professor Bergström will study computational tools to assess and foresee the outcome of lipid-based formulations on the ability to develop poorly water-soluble drugs.

"I'm really excited about joining the MIPS team and learning more about lipid-based drug delivery systems from the best scientists in this field worldwide," she said.

"I hope that our research will result in improved formulation strategies for troublesome compounds, so that we can better understand the underlying molecular mechanisms and improve the in vivo behaviour of delivery systems."



Students raise funds for public health education

Students recently called on their trivia skills and purchased striking t-shirts to raise \$430, which will go towards enhancing public health education in Tonga and Tuvalu. The trivia night and 'research on a t-shirt' competition were joint initiatives of the Monash Parkville Postgraduate Association and Remedy, a student club that aims to share resources with underdeveloped countries and increase awareness of health and pharmacy practice issues in underprivileged areas.

Funds will help to purchase basic equipment (including tablet counters) for health education in Tonga and Tuvalu, countries that lack resources for public health education in hypertension and diabetes.



'Think outside the cube' illustration by Josephine Chong.

Lecturer of the year

In late 2010, the Monash Parkville Student Association surveyed faculty students to find the lecturer of the year. Congratulations to lecturers nominated by students at each year level:

- first year: Dr Betty Exintaris
- second year: Dr Sab Ventura
- third year: Phillip Bergen (BPharm(Hons) 2002).

Congratulations to Dr Daniel Malone (BPharm 1994, BPharm(Hons) 1996, PhD 2001), who was awarded overall lecturer of the year for the second year running.



Mobile learning for Gen Y

Generation Y is a technologically savvy group that plugs into devices 24 hours a day, seven days a week. As students, they like to choose when and where they learn.

To facilitate this and improve student learning, Dr Ian Larson has written a smart phone learning application or 'app'. Developed for the Android mobile operating system, MonPharm Rheology is a quiz-based formative assessment application that students will be able to download free from their Monash University Studies Online website or from the Android Market. Also on Dr Larson's drawing board is a peer-assisted learning application that allows students to write questions and answers for other students.

FDA approves Acrux's Axiron

Faculty spin-off biotech company Acrux had an extremely successful year in 2010. The company signed the largest product licensing deal in the history of Australian biotechnology when it licensed a potential treatment for hypogonadism, Axiron, to US company Eli Lilly. This was followed by US Food and Drug Administration (FDA) approval for a new drug application for Axiron, making it the first testosterone replacement product approved for administration via the armpit.

Acrux was established in 1998 after its innovative spray-on drug delivery technology was discovered by faculty researchers Emeritus Professor Barry Reed (PhC 1963, BPharm 1969), Professor Barrie Finnin (PhC 1967, BPharm 1969) and Dr Tim Morgan (BPharm 1992, BPharm(Hons) 1995, PhD 1999).

Acrux also scooped the 2010 Governor of Victoria Export Awards, taking out the prestigious Victorian Export Award for Innovation Excellence and the Large Services Export Award.



Ancora Imparo

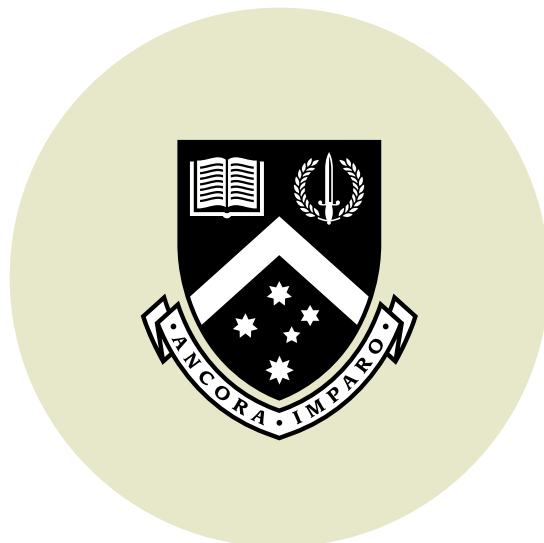
In 2010, second year pharmacy student Seang Khov was one of only 40 students from across the University chosen, from a field of 360 applicants, to participate in the Vice-Chancellor's Ancora Imparo Student Leadership Program.

The Ancora Imparo program encourages idealistic and passionate students to take their leadership skills to the next level. Participants are exposed to theoretical and case study components, discussions and seminars from some of the nation's most inspiring leaders, as well as the study of past and present models and contexts of leadership.

"The whole series of events was very inspiring. I learned so much about leadership and gained an incredible amount of knowledge," said Seang.

"The most important thing was learning that there's a whole world of opportunities out there and it's up to us to reach out and take advantage of them."

In 2011, faculty students Nadia Widuch and Tamir Dingjan are taking part in the program.



Dr Barrie Kellam

Dr Barrie Kellam, Associate Professor in Pharmaceutical Medicinal Chemistry and Chair of the Teaching and Learning Committee at the University of Nottingham's School of Pharmacy, UK, recently joined the faculty for a six-month sabbatical, working on aspects of GPCR medicinal chemistry and pharmacology/imaging. His research career is focused on the synthesis of novel molecular entities and their application to a wide arena of biological and pharmacological problems.

A pharmacist, Dr Kellam gained his PhD from the University of Nottingham and later held a postdoctoral position at the School of Pharmacy, London. He is co-founder and Director of Medicinal Chemistry at CellAura Technologies Ltd, which offers innovative fluorescent screening products for life science research and drug discovery.

The faculty and the School of Pharmacy Nottingham are actively engaged in a series of collaborative relationships.



Upcoming events

MIPS seminar program

All seminars will be held from 11am to 12pm at the Faculty of Pharmacy and Pharmaceutical Sciences, 381 Royal Parade, Parkville. The seminars are free and all are welcome. To RSVP contact Carolyn Fox, email carolyn.fox@monash.edu or tel: +61 3 9903 9622. For more information visit www.pharm.monash.edu.au/research/facultyseminarseries.

Wednesday 27 July

Professor Rod Minchin
School of Biomedical Science,
University of Queensland

Arylamine N-acetyltransferase 1 – role in cancer cell growth and invasion

Wednesday 10 August

Professor Carl Kirkpatrick
MIPS: Drug Delivery, Disposition and Dynamics

Wednesday 24 August

Professor David Jans
Faculty of Medicine, Nursing and Health Sciences,
Monash University
Nucleocytoplasmic trafficking of proteins from RNA viruses; target for anti-virals?

Wednesday 7 September

Dr Jamie Simpson
MIPS: Medicinal Chemistry and Drug Action

Wednesday 21 September

Dr Ian Larson
MIPS: Drug Delivery, Disposition and Dynamics
Why some powders flow and others don't

Wednesday 19 October

Dr Michelle McIntosh (BPharm1995,
BPharm(Hons)1996, PhD 2000)
MIPS: Drug Delivery, Disposition and Dynamics
Simple science with big impact

Wednesday 2 November

Associate Professor Jian Li
MIPS: Drug Delivery, Disposition and Dynamics
Targeting Gram-negative superbugs

Wednesday 16 November

Professor Jane Visvader
The Walter and Eliza Hall Institute of
Medical Research
The breast stem cell hierarchy and its regulators

Retired Pharmacists group

26 July

12.15pm–3pm

The Honorable John Delzoppo
Parliament House visit and luncheon
\$21.50 per person, limited numbers (max 30)

30 August

11am–1pm

Emeritus Professor Barry Reed (PhC 1963,
BPharm 1969)
Insights on the Sissons Mural

27 September

11am–1pm

Associate Professor Louis Roller (PhC1963,
BPharm1969)
Pharmacogenomics (individualised medicine)

25 October

11am–1pm

Lyn Stanton (PhC 1967, BPharm 1969)
Volunteering with the Arthritis Foundation

29 November

11am–1pm

Associate Professor Jennifer Marriott
(BPharm 1971)
Showcasing the professional practice suite

For further details visit www.pharm.monash.edu.au/alumnifoundation/ or contact Iliana Findikakis, tel: +61 3 9903 9087 or email iliana.findikakis@monash.edu.

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 November 2011.

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.

To contact *Alchemy*, tel: +61 3 9903 9635, email vcp.foundation@monash.edu or write to *Alchemy*, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, 381 Royal Parade, Parkville VIC 3052.



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