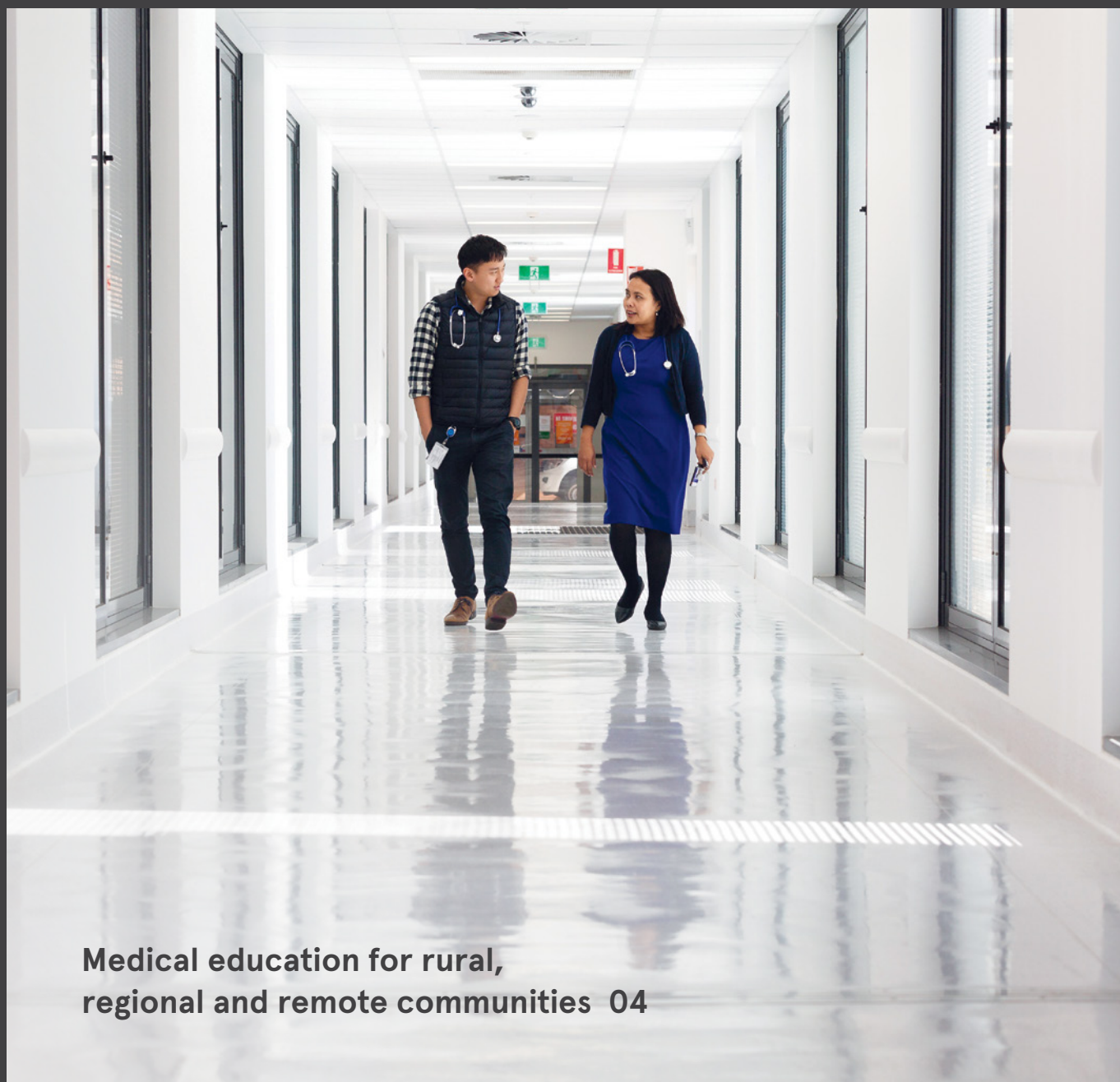


# *radius*



THE UNIVERSITY OF  
SYDNEY



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## Welcome to the Autumn issue of *Radius*

The 2019 academic year represents the first full year of the new Faculty of Medicine and Health. Many changes have taken place in the University of Sydney School of Medicine and throughout the University of Sydney, and we look forward to their consolidation.

The former faculties of medicine, dentistry, pharmacy, and nursing and midwifery have been re-established as schools within the Faculty of Medicine and Health, to be joined in 2020 by the Faculty of Health Sciences. The University of Sydney School of Public Health and the School of Medical Sciences, both previously part of the Faculty of Medicine, now stand separate from Sydney Medical School within the Faculty of Medicine and Health. The University of Sydney School of Medicine now comprises seven metropolitan clinical schools, as well as the School of Rural Health (with

campuses in Dubbo and Orange), the University Centre for Rural Health in Lismore and the Broken Hill University Department of Rural Health.

In parallel with these changes, the Australian Government is implementing policies to strengthen the rural medical workforce by investing in rural medical education. In December 2018, the Australian Government announced the award of funding to seven universities for the establishment of six standalone rural medical programs in New South Wales and Victoria, forming the Murray-Darling Medical Schools Network.

The rationale is to attract rural residents and others to study medicine in rural settings; evidence shows this leads to more graduates seeking to live and practice medicine in the bush.

Within the Murray-Darling Medical Schools Network, the University of Sydney was awarded funds to set up and operate a full four-year graduate-entry medical program in Dubbo. Once Australian Medical Council accreditation is achieved, these students will undertake and graduate with the University of Sydney Doctor of Medicine degree.

Funds were also awarded to Charles Sturt University, in collaboration with Western Sydney University, to set up a five-year undergraduate medical program in Orange and Bathurst.

The University of Sydney will continue to offer Sydney-based students extended rural placements in Dubbo, Orange, Lismore and Broken Hill, and will collaborate with Charles Sturt and Western Sydney in Orange (see page 4 of this issue of *Radius* for further information).





Rural landscape in Dubbo

At the same time as we are planning to introduce the full medical program in Dubbo, our work on significant changes to the four-year curriculum is at an advanced stage. In 2019, the proposed changes will be submitted to the University's Academic Board for approval, and the Australian Medical Council will then consider the new curriculum for reaccreditation. A description of the new curriculum will appear in the Spring 2019 issue of *Radius*.

Major developments are continuing in our postgraduate medical coursework program in 2019, including the launch of our new Master of Medicine/Master of Science in Medicine (General Practice and Primary Health Care) courses. These programs are designed for both new and experienced practitioners. We continue to add coursework to existing programs (such as mechanical ventilation and extracorporeal life support to

our highly successful Critical Care program). I am particularly pleased to announce the launch of our Genomics in Clinical Practice unit, which has been accredited by the Specialist Advisory Committee in Clinical Genetics of the Royal Australasian College of Physicians for College Fellowship trainees.

Alumni who visit the Camperdown/Darlington Campus will notice the changing landscape as new buildings become prominent on the skyline. The demolition of the Blackburn Building, to make way for an ambitious new building program in the new health precinct, was a source of some heartache for many of us. The Blackburn family graciously consented for the Blackburn name to be attached to the adjacent No. 1 Oval, and this took place in a ceremony on 25 October (described on page 8). We are also proposing to introduce the 'Ruthven Blackburn Medal' to allow the Sydney

Medical School to recognise major achievements in clinical research.

Much of our work takes place at the interface of medicine and the various domains of science. Late last year I was delighted to observe the creative energies of our students at the interface of medicine and the arts and humanities, supported by the Harris Student Fellowship. One of the successful Harris Fellows, Dr Isabel Hanson (now a graduate), used her prize to engage a cartoonist, Safdar Ahmed, to capture her ideas in images. The resulting work has just been published in the *Guardian Australia*. As we know, the roots of medicine run deep, and some draw nourishment from the arts.

**Professor Arthur Conigrave**  
BSc(Med) '79 MBBS '82 MSc '83  
PhD '92 MD '08  
Head of School and Dean of  
Sydney Medical School







# Medical education for rural, regional and remote communities

The University of Sydney has welcomed federal government funding to give medical students their full training in regional Australia.

Written by Michael Frommer  
and Dan Gaffney

In December 2018, the Australian Government announced the establishment of the Murray-Darling Medical Schools Network with funding earmarked in the May 2018 federal budget. This multi-university network is designed to address rural and regional doctor shortages by increasing the numbers of medical students who undertake their entire medical studies full time in rural, regional and remote communities.

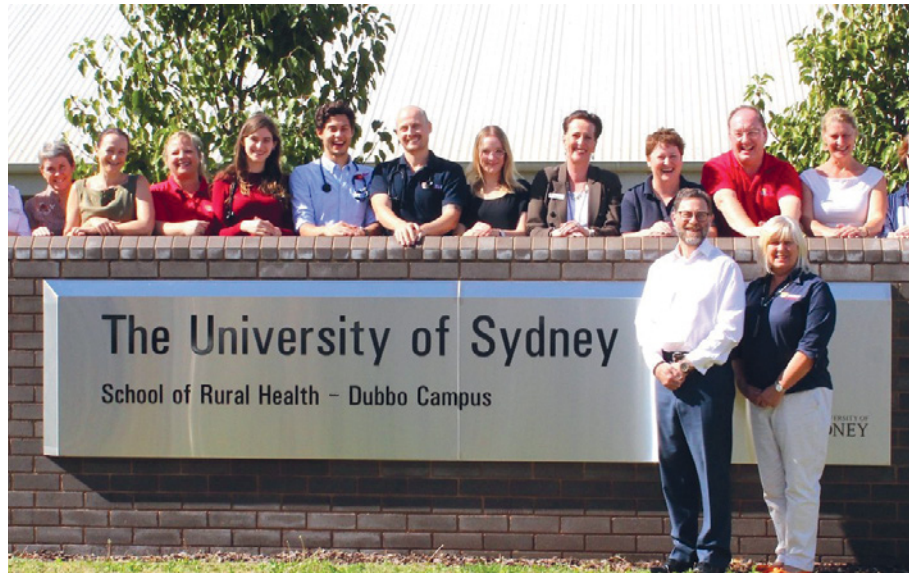
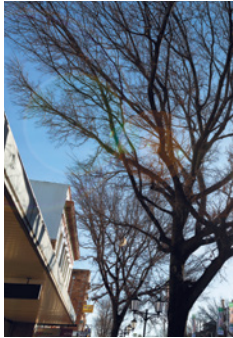
The new funding allows the University of Sydney to build on the significant contribution it makes to health professional education, research and health care in rural, regional and remote New South Wales (NSW). The University will convert the School of Rural Health campus in Dubbo to deliver the full four-year Sydney Doctor of Medicine (MD) program, enrolling 24 students in each cohort, beginning in 2021.

“The University of Sydney is delighted with these federal funding outcomes, which will allow us to build on the already significant contribution we make to health professional education, research and care delivery in rural, regional and remote NSW,” says Professor Stephen Garton, Provost and Deputy Vice-Chancellor.



Top left: Leafy surrounds at the School of Rural Health, Dubbo Campus

Right: Students and staff gather outside the clinical school



“We look forward to working with our partners in the Murray-Darling Medical Schools Network: the University of New South Wales, Charles Sturt University and Western Sydney University in NSW, and the University of Melbourne, Monash University and La Trobe University in Victoria.”

The funding consists of \$7.65 million to extend medical training facilities on the existing School of Rural Health campus in Dubbo. The site is adjacent to Dubbo Base Hospital, where a major redevelopment project is nearing completion. Teaching will be supported through the Australian Government’s Rural Health Multidisciplinary Training (RHMT) program.

The longstanding RHMT program provides opportunities for students in medicine and many

other health disciplines from the University of Sydney and other universities to complete short and longer-term clinical placements in rural sites throughout Australia. University of Sydney students may undertake placements in Orange, Dubbo, Broken Hill, Lismore and surrounding communities.

“From an enhanced base at Dubbo, our end-to-end rural medical program will be delivered in close collaboration with the Western NSW and Far West Local Health Districts, the Western NSW Primary Care Network, Aboriginal health services, the Royal Flying Doctor Service and local councils. Once operating at full capacity, 96 medical students will be based full time in Dubbo and surrounding communities. This will provide a tremendous boost to health care in Dubbo and the region,

and also to the local economy,” says Professor Garton.

“We will be pursuing targeted recruitment strategies to maximise the number of students accepting places for the Dubbo medical program who are drawn from the region and from other rural, regional and remote communities. This will include an emphasis on prospective Indigenous and low SES student recruitment.”

Students who undertake the Dubbo medical program will graduate with an MD degree from the University of Sydney. They will have opportunities to undertake placements at rural sites outside Dubbo and at remote sites in far-western NSW. They will also be able to undertake short placements in Sydney if they wish.

The Dubbo plan provides for the recruitment of new teaching staff who





Left and far left:  
Images of Dubbo

Below: Medical students  
practise delivering  
procedures on a  
training manikin



Medical student uses stethoscope  
on newborn patient

will be based in Dubbo and will join the staff and affiliates who currently teach Sydney-based students undertaking extended rural placements in Dubbo in Year 3 or Year 4 of the MD program. The Doctor of Medicine program's online teaching materials and assessment systems will be used, and Dubbo students will have access to the full range of resources available at the University of Sydney, including online library access.

In order to accommodate the Dubbo medical program and Charles Sturt and Western Sydney Universities' new undergraduate medical school in Orange and Bathurst, the number of Sydney students undertaking extended rural placements in Orange and Dubbo will be reduced.

It is hoped that a compensatory increase in extended placements will

be possible for Year 4 University of Sydney students in Lismore.

Detailed planning for the Dubbo site has begun. The intention is to build an extension to the existing clinical school building, forming an L-shaped structure with direct access to Dubbo Base Hospital. The extension will accommodate an anatomy teaching facility, other 'wet' and 'dry' laboratories, a clinical simulation laboratory, and other learning and teaching spaces, as well as staff offices and amenities.

Future issues of *Radius* will report on progress at the Dubbo site and on related developments in Orange, Lismore and Broken Hill.



Professor Ruthven Blackburn's sons: Dr Simon Blackburn and Angus Blackburn, next to the plaque at the entrance to the oval

# Blackburn commemoration continues on campus

Written by Michael Frommer

Built for the Faculty of Medicine in 1933, the Blackburn Building was designed to bring a university, clinical environment and research laboratories into close proximity. The goal was to enable 'science learned in the laboratory' to feed into medical practice and education.

Reflecting its design concept, the building, funded by the Rockefeller Foundation, was often referred to as 'the New Medical School'. This name stuck for many years even after the Blackburn name was attached to it in 1960.

In 2018, it was demolished to make way for new buildings in the health precinct. Sydney Medical School Historian, Associate Professor Catherine Storey OAM, commented on the building in a recent article<sup>1</sup> in the *Medical Journal of Australia*:



“The building has struggled to cope with the ever-increasing demands placed upon it by a very different medical community to its original occupants. Its architect had designed ... spaces for the isolated researcher, his test-tubes and fume cabinets, notebooks and journals. The model did not readily promote collegiality. The numbers of researchers have grown exponentially, and they now work in teams, connected with a complex technology infrastructure for which our original building was not designed.”

The Blackburn family accepted the need for the eponymous building to be replaced, and graciously consented for the Blackburn name

to be transferred to the adjacent No. 1 Oval. This took place on 25 October 2018 in a ceremony hosted by the Vice-Chancellor, Dr Michael Spence AC, at the oval's grandstand. In his address, Dr Spence commemorated the father and son for whom the oval is now named – Professor Sir Charles Bickerton Blackburn and Professor Charles Ruthven Bickerton Blackburn – and highlighted the immense importance of the commitment to academic medicine that they exemplified.

Members of the Blackburn family were present at the ceremony. Dr Simon Blackburn, one of Professor Ruthven Blackburn's sons and a distinguished engineer, gave an

address in reply to Dr Spence. He acknowledged the University's continued recognition of his father's and grandfather's contributions.

At the conclusion of the ceremony, members of the Blackburn family were presented with small pieces of masonry collected during the Blackburn Building's demolition. A plaque outlining the careers of Sir Charles Blackburn and Professor Ruthven Blackburn stands at the entrance to the oval.

<sup>1</sup> Storey CE. Vale New Medical School (the Blackburn Building), University of Sydney. *Medical Journal of Australia*, 2018; 209 (5): 199-201e1.



Top: Vice-Chancellor Dr Michael Spence  
Left: Professor Arthur Conigrave addresses the crowd

Dr Simon Blackburn, Professor Matthew Vadas AO and Michael Spence at the naming ceremony

# How the University works with philanthropists

Medical research inspires more people to donate to the University than any other activity. Philanthropy has brought new buildings, equipment, research and scholarships. To ensure donors have the best possible experience of giving, the University has put together a dedicated professional team.

It was a first for Australian universities when Vice-Chancellor, Dr Michael Spence AC, announced in January that the University's INSPIRED campaign had reached its target of \$1 billion.

Almost half that figure was directed by donors to go to initiatives in medicine and health. Gifts ranged from a few dollars to a single gift of \$35 million in support of the University's new health precinct, currently under construction.

Every dollar given is gratefully received, and for donors who want to make a meaningful gift, the University has a team of people who make the process of giving as easy as possible. These Development Officers are part of the Division of Alumni and Development and they come from diverse fields including psychology, science, economics and commerce.

As well as helping with the technical aspects of making a gift, they also help donors connect with work that reflects their passions.

Joel Smith, Senior Director of Development for Medicine and Health, has a particular understanding of what

motivates donors. "It often comes from a personal experience, or the experience of a family member," he says. "The experience of illness is a strong motivator, but it can also come from their educational background, or a general interest in a field of medicine and health."

The offices of the Division of Alumni and Development are busy, and no less busy now the INSPIRED campaign has ended. The Development Officers divide their time between donor-related activities and building relationships with researchers and academics.

Charly Brown is the Associate Director for Mental Health and Neuroscience in the Development Office, "My job is to understand what is important to people, what they're passionate about. I work with them to find a University program, often research-based, that they find meaningful."

To do this effectively, it is also important for Development Officers to know what research and other work is being done on campus, and where gifts can have the greatest impact.

In philanthropy, there are three main types of giving: donations spent as the donor directs; endowments held in perpetuity that generate interest; and bequests, where the gift is made through a provision in a will.

The gift, or pledge of a gift, is not necessarily the end of the relationship.

"Where a gift has supported research, we regularly update the donor on progress and research outcomes," Mr Smith says. "We try to get the donor or the donor's family to meet the academic staff whose work benefits from their gifts, or to meet scholarship holders whose scholarships they have funded."

Rachel Love is an Associate Director of Development. She spends a lot of her time with researchers at the University's Save Sight Institute and talking with donors interested in that area.

"The gift is just the beginning of what we hope will be a continuing relationship. We want supporters to know they've made a difference and that they're an important part of the research process itself. This gives something back to them," she says.



Ms Love gives the example of a donor who at the age of 12 years was diagnosed with keratoconus, an eye disorder affecting one in 2000 people that distorts vision by changing the shape of the cornea. The donor wanted to help other people with the condition.

“His initial gift led to a world first – it helped establish the Save Sight Keratoconus Registry, an online database to collect information from patients and clinicians about the outcomes of keratoconus treatment. It’s a very valuable clinical resource.

“Later the supporter went on to make another gift, funding a new research position at the Save Sight Institute to analyse the registry’s data and expand its reach nationally and internationally.”

“Making a meaningful donation can be powerful and even therapeutic for people who have confronted a health crisis, but many of them don’t know how to go about it,” says Mr Smith. “The first person they talk to is often their clinician.

“It’s not about clinicians asking anyone to give. The best way clinicians can support people who want to give is by putting them in contact with the Development Office.”

Development Officers are always on standby for advice and assistance. They are a resource to help donors along the path of giving and for academics to pass along relevant

and succinct information. They are also available for broader discussions with supporters.

They connect potential donors with University people who can use that gift in a way that will have the most beneficial impact.

**To find out more about the Division of Alumni and Development, or if you have questions about philanthropy at the University of Sydney, please contact Joel Smith.**

**Phone: +61 2 9351 3574  
Email: [joel.smith@sydney.edu.au](mailto:joel.smith@sydney.edu.au)**

Right: Many organisations fundraise for medical research, but most of the actual research is done through universities



# The 2019 Lambie Dew Oration

Readers of *Radius* are cordially invited to the 2019 Lambie Dew Oration, to be delivered by Professor Jeffrey Rosenfeld AC OBE KStJ, senior neurosurgeon at the Alfred Hospital in Melbourne and Director of the Monash Institute of Medical Engineering. Professor Rosenfeld will speak on ‘Medicine at the extremes, from the battle for Mosul to the bionic eye’.

Each year, our student society Sydney University Medical Society (SUMS) convenes the Lambie Dew Oration, held in honour of Charles Lambie, the inaugural Bosch Professor of Medicine at the University of Sydney, and Harold Dew, the inaugural Bosch Professor of Surgery.

When Lambie and Dew took up their appointments in 1930 and 1931 respectively, they were the first full-time professors of medicine and surgery in Australia. The medical curriculum they developed in the 1930s became the foundation for undergraduate medical education in the University of Sydney.

The undergraduate program they introduced was delivered (with many updates and modifications) until the introduction of the graduate-entry medical program in 1997.

For each year’s Lambie Dew Oration, SUMS invites a distinguished speaker to address a medical or social topic of their choice.

The 60th Lambie Dew Oration was delivered on 12 October 2018 by Associate Professor Kelvin Kong, a Worimi man from the Port Stephens area. In addition to his roles as an otolaryngologist and surgeon, and his work with the University of Newcastle and the John Hunter Hospital, he frequently conducts clinics in remote parts of Australia, and has been a prominent advocate for Indigenous health and Indigenous doctors. Associate Professor Kong has chaired the RACS Indigenous Health Committee, and been a board member of the National Centre of Indigenous Excellence and the Australian Indigenous Doctors’ Association.

Professor Jeffrey Rosenfeld AC OBE KStJ has agreed to give the 61st Lambie Dew Oration, taking place on Thursday 10 October 2019.

Professor Rosenfeld is a Professor of Surgery at Monash University, Senior Neurosurgeon in the Department of Neurosurgery at the Alfred Hospital in Melbourne, Director of the Monash Institute of Medical Engineering, and Major General in the Australian Defence Force – Reserves. He has been extensively involved in military medicine, and his research focuses on traumatic brain injury and restoring sight to individuals with severe vision impairment using bionic vision technology.

*Lambie Dew Oration:  
Thursday 10 October 2019, 6 pm,  
Great Hall, University of Sydney*



## Lambie Dew Oration previous speakers

Speaker	Date
<b>Associate Professor Kelvin Kong</b> , otolaryngologist and head and neck surgeon from the University of Newcastle, Australia's first Indigenous surgeon, and the first Indigenous Fellow of the Royal Australasian College of Surgeons	2018
<b>Professor Fiona Wood AM</b> , Director of the Western Australian Burns Service, Consultant Plastic Surgeon at Fiona Stanley Hospital and Princess Margaret Hospital for Children in Perth, and Winthrop Professor of Surgery at the University of Western Australia	2017
<b>Professor Gordian Fulde AO</b> , Director of the Emergency Departments at St Vincent's and Sydney Hospitals, and Senior Australian of the Year	2016
<b>Professor Frances Baum AO</b> , Matthew Flinders Distinguished Professor of Public Health at Flinders University of South Australia and Commissioner on the United Nations Commission on the Social Determinants of Health	2015
<b>Professor John Yu AC</b> , former Chief Executive Officer of the Children's Hospital at Westmead, former Chancellor of the Australian National University, and Australian of the Year	2014
<b>Ms Helen Clark ONZ</b> , former Prime Minister of New Zealand and former Administrator of the United Nations Development Programme	2013

Enquiries about the event:  
[alumni.medicine@sydney.edu.au](mailto:alumni.medicine@sydney.edu.au) or +61 2 8627 1905

Right: Guests of the 2018 Lambie Dew oration given by Associate Professor Kelvin Kong







# Increased physical activity linked to better mood

Written by Dan Gaffney

A new study published in *JAMA Psychiatry*<sup>1</sup> reveals that increasing physical activity may be an effective way to boost mood, especially in people with bipolar disorder.

The finding suggests that physical activity may play an influential role in regulating mood and could therefore be a viable target for clinical intervention – a positive finding as physical activity is more easily changed than mood states.

Researchers from the University of Sydney and leading institutions in the United States, France, Hong Kong and the Netherlands reported that increases in physical activity tended to be followed by improvements in mood and perceived energy levels. This beneficial effect was even more pronounced in a subset of the study – subjects with bipolar disorder.

The findings challenge prevailing theories of depression, proposing that sleep problems, low energy, and low activity levels are the result of depressed mood.



The study, which examined interactions among these factors, suggests the opposite may be true – that instability in activity and sleep systems could lead to mood changes.

“Treatments that disrupt the body clock may be more likely to cause harm in patients,” says study co-author, Professor Ian Hickie AM, of the University of Sydney’s Brain and Mind Centre.

### Other key findings

- The researchers found bidirectional relationships between physical activity and subjective energy, and between physical activity and sleep duration.
- On average, a higher activity level at one timepoint was associated with improved mood and increased perceived energy at the next timepoint during the day.
- Likewise, increased energy at one timepoint was associated with increased activity at the next timepoint. Importantly, these associations controlled the current levels of mood, energy and activity respectively.
- Activity was inversely associated with sleep duration – more activity tended to be followed by less sleep that night, and more sleep tended to be followed by less activity the next day.
- Tracking sleep, activity, mood and energy concurrently was particularly important in people with bipolar disorder because the changes in internal psychological states were strongly influenced by both sleep and physical activity.

**“Systems regulating sleep, motor activity and mood have typically been studied independently. This work demonstrates the importance of examining these systems jointly rather than in isolation.”**

**Dr Vadim Zipunnikov**  
Johns Hopkins University

“This study exemplifies the potential for combining the use of physical activity trackers and electronic diaries to better understand the complex, dynamic interrelationships among multiple systems in a real-time and real-life context,” says senior author Dr Vadim Zipunnikov of Johns Hopkins University.

“Systems regulating sleep, motor activity and mood have typically been studied independently. This work demonstrates the importance of examining these systems jointly rather than in isolation.”

“Modern psychiatry is rapidly abandoning its traditional categories, such as major depression and bipolar disorder, in favour of personalised and more objective modes of assessment,” says Professor Hickie.

“These new modes of assessment then form the basis for more accurate predictions of illness course and, most importantly, choosing the most relevant treatments. They are also providing unique insights into probable underlying mechanisms.

“For bipolar disorder and atypical depression, they strongly support our working proposition that

disturbed body clocks are the basic cause of these disorders, and that treatments such as physical exercise, light exposure and melatonin-based medicines need to be much more specifically focused on stabilising the daily body clock.

“Treatments that disrupt the body clock, like some of the commonly prescribed serotonin-based antidepressants may be more likely to cause harm in these patients.

“This study highlights the way our international consortium with nodes in the United States, Europe, Australia, Canada, China and Hong Kong is using highly informative case data to transform the diagnosis and treatment of the major mood disorders.”

### Study details

Researchers used activity trackers and electronic diaries over a two-week period to collect data on physical activity, sleep duration, subjective mood and energy levels from study participants with bipolar I disorder, bipolar II disorder, major depressive disorder, or none of these three disorders.

The participants comprised 242 adults (150 women and 92 men), aged 15 to 84, including 54 people with bipolar disorder and 91 with major depressive disorder.

<sup>1</sup> Choi KW, Chen C, Stein MB, et al. Assessment of Bidirectional Relationships Between Physical Activity and Depression Among Adults: A 2-Sample Mendelian Randomization Study. *JAMA Psychiatry*. Published online January 23, 2019. doi:10.1001/jamapsychiatry.2018.4175

# Needle-free device could improve vaccine delivery

Written by Dan Gaffney

University of Sydney scholars are testing a device that could eliminate needles and end the need for cold chain storage of vaccines.

The device, a microprojection array patch, or 'MAP', is a one square centimetre of biomedical polymer – smaller than a postage stamp – embedded with 5000 vaccine-coated microprojections that pass through the skin's outer layer to deliver a vaccine directly to thousands of immune-rich cells in the skin.

The result is more efficient immunisation that does not require refrigeration like 'current vaccines that use a needle and syringe.

The device is being commercialised by Australian biotech company Vaxxas, with manufacturing research being done by the University of Sydney and the Innovative Manufacturing Cooperative Research Centre (IMCRC).

"Delivering vaccines with this technology will be cheaper and easier than liquid vaccines delivered by needles because they don't need to be refrigerated," says Cristyn Davies from the University of Sydney. "This would offer a significant advantage in remote locations, including in developing countries where refrigeration to keep vaccines viable is a major challenge."

Cristyn Davies is evaluating the device with her University of Sydney colleagues Professor Rachel Skinner and Professor Robert Booy from the School of Medicine and Professor Behnam Fahimnia from the Business School.

Together, they will test the utility and acceptability of the device among patients and clinicians and assess its cost-effectiveness compared to conventional immunisations.

The device could also boost immunisation rates – at least 10 percent of people have been reported to avoid influenza vaccination due to fear of needles. Furthermore, the World Health Organization (WHO) estimates there are 1.3 million deaths each year due to needlestick injuries and cross contamination.

## Usability testing

The MAP device is applied to the skin using a disposable applicator that contains the product and ensures reliable delivery.

In 2015, Vaxxas conducted a WHO-funded study testing the usability and acceptability of the applicator for polio vaccinations in Benin, Nepal and Vietnam. Cristyn Davies believes the study provided valuable information and suggested great potential for the Vaxxas product.

"With Vaxxas planning to develop and commercialise the device in Australia, our research will focus on how the applicator is perceived by patients and administrators," she says.

Professor Rachel Skinner comments that Australia has mature, well-developed vaccination services. "What immunisation providers expect in using the device, and its acceptance by immunisation providers and recipients, may differ dramatically from those in developing countries," says Professor Skinner.

"We will be testing the application in several settings and across different age groups in the workplace and with GPs," says Professor Booy.



The findings will be compared with results from the earlier WHO utility study to determine requirements in different markets.

“We are at an important stage of the product development process,” says Charles Ross, Head of Clinical Operations at Vaxxas. “Before investing in manufacturing the applicator at pilot scale, we want to be confident the device satisfies design, end-user and logistical requirements for its intended markets.”

“Vaxxas is a great example of manufacturing innovation in Australia,” says David Chuter, CEO and Managing Director at IMCRC.

“This research will give Vaxxas end-user and distribution information that decreases risks and accelerates the path to market and identifies product and design parameters required for subsequent pilot scale manufacture in Australia.”

The MAP vaccine delivery system was invented at the University of Queensland. Development is continuing at the Translational Research Institute.



### Fast facts

- Data from preclinical studies suggests the device will not only enhance the immune response generated by a vaccine compared to traditional delivery methods, but potentially do this at a fraction of a full vaccine dose.
- The MAP-delivered vaccines tested to date do not need to be refrigerated, reducing costs and alleviating transportation issues, particularly to parts of the world where cold chain infrastructure is unreliable.
- The device eliminates the risk of needlestick injuries.
- In addition, it will reduce the burden on patients suffering from needle phobia.



# Statin therapy found safe and effective for people aged over 75 years

Written by Kobi Print

Statin therapy is safe and effective in people aged over 75 years and reduces major cardiovascular events such as heart attacks and strokes, according to new research at the University of Sydney and the University of Oxford.

Published in *The Lancet*<sup>1</sup>, the study compared the effects of statin therapy (cholesterol-lowering medication) in nearly 187,000 people who had taken part in 28 large clinical trials. Participants were divided into six different age groups, ranging from under 55 to over 75 years, to assess the effects of statins on major vascular events (myocardial infarcts and strokes), coronary revascularisation procedure rates, cancer incidence and deaths.

Statins lower the level of low-density lipoprotein (LDL) cholesterol in the blood and are prescribed to millions of people around the world. Having a high level of LDL cholesterol can lead to hardening and narrowing of the arteries and cardiovascular disease.

“Statin therapy has been shown to prevent cardiovascular disease in a wide range of people, but there has been uncertainty about its efficacy



and safety among people aged over 75 years,” says lead investigator, Professor Anthony Keech, Deputy Director of the NHMRC Clinical Trials Centre at the University of Sydney.

“Our study summarised all the available evidence from major trials to help clarify this issue, and found there were significant reductions in major vascular events in each of the six age groups considered, including in patients aged over 75 years at the start of treatment.”

Most previous statin trials defined ‘elderly’ people as those over 65 years of age. Due to advances in medicine, including the development of pivotal treatments such as statins, life expectancies are now much greater. As a consequence, questions of the effectiveness of treatments in the elderly have focused on older age groups.

### Study results

The researchers found that statin treatment reduced the risk of a major vascular event by about 25 percent for each millimole per litre reduction in LDL cholesterol, with similar benefits across all ages – even those over 75. They also found that statin therapy did not increase the risk of deaths from non-cardiovascular disease, or the risk of cancer, at any age.

Cardiovascular risk reductions were observed irrespective of age, in people with or without known vascular disease at the start of the trials. The evidence was less definitive among people aged over 75 without pre-existing vascular disease (those who were prescribed statin therapy for the ‘primary prevention’ of heart attacks and strokes). New randomised

trials are now studying the effects of statins in more depth in apparently healthy older people.

“Our analysis found that statin therapy appears to be just as effective in people aged over 75 years as it is in younger people. We now have definitive evidence that statins benefit older people who have suffered a heart attack or stroke.”

**Co-investigator,**  
Dr Jordan Fulcher, Sydney Medical School,  
the University of Sydney

“This study will provide guidance and reassurance for doctors and patients that people are not automatically ‘too old’ for treatments like statins to be effective.”

Co-investigator Professor Colin Baigent, Director of the Medical Research Council Population Health Research Unit at the University of Oxford, added: “The risk of heart attacks and strokes increases markedly with age, and yet statins are not prescribed as widely for older people as they should be.

“Since the risk of heart attack and stroke increases with age, the potential benefits are likely to be even greater for older people.

“Therefore, there is a need to ensure that patients at risk of cardiovascular disease due to their age are offered statin therapy when there is good reason to believe that it will be beneficial. Anyone with concerns about whether statin therapy is suitable for them should discuss this with their GP.”

Dr Fulcher added: “Fewer healthy older people were represented in these clinical trials, so more information in this group of people would help confirm the same benefits that we see in our overall trials population. A new randomised trial in Australia, called STAREE, is specifically exploring whether statin treatment can prolong survival free of disability in a healthy elderly population.”

The study was conducted by the Cholesterol Treatment Trialists’ Collaboration, a joint initiative coordinated between the National Health and Medical Research Council Clinical Trials Centre, University of Sydney, Australia; and the Clinical Trial Service Unit & Epidemiological Studies Unit, Nuffield Department of Population Health, University of Oxford, on behalf of academic researchers representing major statin trials worldwide.

The work was funded by the UK Medical Research Council; the Australian National Health and Medical Research Council; and the British Heart Foundation.



<sup>1</sup> Cholesterol Treatment Trialists’ Collaboration. Efficacy and safety of statin therapy in older people: a meta-analysis of individual participant data from 28 randomised controlled trials. *The Lancet*, 2019; 393(10170): 407-415

# Weight gain in early childhood affects teenage heart health

Written by Kobi Print

Obesity and cardiovascular risk factors in childhood and adolescence are associated with increased risk of cardiovascular disease in adulthood, the leading cause of death in Australia.

New research from the University of Sydney has found that excessive weight gain in children aged under two years can lead to elevated cardiovascular and metabolic risk factor levels in teenage years including increased cholesterol, being overweight and having increased abdominal (central) fat.

Obesity and elevated cardiovascular risk factor levels in childhood and adolescence are associated – in adulthood – with increased risk of cardiovascular disease, the leading cause of death in Australia.

Published in *The Journal of Pediatrics*<sup>1</sup>, the study tracked the Body Mass Index (BMI) of children from birth to 14 years of age and found that earlier development of high BMI (in children aged under two years) resulted in higher cholesterol levels, higher blood pressure, and more central fat in adolescence, compared with onset of high BMI in children aged three to five years.

Teenage obesity is a major health problem in Australia, but its

development and subsequent effects have not been well researched. This is the first study to investigate the consequences of weight gain at two different stages of early childhood and the subsequent occurrence of cardiovascular disease in adults.

“Our study found there are two main pathways to obesity as a teenager: rapid weight gain in the first two years of life (early weight gain), or rapid weight gain between ages two and five years of age (later weight gain),” says the study’s senior author Professor David Celermajer AO, Scandrett Professor of Cardiology at Sydney Medical School, the Charles Perkins Centre and the Heart Research Institute, and a senior cardiologist at Royal Prince Alfred Hospital.

“The data show that the timing of the development of excess BMI in early childhood is an important determinant. Earlier increases in BMI that persisted through childhood results in greater central fat and higher cholesterol in teenagers, independent of their BMI at 14 years.”

## How the research was conducted

The study assessed a group of 410 Australian children from birth throughout childhood to the age of 14. Their weight, height, and waist circumference were recorded. For 190 of those children, detailed measurements were also taken of their cholesterol, blood pressure and central fat at the age of 14 years.

Three groups were identified in the study: normal BMI, “early rising” excess BMI from the age of two years, and “late rising” excess BMI from the age of five years.

Lead author Dr Jennifer Barraclough, a cardiologist and PhD student at the University of Sydney and the Heart Research Institute says, “The early weight gain group have more centrally placed or unhealthy fat than the later weight gain group. Fat around the middle is a key risk factor for cardiovascular disease in adulthood.

“The early weight gain group also had significantly higher cholesterol levels compared to a group of teenagers with weights in the healthy range.





“Our study showed that the earlier the onset of excess fat before five years of age, the more likely the individual is to have fat around the middle by adolescence.

“The study also found that both early and late weight gain groups were more likely to have overweight or obese mothers.”

### Starting healthy habits early

Co-author Professor Louise Baur AM, Head of Child and Adolescent Health at Sydney Medical School and Head of the Clinical School in the Children’s Hospital at Westmead, says: “This study has shown that it is important for families and the community to understand the risks of excess weight gain in early life and to ensure healthy

eating and activity are supported from a very young age.

“These findings may provide an opportunity to identify ‘high risk’ young children and trial interventions at an early age, prior to the development of high cholesterol and centrally placed fat which becomes evident in adolescence and increases the risk of heart disease as an adult.”

Professor Baur highlighted the importance of healthy infant feeding. “Breastfeeding should be supported where possible until at least 12 months, with solids introduced from around six months,” she says.

“Healthy eating and physical activity for all family members are also important factors promoting healthy

weight gain in the young child. General practitioners and early childhood nurses can also help to monitor weight gain in this critical period of life.”

<sup>1</sup> Barraclough JY, Garden FL, Toelle BG, Marks GB, Baur LA, Ayer JG, Celermajer DS. Weight Gain Trajectories from Birth to Adolescence and Cardiometabolic Status in Adolescence. *The Journal of Pediatrics*, 2019; <https://doi.org/10.1016/j.peds.2018.12.034>

# Where are they now?

In every edition, we profile Sydney Medical School graduates to see where their studies have taken them. This time we report on Associate Professor Payal Mukherjee and Dr John Affleck.

## Associate Professor Payal Mukherjee Master of Surgery

After falling in love with the study of anatomy as a medical student, Payal Mukherjee knew she wanted to pursue a career in ear, nose and throat surgery.

She loved how dynamic and technical the speciality was. What she did not realise at the time was how technology-dependent the field would be, and how much she would love finding solutions for severe ear disorders and deformities using new techniques.

While completing her training at the Royal Prince Alfred Hospital in Camperdown, she gained exposure to a number of surgical academic and research staff who inspired her to pursue an academic pathway. As a result, she completed a Master of Surgery degree at the University of Sydney in 2010, and shortly after, took up a fellowship at Oxford.

On return to Australia, a healthy mix of curiosity, passion and encouragement led her to commence a PhD in disruptive technologies, specialising in the

medical applications of augmented reality (AR), virtual reality (VR), 3D printing and bioprinting.

Her PhD research, supported by a series of grants and collaborative partnerships from the University of Sydney and the University of Wollongong, is now in test phase and could provide a groundbreaking solution for people diagnosed with microtia.

Using a 3D printer, the team is constructing new ears for patients whose own auricles are deformed. By infusing the printed ear with stem cells, they are creating living cartilage that should allow for normal ear function without difficult surgery.

These types of advancements are changing worldwide perceptions of medical devices and their uses. While new technology will always raise questions of commercialisation, ethics and regulation, the answer lies in collaboration.

"I'm very proud to work with a diverse group of professionals, both in cultural background and in specialisation. The nature of my work is extremely multidisciplinary, spanning engineering, medicine, science, psychology and information technology," she says.

Associate Professor Mukherjee is committed to her role as an influential educator. "Everything I do should be complementing my teaching work."

From her bases at the University's Central Clinical School, Sydney Adventist Hospital Clinical School, and her private practice, she strongly supports Sydney Doctor of Medicine students undertaking MD research.

She is also using virtual reality to help students learn more about anatomy through visualisation, and she hopes technologies like this will become the norm at both undergraduate and postgraduate levels.



“AR, VR and 3D printing are crucial in understanding anatomy and for designing reconstructive options for the face, and there’s been significant growth in this area recently,” she says.

“My goal for 2019 is to create a suite of VR materials that are available online for students to access.”

Associate Professor Mukherjee doesn’t just educate clinical school students. She also teaches primary and high school age kids about disruptive technologies and careers in STEMM (science, technology, engineering, mathematics and medicine).

“I do a lot of work with students who visit the hospital or come to our virtual reality labs on campus at the University of Sydney,” she explains.

“My colleagues and I familiarise them with the technology and talk to them about their future and career opportunities.

“Surgery is a male-dominated industry and I want to lead change in this area. I want to be a role model and show that a career in this field is female-friendly. Girls need to stay engaged in STEMM education and stop holding back.

“We all have a role as humans to improve our community, and for me, I believe it’s really important to benefit even more people than



Associate Professor Payal Mukherjee (right) and colleague Professor Gordon Wallace show the 3D bio-printed ears they have been working on

patients and students – I want to improve gender equity more widely.”

Through advocacy work with younger generations, Associate Professor Mukherjee hopes to create new jobs and new areas of specialisation to advance the future even more.

**Changing the world in more ways than one, Associate Professor Mukherjee was recently nominated as a finalist in the NSW Premier’s Women of the Year Awards. She is widely respected for her exemplary work in adult and paediatric ENT surgery as well as in education and gender equity advocacy.**

# Where are they now?

## Dr John Affleck Master of Medicine (Critical Care Medicine)

Dr John Affleck is one of Australia's most respected aerospace medicine specialists. At the age of 70, he has just added another impressive achievement to his distinguished career: completing a Master of Medicine (Critical Care Medicine) degree at the University of Sydney School of Medicine.

"Because my job puts me in isolation, I wanted something to bring me right up-to-date and keep my mind focused on problem-solving and clinical evidence, to achieve the best outcome for the lives I still hope to save," he says.

Dr Affleck started work as a GP, before spending six years as Chief Medical Officer of the Royal Flying Doctor Service in Broken Hill – starting a long career in the aviation medicine field.

"I had always had an interest in aviation. I had learned to fly and owned my own plane at the time," he says.

He became a designated aviation medical examiner for the Civil Aviation Safety Authority, certifying pilots to fly. He undertook training in aviation medicine at the Royal Air Force Institute of Aviation Medicine and is a Fellow of the Australasian College of Aerospace Medicine.

As well as examining pilots, Dr Affleck became Medical Consultant for Wingaway, overseeing patient air transfers in NSW – a role he has held for 14 years.

In 2016, Dr Affleck took on another appointment as Medical Director of Medevac Flights, which undertakes international retrieval of sick and injured people.

On top of that, he has continued doing locum ED work. From 2013 to 2017, he worked weekends as the sole doctor in the ED at Cowra Hospital in central west NSW, dealing with everything from heart attacks and asthma to burns, head injuries and other significant trauma.

"I have 40 years of experience working in the field and I think I am reasonably competent at what I do, but there is always something to learn," he says.



Dr Affleck stands with Sandy Swanton, Wingaway's Chief Flight Nurse



Dr Affleck says he was concerned that, despite past experience, he might now only perform some procedures a couple of times a year. To maintain his skills, he offered to work part time in the emergency department of a major Sydney hospital, but he wasn't able to do so, even on a voluntary basis, as the hospitals' priority was the training of registrars, not the maintenance of skills of other doctors.

"My scope of practice is to assess and manage emergency situations working alone. I found that for an ageing doctor, it is challenging to maintain exposure to and practise the skills required in the rural setting where a specialist cannot attend immediately."

In 2017, he enrolled in a Master of Medicine (Critical Care Medicine) and completed the largely online course in two years, while continuing to work full time.

He admits he found some subjects hard work, such as cardiology, but other subjects that he was initially

unsure about, such as clinical reasoning and communication, were enjoyable and very rewarding.

"The subjects I studied in critical care medicine were well-produced and the modules for learning online were well-constructed," he says.

Dr Affleck says the degree not only reinforced his decision to continue practising, but demonstrates to his insurer and the Australian Health Practitioner Regulation Agency (AHPRA) that he is actively engaged in continuing medical education.

"It is really good to have put yourself through that intellectual rigour of different clinical situations, then, when you face the situation in real life, you have already rehearsed it in your mind, and you are ready," he says.

"I acquired a lot of knowledge, and had a lot more knowledge updated and reinforced. I'm pleased I did the degree."



Dr John Affleck stands in front of a medical retrieval aircraft.

He thinks engaging in academic activity is a good idea for older doctors – whether that is within medicine, or another field such as learning a new language.

"The degree was useful for me as I don't intend to retire in the next few years," he says. "If there are doctors of advancing age who might be feeling the way I did, the Master of Medicine is available in a lot of different flavours – I did critical care but other doctors might be interested in other streams."



Dr Affleck cares for an infant patient

**Pursue your interests and upskill with a unit of study or a full postgraduate degree in a broad spectrum of specialty areas including general practice and internal medicine.**

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# Reunion recaps

## Class of 1961 57-year reunion

**Dr Bill Molloy RFD ED KLJ**

A get-together of the 1961 year, some 57 years after graduation, was arranged by Dr Ruth McMahon and Dr Bob McGuinness and held at the Women's College on 23 September 2018.

The reunion was a very successful event. As it was a bright sunny Sunday, we were able to use the courtyard next to the Menzies Common Room for pre-lunch drinks and meeting up again to reminisce about "old times" and reconnect with the University.

73 guests attended, with 50 of them from the Class of 1961. We had the privilege of having Professor the Hon. Dame Marie Bashir AD CVO, herself a medical graduate, to address us most warmly on this occasion.

After the luncheon and very good speeches, some guests attended a tour of the new Sibyl Centre at the Women's College.

In all, a very successful function and congratulations to our organising committee. We look forward to our 60-year reunion in 2021.

## Class of 1978 (OBL\*) 40-year reunion

**Dr Philip Hung MBBS, FRANZCR**

On 22 of September 2018, 131 alumni and partners gathered at the Refectory in the Holme Building at the University of Sydney to celebrate 40 years since our graduation. We were privileged to have 84 alumni and 47 partners join us.

After drinks and canapés on the lawn, we made our way into the Refectory where I gave the welcoming speech. I spoke of the many changes which had occurred in society and in medicine since the time of our graduation.

Following the main course, our surprise guest MC Molly Meldrum, aka Ian Butcher, introduced our entertainers: soloists Mary-Anne Hockings, David Mawter, Jan Orman; air guitarists Andrew and Dave McDonald; and the Village People Chris Ingall, Philip Graham, Lyn March, Mat Swann, Steve Williams and Andrew McDonald, who had us alternately mesmerised by their voices, and in stitches at their on-stage antics.

Unfortunately, the night's festivities seemed to come to an end far too early. However, the evening proved to be a wonderful opportunity to remind ourselves of the fun and camaraderie which we enjoyed during those formative years and I believe that many bonds were reforged during a lovely night of celebration.

Finally, I announced that after 30 years and five reunions, I was retiring as convenor of the Reunion Committee. Most fortunately, Andrew and David McDonald have already announced their preparedness to take on planning for the next reunion, our 45th, in 2023. So, please watch out for a Save the Date notice in 2022.

\* OBL stands for "Old By Laws". When the University transitioned from a six-year to a five-year curriculum in 1973, it became necessary to distinguish between the graduates who commenced in 1972 and those who started in 1973 - as both cohorts finished in 1978. The 1972 cohort was designated as the Class of 1978 (OBL) and the 1973 cohort as the Class of 1978 (NBL) ("New By Laws").



## Class of 1983 35-year reunion

**Dr Peter A Brown**

The No. 1 Oval Grandstand was a familiar and intimate venue for the 35th Reunion of the Class of 1983 on Saturday 13 October 2018. 76 graduates and partners attended, with many apologies. The night was full of laughter, memories and catching up, as well as remembering our colleagues who have passed on.

After much mingling over canapés, a year photograph was taken on the sidesteps of the grandstand. We were then seated at tables and shared a meal together. Speeches were kept to a minimum as colleagues just wanted to chat. It was great to see some people who have not been able to attend a reunion before. We all look forward to the 40th and anticipate setting a date well in advance.

We would like to thank Colette Slaviero and the University Alumni Relations team for all their assistance. Please update your mail and email contact details with them if there are any changes in the next few years.



Class of 1961



Class of 1978 (OBL)



Class of 1983



## The University of Sydney School of Medicine – upcoming reunions

Date	Class of	Milestone	Key organisers	Venue	Time
Saturday 9 March 2019	1969	50 years	Associate Professor Arabella Smith Professor Susan Pond AM	The Refectory, Holme Building	12–4pm
Tuesday 16 April 2019	1957	62 years	Dr Ray Hyslop	The Australian Club	12–3pm
Saturday 27 April 2019	1955	64 years	Dr David Jeremy Dr Vera Gallagher	The Royal Sydney Golf Club	11.30am–3pm
Saturday 14 September 2019	1964	55 years	Dr Margaret Lorang	The Refectory, Holme Building	6–10pm
Friday 18 October 2019	1954	65 years	Dr Ray Hollings Dr Rodney Clark	The Royal Sydney Golf Club	12pm
	1999	20 years	Dr Paul Nicolarakis Dr Loren Rose Dr Pradnya Dugal	The Anderson Stuart Building Courtyard	6–11pm

### Enquiries and further information

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- Surgery (including breast surgery and surgical anatomy)\*

\* Requires a medical degree



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