It's January. It's hot. Why not escape the summer lethargy and join like-minded Australians on a cultural journey of the highest quality? Academy Travel's small group tours feature expert, enthusiastic tour leaders, well-located four-star accommodation, some memorable dining, music, art and architecture of the highest order.

THE CITY OF ROME
January 7-21, 2014 from $5,250 per person, twin share
Rome is mild and often sunny in January. Explore ancient sites and the glorious art of the Renaissance and Baroque. Features excursions out of town and some fine meals.
Tour leader: Classicist and art historian Angus Haldane

PARIS IN THE WINTERTIME
January 5-18, 2014 from $5,495 per person, twin share
Get an insider's view on the world's greatest art city, without the crowds. Features walking tours, extended gallery visits and some of Paris' most charming neighbourhoods, plus excursions out of the city.
Tour leader: French social historian Dr Michael Adcock

BURMA
January 13-28, 2014 from $6,900 per person, twin share
Visit Yangon, Mandalay and the temples of Bagan, cruise the Ayeyarwaddy River and learn about the history of this emerging destination in a small group.
Tour leader: Historian and Burma specialist Judy Tenzing

Full details at: www.academytravel.com.au
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OCTOBER 2013

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KEEP IN TOUCH

If you have moved or have a new email address, please update your details on Sydney Medical School Alumni website.
sydney.edu.au/medicine/alumni

Not alumni but would like to read about Sydney Medical School?
Complete the form on the alumni website and we would be happy to send it to you.
FOUNDATIONS FOR THE FUTURE

Welcome to the final issue of Radius for 2013, where we again feature some of the wonderful research being done in Sydney Medical School and the impact this research is having in the practice of medicine. As always, the breadth and quality of research being undertaken by Sydney researchers, both within the University and in our research partners, is very impressive. The 21st Century Medicine lectures, which cover the research featured, are open to all, for those in Sydney, it would be good to see you at one or more of these talks! But the talks will also be informative and interesting for patients, friends and a wide range of interested people.

There have been two other important developments in Sydney Medical School in recent months that I would like to highlight in this Radius.

The first is that we will be changing from awarding medical graduates Bachelor of Medicine and Bachelor of Surgery to awarding a Doctor of Medicine. Students who enrol in our medical program in 2014 will be the first to graduate with an MD from the medical program. At the same time, we have changed the existing MD, which has been awarded for sustained research contribution, to a Doctorate of Medical Science.

After a long and prestigious history, the decision to change from MBBS to MD was not taken lightly. But there were a number of compelling reasons to change to awarding what is called a “professional masters” Level 9 degree to graduates of medicine.

The first is that, under the Australian government’s new framework for academic achievement – called the Australian Qualifications Framework - MBBS is categorised as an undergraduate Level 7 degree. For us at Sydney, with a graduate entry program, we were therefore out of line with the government classification and this has implications for our graduates who go on to do other postgraduate degrees, among other things.

The second reason is that we are in a competitive market. Internationally, the MD is becoming the most widely recognised medical qualification. We are not alone in Australia in changing to an MD – Melbourne, UNSW, Queensland and UWA have introduced or are introducing MD degrees for their medical program. Within the University of Sydney, outside of Medicine, the Faculties of Law, Veterinary Science and Dentistry – all of whom have graduate entry programs - have also introduced professional masters degrees.

While the title of the degree is changing, the content and delivery remain largely unchanged. What we absolutely are not doing is reducing the clinical training provided, nor the basic science foundation.

The main change is the introduction of a research methods module in the early part of the program, and a formal research project which will be undertaken over years three and four.

MARIE BASHIR INSTITUTE

The other significant development of recent months is the naming of the Sydney Emerging Infections and Biosecurity Institute as the Marie Bashir Institute. This is in recognition of the commitment of Her Excellency Marie Bashir to the well-being and healthcare of people in our region. As you know, although Professor Bashir stepped down as Chancellor of the University only recently, she remains Governor of NSW and of course is still a member of our faculty. The Sydney Emerging Infections and Biosecurity Institute is only relatively new – established four years ago – but has already made great progress in forming a pan-university network with links to multiple institutions in South East Asia. Many of us have known Professor Bashir and her passion for establishing partnerships with colleagues particularly in the developing world. She has particularly championed this initiative and we are delighted that she has agreed to being associated with it in this way.

As this is the last issue of 2013, can I take the opportunity to acknowledge the great support this faculty receives from alumni, from professional colleagues and from friends in the broader community. We are extremely fortunate and grateful for all the assistance, both financial and other, we receive. Without donors contributing to scholarship and research programs, without colleagues in hospitals and clinics teaching our students without any financial benefit, we would not be able to maintain the quality and range of our programs. My sincerest thanks to all for your generous and ongoing support.
SYDNEY CHANGES FROM MBBS TO MD

After close to 150 years of awarding bachelor degrees, Sydney Medical School will from 2018 be awarding Doctor of Medicine (MD) to graduates of medicine. Students commencing their medical studies in 2014 - and completing their studies in 2017 - will be the first to enrol in the new MD program.

"After a long and prestigious history, we did not make this change without careful consideration," said Professor Bruce Robinson. "But eventually, there were a number of compelling reasons." (Read further comments in Dean’s Message, opposite)

As part of the changes, the traditional award of Doctor of Medicine for sustained research contributions will be replaced with a Doctor of Medical Science or DMedSc.

The main change is the introduction of a research methods module in the early part of the program planned for Stage 1, and a formal research project which will be undertaken in Stage 3, over years three and four.

WHAT IS NOT CHANGING

While the title of the degree is changing, the content and delivery remains largely unchanged. The clinical training provided and the strong foundation in basic science will remain the same.

<table>
<thead>
<tr>
<th>Stage 1</th>
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<td>Foundation (all basic biomedical sciences)</td>
<td>Neurosciences, vision and behaviour</td>
<td>Medicine</td>
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<td>Musculoskeletal medicine</td>
<td>Endocrine, nutrition and sexual health</td>
<td>Surgery (years 3 &amp; 4)</td>
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<td>Respiratory sciences</td>
<td>Renal urology</td>
<td>Perinatal and women’s health</td>
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<td>Cardio-vascular sciences</td>
<td>Oncology palliative care</td>
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<td>Research methods (new with MD)</td>
<td>Research project (new with MD)</td>
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Sydney has 228 Commonwealth Supported Places in medicine, and this will not increase with the new degree. Similarly, the University will not be accepting domestic fee paying students into medicine under the terms of the agreement between the University and the Commonwealth.

The entry criteria will remain unchanged, with the three criteria continuing to be performance in an undergraduate degree, performance in the Graduate Australian Medical Schools Admissions Test (GAMSAT) and performance in an interview.

“We will continue to take students from a diverse range of undergraduate degrees since we believe that the decision to study medicine should be a mature and well-informed one. Our experience is that the diversity of the student body adds to the overall educational experience of the Sydney Medical Program” said Professor Robinson.

“This change has required enormous commitment from Professor Michael Frommer and Dr Vera Terry, supported by many others in the Office of Medical Education. That the changes progressed smoothly is a credit to their efforts,” said Professor Robinson.

TOM RUBIN AWARD FOR PROFESSIONAL STAFF

After close to 30 years Sydney Medical School’s Executive Officer, Tom Rubin, has retired. At a dinner in MacLaurin Hall, members of faculty joined with colleagues to celebrate his long and valued contribution to the School and the University. During the dinner, the Dean announced the Tom Rubin Award, to be awarded annually to a general staff member who has made a sustained and significant contribution to the faculty.

“Tom has been the most loyal and committed executive officer a faculty could have had. He has supported five deans and given unsparingly sound advice to them and the faculty,” said Professor Robinson.

The dinner featured, among other entertainment, alternate versions of two of The Animals’ great anthems including “We’ve gotta get out of this place” scripted and performed by Professors Simon Chapman and Bob Cumming, with vocals by Public Health lecturer Suzanne Plater. Professors Steve Leeder, Ben Freedman and Tony Cunningham also contributed to the entertainment lineup with music and poetry, and Tom as the Fiddler on the Roof.

“It has been a privilege to work with five deans, all of whom have, in their own ways, been superb leaders of the medical school with interests, goals and skills matching their times – plus the scores of other committed colleagues I have met. It was a real thrill that so many chose to come to the farewell dinner. I thank you all,” Tom Rubin said.
NEW SURGERY COURSES FOR 2014

A new Graduate Certificate in Surgical Sciences to be offered in 2014 can be completed by coursework or whole body dissection.

This coursework stream is designed to prepare candidates for the Royal Australian College of Surgeons Part 1 examination, and is open to Sydney medical students (years 3 and 4) and medical graduates. Students will study four core subjects including surgical pathology, physiology and pharmacology. This certificate is taught by prominent surgeons and can be credited towards a Master of Surgery degree.

The whole body dissection stream is now available twice each year as a Graduate Certificate in Surgical Sciences, as well as a stream within the Master of Surgery. It is taught full-time over a 12 week period and is available to medical graduates who are interested in pursuing a surgical career. It is taught by prominent sub-speciality surgeons.

For more information: sydney.edu.au/medicine/surgery/

DEVELOPING LINKS IN LATIN AMERICA

Latin America is emerging as one of Sydney Medical School’s new research partners, with growing numbers of research projects and postgraduate students. It is a region which is looking for opportunities for high quality international research experiences, with many countries with generous scholarship programs.

The initial focus of interaction has been on three countries: Chile, Brazil and Argentina where we have agreements with Universidad de Chile, Santiago; Universidad Austral de Chile, Valdivia; Universidad de Sao Paulo, Universidade Federal de Rio Grande do Sul, Porto Alegre; Universidad de Buenos Aires, and Universidad Austral, also in Buenos Aires.

There are two key areas of research interest. The first is in infectious diseases and the second is in non-communicable disease, where Latin America faces similar challenges as Australia.

Her Excellency Professor Marie Bashir recently hosted a reception at Government House for diplomatic representatives from Latin America, for postgraduate and research students from Latin America and their supervisors in the faculties of Medicine, Health Sciences, Pharmacy and Dentistry.

At the moment, Latin American students make up only a small proportion of our student body but the number is increasing each year.

In January 2014 the University of Chile will send a number of researchers to hold a workshop on infectious diseases in Sydney.

The Brazilian Science Without Borders scholarship program, which is funding thousands of Brazilian students to study overseas up to 2016, has seen a major increase in students at the University of Sydney. In all, there are now more than 260 Brazilian students enrolled in undergraduate study abroad programs.

UPCOMING EVENTS

21ST CENTURY MEDICINE TALKS
6pm to 7.30pm in various locations. See sydney.edu.au/medicine/21st-century for further details and to register.

25 September
Why diets (usually) fail
Associate Professor Amanda Salis

2 October
Back pain – time to get it right?
Professor Chris Maher

9 October
Beating melanoma – targeting genes
Professor Graham Mann and Dr Georgina Long

16 October
Preventing the superbug apocalypse
Professor Jon Iredell and Clinical Associate Professor Tom Gottlieb

30 October
Early detection of heart disease in the young and preventing it in adults
Professor David Celermajer

13 November
Mapping teenage minds
Professor Gin Mathi

20 November
Talking with doctors - views from both sides
Professor Stewart Dunn

27 November
Nine months that shape your world
Professor Jonathan Morris

LAMMIE-DEW ORATION
Helen Clark, Administrator of the United Nations Development Programme
A VITAL CROSSROADS: HEALTH & HUMAN DEVELOPMENT FOR A NEW CENTURY
15 October, from 6pm in the Great Hall. See http://lambiedew.com/ to register

MARIE BASHIR INSTITUTE COLLOQUIUM
5 December, New Law School, University of Sydney sydney.edu.au/mbi mbi@sydney.edu.au

GRADUATION CEREMONY
13 December at 11.30am

news
KCMG CBE TD (1919-2013)

Sir Robert Crichton-Brown

Matthew Kiernan appointed to Busshell Chair of Neurology

Matthew Kiernan has been appointed to the Bushell Chair of Neurology. The Bushell Chair was established in 1978 as the first continuing Chair of Neurology in Australia and remains one of the most prestigious in the country.

The position was created with appointment of Professor James G. McLeod, AO, FAA, and has been held by Professor John D. Pollard, AO and most recently Professor David Burke, AO, FAA.

Matthew will provide academic leadership across the University. He will have a leadership role for neurology at the Brain and Mind Research Institute with an aim of strengthening the ties of the BMRI to the Department of Neurology at RPAH and the University of Sydney more generally.

Matthew is an honours graduate from Sydney Medical School (1990) and completed his general medical training at RPAH. Following completion of his PhD and training in neurology at the Prince of Wales campus, Matthew worked for a number of years at the Institute of Neurology, University College London and the National Hospital for Neurology and Neurosurgery Queen Square, before returning to Australia. He was appointed Professor of Neurology, Prince of Wales Clinical School, UNSW, in 2009.

Matthew Kiernan is recognised nationally and internationally for research excellence and leadership in academic neurology, neuroscience research and teaching.
The Marie Bashir Institute for Infectious Diseases and Biosecurity
Tackling infections, locally and globally

Professor Bashir has been honoured in this way in recognition of her long-standing and deep commitment to the health and well-being of Australians and people across our region, particularly those who are disadvantaged,” said Professor Bruce Robinson, Dean of Sydney Medical School. “Professor Bashir has formed close relationships, some established over 30 years ago, with colleagues in Vietnam, Cambodia, Indonesia, India and, more recently, Mongolia. She championed the establishment of the Sydney Emerging Infections and Biosecurity Institute as an important initiative for the University in its quest to promote health through multi-disciplinary research, education and advocacy. We are honoured that Professor Bashir has agreed to be associated with our work in this way”, Professor Robinson said.

Sydney Emerging Infections and Biosecurity Institute was established in 2010 in response to the risk posed to humans and animals by emerging and re-emerging infectious diseases, including HIV, avian and H1N1 influenza, SARS, Hendra virus, drug-resistant tuberculosis and other drug-resistant infections. Professor Tania Sorrell is the foundation director.

“Globally, emerging and re-emerging infectious diseases are major causes of morbidity and mortality, socioeconomic disruption and economic instability,” said Professor Sorrell. The Marie Bashir Institute brings together researchers, educators and professionals from across medicine, veterinary science, law, engineering, nursing and pharmacy in a bid to:
• Increase understanding of factors influencing emerging and re-emerging infectious diseases in humans and animals
• Develop and help implement new ways of reducing the health and societal impacts of emerging infectious diseases in humans and animals
• Provide an independent, expert resource for government, professionals and the public.

“Expert knowledge and input into policy development are essential for governments to effectively anticipate control and reduce the impact of epidemics.”

"Already in the area of Infectious Diseases we have research and capacity building partnerships in Indonesia, Timor Leste, Vietnam, India, Bhutan, Africa, Latin America and China. Exemplars of our research collaborations are in the fields of tuberculosis, hepatitis, filariasis, antibiotic resistance, HIV and sexually transmitted infections,
hospital acquired infections, fungal diseases, animal health, sustainable agriculture and health policy” said Professor Sorrell.

Professor Bashir graduated from the University of Sydney in 1956 with degrees of Bachelor of Medicine and Bachelor of Surgery. She worked initially in General Practice before specialising in Psychiatry, and is widely regarded as the founder of adolescent psychiatry in Australia. In 1972 she was appointed Foundation Director of the Rivendell Adolescent Unit in Sydney, an inpatient unit providing assessment, diagnosis and treatment throughout the State for psychiatric disorders in adolescents.

In 1995, in partnership with the Aboriginal Medical Service, Redfern, she established the Aboriginal Mental Health Unit. This enterprise provides regular clinics and counselling at both the Aboriginal Medical Service and other health service sites. In 1997 she was appointed Director of the Community Health Services in then Central Sydney Area Health Service.

Her teaching role with the University was formally recognised in 1993, when Senate conferred upon her the title of Clinical Professor, and later awarded her the degree of Doctor of Medicine (honoris causa).

For her services to children and adolescents, she was made an Officer of the Order of Australia in 1988. In March 2001, Professor Bashir was appointed Governor of New South Wales and in that same year was made a Companion of the Order of Australia.

DR BOB RAVICH
Funds to support the start-up of the new Institute were provided by a generous donation to Sydney Medical School Foundation, co-ordinated by the Dean Professor Robinson and the late Dr Bob Ravich.

“Bob Ravich was a colleague and teacher of mine, he was a wonderful physician and human being, who had the great foresight to recognise the need and potential for such an institute. He took the case to a former patient who enthusiastically embraced the opportunity to support a new and important initiative by donating to the Sydney Medical School Foundation,” said Professor Robinson.

Top Left: Her Excellency speaking to the media in Vietnam
Bottom Left: Her Excellency with the late Dr Endang Rahayu Sedyaningsih, former Health Minister for Indonesia
Top Right: Her Excellency with Professors Bruce Robinson and Tania Sorrell at Government House
Launched last year, the 21st Century Medicine series of lectures is a chance for students and the public to learn about the latest developments across the range of medical research.

Aviva Lowy speaks to five of the lecturers about some of the most exciting things happening in health. Video interviews with other presenters are available at sydney.edu.au/medicine

A full list of the talks and presenters is on page 6.
CARDIOVASCULAR DISEASE: IT’S PERSONAL

Cardiologist David Celermajer has a party-trick. He poses this quick quiz for his audience: showing them a slide of a person with a big lump of cholesterol in their heart, he asks how old the person is.

“The answer is 94, and he died of prostate cancer. Then I show them a slide of a person with a very small but bleeding plaque. That person was 37 and died of heart disease,” says Celermajer, Scandrett Professor of Cardiology at the University of Sydney. “So it’s not just the big plaque that is dangerous and the little one is OK. It’s not enough to know the size of the plaque, you have to know a lot more, such as what type of plaque it is. Is it vulnerable, or is it impervious? And it’s very hard to tell.”

The slides in the quiz were taken after the two people had died. But, as Celermajer says: “You can’t do autopsies to find out if living people have got plaque. Our holy grail is non-invasive detection, especially of vulnerable plaque in vulnerable people.”

One of the non-invasive methods, which he pioneered over 20 years ago, is flow-mediated dilation (FMD), done with an ultrasound on the arm. It forms the story of Celermajer’s discovery of how to detect heart disease in its earliest stages.

“Twenty-one years ago, in the Lancet, we described the FMD test conducted on children with an average age of eight. We found that the children with very high cholesterol already had impaired blood vessel function in their first decade of life. This was the first ever demonstration that you could detect the earliest stages of heart disease in children without having to cut them open.”

So significant were the findings that the study remains one of the most highly cited papers in the world of heart disease... ever.

For the children in that study, the prognosis seems unlikely to be good. About half of them had cholesterol of around eight - normal is less than four - making them seriously predisposed to cardiovascular disease.

Celermajer also conducted the same type of research into blood vessel function for teenage ‘passive smokers’, the results of which were published in the New England Journal of Medicine in 1996. He compared teenage smokers with teenagers who were not smokers but lived at home with parents who were. What he found was that the teenagers exposed to cigarette smoke in the home had sick blood vessels, as sick as the kids who smoked themselves.

He’s quick to point out that there is a duration effect. The teenagers whose parents smoked were exposed to the smoke all through childhood, while the 16-year-old smokers had only taken up cigarettes in the past year or two. However, the results in both groups was just as bad, no matter how long it had taken each to arrive there.

“Passive smoking all your life might be worse than active smoking for a couple of years. If parents smoke then their children are exposed to smoking for extended periods and perhaps at a time when their blood vessels are very prone to environmental influences.”

This study was one of the major pieces of scientific data that brought about the mandating of passive smoking protection. In the late 1990s, the Californian Congress placed a ban on smoking in public places and similar legislation followed around the world. The research can be credited with contributing to the saving of tens of thousands of lives.

Risk of heart disease can be seen in children even younger than those in adolescence or early childhood. In 1999, a team working in California showed that unborn babies of mothers with really high cholesterol had deposits of cholesterol in the aorta, the main blood vessel of the body. In 2005, Celermajer conducted similar research showing that babies who were very small, from growth restriction in utero, had blood vessel damage noticeable on the day they were born. Such babies are also at high risk of heart disease later on in life.

The good news for the babies of mothers with high cholesterol is that, after birth, if they are out of the high cholesterol environment, their arteries go back to normal. “We can see the changes, but in a child they are quite easily reversible. Some risk factors are worse than others. The damage caused by high cholesterol in childhood can be relatively transient but the damage caused by smoking is particularly stubborn.”

The advantage of non-invasive and repeatable procedures that allow us to look at heart and vessel health is that they give us the opportunity to see early signs of heart disease, as well as the efficacy of interventions to avoid the disease.

“The availability of a non-invasive way to study blood vessel health opens the door to all these questions: what are the predisposing factors?; how much of each one do you need; how reversible is it with withdrawal of the risk factor or some other clever intervention?” says Celermajer.

At the moment, the imaging technique used in his research is not being done clinically because it is technically a very demanding test to undertake. About 300 or 400 research groups around the world use it. But he does envisage a time when this imaging moves into the clinical realm.

“I would love there to be a test that can be done on teenagers and young adults to stratify their risk and I think it will happen. It personalises the risk. We’ve shown people in their 30s the plaques in their blood vessels when they smoke, and they’ve said: ‘I had no idea. Man, is that really me?’ Looking at the warning on a cigarette packet has far less of an effect. When it’s demonstrable in them and their blood vessels, and they know that’s what most Australians die of, they’re frightened.”

Celermajer has found that there’s nothing like being confronted with the visual evidence of your own damaged blood vessels and seeing normal healthy vessels to get a smoker to quit. So what are the ‘after’ pictures like?

“There has been follow-up to see what changes there are to the blood vessels after smoking cessation and there has definitely been improvement, but it is hard to study because not many people are successful with quitting in the long term. We have done reversibility studies with obesity. One nice study in adolescents who were obese showed that you can reverse all that damage with sustained diet and exercise.”

Research into the earliest stages of cardiovascular disease is extremely important because the disease is the number one killer in the western world, responsible for 30-40% of all deaths and commoner than all cancers put together.

“What is really devastating is that it is now the number one cause of death and suffering worldwide, even in developing countries. We’ve done a lot of work in the developing world – in China, India, sub-Saharan Africa - to look at the emergence of cardiovascular disease here. When I started in 1996 with the CATHAY (Chinese ATherosclerosis in Aged and Youth) study it was right at the beginning of the atherosclerosis epidemic in China. In rural India, we’ve done a risk factor survey, looking at how much heart and blood vessel disease they had. We expected, for example, an incidence of diabetes of 1% and we found an incidence of over 10%.

Because cardiovascular disease is largely environmentally cast, lifestyle changes promise great hope of reducing risk. “Most people think it is about 90% of what we stick in our system and about 10% genetic. In about 10% of people with heart attacks, they’re pristine, never smoked, never got fat, exercise regularly... but they’ve likely inherited a bad gene from a parent.”

Celermajer refers to Chris Anderson, one of the many famous Australians who has gone public after his experience of early heart disease.

“He’s an Australian rugby league player and he had coronary artery surgery at 48 – one of the fittest guys around.”
There’s something special about a melanoma. Scattered throughout the skin, about one in 30 cells are melanocytes whose job it is to make the colouring we get with a suntan and pass that into other skin cells to protect them. Melanoma is the cancer that arises from these cells.

The other thing that makes melanoma special - and not in a good way - is that other cancers which appear on our skin can usually be burnt off or cut out and don’t generally spread further. But melanocytes that have become cancers are often aggressive and can be fatal.

“Mortality rates for melanoma, on average, are good because we can usually detect them early, but in younger people in their 30s to 40s, it is the number one cause of cancer death,” says Professor Graham Mann at Westmead Millennium Institute for Medical Research and Melanoma Institute Australia. “That’s why it is important for young people to minimise sun exposure and never go near a solarium.”

Mann is particularly interested in what genes can show us about why people get melanoma. There are two major ways for melanoma to happen and genes are implicated in both.

“The first way relates to the strong effect of the sun in causing mutations in the skin cells. An individual’s genes strongly affect their vulnerability to the sun - through their skin colour and the way they deal with DNA repair after sun damage.

“Gene variations also affect the number of moles - a cluster of melanocytes – that we have and whether they are unstable. Some people tend to form moles, and some tend to form a lot of moles. Sunshine can cause moles, but this underlying tendency is determined by genes,” says Mann.

The risk of an Australian getting melanoma at some stage in their life is 3-4%, however some people are at higher risk due to their sun exposure, their genes, or both.

Recent research has identified about 20 genes that commonly vary in the population and where those variations can boost a person’s risk. For a few genes the extra risk is about a factor of 2 or 3 (so 6-12% lifetime risk), for most the extra risk is much smaller. But it seems that these risks combine, so people with variations in several of these genes can have a risk of melanoma much greater than the general population.

Research into the genes involved in breast cancer is further advanced than for melanoma and around 70 common gene variations have been teased out there. “Recent research shows clearly that the minority of the women who carry the “risky” version of several of these genes make up a significant proportion of people who get breast cancer. This situation is likely to apply to melanoma as well,” says Mann.

The odds can be as high as for people carrying a mutation in the p16 gene. Though rare, with only one person in a few thousand having the mutation, melanoma risk can be more than 50% over a lifetime.

Some family members might have been dealt a “full hand” of risky gene variations from their ancestors, while others will have inherited only a few, and others none.

So we can see one reason why melanoma can often appear in family clusters: we share our genes with our close relatives. But the new research helps to explain the differences within a family. Some family members might have been dealt a “full hand” of risky gene variations from their ancestors, while others will have inherited only a few, and others none.

Of course, as families we also share lifestyles, so family holidays spent lying on the beach exposed to the sun will also increase the risk of melanoma for all family members.

What about moles? “The sun causes moles to form by damaging genes in melanocytes and stimulating their growth. You are not usually born with them; they come on during childhood and early adolescence and we peak with our full complement in early adult life. Elderly people have fewer moles than other people. It is sun exposure that kick starts these moles early in life but then they run out of steam and many mole cells just die and disappear later in life.

“The mole cells are not melanoma cells. They’ve got some things wrong with them and some genes that have been damaged, but they’ve got other mechanisms that can make them self-destruct. It’s one of the important mechanisms in our body. For example, when you get sunburnt and you shed the dead skin, that’s a way to get rid of cells carrying sun-mutated genes.

“The sunnier the environment, the more moles we develop. In Australia, it’s common for a person to have up to 50 moles. If you have 50-100 moles, you are at higher risk than the average, and if you have 100-150, you are at a higher risk again. Bigger moles and irregular moles also add to your melanoma risk, independent of the actual number of moles you have. About half the melanomas that develop arise inside moles, and the other half arise from the majority of melanocytes that sit in the skin by themselves.”

Is it all about genes? No. “The sun is the main driver of melanoma and that’s why it is important to have public health campaigns that push healthy sun habits. No matter what our genetic make-up, sun exposure, obesity, smoking . . . they increase cancer risk for everyone.”

Mann believes that, in addition to facing up to the negatives of an unhealthy lifestyle, health messages can do a lot to highlight the advantages of stopping these habits. “The best campaign I’ve seen recently is the one that focusses on all the improvements enjoyed when you stop smoking. Better sun behaviour delivers too.”

He also likes to point to the positive outcomes of genetic research on melanomas themselves. They are now giving new hope to those with melanoma, whether or not they are at high genetic risk.

“We are coming to grips with melanoma behaviour: the genes that drive melanoma and make the difference between the ones that are aggressive and dangerous, and those which are easier to treat. But we have also found some key chinks in melanoma’s armour.

“In the last couple of years, clinical trials have delivered the first effective drugs against melanoma by targeting these weak points. It’s a huge new area where we are finally seeing drugs developed to target the particular mutations that cancers have, and possibly the beginning of the end for melanoma. For the first time, we are treating people with advanced melanoma and extending their survival. This is changing the whole landscape.”
Imagine a classroom of normal healthy teenage girls. As many as half of them may grow up and develop anxiety and depression. But which ones will they be?

“Most psychiatric disorders have their origins in adolescence and childhood, often years before the emergence of symptoms and well before the diagnosis of disorders,” according to Professor Gin Malhi, Executive and Clinical Director of the CADE Clinic based at Royal North Shore Hospital.

Emotional symptoms emerge in adolescence before manifesting as the full-fledged emotional disorders of anxiety and depression. That’s not to say that all teenagers exhibiting emotional symptoms will go on to receive clinical diagnoses, but it does mean they are the vulnerable ones.

Depression and anxiety are two of the most commonly occurring psychiatric disorders in adulthood, and they are enormously debilitating. Depression is also the most likely illness to lead to suicide, which means it can ruin the life of the sufferer as well as that of their family and friends.

According to Malhi, the prevalence of emotional disorders is greatly underestimated. He believes that as many as one in two people will have a mental disease - even if only in moderation and perhaps remedied by counselling - at some time in their life.

The biggest risk factor for emotional disorders is gender: women are three times as likely to succumb, which is why the prospect for that class of teenage girls seems so gloomy. And that’s why identifying vulnerability to anxiety and depression in adolescents is critical for shaping early interventions that may halt progression of the disorders.

Malhi and his team of researchers decided to go into the classroom and do some ‘mind reading’. In effect, they wanted to see whether there was already a discernible difference in brain function between girls who were showing emotional symptoms (ES+) and those who weren’t (ES-).

“We examined girls in middle adolescence so as to avoid the potential confound of puberty at a younger age and yet still manage to sample the time period when most emotional disorders are taking form.”

Studies investigating anxiety and depression in adults have identified changes in the frontolimbic network (FLN). These have been backed up by studies using neuroimaging in pediatric and adolescent populations with emotional disorders where functional deficits have been implicated in the same network which regulates emotions.

The question Malhi’s research team wanted to answer was: Are there neural antecedents to emotional disorders? We know the brain has changed in those already afflicted, but are there visible changes or markers in the brains of those who are on the path to depression?

All the 15-year-old girls in the study undertook neuroimaging, as well as a series of self-report questionnaires. They were then assigned to two different groups: the first group (ES+) were those whose questionnaire score was high according to The Child and Adolescent PsychProfiler. This indicated the presence of symptoms but notably these symptoms did not constitute a diagnosis. In other words, these girls were still healthy and clinically no different to the remainder who were classified as ES-. Malhi was not surprised that there was a fairly even split and that more than half of the participants could be considered vulnerable to emotional disorders.

...identifying vulnerability to anxiety and depression in adolescents is critical for shaping early interventions that may halt progression of the disorders.

The participants were given an emotion processing task which involved viewing a series of 60 images of positive, negative or neutral affect, and then asked to give them a pleasure rating. MRI scans were taken of the girls’ brains during the task to determine the areas of activation when processing emotion.

The data revealed that ES+ girls displayed impairment in FLN functioning during both positive and negative emotion processing compared with emotionally healthy girls (ES-). The finding suggests that this dysfunction may be a precondition to the emergence of emotional disorders.

Until the research undertaken by Malhi’s team, no studies had investigated the neurobiological basis of vulnerability to emotional disorders using fMRI. This is groundbreaking work.

“What we discovered is that girls who are ES+ already have changes in the brain which can be detected by functional neuroimaging. These are healthy girls, but their brains are already different in the way they are processing emotions,” says Malhi.

Although the study provides new insights towards understanding the emergence of depression, Malhi concedes that it has limitations. “We acknowledge that those who are classified in this study as vulnerable, or ES+, may not go on to develop an emotional disorder, as emotional and social circuitry maturation processes continue into late adolescence and early adulthood.”

The other obstacle for the researchers is that the participants may go on to develop depression in their 20s or in their late 40s. And if it’s the second group, that’s a long time to wait around to see if their predictions hold true.

“We don’t know the time scale of the change we are looking for and whether or not it is incremental. We will follow up our study participants in about four years time, when they are 19 and 20-year-olds. The question will be: have we got a reasonable chance to see significant developments by then?”

If the team has been able to pin point a red flag for depression in 15-year-olds, Malhi wonders if there might even be the chance of finding warning signs in younger children.

“Are we picking it up early enough? Maybe these changes occur when girls are 12. And if we can pick them up even earlier, that’s better.

“It’s better because we can say to these children there are strategies that will work in fending off depression. We know exercise is a good anti-depressant. We already use it for depressed adults. We can help these children at risk by getting them to change their diets and their lifestyles. Maybe we can have regimes for 12 and 13-year-olds who are likely to develop emotional disorders and ensure that they never become depressed.”
Professor Chris Maher, Director, Musculoskeletal Division, The George Institute for Global Health, Professor, Sydney Medical School.
A bad result by any measure and, according to Professor Chris Maher, even uncontaminated, the injections were unlikely to offer much relief of pain for patients. “In the short term, the injections are only marginally more effective than a placebo and in the long term, no better than placebo.”

According to Maher, who is Director of the Musculoskeletal Division at the George Institute for Global Health and Professor at Sydney Medical School, there are lots of pointless things that people do to deal with bad backs, egged on by website promises of cures or well-meaning but ill-informed clinicians, epidural injections being just one of these.

“We’ve got a pretty good idea about what works for back pain but, unfortunately, people tend to get the wrong care. In fact, over time, the treatment being provided has got worse.”

“About 90% of people with acute back pain have non-specific back pain. The clinical guidelines say don’t send these people off for imaging, encourage them to remain as active as possible, and use simple painkillers as a starting point. Instead, what tends to happen is they get sent off for imaging straight away, they get prescribed much more complex pain medicine than they need and they often get told to go to bed.

“They don’t need a formal exercise program but they do need to get active again. The treatment that’s endorsed for acute back pain is quite simple but patients get more complex care; they get more of the wrong sort of treatment.

“That approach has downstream effects. If you send people off for imaging they are more likely to end up being offered surgery. If you send them off for imaging, about a third will come back with something found. Patients focus on the imaging results and can become quite disabled by them. If the primary care clinician doesn’t explain it correctly, they’ll think there is something seriously wrong with their back.

“There’s also a downside with prescribing stronger pain medications, such as opioids. In the US over the last decade we have seen a major increase in prescription of opioid analgesics; and at the same time the number of deaths involving opioid analgesics has quadrupled.”

Maher doesn’t underestimate the pain caused by bad backs, but it is a condition that shouldn’t kill you, which is worth keeping in mind when considering the risk and benefits of a treatment you may be offered.

In a survey of the care provided to patients presenting with new episodes of lower back pain (LBP), Maher and colleagues looked at over 3,500 patient visits before and after the release of clinical practice guidelines. The results showed little difference in the ‘before’ and ‘after’ stats. The investigators concluded: “The usual care provided by clinicians for LBP does not match the care endorsed in international evidence-based guidelines and may not provide the best outcomes for patients. The unendorsed care may contribute to the high costs of managing LBP and some aspects of the care provided carry a higher risk of adverse effects.”

In relation to medication, where a simple analgesic such as paracetamol is considered the best first option, the most common medications recommended or prescribed were non-steroidal anti-inflammatories (37%), followed by opioids (20%), with paracetamol coming in last (18%). Less than one in five patients received paracetamol and, worse still, less than a third of those received the recommended dose.

The report goes on to state that while the guidelines caution against the routine use of imaging, imaging was nevertheless requested for a quarter of the patients presenting with new LBP. Simple radiographs have stayed at much the same rate, but CTs and MRIs have become more popular. And only about one fifth of patients were provided with advice, education and reassurance of a favourable prognosis as suggested by best-practice guidelines.

Having identified the problem, Maher has been working with the National Prescribing Service to develop solutions. The first step was an electronic decision support tool for clinicians, Back Pain Choices, that provides guidance on the management of back pain in primary care. A patient option is planned for the future.

What magnifies the significance of this bad treatment is that so many people suffer with bad backs. “At any point in time, 25–30% of the population will have back pain and up to 80% of people will have back pain at some time in their life.

“While we used to dismiss complaints about bad backs, the recent 2010 Global Burden of Disease claims it is the most disabling health condition in Australia, and that would be the same across the world,” says Maher.

This study showed that in terms of years lived with a disability, LBP was ranked no. 1, with other musculoskeletal disorders ranked third and neck pain fourth - this is in a group of diseases and disorders which included depression, anxiety, diabetes, chronic obstructive pulmonary disease and osteoarthritis.

What triggers back pain is not clear, and there now seems to be a strong genetic component. When researchers have looked at possible risk factors such as vibration, smoking, lifting and being overweight, the findings have been inconsistent. Anything coming out as positive has only had small predictive effects. Maher believes this is because the research to date hasn’t controlled for genetics.

And not knowing the risk factors makes it impossible to give any useful advice on how to avoid back pain. Maher points to an example of where public policy has jumped the gun on research and failed: OH&S training on the safe way to lift.

“A study nearly two decades ago in the US postal service looked at this and found it was totally ineffective. People went around to the workplace, taught postal workers how to lift correctly and improve their posture. There was no change in the incidence of back pain between the control group and the group that got the intervention. The only difference was that if you quizzed these people, they remembered the messages they’d been taught, but it hadn’t changed the rates of back pain. The only thing that’s been shown to work is giving people an exercise routine after the occurrence of back pain, but it won’t stop it in the first place.

“We are doing a study at the moment to try and see what does predispose people to back pain, but it’s probably the first that’s ever been conducted properly. That study has identified some very important triggers but I’m a bit reluctant to say that we now know how to prevent back pain from occurring. We need to do about 5–10 more years of research before we’re in that position.”

Of those people who report a recent onset of back pain, 50% will have a recurrence of that pain within a year. It’s unusual to have back pain only once in your life. Maher says that perhaps we need to see it as a chronic condition.

“It’s almost like the common cold. Maybe we just have to accept people will get it and learn to manage it better.”

For a start, he’d like to see public health messages to combat the slew of misinformation about bad backs.

“The prevalence of back pain hasn’t changed but the unhelpful ideas about it have increased. Ideas such as: if you’ve got back pain, you’ve damaged your back; if your back hurts, don’t move; and if you’ve got back pain, a disc is out of place.

“There are lots of health campaigns about weight loss and cardio-vascular disease, but you don’t see many health messages about back pain.”
Professor Jon Iredell, Director of Infectious Diseases at the Centre for Infectious Diseases & Microbiology, Westmead Hospital; Professor of Medicine & Microbiology at Sydney Medical School.
Antibiotic control and antibiotic resistance needs to be up there with tobacco control and smoking according to Professor Jon Iredell, Director of Infectious Diseases and Microbiology at Westmead.

I's not that Iredell doesn't appreciate the life-saving drugs that revolutionised medicine in the 20th century. It's just that he knows the dark side: the proliferation of 'superbugs', a convenient catch-all term for those bacteria which are most dangerous (most 'virulent') and most able to defeat antibiotics (most 'resistant').

Bacteria can be roughly divided into two groups, depending on whether they turn violet with the time-honoured laboratory method of Gram staining. Mention superbugs and people are likely to think of Gram-positive bacteria such as the golden staph (Staphylococcus aureus) and the antibiotic-resistant version (MRSA) which swooped into hospitals decades ago. This has long been considered the big threat, but thanks to a variety of mechanisms, including aggressive campaigns for good hospital hygiene, MRSA is starting to come under better control.

“Golden staph, like other Gram-positive bacteria, are opportunists that can tough it out on surfaces such as your hands or a table top. In comparison, Gram-negative bacteria can't really survive very well in the external environment. They tend to spread more directly from person to person and their evolution is more about gene sharing,” says Iredell.

“We used to think of the Gram-negative bacteria such as E. coli as ordinary residents of our bodies playing a harmonious role in our gut and keeping us healthy. But if they pick up resistance or virulence genes - and the two are predicted to travel together - then we are more likely to run into trouble with them. These bacteria have now become extraordinarily resistant because they have acquired new genetic material that enables them to defeat all the antibiotics that we would normally use, even in a hospital.”

The dominant mechanism for gene sharing in Gram-negative 'superbugs' is therefore by direct one-on-one exchange, typically of self-reproducing DNA circles called plasmids. When bacteria meet up, bacterium A transmits a plasmid to bacterium B in a fairly direct manner. You can think of it as bacterial sex. Rapid efficient gene transfer is a particular characteristic of E. coli and Klebsiella - these two bacteria are major causes of catastrophic infection in previously well people and they form the focus of Iredell's research.

With the golden staph threat being addressed in Australia, the emerging problems in Gram-negative bacteria are what has everyone worried. Iredell refers to headlines of the past few years covering the Indian superbug scare known as NDM (the first two letters referring to New Delhi). But the name does not imply geographical specificity. The problem has been detected in patients all around the world, including here in Australia, where a national conference recently convened by the Australasian Society for Infectious Diseases illustrates the level of concern in the medical profession about antibiotic resistant Gram-negative superbugs generally (http://www.asid.net.au/gramnegative; 2-3 August 2013).

“One of our greatest mistakes is not to think of it as a global ecological problem. The interconnectedness of everybody's microflora means that we actually share these gut microbes pretty effectively. It's not just humans who share them, even migratory water birds transmit these things around the world. E. coli from a hospital dump in Bangladesh might be ultimately deposited in Canada, Tokyo or Sydney. “There is always a pool of more virulent E. coli and Klebsiella somewhere. More virulent bacteria are more likely to meet antibiotics because of their greater propensity to cause disease in humans. As bacteria adapt to the antibiotics - and bacteria have been adapting since before mammals evolved - then common sense dictates that virulence and resistance adaptations should come as a package deal,” says Iredell.

Iredell says that even though the rate of antibiotic resistance to the bugs in Australia is only a tenth of that in India, these bugs are flying into our country aboard birds and, more frequently, planes. That means a conservative approach to antibiotic use won’t protect us if other countries give superbugs free rein to develop.

“This is a global ecological issue and we need to take the same view as we take of other ecosystems. Controlling the selection pressure that is driving the adaptation means controlling antibiotics through policy, advocacy and international agreements. Antimicrobial stewardship - the appropriate use of antimicrobials in hospitals, agriculture and veterinary science - is a strong agenda in Australia but we need to partner with neighbouring countries and support them.

“We also have to adopt a research agenda to better understand the impact of antibiotics. We only have a simplistic understanding at the moment, knowing that some drugs appear to do more damage than others, but their mechanisms and our capacity to predict the consequence of the use of one drug over another are not well researched. If you think about an individual's gut, the diversity of microflora is enormous and largely unmeasured. A lot of what we are doing with these antibiotics is really not visible. When we use an antibiotic to target 0.5% of the ecosystem that's causing the problem, we are doing a lot of damage to the remaining 99.5 % of the ecosystem and creating opportunistic niches for superbugs to move in.”

Iredell says we also need better monitoring and surveillance of the ecosystem itself. If all the E. coli in India are resistant and aggressive, it doesn't matter that you've never had an antibiotic in your life: you are still prone to get it. It will move into the space in your gut in which E. coli normally live. So what is happening to the biodiversity of E. coli in that particular niche? Is it becoming dominated by virulent and resistant clones or will all the E. coli become normal, antibiotic-sensitive and non-virulent in five or 10 years if you withdrew all the antibiotics?

“We don’t know the answer,” says Iredell. “There may be an ecological tipping point beyond which healthy biodiversity can’t be salvaged, in the same way that if you damage any ecosystem too greatly and start to experience extinctions, the system won't naturally restore when left alone. My concern is that we are pushing certain species towards diminished diversity and increased aggressiveness and antibiotic resistance, so that even if we fix our global policy settings, and everybody stops using antibiotics, it may be too late.

“It's unlikely that we are beyond salvage already but it could be a long time before we stop doing damage and we don't know how much time we have. We need to discover how real this threat is.”

**OPTIMISM**

However, Iredell does believe there is reason for optimism, pointing to a number of areas where solutions to the superbug threat are likely to emerge. The first of these is probiotics.

“Probiotics haven't been researched much in humans, perhaps as there is no commercial driver to do the research because they are not regulated by the Therapeutic Goods Administration. But there's been research into probiotic use in animals and there's lots of evidence that they do good things.

'Another 'green management' option will be to use natural predators such as bacteriophage viruses that infect the bacteria, quickly destroying it without harming other beneficial bacteria. The biotechnology revolution suggests that we will be able to rapidly recognise the threat potential to an individual and choose antibiotics much more wisely instead of using the 'best guess' approach.'”

And finally, Iredell talks about targeted manipulation of bacteria at a genetic level. “When we know how these genes are transmitted, we can potentially cleanse bacteria of their aggressive characteristics. Gene therapy in humans is well accepted and often very successful - we need to adapt this approach to one of our most important organs for good health – our internal microflora.”
Hanoi’s streets thump like an impatient teenager. It’s a city on the move, evolving, impatient for change. Its frantic pace is mirrored in the corridors of Viet-Duc Hospital, one of Vietnam’s major surgical and trauma centres.

Dr Ha Phan Hai An, one of the first Hoc Mai scholarship recipient is now deputy director of the Viet-Duc Hospital precinct. In a city of 6.5 million there are high demands on this medical facility. At any time the 500-bed hospital is packed, wards overflowing with patients, anxious family members waiting to bathe or feed their relatives, and extremely busy hospital staff.

As Viet-Duc’s deputy director Dr An co-ordinates its executive management team. She is now also Director of the precinct’s International Cooperation Department which aims to build stronger global relationships. In her clinical role, she leads the kidney diseases and dialysis department and is recognised among her peers as one of Hanoi’s top renal specialists.

As a young girl, she dreamt of becoming a geologist but instead followed in the footsteps of her parents becoming a doctor. At the time, the ratio of patient to doctor was more than 2,000 to one. After graduating in the early nineties she decided to specialise in renal diseases concerned by the rising number of people presenting with the kidney disorders.

Renal diseases are still on the rise in Vietnam and no one is quite sure why.

“Some medical experts are suggesting our rapidly changing diets or use of toxic blends of traditional and herbal medicines as the cause of damage,” says Dr An.

“Unfortunately many people would prefer to trust the word of their local healer and rely on a concoction of herbal remedies. The problem is when one doesn’t work they will quickly try another without realising the effect these potions may have on their internal organs.”

“Sadly, often it is also a much cheaper option for the patient. But the results can be catastrophic with people suffering organ failure,” Dr An states.

The dialysis unit Dr An runs operates twenty-four seven, in three shifts. “The early morning is allocated to older, retired people” she explains. “The second shift is for middle aged people but still employed, while the late shift is for the younger patients who work through the day and undergo their dialysis sessions throughout the night. They go straight from their session to work,” says Dr An.

While there are thirty dialysis machines at Viet-Duc, there’s a limit to the number of machines that the hospital can effectively maintain, admits Dr An. She has become a passionate advocate for organ donation.

For one of the earliest and one of the most recent Hoc Mai scholarship recipients, the fellowship provided a wealth of new knowledge and skills – now being put to good use in Vietnam.

By Victoria Hollick
“I would like to improve the survival rate for dialysis patients. We have more than 6,000 patients with chronic kidney failure who urgently need transplants. But in the past four years we have had as few as 12 people donate their organs.

“The issue of organ donation is complex. Firstly, many people do not know that it is possible. But there is also the issue of deeply held cultural beliefs that a person’s body must be buried intact with all their organs,” Dr An says.

She believes targeted education programs on organ donation are the way forward and now leads a campaign focused on brain-dead donors.

Supporting Dr An’s quest to find the root cause of Vietnam’s increase in kidney diseases is a young doctor Pham Hoang Ngoc Hoa, a Hoc Mai scholarship recipient last year. Dr An describes her young colleague as a doctor with a brilliant future.

While Dr An deals with the clinical repercussions of kidney disease, 27-year-old renal pathologist Dr Hoa is focused on research.

Working at a hospital across town in the Bach Mai Hospital’s Transplant Centre she is one of only five renal pathologists in Hanoi.

She is passionate about her research work. When she is not in her pathology lab diagnosing patient samples she is focused on finding the causes of lupus nephritis and the histopathological reasons behind the various types of kidney diseases.

A year after her placement in Sydney, Dr Hoa is adamant that she will remain life-long friends with the doctors who took her under their wing at Royal North Shore Hospital. Dr Hoa says her time at the hospital gave her the opportunity to put her university text book learning into practice.

“There are few laboratory scholarships in Vietnam and without my experience in an Australian hospital I would not be able to do the work that I do now.

“Before I did the scholarship program I had to practise what I had learned from text books and trust it was enough basic knowledge to make the correct diagnosis on a pathology sample,” admits Dr Hoa.

Because there are very few clinicians or pathologists in Hanoi or even Vietnam with the ability to diagnose non-tumour renal diseases, Dr Hoa says she still relies on the assistance of her Australian mentors, Professor Carol Pollock and Associate Professor Anthony Gill.

“I am really lucky because I can make a diagnosis on a pathology sample and if I have any doubts I will send my results to them and they respond quickly.

“Thankfully I have people who can support my decisions. The correct treatments can be given to patients. Without the assistance of our friends in Australia none of this would have been possible.”
When disaster strikes

By Christine Jorm

Associate Professor Christine Jorm is coordinator of the Professional and Personal Development Theme of the medical program and Associate Dean (Professionalism).

On Wednesday, 21st August, low rumbling gave scarce warning before the buildings began to collapse. Sirens blared. Panic quickly spread.

‘You are attending the AMSA Convention in Wollongong. An earthquake has led to the collapse of a nearby church. Many in the congregation have been injured, and you have been asked to go and help. However, the roads into this area have been declared unsafe and the arrival of emergency services will be significantly delayed.’
The 1909 Gothic-revival MacLaurin Hall was an obvious choice for a church collapse when seeking the largest flat space on campus to host the inaugural Human Factors in Healthcare Workshop. Designed around managing an acute emergency patient situation, the experiential workshop made serious demands on medical students’ teamwork, decision-making and communication skills. Divided into small teams, students were forced to work in tight spaces. Each group focused on one of the four cases. One student in each team became one of four victims: 74 year-old retired public servant Harold, hair stylist Jan, 34 weeks pregnant Gloria or university student Tom. Initial findings and injuries were marked on these victims. The room was divided up into eight ‘disaster clusters’ containing one instance of each case and monitored by an expert facilitator (physicians, Sydney Medical School simulation experts and pre-hospital retrieval experts including Care Flight Director Alan Garner).

The resourcefulness of the students was rapidly tested. As their patients’ conditions worsened, fallen planks were used to stabilize shattered limbs and spines, old towels from the ‘church clothing drive’ became pillows and blankets and hypoglycemic Gloria was sustained by biscuits salvaged from the ‘church morning tea’.

Sirens howled again, marking the arrivals of ‘Hospital Response Team’. Despite arriving with I.V fluids, blood results and cervical collars, the team was low on resources and hampered by one very slow radiographer. Students were forced to convince, negotiate and wait for the limited services of the response team, who were deliberately not briefed on the full case details.

Frequent disruptions were effected by Ian Swallow, an experienced Pam McLean Centre actor with a role as a very annoying congregation member full of unhelpful suggestions.

Technology featured significantly in the scenario, with patient observations flashed up at random intervals on a screen. One innovation was the use of mobile phones. The Sydney Medical Program text messaging service usually used for notifying students of cancelled lectures was utilised to send patient information, irrelevant distractors and requests for the students to leave their groups in order to relay patient information, irrelevant distractors and requests to the ‘SES Communications team’: for instance, Jan’s daughter needed to know if she should get on a flight from London. Students were also encouraged to use their phones to look up medical information and treatment ideas.

Cases were complex, deliberately designed to challenge students at this level. Every patient deteriorated rapidly.

Jan had fallen heavily onto her left side, landing on a metal rail, and then hitting the back of her head. She broke her fall with her right wrist which is now deformed and swollen. Jan had a left open pneumothorax with flail segment and a left intracranial haematoma with mass effect. Limited first aid was possible. She needed her chest decompressed, her breathing and blood pressure managed, and to get to hospital fast for warfarin reversal (with FFP, prothrombinex, Vitamin K) and neurosurgical evacuation of the haematoma.

Meanwhile, Tom’s fractured pelvis and femur resulted in a hypovolaemic arrest, with ECG readings projected on the big screen. Mannequins supplemented the student patient when his team began last-minute cardiopulmonary resuscitation.

The scenario concluded with the hospital response team returning, but able to evacuate only one quarter of the patients. Isolated teams now had to rapidly coalesce to work out a triage plan – Jan and Tom both extremely unstable at this point!

Charismatic patient safety experts Sidney Dekker (School of Humanities, Griffith University) and John Wakefield (Executive Director, Medical Services Children’s Health Queensland) then debriefed the students, providing more formal teaching on Human Factors.

Stunned by the extent of their immersion, the students gave extremely positive feedback. “Lying there with so much anxiety around me, I started to feel panicky too,” said one student ‘patient’, with another “amazed at how much I just really wanted our patient to survive … I forgot it was a simulation.”

Thanks to:
The complexity of the scenario was facilitated by impressive camaraderie and involvement from doctors, nurses and RMO volunteers from every Clinical School, including the Rural Clinical School. The core workshop development team was comprised of Stacey Gentilcore, Christine Jorm, Renee Lim, Adam Osmanovski, student Jeremy Robertson and Clare Skinner. Thanks also to: Kath Atkins, Mo Buksh, Jen Burn, Dominique Briones, Toni Cavalletto, Mimi Chiu, Tyler Clark, Evelyn Dalton, Stewart Dunn, David Fulton, Michael Frommer, Alan Garner, Randall Greenberg, Rebekah Jenkin, Tamsin Kaneen, Wanda McDermott, Pip McIlroy, Louisa Ng, Daniel Ng, Hugh Porter, Josie Roper, Lucy Roper, Cathie Spiker, Ian Swallow, Gabriel Shannon, Phil Simpson, Mechelle Smith, Aaron Tan and Sarah Whereat.
The brain must surely be the most fascinating of all human organs. The early anatomists first explored its secrets; the physiologists began to investigate its pathways; the clinicians made clinic-pathological connections but we still have much to learn. A display at Fisher Library includes many of the original works of the 13th to 19th centuries, which laid the foundations of our current knowledge of the neurosciences.

By Catherine Storey
President of the Medical Alumni Association
When the International Society for the History of the Neurosciences (ISHN) recently met in Sydney, our University motto, ‘though the constellations change, the mind is universal’ was quite appropriate. The ISHN have, in the past, held their meetings alternatively in one of the great capitals of Europe where the great defining moments of neuroscience have played out over the centuries, or in one of the capitals of North America, where well endowed research facilities have contributed to more recent neuroscience history. So it was with some trepidation that the local organising committee set about the task of organising the very first meeting to be held in the Southern Hemisphere. The University campus provided an excellent locus for this international history conference.

Yvonne Cossart, John Carmody and I from the local committee, in a joint venture between ISHN and Rare Books at Fisher Library, aided by librarian Sara Hilder, arranged an exhibition of rare books to complement, supplement and illustrate the themes of the conference. The display provided the opportunity to highlight the exceptional collection held by our comparatively ‘new’ University. And what an exceptional collection is held at Fisher Library!

Although not a comprehensive review of the history of the neurosciences, and confined largely to advances in Western medicine, the aim of the exhibition was to cover the major periods of change, from the earliest anatomical illustrations of the brain to the rapid expansion in twentieth century scientific developments that underpin our modern understanding of brain function.

A display highlighting the now almost forgotten infections of leprosy and syphilis complemented our special theme day of neuro-infections organised at the Quarantine Station, North Head; the original descriptions of some of the clinical descriptions of movement disorders assisted the joint day with the Movement Disorders Society. Some of those who viewed this exhibit expressed their surprise at seeing for the first time the brief paragraph in which Sydenham describes chorea (1686), or the thin monograph in which Parkinson demonstrates his ability as an astute observer (1817). The saddest is a short letter to the editor of the Lancet in which a general practitioner pleads for assistance for his own son (1981). The clinical description of what is now referred to as West’s syndrome has not been improved upon.

...from the earliest anatomical illustrations of the brain to the rapid expansion in twentieth century scientific developments that underpin our modern understanding of brain function.

The library’s superb collection of anatomical texts allowed us to explore the early studies of the brain through human dissection, an important influence from the 16th century; the works of Descartes and the writings on the use of the microscope demonstrate the influence of experimentation and the search for mechanisms of human physiology which emerged in the 17th century. The library’s outstanding collection of works on phrenology is also included. This may seem at odds with the theme of incorporation of science into the practice of neurology in the 19th century, but for the first time, localisation of brain function was proposed leading to the extensive clinic-pathological correlates which characterise this period. These themes are illustrated with the use of pivotal texts and contemporary journal articles while the 20th century incorporation of laboratory science into this clinical specialty is reflected in the use of early journal articles to illustrate the progress in unraveling the mysteries of electrical transmission in the nervous system.

As this year marks the 50th anniversary of the award of the Nobel Prize to the Australian researcher John Eccles in 1963, a special spot was allocated to celebrate his early work (some of which was performed at the Kanematsu Institute, Sydney Hospital in the 1940s). This achievement alerted us to the overwhelming number of Nobel Prizes which have been awarded for neuroscience. The exhibition also brings together an example of each of these prizewinners.

We feel that it is important that students are aware of this ageless resource, and we hope that many of our current students, who now access information almost exclusively in electronic format, have an opportunity to review the exhibit while studying in their clinical neurology blocks. Two of the first year students assisted with the preparation of the exhibition, enthusiastically researching, handling, and displaying the books. Tanya Monolios (Med 1) researched the material to trace the emergence of the cranial nerve nomenclature as we know today, through the early works of Galen, the anatomical works of the Renaissance and on through the nineteenth century. Ashley Kong (Med 1) brought together works that described the first clinical ophthalmoscope and those papers that illustrate the incorporation of this tool into clinical practice, in a display that is complemented by various ophthalmoscopes used over the last century by our medical alumni.

The exhibition will continue in the exhibition space, Level 2, Fisher Library until December 2013 and I do hope that many of the medical alumni will have an opportunity to view it. These books, however, need to compete in a digital age. Although it is a joy to see the display cases full of these works, the exhibition will be available in a virtual form on the Fisher Library website later in the year, when hopefully it will serve as a resource for future students.
Nominations are sought for the award of the Sir Zelman Cowen Universities Fund Prize, which recognises discovery in medical research at the University of Sydney. Nominations should be made according to the Prize guidelines, and sent by email to the Fund’s office by Friday 22 November 2013.

Guidelines

• The Prize, which will comprise an award of $10,000 and a medal, will be for discovery in medical research performed principally at the University of Sydney.

• Nominees should have made a major contribution to the understanding or treatment of disease.

• The nomination should identify the potential or achievement of the discovery for therapeutic outcomes.

• Nominees should be under 45 years of age at the time of close of applications.

• It is anticipated that the award will be announced in April 2014.

• Nominations should be completed following these guidelines and a pro-forma available from the Fund’s Office.

Enquiries
Ms Sue Freedman-Levy – Administrative Officer
Sir Zelman Cowen Universities Fund
University of Sydney F13 NSW 2006
P 9351 6558 E suefl evy@anatomy.usyd.edu.au

Submission Address
szcuf@anatomy.usyd.edu.au

The 2014 Award of the Sir Zelman Cowen Universities Fund Prize for Discovery in Medical Research will be sponsored by The Schwartz Foundation.

THE RECIPIENT
Allison Tong used the scholarship to attend the 21st Cochrane Colloquium in Quebec City, 19-23 September 2013, where she gave a presentation on Enhancing transparency in reporting the synthesis of qualitative health research. (BMC Medical Research Methodology 12:181 available at http://www.biomedcentral.com/1471-2288/12/181)

“I would like to thank the Sydney Medical School and every person who supported the Helen Triantafyllou Early Career Research Conference Grant. This Grant provided me with a valuable opportunity to develop my research profile and facilitated international recognition of our work in improving the quality of reporting qualitative health research synthesis,” Allison said.
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bou tique postgraduate accommodation on campus

Not all colleges are the same. Sancta Sophia College is a peaceful haven on the edge of the University of Sydney campus.

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As part of the Sancta Sophia College community, which has 160 undergraduate women and is currently home to a strong postgrad med cohort, you will be able to experience the cultural, spiritual, sporting and recreational activities that form the pulse of the College.

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For more information see www.santasophiacollege.edu.au

Or contact: Valerie Bohle Registrar and College Secretary T + 61 2 9577 2100 E: secretary@sancta.usyd.edu.au Sancta Sophia College, 8 Missenden Road, Camperdown Sydney, Australia
INDONESIA

In July Sydney Medical School’s Executive officer Tom Rubin met with several alumni in Indonesia who returned to their communities after studying at Sydney with courageous determination to give back.

Graduate Dr Mirari Prasadajudio MM (RHlthScHuman Genetics) 2004 tells her story:

“After completion I returned to Indonesia, working in small clinics serving a poor community in Semarang. During the six months of my service I received a further scholarship from German academic exchange service DAAD to the University of Heidelberg. I did my Doctorate in Medicine, worked in the hormone laboratory [that’s what they called it], in the obstetrics department. My interest was obstetrics and infertility in particular.

After completion of my Doctorate in 2006, I returned to Indonesia, working in clinics in Jakarta while waiting for a community service call. In Indonesia, medical doctors need to serve in poor communities. The same year, I served a poor community in a very remote island of Rote closer to Darwin, where I assisted a group of Australians. I think they were from DFAT. I helped them translate their meetings with local fisherman about Australian borders. It was an interesting experience for me.

I returned to Jakarta in 2008. My husband had an accident during my stay in Rote which caused me to reconsider my field of interest. Being an obstetrician would require me to spend most of my time in operating theatres, and with my family commitments I couldn’t instantly leave the theatre. I decided I would be a housewife, but my husband encouraged me to keep on pursuing my career in the medical field and helping the community. He encouraged me to consider paediatrics. After five more years studying obstetrics, I worked as editor of one of Indonesia’s paediatrics journals, whilst preparing for a paediatrics residency entry examination at the University of Indonesia. It was very competitive as they only receive 10-15 applicants each semester.

My husband passed away in 2009, and on the day of his sudden death, I received news I had been accepted into paediatrics. I thought ‘God must be joking!’ I’d left Germany and changed my field for my husband, then once I was ‘in’ the paediatrics field, my husband left.

I’m now in my final year of residency, doing my final thesis, and hopefully will complete the national board exam at the end of this year. With hindsight I think even as bitter and gloomy as it could be, it is part of my life. I’m happy where I’m at now, and hopefully I will contribute to the better enrichment of paediatrics health. I established a foundation for poor children in 2011: www.main.or.id

I may not be as successful as other home-returnee doctors in term of my position, but I’m
grateful for my experience at The University of Sydney. It contributed to better knowledge and enriched my life experience.”

BANGLADESH

After graduating from the Master of International Public Health in 2009, Liz Drummond worked for one year as a Nutrition, Research and Evaluation Officer through the AusAID-funded ‘Australian Volunteers for International Development Program.’ She recently returned to Sydney after working with what she describes as an exciting “in-the-moment project.”

“During this time I was mostly involved with the IFAD Small Fish and Nutrition Project implemented by WorldFish in Bangladesh. This program aimed to increase the availability and consumption of nutrient-rich fish and increase awareness of the importance of fish and improved micronutrient nutrition. The project was implemented in around 2000 households in three different districts of Bangladesh. Overall we had a very positive response and hope that in the future we can expand this project to more communities.”

View a seminar by Liz about the timely project: http://bit.ly/179C513

PHILIPPINES

Our medical graduates are highly sought after. In November the Master of International Public Health students will participate in a ‘Classroom in the Field Program’ (CIF), which heralds the start of exciting and innovative collaborations in student/staff exchange, teaching and research between Sydney Medical School and Philippine partners. The wonderful aspect of the CIF Program is that Sydney Medical School and Sydney School of Public Health (MIPH and MPH) Filipino alumni have volunteered to be field mentors. How generous of them and such a rewarding feeling when one’s students enthusiastically give back to their alma mater.

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Sydney Medical School has a long history of philanthropy and its first Dean Professor Thomas Peter Anderson Stuart encouraged donors to give to his much-loved Anderson Stuart building as early as 1890. In that year Sir Philip Sydney Jones Kt (MB 1900 ChM 1901), Vice-Chancellor, Fellow of Senate, Physician, Examiner in Medicine and the son of merchant David Jones donated the building’s eastern stained glass windows.

Their six panels tell a story of the history of medicine and contain portraits of 18th and 19th century pioneers of British medicine and surgery: Richard Bright (1789-1858), English physician and early pioneer in kidney disease research; Sir Benjamin Brodie, 1st Baronet (1783-1862), English physiologist and surgeon who pioneered research into bone and joint disease; Edward Anthony Jenner (1749-1823), English physician and scientist who pioneered the smallpox vaccine; Sir Astley Paston Cooper, 1st Baronet (1768-1841), English surgeon and anatomist, who made historical contributions to otology and vascular surgery; Sir James Young Simpson, 1st Baronet (1811-1870), Scottish obstetrician who introduced chloroform for general medical use; and James Syme (1799-1870), a surgeon who introduced many innovative methods and invented the waterproof material known as ‘mackintosh.’

As many alumni would remember, in the early 20th century a constructed mezzanine plus a specimen preparation room and toilet intersected and literally imprisoned the beautiful windows on the eastern side. The recent stunning restoration has revealed them once more and made possible through the sustained efforts of many people. On 17th April 2013 the liberated eastern stained glass windows of the Anderson Stuart building were proudly unveiled to the public in a joyful celebration accompanied by string trio.

Anyone wishing to contribute to further essential restoration, should contact Sydney Medical School Foundations Director, Sue Merrilees on sue.merrilees@sydney.edu.au
“We started university with nothing and feel we owe the University and our teachers a big debt. We have come to our present financial situation as the result of medical income and subsequent investments. Now, getting older, we think about what will happen to our Estate. The children are all reasonably well provided for. How would they cope with a windfall at our death? We wanted to establish a fund that would have a lasting impact. We considered other investment entities, but were impressed with the university’s policies and minimal fees. We met Greg Fernance, Head of Investment and Capital Management, who explained to us how the University of Sydney invests funds, and we were reassured by his strategy and expertise. Because the Sydney Medical School Scientific Advisory Committee evaluates all applications for funding, we knew the proceeds would be spent wisely, to support promising medical research and scholarship. We have both been extremely happy with our decision and strongly recommend it to others.”

For information about opportunities to support or contribute to Sydney Medical School, contact Sue Merrilees sue.merrilees@sydney.edu.au
2014 SEASON

Priority renewal window for 2013 Season Ticket Holders 17 September–15 October
Season Tickets on sale to the general public 15 October

Browse the full program online or request a brochure now. SMS your name and address to 0427 016 327* or visit the website.
* (Standard SMS charges apply)

2014 is waiting in the wings...

There’ll be Russian revolutions and British farce at the Drama Theatre, Sydney Opera House. 50s black comedy, 60s screen sirens and 70s road trips at The Wharf. Epic swashbuckling swordplay and dark, dark magic at Sydney Theatre.

Hugo Weaving towers as Macbeth, Richard Roxburgh coaches Ryan Corr in the art of poetic seduction in *Cyrano de Bergerac*, Paul Capsis is ravishing in *Calpurnia Descending*, a feisty Bryan Brown sweeps Greta Scacchi off her feet in *Travelling North* and the Russians are coming in the form of Justine Clarke, Helen Thomson and Jacqueline McKenzie in *Children of the Sun*.

Discover the full line-up.