

MJA Careers

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Professor Melissa Southey is dedicated to uncovering why some families have such a history of breast cancer, and how to modify their risk

Professor Melissa Southey is a molecular geneticist. She runs a 28-strong team of researchers as head of the Genetic Epidemiology Laboratory (GEL) in the University of Melbourne's Department of Pathology.

To quote her GEL profile page: "Her research programs are focused on characterising the genetic and epigenetic factors responsible for cancer predisposition and progression, including familial aggregation of cancers".

Specifically, she studies the genetics of familial breast cancer, and has dedicated her professional life to puzzling out why some families have so much history with the disease, and, ultimately, how to reduce the risk to them.

Professor Southey puts in long hours chasing the answer to the breast cancer puzzle and, like other researchers in her field, it would be easy to stereotype her as she's pictured here — white coat, bespectacled and, no doubt, with an expensive piece of equipment close at hand.

She has all the qualifications you'd expect — she completed her Bachelor of Science (Hons) from UoM in 1988, and followed that up with a PhD, again from UoM, in 1993.

It's the non-scientific aspects of her resume that surprise.

First up is a graduate diploma, now known as a masters, in law, awarded in 1996.

"It's focused on intellectual property law, particularly around patents and copyright law," Professor Southey tells the MJA.

"If I wanted to I could go be a patent attorney, but I use it from a scientist's point of view, knowing how to protect your own intellectual property. The whole space is quite detailed. It's not just about the institution, it's also about [the individual] having a voice."

Go back a little further and Professor Southey's career path has another surprising turn.

"Science was always a key thing in my life," she says, "but I started university doing music at the Con. It didn't take long to realise that music was my hobby not my career. Science sort of overran it."

She plays piano and the oboe, but her major at the Melbourne Conservatorium of Music was singing, specifically operatic singing, making the most of her soprano voice.

"[Music] was a nice therapy, I suppose," she says. "And it financially sustained me through university — mostly choral, church music, weddings, that sort of thing."

Although her days of singing professionally are over, music provides essential moments of stillness in Professor Southey's life.



Professor Melissa Southey

"I travel quite a bit and I always try to go and hear some music wherever I am," she says. "It's something I don't have to think about, I guess. Almost mindful rather than thinking."

An income wasn't the only positive to come out of music.

"I met my husband, Andrew, when I was 13, in a school orchestra. He

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“In 5 years we’ve made a huge difference. In 10 years’ we could make an extraordinary difference”

was blowing out his trumpet down the back of my shirt,” she says. They married in her honours year, and now have two daughters, aged 17 and 19. He is a psychologist.

“I didn’t do the classic postdoctoral thing overseas,” Professor Southey says. “We waited until both girls were in primary school and then went to France for a while.”

Like most working mothers, Professor Southey faces all the usual dilemmas around work–life balance.

“Andrew has been able to pull back a little, but it’s tough for a research scientist to do that,” she says, calculating that she logs about 70 hours a week in the lab.

“But I work with joy. It’s like being paid for doing your hobby. I have to pinch myself sometimes. I even feel a bit guilty, because it’s so amazing. I get to see a lot of the world and I’m stimulated most of the time.

“And I think — I hope — I’m setting a good example for my daughters.”

So, why cancer?

“Cancer always interested me as an undergraduate. You could clearly identify which cells were cancerous, but what really intrigued me was, why were they cancerous?

“Like most people, cancer had touched my family so that’s the direction I went in.”

A quarter of a century on from her undergraduate days, Professor Southey nominates three milestones in the field of “precision public

health” that have changed the face of genetics.

“The first was polymerase chain reaction (PCR) becoming affordable in the 80s,” she says. PCR is a process used in molecular biology to amplify DNA sequences. “That was a huge boost. It gave us an amazing capacity to look at genetics in ways that were not possible before. It made genetic testing quicker, easier and cost-effective.”

The second milestone was the development of gene array technology in the middle to late 1990s; and the third was next-generation sequencing.

“In the late 80s we could look at 200 base pairs in a week,” Professor Southey says. “Now we can do a whole human genome in a day.”

Running a team of 28 researchers is like herding cats “but in a good way”, she says.

“It’s not like an accounting office. We encourage independent thought and action, so it’s a matter of herding them in constructive and supportive ways. It’s a delicate art.”

Mentors were vital to Professor Southey’s early career development, she says.

Professor Deon Venter, a consultant anatomical and molecular pathologist, was an early influence.

“He knew what molecular genetics could do for pathology,” she says. “He was leading the field, and he was right. He joined those two dots together for me.”

Professor John Hopper, Director (Research) of the Centre for Epidemiology and Biostatistics in the School of Population Global Health at The University of Melbourne, and Professor Graham Giles, Director of the Cancer Epidemiology Centre at Cancer Council Victoria, were mentors, as is Professor Ingrid Winship, chair of Adult Clinical Genetics at the University of Melbourne.

Professor Southey is doing some mentoring of her own, as students come through her department.

“By the time students have found me, they’ve already converted,” she laughs. “They’re focused, engaged, and they know that just having a degree is not all that unusual. They know they have to find a niche to be employable.

“It blows me over how bright they are.”

The National Breast Cancer Foundation has set the goal of zero deaths from breast cancer by 2030. Does Professor Southey think that’s realistic?¹

“I’m not sure,” she says. “Maybe I’m too [close to it]. There are so many families where we don’t understand why they have so much family history of breast cancer.

“But I’m not pessimistic either. We’re making huge strides in identifying those who are at risk before they develop breast cancer. The biggest way forward now is to modify the risk. How do we reduce the risk?

“In 5 years we’ve made a huge difference. In 10 years’ we could make an extraordinary difference.”

1. National Breast Cancer Foundation’s Project 2030 <http://nbcf.org.au/about-national-breast-cancer-foundation/about-us/project-2030/>

doi: 10.5694/mja16.1605C1

Around the universities and research institutes



Professor David Wattchow, surgeon, clinical researcher and philanthropist, has been made a Companion of the University by **Flinders University**. He is a foundation alumnus

of the School of Medicine, and is recognised internationally as an expert in the treatment of complex cancers of the distal colon. His leadership of the Flinders Medical Centre (FMC) Clinician's Special Purpose Fund has been influential in the donation of more than \$2 million for neuroscience and cancer research, while his significant personal donations have supported PhD scholarships and fellowships. These activities have been instrumental in the creation of the Flinders Centre for Innovation in Cancer. A graduate and University Medallist in 1980, Professor Wattchow received his PhD from Flinders in 1989. He gained his surgical fellowship in 1990, joining the FMC staff as a consultant surgeon with academic status at the University. He was made Head of Colorectal Surgery in 1996, and in 2008 received professorial status and became FMC's Clinical Director of Gastrointestinal Surgery. As well as teaching into the University's MD course and supervising PhD students, Professor Wattchow is the author of 75 peer reviewed publications and recipient of 32 research grants.

<http://blogs.flinders.edu.au/flinders-news/category/faculty-of-health-sciences/school-of-medicine>



Associate Professor of General Practice John Litt is retiring after 30 years at **Flinders University**. He has also been presented with a Lifetime Achievement Award from The Lung

Foundation, which he can add to his 2014 Dean's Award. In 2015 alone, during his time as deputy chairman of the Royal Australian College of General Practitioners' Quality Committee, its publications and guidelines generated more than one million website hits. He played a key role, together with another public health physician and South Australian GP, Peter Lake, in raising the uptake of flu vaccinations in South Australia for a major risk group, those over 65 years, from 29% to over 80% over a 10-year period, through the formation of the SA Influenza Advisory Committee. A/Prof Litt has been a member of the SA Department of Health Primary Care

Pandemic Planning Steering committee and sat on several committees related to immunisation, including the ATAGI, SA Immunisation Forum, SA Influenza and Pneumococcal Advisory Committee. He says he will remain active on four national and one international Immunisation Advisory Committees.

<http://blogs.flinders.edu.au/flinders-news/2016/04/20/farewell-john-litt-leaving-the-party-but-not-turning-out-the-lights>

The **University of Sydney** has received a \$35 million gift from the Susan and Isaac Wakil Foundation, the largest gift ever donated to the University since its foundation in 1850. In 2015 the Wakils gave \$10.8 million to Sydney Nursing School to establish 12 annual nursing scholarships, bringing their total University giving to nearly \$46 million. The gift will enable construction of the main building within the University of Sydney's proposed Health Precinct. For the first time multiple health disciplines will come together in a purpose-built facility to translate research into education and clinical services. The Susan Wakil Health Building will co-locate the faculties of Nursing and Midwifery and Health Sciences, with components of Medicine, Pharmacy and Dentistry. It will provide state of the art clinical simulation programs and a multi-service clinic, as well as flexible infrastructure that supports team-based research programs. A professorship will be called "The Susan and Isaac Wakil Professorship of Healthy Ageing", in recognition of both donors.

<http://sydney.edu.au/news-opinion/news/2016/04/21/wakil-donation-to-transform-approach-to-health-care-.html>

The **Garvan Institute of Medical Research** in Sydney and Israel's **Weizmann Institute of Science** are planning to establish a joint centre for research in cellular genomics. The Centre, which will be known as the Garvan-Weizmann Centre for Cellular Genomics, will be housed in The Kinghorn Cancer Centre in Sydney. The Centre will be Australia's only multidisciplinary facility for cellular genomics — the study of the molecular genetic states of thousands of individual cells. The mission of the Centre will be to help researchers to develop a detailed understanding of how the genomes and gene expression programs of individual cells in the brain, the immune system and other organs change over the course of a lifetime, how

cancers, autoimmune diseases, dementia and other conditions develop, and how to design new strategies for prevention and treatment. The Centre's establishment will be supported by \$5 million in NSW Government funding, with matching funds provided by Garvan, with the assistance of Weizmann Australia.

<http://www.garvan.org.au/news/joint-sydney-research-centre-in-the-works-for-garvan-and-weizmann-institutes>



The **University of Newcastle** (UON) has appointed leading endocrinologist Professor Roger Smith, AM, as its next Laureate Professor to reflect his contribution to the

understanding of human pregnancy. Professor Smith joins a group of only 10 UON academics to receive the highest academic honour. The Laureate title is reserved to recognise individuals for their world-class academic achievements and research impact on an international scale. Laureate Professor Smith said one of his major discoveries was that the length of human pregnancy was determined by a type of biological clock located in the placenta. He also noted the important work his team has done in the Indigenous community. He is the co-director for the University's Priority Research Centre for Reproductive Science, director of the University's Mothers and Babies Research Centre and director of the Department of Endocrinology at John Hunter Hospital.

<http://www.newcastle.edu.au/newsroom/featured-news/leading-uon-endocrinologist-honoured-with-laureate-professor>



Monash University's School of Clinical Sciences' medical student Ben Cailles will present two abstracts at the Annual Meeting of the European Society for Paediatric

Infectious Diseases (ESPID) this month in Brighton, UK. Ben completed his Bachelor of Medical Sciences (Honours) last year at St George's Hospital University of London, where he analysed UK neonatal unit data to monitor the epidemiology of neonatal infection. One of Ben's submitted abstracts received a "top score" from ESPID and he will give a 10-minute presentation on the epidemiology of neonatal infections in the UK. Ben and the research team aim

to publish their results in a peer-reviewed journal later this year, adding to a review article on this topic Ben published last year in *Early Human Development*.

<http://www.med.monash.edu.au/news/2016/monash-medical-student-research-recognised-at-world-meeting.html>

Professor Dan Lubman, Director of Turning Point and Professor of Addiction Studies at **Monash University**, has been appointed to a new Victorian Government Mental Health Expert



Taskforce, to guide the implementation of Victoria's new 10-year mental health plan. The taskforce brings together a significant level of experience and expertise, and "reflects the Victorian Government's ongoing commitment to work with the mental health sector, and people affected by mental illness to achieve better outcomes for all Victorians". This appointment recognises the significant state and federal work conducted by Prof Lubman and his team at Turning Point. Prof Lubman is also a member of the Victorian Government's Ice Action Taskforce, which was first convened by Premier Daniel Andrews in 2014.

<http://www.med.monash.edu.au/news/2016/dan-lubman-vic-gov-mental-health-expert-taskforce.html>

A world-first research centre exclusively focused on tackling the childhood obesity epidemic has launched at the **University of Sydney's** Charles Perkins Centre (CPC). Experts from seven universities across Australia, New Zealand and the UK will join forces through the new Centre of Research Excellence in the Early Prevention of Obesity in Childhood, to be housed at the CPC. The new NHMRC-

funded Centre will pursue research into the prevention of obesity in childhood, examining the crucial early years of life to better understand the importance of good nutrition, exercise and the effects of screen time in children aged 0–5 years. The \$2.5 million Centre, which is funded until 2020, will bring together specialists from a variety of disciplines including paediatricians, dietitians, health experts, economists and exercise physiologists, bringing a multidisciplinary approach to the complex childhood obesity problem.

<http://sydney.edu.au/news-opinion/news/2016/04/20/leading-health-experts-join-fight-against-childhood-obesity.html>

Burnet Institute and the School of Medicine and Health Science (SMHS) at the University of Papua New Guinea have signed a 5-year memorandum of understanding (MOU) to create opportunities for academic collaboration, student and staff exchanges, joint research, project tenders and grant applications. The MOU nominates public health, infectious diseases, women's and children's health and health systems as areas providing opportunities for academic collaboration.

https://www.burnet.edu.au/news/667_burnet_university_of_png_forge_new_ties

CSL has announced the establishment of a new \$25 million fellowship program for early stage and translational research in Australia. The CSL Centenary Fellowships will be high-value awards available to outstanding Australian researchers seeking to consolidate their career and undertake medical research in an Australian academic institution. Two 5-year fellowships, each valued at \$1.25 million, will be awarded each calendar year, for 10 years. Applications for the

first two CSL Centenary Fellowships (to commence 1 January, 2017) will open on 1 June, 2016.

https://www.burnet.edu.au/news/665_csl_launches_25m_fellowship_program



Professor Rob Medcalf, from the **Australian Centre for Blood Diseases** at Monash University, has been awarded The International Society for Fibrinolysis and

Proteolysis (ISFP) Prize for 2016. Prof Medcalf's area of expertise is in molecular neurotrauma and haemostasis. The ISFP Prize is awarded bi-annually for outstanding contributions to the field of fibrinolysis, thrombolysis and proteolysis. Prof Medcalf will deliver a honorary plenary lecture at the joint meeting of the ISFP and the Plasminogen Activation Workshop, to be held in Shizuoka, Japan, 17–21 October, 2016.

<http://ccsmonash.blogspot.com.au/2016/04/congratulations-to-prof-rob-medcalf-for.html>

Australia's first robotically assisted hip replacement operation was performed in Brisbane late last month under the leadership of **QUT's** Professor of Orthopaedic Research, Ross Crawford. Robot technology for hip operations has been used for some years in the US, but the 19 April operation on a patient at Brisbane's Holy Spirit Northside Hospital was the first time the technology has been used for a hip replacement operation in Australia.

<https://www.qut.edu.au/institute-of-health-and-biomedical-innovation/about/news/news?news-id=103549>

doi: 10.5694/mja16.1605C3