



ASSOCIATE PROFESSOR  
STEVEN TONG LOVES HIS  
JOB AT MENZIES

# QUIET ACHIEVER

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*Infectious diseases specialist Steven Tong is modest about his world-class achievements in medical research.*

He dismisses the idea that he is on the frontline of medicine, even though his work at the Darwin-based Menzies School of Health Research has advanced mankind's understanding of often-fatal diseases and greatly improved health service delivery.

Associate Professor Tong says his wife, Dr Kerry Gijsbers, is much more at the coalface because she's a medical

practitioner working in a remote Aboriginal community.

"Day in, day out, she and her colleagues deliver health care in a stressful, under-resourced environment. The breadth of what they do is amazing."

His modesty is typical of Menzies, a world-leading medical research organisation that has rarely, if ever, blown its own trumpet since being founded 30 years ago.

The institute has established itself as a world leader in many fields – from tackling the destructive cycle of

chronic disease that is at the core of Indigenous disadvantage in northern Australia to combating many of the diseases that afflict our neighbours in Asia, particularly malaria.

Associate Professor Tong spends one third of his time as a specialist at Royal Darwin Hospital and two thirds as a researcher at Menzies.

"I love my job," he says. "I get to work with two key aspects of disease, the patients themselves and the bugs causing the infections, and the importance of how they interact at multiple levels – individually, the



ASSOCIATE PROFESSOR  
STEVEN TONG AT WORK IN  
THE MENZIES LABORATORY

surrounding environment, and at a social and larger population level.

“Research-wise, I get to work with a marvellous team at Menzies. It’s a great environment here, very supportive of young researchers.

“Menzies is small enough for you to know the director. You bump into him and he takes the time to have a chat. I couldn’t see that happening as much in a bigger institute.”

Associate Professor Tong, aged 40, is one of many top-flight researchers working at the health institute.

They were all drawn to Menzies by its reputation, exacting standards, facilities and nurturing culture.

Many are now among the world leaders in their field – making breakthroughs that are changing the way many diseases are treated.

Associate Professor Tong’s mother was born in Malaysia and his father in Hong Kong. They went to Melbourne to study, partly because of the quota system in Malaysia that prevents many Chinese going to university. And after university they decided to stay.

Australian-born Steven didn’t decide until he was in Year 12 that he wanted to be a doctor.

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“My parents were very happy,” he says. “Of course they were – they’re Chinese. It’s said that all Chinese parents want their children to be doctors. It’s a stereotype and we laugh about it – but there’s some truth in it.

“But in many ways now I’m much more Aussie than Chinese. I love my footy and cricket. And I like the way everybody gets a go in Australia.

“I wanted to use whatever skills I have in a creative way. Medicine and research are a great fit.”

Associate Professor Tong, who graduated from the University of Melbourne with a Bachelor of Medicine and Surgery with Honours in 1998, researches many infectious diseases that particularly afflict Indigenous people, such as rheumatic heart disease and influenza, but it is his work with

staphylococcus and hepatitis B that has made his reputation.

He moved to the Northern Territory in 2006 to finish his specialist training and the following year started his PhD on the germ golden staph (*Staphylococcus aureus*) under the supervision of the legendary Professor Bart Currie at Menzies and Charles Darwin University.

He found that Aboriginal people were six times more likely to acquire bloodstream infections with *Staphylococcus aureus* and that there was a concerning increase in antibiotic resistance to commonly used penicillin antibiotics in the NT golden staph strains – these are called MRSA, short for methicillin-resistant *Staphylococcus aureus*.

*Staphylococcus aureus*, which is rife on Aboriginal communities, causes skin

and other soft tissue infections; the bug can eat big holes in heart valves and lungs. Golden staph is the most commonly isolated germ at Royal Darwin Hospital.

Up to 30 per cent of sufferers die when the bacteria gets into the bloodstream.

“It can kill very quickly.”

The bacteria evolves rapidly to build up resistance to antibiotics, which makes treating the disease never-ending guerilla warfare.

Rates of MRSA in Aboriginal communities have increased from 5 per cent to 25 per cent over the past 20 years – much of this increase driven by the need for widespread use of antibiotics to treat the many infections in these communities.

Following his PhD, Associate Professor Tong went to Duke University in North Carolina in the United States as the Inaugural NT Fulbright Scholar and then to the Wellcome Trust Sanger Institute in Cambridge, UK.

During this time he used DNA sequencing technology to help uncover two new species of staph – *Staphylococcus argenteus* and *Staphylococcus schweitzeri*.

A Menzies team, led by Associate Professor Philip Giffard, Dr Deborah Holt and Dr Malcolm McDonald, had been working on *Staphylococcus argenteus* for several years. This new species was first noted in the NT – frequently recovered from skin sores in Aboriginal children.

“Although very closely related to *Staphylococcus aureus*, *Staphylococcus argenteus* looks silver on an agar plate, not golden, and so we named it ‘silver staph’ (*argenteus*).”

*Staphylococcus schweitzeri* has been found in monkeys in Africa by German collaborators and is a sister species to *Staphylococcus aureus* and *Staphylococcus argenteus*.

The senior research fellow is also investigating a virulent “clone” of *Staphylococcus aureus* called ST93, which probably originated in the Top End and the Kimberley region of Western Australia and spread around the world.

“We and another lab in Melbourne have used detective work to find all this out.

“Although defining new species and using DNA sequencing technology is exciting, it is also crucial that we start improving treatments for infections caused by golden staph.”

Associate Professor Tong has been part of a team, including Dr Asha Bowen and Professor Jonathan Carapetis, that performed a trial showing that an oral medicine called bactrim is as effective as a painful penicillin injection to treat skin sores in Aboriginal children. Published in the prestigious journal *The Lancet* in 2014, this work has already resulted in changes to national and Territory antibiotic guidelines.

He is also co-leading with another Menzies researcher, Dr Joshua Davis, an international trial to improve treatments of MRSA bloodstream infections.

“Nobody has done this before. The results could potentially change the way MRSA bloodstream infections are treated all over the world.”

Associate Professor Tong’s work on hepatitis B has also been world-class.

The disease is common in Aboriginal communities and can be fatal, particularly by causing cancer of the liver or liver cirrhosis.

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Associate Professor Tong, together with Dr Joshua Davis and Dr Jane Davies from Menzies and a group led by Professor Stephen Locarnini from the Victorian Infectious Diseases Reference Laboratory in Melbourne, has discovered a strain of the virus unique to Indigenous people in the Top End.

“We’re now working to understand the public health implications of this. Does it cause cancer earlier? Does the vaccine for Hepatitis B work well against this unique virus?”

Associate Professor Tong acknowledges that medical research nowadays is a collaborative process.

“All my work has been in collaboration with amazing people from Menzies, the rest of Australia and overseas groups. Apart from getting to do incredible science and seeing improvements in health outcomes, one of the great joys of research are the wonderful relationships that are formed through working together.

“There are so many good, dedicated people at Menzies. It’s inspiring.” TQ



HEALING OF SORES ON HANDS FOLLOWING TREATMENT WITH ORAL BACTRIM ANTIBIOTIC

