



Newsletter: Issue 12, December 2016

University of Otago, Dunedin, NZ

A Message from the Director:

Welcome to the latest edition of the Webster Centre Newsletter. There is much to share. In this issue you will read about our most recent national infectious diseases meeting, which was held in Queenstown last year and you will learn about the NZ speaking tour carried out this year by our namesake, Professor Robert Webster along with his wife, Marjorie Webster. You will meet this year's Webster summer studentship and student travel award recipients, and hear about educational and outreach activities. We also profile Dr. Deborah Williamson, ID physician and Steering Committee member, who is now based in Melbourne.

The appearance of this issue also represents an opportunity to announce some important changes. First, the Centre is taking on a new role as part of the One Health Aotearoa Research Centre which is headed by Prof. Nigel French (Massey) and Prof. David Murdoch (Otago). Second, Professor Andy Mercer (Otago) will be assuming the Directorship of the Webster Centre in the New Year. Andy Mercer is NZ's leading virologist, and is the Webster Chair of Viral Pathogenesis, Microbiology and Immunology.

It has been my privilege to serve as the Director of the Webster Centre for its first 10 years and I am deeply grateful for the opportunity. As I look back on the Centre's many successes, which include securing a PC3 laboratory for Otago, facilitating research collaborations among our members, helping to train our students and holding some exciting scientific meetings, it's clear to me that NZ has some amazingly talented scientists in the area of infectious diseases, and I feel fortunate to have been able to meet and work with many of them. I am happy that the Centre is in good hands and I know that under Andy it will continue to prosper.

It's been a good run. Take care and please keep in touch! Regards, Kurt

Professor Robert Webster Speaking Tour of New Zealand



Prof. Webster 2016 Visit to Dunedin. (Left) Photos before academic lecture in Microbiology on 3 October. From left: Prof. K. Krause, Prof. R. Webster, DVC R. Blaikie. (Right) Microbiology tea room. From left: Wen Jiun Lee, Pramit Patel, Dr. Qing Sun, Dr. Ning Huang, Prof. R. Webster, Professor A. Mercer, Conor Orsourn, Dr. Matloob Hussein.

From 13 September to 5 October this year, the Webster Centre sponsored a lecture series given by Professor Robert Webster at four locations in New Zealand, Auckland, Wellington, Christchurch and Dunedin. Professor Robert Webster, who travelled along with his wife, Marjorie, presented both public and academic lectures on topics including "What New Zealanders need to know about bird flu: From the mutton bird to a cure for influenza", and "The Next Pandemic Threat: Influenza or What?".

Prof. Webster visit continued..

Robert Webster is an international expert in human influenza and world-renowned virologist. His research team identified the avian strain of influenza known as H5N1, the causative agent of avian influenza or “bird flu” that emerged in Hong Kong in 1997. The main focus of his research has been the reservoir of influenza viruses in wild birds, their role in the evolution of new human pandemic strains and on the development of a universal influenza vaccine.

Born in Balclutha, Professor Webster studied microbiology at the University of Otago. After receiving his PhD in Australia, he moved to the USA where he established one of the world’s leading centres of influenza research at St Jude Children’s Research Hospital in Memphis. He is a member of the US National Academy of Sciences, a Fellow of the Royal Society (London) and Fellow of the Royal Society of New Zealand. Professor Webster and his family are the namesake of the Webster Centre for Infectious Diseases and it was our privilege to sponsor this visit.

2015 Webster Centre Symposium QMB Meeting 30 – 31 August



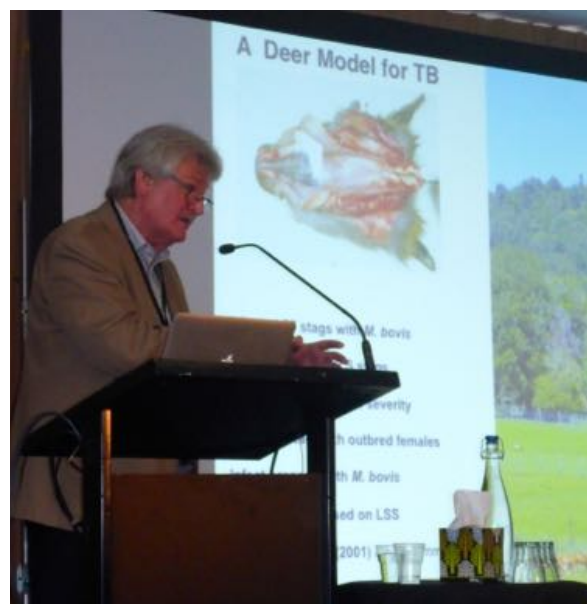
The National Symposium on Infectious Diseases and Antimicrobial Resistance: Challenges, Opportunities and Successes meeting was held on 30 - 31 August 2015 in association with the 2015 Queenstown Scientific Meetings. Our co-convenors were Professor Greg Cook and Dr. Deborah Williamson. Major themes at this meeting included mycobacterial disease, antibiotic resistance, next-gen sequencing and the microbiome.

The featured international and national speakers were as follows: *William Jacobs & Michael Berney*, Albert Einstein College of Medicine; *Mark Walker*, University of Queensland; *Scott Beatson*, Australian Infectious Diseases Research Centre; *Elaine Petrof*, Queens University, Canada; *Dean Crick*, Colorado State University; *Nadeem Kaakoush*, University of New South Wales; *Nigel French*, Massey University; *John Fraser & Nikki Moreland*, University of Auckland; *Chris Greening*, CSIRO, Canberra; *Andree Huber*, Osaka University; *James Hadfield*, Wellcome Trust Sanger Institute, Cambridge; *Una Ren*, ESR; *Htin Aung*, *Greg Cook*, *Frank Griffin*, *Kurt Krause*, *David Murdoch*, *Gerald Tannock*, *James Ussher*, *Ayesha Verrall*, *Deborah Williamson & Lyn Wise*, University of Otago.

Highlights of the 2015 QMB/Webster Meeting



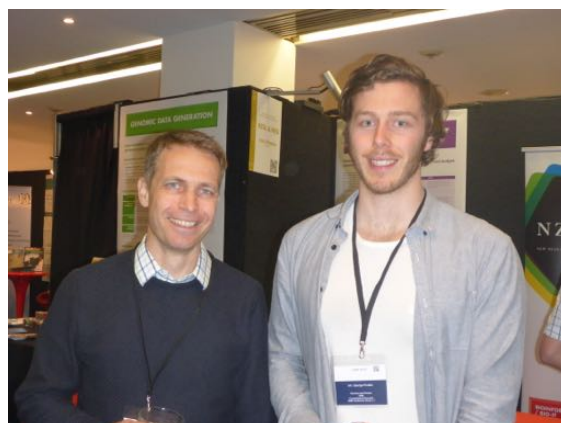
Professor Bill Jacobs, Albert Einstein College of Medicine, presents a plenary lecture "On the Road to Edward Jenner's Revenge: Lessons for TB Vaccines from a New Herpes Vaccine"



Professor Frank Griffin, University of Otago speaks on "Biomarkers for Resilience and Susceptibility to Mycobacterial Infection: Model Studies in Deer"



Co-Convenors of the QMB/Webster Centre meeting, Dr Deborah Williamson (P Doherty Institute) & Professor Greg Cook (University of Otago) flank Professor Jacobs



Dr. Michael Berney (Albert Einstein College of Medicine) with George Poulter, (Otago doctoral student). Poulter spoke on "Complete genome of PSA – *Pseudomonas syringae* pv. Actinidiae"



Dr Nikki Moreland, University of Auckland, Drs James Ussher, Dr. Htin Lin Aung & Professor Kurt Krause, Director of the Webster Centre for Infectious Diseases



Associate Professor Scott Beatson (University of Queensland, Australia, sponsored by ESR) presenting "Antimicrobial resistance; what can the genome tell us?"

Outreach Activities/Webster Members in the News

Ebola and Beyond – How Bugs Kill Us

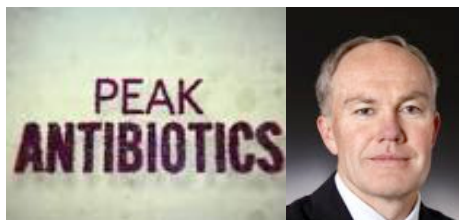
On Monday, 31 August 2015, a free Public Outreach *Question It* meeting entitled "Ebola and Beyond - How Bugs Kill Us" was held in the Queenstown Memorial Centre from 12 - 1pm. Infectious disease researchers, Dr Siouxsie Wiles, Auckland University; Professors Kurt Krause, Otago University and Nigel French, Massey University were panel members in a discussion about the growing global problem of these deadly bacteria and their global threat.

Tairua School



In June 2015 the Director, Kurt Krause, visited with a group of Year 5 and Year 6 pupils from Tairua School, Coromandel, who were particularly interested in the plague and a recent outbreak in Madagascar. The participants are pictured here along with their teacher, Chris Hogarth.

Peak Antibiotics



Webster steering members, Greg Cook and Debbie Williamson, were featured in a

documentary appearing on Prime TV on 5 April 2016 that focused on the dangers of current antibiotic resistance and the need for the development of new antibiotics for the future, as well as the best way to preserve current treatment options.



On 11 May 2015 Dr Deborah Williamson, Doherty Institute, Melbourne, presented her research to a packed room at the Microbiology & Immunology Department, Otago. Her talk was entitled 'A National Epidemic: The changing landscape of *Staphylococcus aureus* disease in New Zealand.

Her research reported on the molecular epidemiology of *Staphylococcus aureus* infections in NZ with a focus on the consequences and collateral damage of the overuse of antibiotics. She reported changes in antimicrobial prescribing patterns which, most notably, appear to have driven an increased resistance to fusidic acid.

RNZ Interview with Professor Kurt Krause



Professor Kurt Krause, Director of the Webster Centre for Infectious Diseases, appears on Radio New Zealand on 21 September 2016 to discuss the global crisis

in anti-microbial resistance. During the interview he pointed out the need for us to carefully use our currently available antibiotics as well as support research into developing new anti-microbial therapies. A link to the interview is pasted below.

<http://www.radionz.co.nz/national/programmes/afternoons/audio/201816993/world-leaders-to-meet-at-un-to-discuss-superbugs>

Earlier this year Professor Krause comments on New Zealand's preparation for pandemic influenza by the Ministry of Health were featured in the January Sunday Star Times.

<http://www.stuff.co.nz/national/health/75701503/nz-buys-300000-doses-of-contentious-vaccine>

Webster Centre Student Support

Postgraduate Travel Scholarship Winners 2016

The Webster Centre is pleased to announce its 2016 travel scholarship recipients:

•Alex Noble, Supervised by Professor Warren Tate, Department of Biochemistry, Otago. To attend the 2016 Biannual ME/CFS in Ford Lauderdale, Florida, USA. Alex's research is on Myalgic/Encephalomyelitis/ Chronic Fatigue Syndrome.

•Adrian Patterson, supervised by Associate Professor Peter Fineran, Department of Microbiology and Immunology, Otago. To attend the 2016 NZMS Conference at Christchurch. Adrian's research is on how quorum sensing controls adaptive immunity through multiple CRISPR-Cas systems.

•Bridget Watson, also supervised by Dr. Fineran, To attend the 22nd Evergreen Bacteriophage Conference in August 2017 at Olympia, Washington, USA. Bridget's research is on toxin-antitoxin systems and phage biology.

•Borom Blakie, supervised by Dr Robin Simmonds, Department of Micro. & Immunol., Otago. To attend the Lancefield International Symposium in October 2017 in Fiji. Borom's research is on elucidating the role of agalactacin A in Group B Streptococcal Pathogenicity.

•Brinsley Ryder, supervised by Dr Jo Kirman, Department of Micro. & Immunol., Otago. To attend the 2nd Innate Immune Memory Conference March 2017 at Hinxton, Cambridge, United Kingdom. Brin's research is on vaccine development for TB.

Jessica Thomson, Supervised by Professor Iain Lamont, Department of Biochemistry, Otago. To attend the 16th International Conf. on *Pseudomonas* to be September 2017 at Liverpool, UK. Jessica's research is on *Pseudomonas*.

Summer Studentship Winner 2016



Eleanor Burgess

A summer studentship was awarded to Eleanor Burgess, supervised by Dr Lyn Wise, Dept of Microbiology & Immunology. Eleanor's research is on developing new tools for use in antiviral skin therapies.

Summer Studentship Winner 2015



Umaima Khatoon

A summer studentship was awarded to Umaima Khatoon, supervised by Merilyn Hibma, Dept of Pathology. Her research is on E-cadherin expression and Langerhans cells mouse papillomavirus infected skin.

Postgraduate Poster Awards QMB/ Webster 2015

- Kiel Hards, Novel mode of action for a TB drug
- Jeremy Raynes, Serological evidence for repeated group A Streptococci exposures in siblings with acute rheumatic fever
- Vanessa Chang, Characterization of mycobacterial membrane vesicles
- Hannah Read, Through a mouse, brightly: *in vivo* experimental evolution of the pathogenic bacterium *Citrobacter rodentium*
- Audrey Tiong, Identification and molecular characterisation of chlorhexidine resistance in national *Staphylococcus aureus* isolates.
- Benedict Uy, Novel Naturopathic Remedies: New Method for Screening of New Zealand Fungi for New Antibiotics



Dr Deborah Williamson

Webster Centre Profiles: Dr Deborah Williamson

The Webster Centre is fortunate to have as one of its steering committee members, Dr Deborah Williamson, Doherty Institute, Melbourne. Interview conducted by Prof Krause.

What attracted you to Health Sciences? If you weren't in the Health Sciences, do you have any thoughts about what you might be doing?

When I was younger, my first job wish was to be an astronaut, but then I realised the Scottish space programme wasn't likely to go anywhere soon so I had to change tack. My Dad is an environmental microbiologist and ended up managing the Scottish & Newcastle brewery. Obviously microbiology and brewery go hand in hand and I thought this would be great if I could have a career where I could combine beer and do microbiology. Actually, my first summer job was doing microbiology in a brewery. This all converged again at the 2015 QMB meeting where I was sponsored by the Webster Centre and able to combine beer and microbiology. So life had come full circle.

Where was your undergraduate training?

I did a BSc with Honours in Experimental Pathology, and then a medical degree, both at the University of Glasgow. It was a combined programme with a year of lectures for science, two years' medical school, two years' science degree and back to medical school after that. I lived in Glasgow for about 8 years, but I'm not a Glaswegian. I'm from Fyfe on the East coast.

After your BSc(Hons) and MB ChB degrees, how did you choose infectious diseases as a speciality?

My first job after I graduated from medical school was at St Mary's Hospital, London where I was as a Senior House Officer in HIV and infectious diseases. I just loved the experience. I then did a three year MRCP postgraduate training program and rotated as a medical specialist for the Royal College of Physicians exams. Later I completed more ID training.

After coming to NZ, I moved much more to a public health focussed role. Currently the people I see on a day-to-day basis are more in the lab, as well as the Deputy Director, or colleagues with the State and Federal Departments of Health.

Do you have a PhD in Microbiology?

I was awarded that in January this year from the University of Auckland.

What is your current big research question? I was awarded a Marsden last year to look at the potential contribution of biocides to resistance in *Staphylococcus aureus*. Since my move my main research activities now are in public health microbiology. But, I lean more molecularly, for sure.

Actually I think Centres like the Webster Centre for Infectious Diseases, which brings together disciplines that wouldn't naturally work together, is critical. We should continually be contacting structural biologists and even physicists or mathematical modellers rather than relying on what we have always done before.

How about long-term career goals?

What gets me out of bed in the morning, I think, is being somewhere where there is a very strong public service culture. For example, like the NHS in the UK, genuinely committed to public service.

My current position as co-head Public Health, of the Peter Doherty Institute for Infection and Immunity in Melbourne, Australia is very exciting for me.

Of course I would definitely come back to NZ, at some point, but NZ should invest more in its microbiological infrastructure.

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