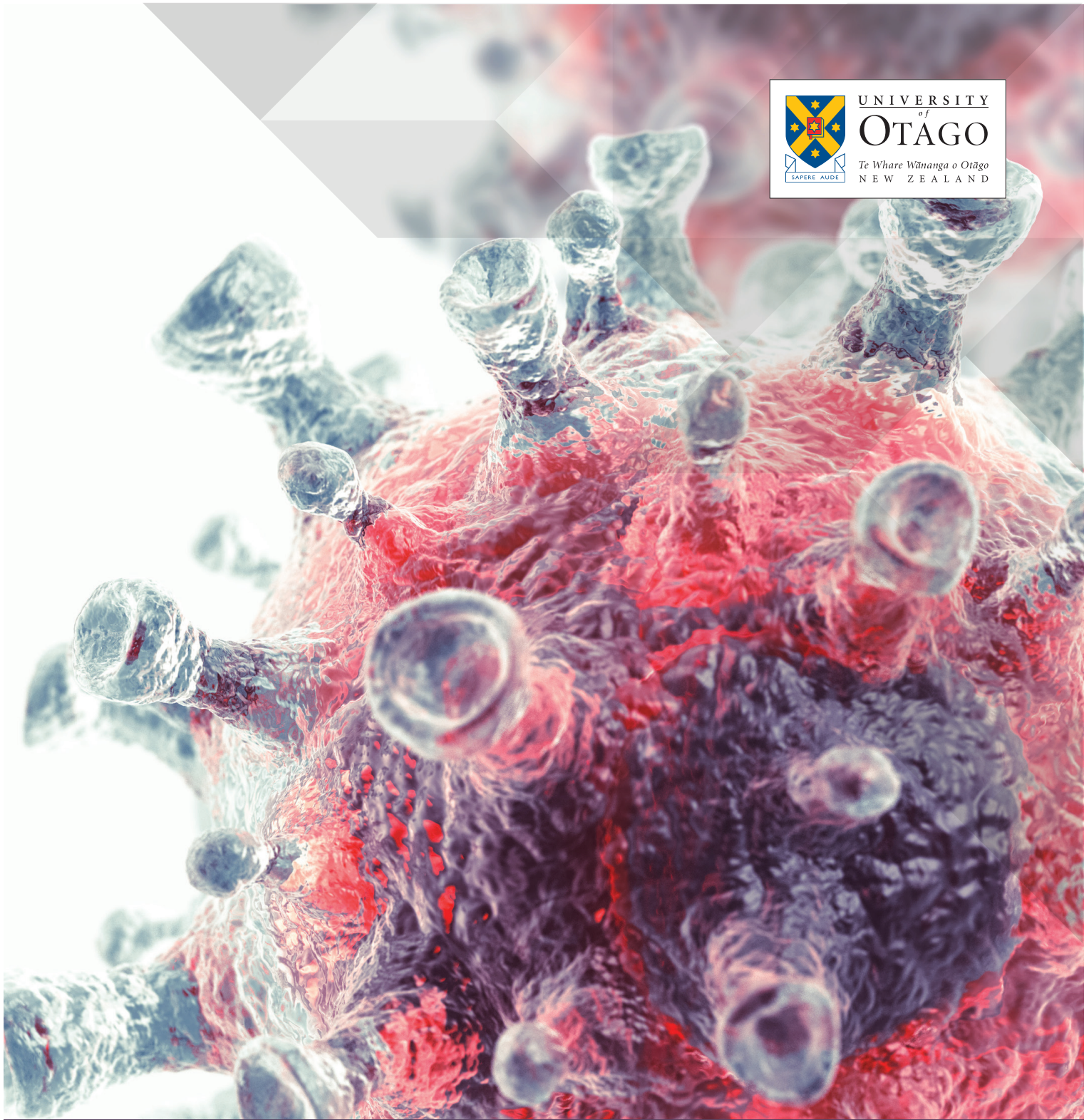




UNIVERSITY
of
OTAGO
Te Whare Wānanga o Ōtāgo
NEW ZEALAND



Otago Spotlight Series Infectious Disease Research

Tuesday 11 September, 2018
Nordmeyer Lecture Theatre
University of Otago, Wellington

Welcome

Tēnā koutou kātoa. I would like to extend a very warm welcome to the Otago Spotlight Symposium on Infectious Disease. This is the fourth spotlight event at which we are showcasing the research strengths in the Division of Health Sciences at the University of Otago.

The Division's ground-breaking research underpins many advances in health policy and practice and the understanding of health and disease, both in New Zealand, and globally. Our researchers are at the forefront of infectious disease research in New Zealand. We have expertise in the fields of viral and bacterial genetics, parasitology, virology, vaccines and new therapies, antimicrobial resistance, infectious disease prevention and control, global health, epidemiology and public health as well as agricultural and environmental links to human health. We have a major focus on health inequalities and Māori and Pacific health, and are dedicated to undertaking research relevant to New Zealand's unique population groups.

We play a key role in One Health Aotearoa - an alliance of New Zealand's leading infectious diseases researchers committed to working together to address important health hazards in New Zealand, and beyond. The Division also houses the Webster Centre for Infectious Diseases, the Health, Environment and Infection Research Unit, the Otago Global Health Institute and the Centre for International Health. These centres work to understand, prevent, and control infectious diseases both in New Zealand and in under-resourced countries. Approaches extend from the molecular, to the clinical and on to public health and policy initiatives. You will hear from a number of researchers involved in these centres today.

Reducing the threat and burden from infectious disease is a key priority for New Zealand. This can only be achieved by engaging with stakeholders and communities, undertaking relevant world-class research, and translating research findings into innovative policy, practice and technologies.

Today, stakeholders will have the chance to meet with researchers and to discuss the future of infectious disease research in New Zealand, and internationally. We would value your input on what you see as key needs and priorities.

I am sure you will be inspired by the day's presenters and I encourage you to keep in touch. I would like to thank you all for attending and I look forward to welcoming many of you back next year.



Professor Paul Brunton
PRO-VICE-CHANCELLOR
DIVISION OF HEALTH SCIENCES
UNIVERSITY OF OTAGO

Infectious Disease Research at Otago: Setting the Scene

Infectious disease remains a major cause of illness and death globally despite the increasing availability of effective prevention and treatment measures. In a high income country like New Zealand, infectious disease is the main cause of acute hospitalisations and is therefore an important driver of health care costs. These diseases also cause high levels of health inequalities, with consistently higher rates in Māori and Pacific peoples. Rheumatic fever is the most extreme example, with rates that are 40-80 times higher in Māori and Pacific children compared with European children.

The threat posed by infectious disease is distinct in that it is constantly changing and will continue to surprise us. New agents like the SARS virus may cross from other species and cause a human pandemic. Other agents like Zika virus may become more transmissible to humans and cause new patterns of illness. Sometimes it is a combination of environmental events and infrastructure issues that cause a major outbreak, as occurred in the Havelock North campylobacter outbreak.

Another major threat is antimicrobial resistance (AMR). AMR is a rapidly evolving global emergency that threatens many of the achievements of modern medicine. AMR pathogens kill an estimated 700,000 people per year and if left unchecked threaten to reduce the global GDP by 2-3.5% by the year 2050 at a cost of \$USD100 trillion. The good news is that decades of research have given humanity many tools to prevent and manage infectious diseases effectively. Continuing this commitment to high quality research is particularly important given the evolving nature of microbes. Translating this knowledge into effective programmes is also vital, particularly to ensure they reach those living in relative poverty and in low-income countries.

Otago has a unique and distinguished collection of world-leading researchers working to combat infectious disease. Many of our biomedical researchers are focused on AMR in bacteria, viruses, malaria and fungi. At the forefront of this research is the use of molecular approaches to combat AMR including microbial genomics, molecular diagnostics, vaccine and drug development. We also have significant expertise in international health, epidemiology, public health and health inequalities. The work undertaken in these domains informs policy and practice.

We are delighted to share our world-class research with you today, particularly that from our young and emerging researchers who will be the future leaders in the fight to ease the burden of infectious disease within New Zealand, and beyond.



Professor Michael Baker
PUBLIC HEALTH
UNIVERSITY OF OTAGO, WELLINGTON



Professor Greg Cook
MICROBIOLOGY AND IMMUNOLOGY
UNIVERSITY OF OTAGO

Programme

9.00-9.15 am Mihi

Session One: Chair - Professor Richard Cannon (Dentistry)

- 9.15-9.45 Professor Michael Baker (Public Health, UOW)
Rheumatic fever - How can we end this terrible disease of poverty?
- 9.45-10.05 Associate Professor Bruce Russell (Microbiology and Immunology)
Parasite threats to New Zealand: Far, near and future
- 10.05-10.25 Associate Professor Catherine Stedman (Medicine, UOC)
Hepatitis C: Time for elimination?
- 10.25-11.00 Morning Tea

Session Two: Chair - Dr Jacqui Keenan (Surgery, UOC)

- 11.00-11.20 Dr James Ussher (Microbiology and Immunology)
New technologies for diagnostics
- 11.20-11.40 Professor Kurt Krause (Biochemistry)
New anti-microbial development based on targeting the enzyme, glutamate racemase
- 11.40-12.00 Dr Jo Kirman (Microbiology and Immunology)
Deciphering the protective immune response to Tuberculosis
- 12.00-12.20 Students present their research
- 12.20-1.20 Lunch

Session Three: Chair - Professor Vernon Ward (Microbiology and Immunology)

- 1.20-1.50 Professor Greg Cook (Microbiology and Immunology)
Opportunities for Infectious Disease Research in New Zealand: a Biomedical Perspective
- 1.50-2.10 Associate Professor Brian Monk (Dentistry)
The hidden danger of fungal infections
- 2.10-2.30 Dr Amanda Kvalsvig (Public Health, UOW)
Pre-hospital management of meningococcal disease
- 2.30-2.50 Dr Natalie Martin (Paediatrics, UOC)
Childhood bacterial and aseptic meningitis: findings from the UK-ChiMES study and beyond
- 2.50-3.10 Associate Professor Patricia Priest (Preventive and Social Medicine, DSM)
The 'One Health' concept
- 3.10-3.30 Final discussion and wrap up of the day
- 3.30 Afternoon Tea
- 4.00 pm Taxis depart to airport for Dunedin and Christchurch attendees

Entries for the Student Poster Competition

POSTER NUMBER	TITLE, AUTHOR, DEPARTMENT
1	<p>REASONS FOR NON-COMPLIANCE WITH COMMUNITY ACQUIRED PNEUMONIA CLINICAL GUIDELINES Serin Cooper Maidlow, Michael Ardagh Department of Surgery, University of Otago, Christchurch and Canterbury District Health Board</p>
2	<p>STRUCTURAL CHARACTERIZATION OF THE ARCHETYPAL FUNGAL EFFLUX PUMP <i>CANDIDA ALBICANS Cdr1</i> Golnoush Madani, Erwin Lamping, Richard Cannon Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago</p>
3	<p>UNDERSTANDING ANTIMICROBIAL RESISTANCE IN NEW ZEALAND Sarah Mitchell, Alex Macmillan, Patricia Priest, Kate Morgaine Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago</p>
4	<p><i>STAPHYLOCOCCUS AUREUS</i> SURVIVAL INSIDE THE NEUTROPHIL PHAGOSOME Reuben Springer, Louisa Ashby, Anthony Kettle, Christine Winterbourn, Mark Hampton Centre for Free Radical Research, Department of Pathology and Biomedical Science, University of Otago, Christchurch</p>
5	<p>NEXT GENERATION INHIBITORS TO COMBAT DRUG RESISTANT TUBERCULOSIS INFECTIONS Zoe Williams¹, Xiaoyun Li², Ke Ding^{2,3}, Gregory Cook^{1,4} ¹Department of Microbiology and Immunology, School of Biomedical Sciences, University of Otago; ²School of Pharmaceutical Sciences, Jinan University, Guangzhou, China; ³Chinese Academy of Sciences, China; ⁴Maurice Wilkins Centre for Molecular Biodiscovery, University of Auckland</p>
6	<p><i>STREPTOCOCCUS PNEUMONIAE</i> ADHERED TO NEUTROPHIL EXTRACELLULAR TRAPS PRODUCE HYDROGEN PEROXIDE WHICH IS CONVERTED INTO HYPOCHLOROUS ACID Christopher Kaldor¹, Heather Parker¹, Gregory Cook², Mark Hampton¹ ¹Centre for Free Radical Research, Department of Pathology, University of Otago Christchurch; ²Department of Microbiology and Immunology, School of Biomedical Sciences, University of Otago</p>
7	<p>INTERACTIONS BETWEEN NEW AZOLE DRUGS AND THEIR TARGET ENZYME Yasmeen Ruma¹, Mikhail Keniya¹, Alia Sagatova¹, Joel Tyndall², Brian Monk¹ ¹Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago; ²School of Pharmacy, University of Otago</p>
8	<p>ASPIRIN'S ROLE IN PREVENTING E-CADHERIN CLEAVAGE BY THE CARCINOGENIC <i>BACTEROIDES FRAGILIS</i> TOXIN. James Swan¹, Alan Aitchison¹, Mark Hampton², Jacqueline Keenan¹ ¹Departments of Surgery and ²Pathology and Biomedical Science, University of Otago, Christchurch</p>
9	<p>INVESTIGATING THE ROLE OF LANGERHANS CELLS DURING WOUND HEALING Aarthi Rajesh¹, Nicola Jones², Gabriella Stuart², Heather Cunliffe¹, Lyn Wise², Merylyn Hibma¹ ¹Department of Pathology, Dunedin School of Medicine, University of Otago; ²Department of Pharmacology and Toxicology, School of Biomedical Sciences, University of Otago</p>

POSTER
NUMBER

TITLE, AUTHOR, DEPARTMENT

- 10 **BCG IMMUNISATION ALTERS LUNG PHAGOCYTE DYNAMICS DURING EARLY MYCOBACTERIAL INFECTION OF MICE.**
Brin Ryder¹, Siouxsie Wiles², Joanna Kirman¹
¹Department of Microbiology and Immunology, School of Biomedical Sciences, University of Otago;
²Bioluminescent Superbugs Lab, Department of Molecular Medicine and Pathology, University of Auckland
- 11 **MECHANISMS OF HPV SUPPRESSION OF ANTIGEN PRESENTING CELLS**
Indumati Sharma¹, Michelle Wilson¹, Betina Nair¹, Greg Giminez¹, Francis Hunter², Sarah Young¹, Marilyn Hibma¹
¹Department of Pathology, Dunedin School of Medicine, University of Otago;
²Faculty of Health and Medical Sciences, University of Auckland
- 12 **CHARACTERISING THE IMMUNOMODULATORY PROTEIN; GIF, ENCODED BY ORF VIRUS**
Theodore Keats, Michele Krause, Kurt Krause
Department of Biochemistry, School of Biomedical Sciences, University of Otago
- 13 **THE EFFECTS OF LARGE DELETIONS ON *PSEUDOMONAS AERUGINOSA***
Priyal Dass, Sam Taylor-Wardell, Iain Lamont
Department of Biochemistry, School of Biomedical Sciences, University of Otago
- 14 **EVALUATING A CAUSAL ROLE OF MITOCHONDRIAL VARIATION IN THE DEVELOPMENT OF GOUT**
Amara Shaukat¹, Anna Gosling¹, Matthew Bixley¹, Amanda Phipps-Green¹, Tanya Major¹, Murray Cadzow¹, Nicola Dalbeth², Lisa Stamp¹, Elizabeth Matisoo-Smith¹, Jennie Harre Hindmarsh³, Leo Joosten⁴, Tim Jansen⁵, Matthijs Janssen⁵, Anne-Kathrin Tausche⁶, Philip Riches⁷, Alexander So⁸, Mariano Andres⁹, Geraldine M. McCarthy¹⁰, Fernando Perez-Ruiz¹¹, Michael Doherty¹², Rosa Torres¹³, Thomas Huizinga¹⁴, Rachel Knevel¹⁵, Fina Kurreeman¹⁶, Tony R. Merriman¹
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Otago Spotlight Series: Infectious Disease Research
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