



27-30 September 2022
Brisbane

The Australian Society
for Microbiology 
bringing Microbiologists together

Tuesday 27th September 2022

Registration Opens @ Emporium Hotel

4:00PM - 8:00PM

Welcome Function

6:00PM - 8:00PM Emporium Hotel

Wednesday 28th September 2022

ASM BACPATH Oration

9:30AM - 10:15AM

Chair: Ulrike Kappler

9:30 AM

Dena Lyras

From plasmid biology to pathogenesis: a series of fortunate events *abs# 1*

Session sponsored by

Session 1; host-pathogen interactions

10:15AM - 11:00AM



Institute for Glycomics

Queensland, Australia

10:15 AM

Ashleigh P Rogers

Clostridioides difficile infection impedes host colonic repair *abs# 2*

10:30 AM

Sophia Hawas

Investigating bacterial persistence in urinary tract infection for the development of new therapeutics. *abs# 3*

10:45 AM

Madeleine A Wemyss

Salmonella Typhimurium induces cIAP1 degradation to promote death in macrophages *abs# 4*

Coffee Break

11:00AM - 11:30AM

Session 2; characterising virulence determinants

11:30AM - 1:00PM

- 11:30 AM **Steven J Mileto**
Toxigenic *Clostridioides difficile* infection induces systemic disease symptoms and pathologies *abs# 5*
- 11:50 AM **Rachelia R Wibawa**
Large genomic deletions in *Legionella pneumophila* identify genes influencing intracellular replication and lung infection *abs# 6*
- 12:10 PM **Nhu Nguyen**
Genomics of *Escherichia coli* causing neonatal meningitis *abs# 7*
- 12:30 PM **Valeriya Bezkorovayna**
Delivery determinants of type VI secretion system cargo effectors in *Acinetobacter baumannii* *abs# 8*
- 12:45 PM **Diana Lopez Urena**
Characterisation of a novel *Clostridioides difficile* virulence factor *abs# 9*

Lunch

1:00PM - 2:00PM

Making arrangements for next BacPath 2024

Session 3; gene regulation

2:00PM - 3:15PM

- 2:00 PM **Chyden Chang**
Cross-regulatory control of antibiotic resistance and virulence in uropathogenic *Escherichia coli* *abs# 10*
- 2:15 PM **Nusrat Nahar**
Determining the role of phase-variable DNA methyltransferases in *Actinobacillus pleuropneumoniae* *abs# 11*
- 2:30 PM **Yi Han TAN**
Klebsiella pneumoniae employs Microcin E492 and colibactin in a two-pronged assault against bacterial competitors in the gut *abs# 12*
- 2:45 PM **Kwok Jian Goh**
Deciphering the role of small RNAs in virulence regulation of hypervirulent *Klebsiella pneumoniae* using RIL-seq. *abs# 13*
- 3:00 PM **Thomas R Smallman**
The stringent response negatively regulates capsule production in *Pasteurella multocida* *abs# 14*

Coffee Break

3:15PM - 3:45PM

Session 4; structure and function of virulence factors

3:45PM - 5:00PM

Session sponsored by



- 3:45 PM **Stephanie L Neville**
The structural basis of bacterial manganese import *abs# 15*
- 4:05 PM **Matthew T Doyle**
Understanding β -Barrel Folding within the Gram-negative Outer Membrane *abs# 16*
- 4:25 PM **Taylor A McDaniels**
Turning a conserved system bad; Understanding how alterations within O-linked glycosylation biosynthesis results in toxicity in *Burkholderia cenocepacia* *abs# 17*
- 4:45 PM **Emma-Jayne Proctor**
Structural biology approaches provide insights into the novel interaction between the M-related proteins from *Streptococcus pyogenes* and plasma proteins *abs# 18*

Poster Session I

6:00PM - 9:00PM Emporium Hotel; Frangipani Room 1&2

Odd numbered posters are presented in this session.

Devika Desai

Hemolytic activity and biofilm-formation among clinical isolates of group B streptococcus causing acute urinary tract infection and asymptomatic bacteriuria *abs# 101*

Joanna Urbaniec

Hidden in plain sight: Insights into antibiotic persistence of clinical *Escherichia coli* isolates *abs# 103*

Ashey Fraser

Investigating the role of outer-membrane proteins in non-typeable *Haemophilus influenzae* to better understand host-pathogen interactions *abs# 105*

Andrew Vaitekenas

Assessing Resistance Evolution Dynamics Between Cystic Fibrosis-Derived *Pseudomonas aeruginosa* and Targeted Bacteriophages *abs# 109*

Yvette Yu Ting Ong

Dissecting the role of RfaH in uropathogenic *Escherichia coli* virulence *abs# 107*

Saurab Kishore Munshi

Do growth substrates matter? - Metabolic adaptation of *Haemophilus influenzae* to the host *abs# 111*

Amy Pham

A Paradoxical Role of Antibodies in Chronic Gram-Negative Lung Infections *abs# 113*

Jordan Thompson

Understanding mechanisms of resistance to type VI secretion system-mediated killing of sibling cells in *Acinetobacter baumannii* *abs# 115*

Johannes K. Hoehensteiger

Protection of *Pseudomonas aeruginosa* Bacteraemia by Antibody-Mediated Serum Resistance *abs# 117*

Daniel R Laucirica

Isolation of bacteriophage with lytic activity against *Acinetobacter baumannii* *abs# 119*

Tahnee B-D. McEwan

Novel glycosaminoglycan interactions with Group A *Streptococcus* *abs# 121*

Sarah M Cahill

Exploring the diversity in capsule biosynthesis genes in *Acinetobacter baumannii* reveals extensive cell surface variation in several globally disseminated drug-resistant clones. *abs# 123*

Nuala Ellaby

Defining the 'Glycointeractome' of the multi-drug resistant pathogen *Acinetobacter baumannii*. *abs# 127*

Valentin A Slesarenko

Characterisation of pneumococcal strains from infant nasopharyngeal samples *abs# 129*

Ruby Thapa

Altered arrangement of the streptococcal chain identified in studies of GAPDH in *Streptococcus agalactiae* *abs# 131*

Jack M Blaikie

Uncharacterised porin mutations affording carbapenem resistance in *Klebsiella pneumoniae* isolates from an Australian aged-care facility. *abs# 133*

Zihao JY Yang

Cardiolipin deficiency removes the condition where *rpoE* is essential in *Escherichia coli* *abs# 135*

Don HK Ketagoda

Development of Oral Microbiome Transplantation to Treat Tooth Decay *abs# 137*

Sarah C Geiger

Testing population genetic statistic Fu's F_s as an approach to understanding clonal bacterial population expansions *abs# 139*

Alice Ascari

The influence of lipopolysaccharide in maintaining lipid homeostasis in *Shigella flexneri* *abs# 141*

Sean N Riek

Improved Production of Mycobacterial Vaccine Antigens *abs# 143*

Rachel F Rollo

Wollamide cyclic hexapeptides synergise with tuberculosis antibiotics in targeting *Mycobacterium tuberculosis* *abs# 145*

Kelvin GK Goh

The copper resistome of group B *Streptococcus* reveals insight into the genetic basis of cellular survival during metal ion stress *abs# 147*

Eve A Maunder

Chromate stress dysregulates *Pseudomonas aeruginosa* molybdenum homeostasis *abs# 149*

Jessica M Lewis

CRISPR interference provides a unique and powerful tool for the modulation of glycosylation in *Burkholderia* *abs# 151*

Miranda E. Pitt

Evaluating the "-omes" of Extensively Drug-Resistant *Klebsiella pneumoniae* using Native DNA and RNA Nanopore Sequencing *abs# 153*

Jiyao Gan

Drug screening reveals an epigenetic modulator that reduces *Salmonella* burden in macrophages *abs# 155*

Greg Tram

Haemophilus influenzae biogroup *aegyptius* encodes ModA16, a phase-variable methyltransferase that regulates a phasevarion. *abs# 157*

Sylvia A Sapula

Wastewater resistome as an indicator of antimicrobial stewardship success in residential aged care facilities *abs# 159*

Daniel G Mediati

The RNA interactome of methicillin-resistant *Staphylococcus aureus* reveals a role for regulatory mRNAs in coordinating gene expression *abs# 161*

Karthik Pallela

Viability transposon insertion site sequencing (Vi-TIS): an alternative method to differentiate dead and alive transposon mutants *abs# 163*

Bassam Elgamoudi

Comparison of surface plasmon resonance (SPR), and isothermal titration calorimetry (ITC) for assessment of ligand-sensor interactions, using *Campylobacter jejuni* multiligand chemoreceptor. *abs# 165*

Jennifer Hosmer

Access to highly specialized growth substrates and production of epithelial immunomodulatory metabolites determine survival of *Haemophilus influenzae* in human airway epithelial cells *abs# 169*

Kak Ming Ling

Exploring the potential of bacteriophages in treating multidrug-resistant *Burkholderia cenocepacia complex* (Bcc) lung infections in individuals with cystic fibrosis (CF) *abs# 171*

Nicole M Bzdyl

Macrophages versus *Burkholderia pseudomallei*; tipping the balance following deletion of the folding protein PpiB. *abs# 173*

Smriti Gaur

Staphylococcus aureus Two-Component System Culprit Behind Biofilm in Clinical Strains *abs# 175*

Terry Kwok-Schuelein

Identification of the intracellular functional form of *Helicobacter pylori* vacuolating cytotoxin A *abs# 177*

Yunn-Hwen Gan

Cross-regulation of chromosomal Type 3 fimbriae genes by a novel factor on the virulent plasmid in hypervirulent *Klebsiella pneumoniae* impacts bacterial pathogenesis *abs# 179*

Charlie C.T Tran

Antimicrobial natural products metabolites produced from *Bacillus* probiotics *abs# 122*

Thursday 29th September 2022

Keynote 2

9:30AM - 10:15AM

9:30 AM

Michael Jennings

Glycomics: Generating new opportunities to understand, diagnose, prevent and cure infectious disease *abs# 19*

Session 5; surface factor biology

10:15AM - 11:00AM

10:15 AM

Yaoqin Hong

Targeting the initiation step of fatty acid synthesis sensitises multi-drug-resistant *Escherichia coli* to previously ineffective antibiotics *abs# 20*

10:30 AM

Jason J Paxman

The molecular basis of how different strains and pathotypes of diarrhoeagenic and uropathogenic *E.coli* form biofilms on host surfaces. *abs# 21*

10:45 AM

Maoge Zang

The multifunctional roles of membrane-integrated phosphatases in *A. baumannii* envelope biology *abs# 22*

Coffee Break

11:00AM - 11:30AM

Session 6; antibiotic resistance

11:30AM - 1:00PM

11:30 AM

David De Oliveira

Rescuing Tetracycline Class Antibiotics for the Treatment of Multidrug-Resistant *Acinetobacter baumannii* Pulmonary Infection *abs# 23*

11:50 AM

Yogitha N Srikhanta

An unexpected link between *Clostridioides difficile* sporulation and antibiotic resistance *abs# 24*

12:10 PM

Winton Wu

Uncovering the role of the functional small RNA interactome in antibiotic tolerance in *Staphylococcus aureus* *abs# 25*

12:30 PM

Jhieh-Hang Jiang

Daptomycin resistance in *Staphylococcus aureus* mediated by multiple peptide resistance factor *mprF* *abs# 26*

12:45 PM

Yu Wang

Adding to the family of resistance factors against last resort antibiotics: Identification and characterization of a novel carbapenemase, CIM-1. *abs# 27*

Lunch

1:00PM - 2:00PM

Session 7; detection, treatments and vaccines

2:00PM - 3:15PM

- 2:00 PM **Dinesh Subedi**
Treatment of nosocomial infections of multidrug-resistant *Enterobacter cloacae* complex using intelligent phage cocktail *abs# 28*
- 2:15 PM **Joshua N Monteith**
The forgotten common antigen: A novel target for cloaking antibodies to *P. aeruginosa* in chronic infection *abs# 29*
- 2:30 PM **Olivia A.K Jessop**
A multiplex PCR pipeline for antimicrobial resistance typing in *Neisseria gonorrhoeae* in Queensland *abs# 30*
- 2:45 PM **Rochelle Da Costa**
Novel vaccine candidates protect against *Salmonella* challenge *abs# 31*
- 3:00 PM **Lina Rustanti**
Treponema pallidum nucleic acid detection in blood from donors seropositive for syphilis *abs# 32*

Coffee Break

3:15PM - 3:45PM

Keynote 3

3:45PM - 4:30PM

- 3:45 PM **Deborah Williamson**
Novel approaches to the detection, prevention, and control of bacterial sexually transmitted pathogens *abs# 33*

Session 8; metabolism and virulence

4:30PM - 5:15PM

- 4:30 PM **Yuan Zhang**
Identification of the donor molecule for phosphorylcholine modification of pilin in *Neisseria meningitidis* *abs# 34*
- 4:45 PM **Casandra Tan**
Purine and carbohydrate availability drive *Enterococcus faecalis* fitness during wound infections *abs# 35*
- 5:00 PM **Jessica L Rooke**
Eating fats to stay alive: elucidating the mechanism of *Salmonella enterica* chronic infections. *abs# 36*

Poster Session II

6:00PM - 9:00PM Emporium Hotel; Frangipani Room 1&2

Even numbered posters are presented in this session.

Renee N Ng

The search for the next silver bullet – phage, antibiotics and EDTA *abs# 102*

Galain Williams

Gene transfer by bacterial conjugation is modulated by the recipient cell surface *abs# 104*

Chitra Ravi

Unravelling the regulatory pathway of cellulose biosynthesis in uropathogenic *Escherichia coli* *abs# 106*

Zheng Jie Lian

Genetic basis of I-complex plasmid replication, maintenance and conjugation *abs# 108*

Qifeng (Nathan) Zhong

Additional physiological roles of the DmsABC sulfoxide reductase beyond mediating anaerobic energy generations in pathogenic bacteria *abs# 110*

Emma L Ledger

A paradoxical role of antibodies to *Pseudomonas aeruginosa* in cystic fibrosis chronic pulmonary infections *abs# 112*

Desirel Ng

Inhibiting *Clostridioides difficile* SpoCR-mediated resistance to sporulation inhibition *abs# 114*

Kimberley T McLean

How Sweet! Uncovering the importance of GalR in *Streptococcus pneumoniae* sugar metabolism *abs# 116*

Megha M Manohar

Vaccination with a multi-valent fusion protein protects chickens against necrotic enteritis lesions caused by *Clostridium perfringens* *abs# 118*

Irene Alevizos

Manipulating the PAAR proteins of *Acinetobacter baumannii* *abs# 120*

Wenkang Feng

Do anti-LPS antibodies to patient

microbiota associate with worse outcomes in Crohn's disease? *abs# 126*

August G Mikucki

Hyper-sialylation of meningococcal lipooligosaccharide in an outbreak of clonal complex 11 *Neisseria meningitidis* *abs# 128*

Pranita Poudyal

Phage defence and Shiga toxin production in enterohaemorrhagic *E. coli* *abs# 130*

Jack K Waters

Lipid homeostasis at the host-pathogen interface *abs# 132*

Freya J Hodges

Secretion of a unique lipoprotein through a TolC-like channel *abs# 134*

Johanna Richter

Streptolysins are the primary inflammasome activators in macrophages during *Streptococcus pyogenes* infection *abs# 138*

Thomas Zammit

The RNA-binding proteome of pathogenic *E. coli* reveals a T6SS immunity protein that has been co-opted for small RNA regulation. *abs# 142*

Sven Cleaves

A 3D human cell-based *in vitro* model for chronic *Pseudomonas aeruginosa* lung infections *abs# 144*

Feifan Zhu

Characterization of the Role of the OmpC-Mla System in Bile Salt Resistance *abs# 146*

Bassam Elgamoudi

Diverse sensory repertoire of paralogous chemoreceptors Tlp2, Tlp3 and Tlp4 in *Campylobacter jejuni* *abs# 148*

Evgeny A Semchenko

Discovery and development of novel treatment options for multi-drug resistant gonorrhoea *abs# 150*

Stephan Brouwer

Streptococcus pyogenes hijacks host glutathione for growth and innate immune evasion *abs# 154*

Yaramah Zalucki

Understanding how mature side residues influence processing of signal peptides by LepB – A model for designing new inhibitors *abs# 156*

David R Thomas

Coxiella effector CBU2016 suppresses DAB2 to facilitate CCV expansion *abs# 160*

Minh-Duy Phan

Transcriptome profiling of uropathogenic *Escherichia coli* in response to infection-relevant stress *abs# 162*

Aimee Tan

Tracing zinc flux in pathogenic *Klebsiella pneumoniae* *abs# 164*

Nicole Lawrence

Modified defence peptides enhance zinc toxicity and macrophage killing of

intracellular uropathogenic *E. coli* *abs# 166*

Jilong Qin

Cysteine-dependent conformation heterogeneity of *Shigella flexneri* autotransporter IcsA and implications in its function *abs# 170*

Nicole M Bzdyl

Neisseria meningitidis macrophage infectivity potentiator proteins are essential for aggregation, biofilm formation and virulence *abs# 172*

Paul D Veith

The cargo proteins secreted by the Type IX Secretion System in *Porphyromonas gingivalis* are conjugated to a modified O-polysaccharide *abs# 174*

Taghrid Istivan

Campylobacter concisus flagellin: In silico modelling, structural analysis, and motility *abs# 176*

Kalindu D Rodrigo

Host-dependent resistance of Group A *Streptococcus* to antifolate antibiotics *abs# 178*

Friday 30th September 2022

Keynote 4

9:30AM - 10:15AM

9:30 AM

Tim Stinear

Resistance, persistence, and *Staphylococcus aureus* abs# 37

Session 9; host-pathogen interactions (2)

10:15AM - 11:00AM

10:15 AM

Aleksandra W Debowski

Investigating the role of *Coxiella burnetii* macrophage infectivity potentiator protein in pathogenesis. abs# 38

10:30 AM

Anuk Indraratna

Saliva protein and glycan dynamics during experimental human *Streptococcus pyogenes* pharyngitis abs# 39

10:45 AM

Lauren E. Bird

Subversion of proteolytic capacity by lysosomal pathogens abs# 40

Coffee Break

11:00AM - 11:30AM

Session 10; regulation of bacterial virulence

11:30AM - 1:00PM

11:30 AM

Miljan Stupar

Inhibition of an Acid-Sensing Two-Component Regulatory System as a Novel Therapeutic Strategy for Tuberculosis abs# 41

11:50 AM

Hannah N Agnew

Streptococcus pneumoniae strains isolated from a single paediatric patient display distinct phenotypes. abs# 42

12:10 PM

Christine Ong

The effect of *Clostridioides difficile* infection on gastrointestinal motility and the enteric nervous system abs# 43

Conference Close

1:00PM - 1:30PM