

YMS2018 Programme

Monday 27th August 2018

08:45-09:15 Arrival and registration
 09:15-09:30 Introduction and welcome
Shi-qi An (Queen's University Belfast, UK)

Session I: Gene regulation and signalling

Chair: **Liang Yang** (Nanyang Technological University, SG)

09:30-09:55 **Zhao-xun Liang** (Nanyang Technological University, SG)
 "Cyclic di-GMP signaling through PilZ adaptor proteins"
 09:55-10:15 **Andreas Latoscha** (Humboldt-Universität zu Berlin, DE)
 "The novel phosphodiesterase ApdA hydrolyses c-di-AMP involved in development and osmotic stress resistance in *Streptomyces*"
 10:15-10:35 **Przemyslaw Olejnik** (University of Tuebingen, DE)
 "Analysis of the diguanylate cyclase SadC involved in oxygen-dependent regulation of alginate synthesis in *Pseudomonas aeruginosa*"
10:35-11:05 Coffee break (Group photo)
 11:05-11:25 **Shreya Dasgupta** (National Institute of Cholera and Enteric Diseases, IN)
 "(p)ppGpp essentially regulates pathogenicity and multiple virulence associated traits of *Salmonella enterica* serovar Typhi"
 11:25-11:50 **Susanne Gebhard** (University of Bath, UK)
 "Flux-sensing by kinase/transporter pairs-need-based activation of antibiotic resistance"

"Hot-spot" poster talks: Part I

Chair: **Miguel A. Valvano** (Queen's University Belfast, UK)

11:50-12:00 **Andrew O'Connor** (University College Dublin, IE)
 "Determining the role of universal stress proteins in the chronic colonisation of *Burkholderia cepacia* complex in Cystic Fibrosis"
 12:00-12:10 **Carlos Molina-Santiago** (Universidad de Málaga, ES)
 "Overtake, resilience and escape: three ecological strategies that define the *Pseudomonas Bacillus* interactions"
 12:10-12:20 **Chao-ying Deng** (Chinese Academy of Sciences, CN)
 "Proteolytic cleavage sequesters histidine kinase signaling and promotes bacterial stress tolerance"
 12:20-12:30 **Elia Riquelme-Zubiria** (UFR Médecine Site de Nîmes, FR)
 "Analysing the role of protein secretion systems in the physiology and pathogenesis of *Brucella*"
 12:30-12:40 **Franziska Faber** (University of Würzburg, DE)
 "Global discovery of RNA-protein complexes in *Clostridium difficile* using Grad-seq"
 12:40-12:50 **July Fong** (Nanyang Technological University, SG)
 "Combination therapy strategy of quorum quenching enzyme and quorum sensing inhibitor in suppressing multiple quorum sensing pathways of *P. aeruginosa*"
12:50-14:35 Lunch and poster session
 14:35-15:20 **EMBO lecture by Regine Hengge** (Humboldt-Universität zu Berlin, DE)
 "Spatial organization of transcriptional control and c-di-GMP signaling in *Escherichia coli* biofilms"

Session II: Secretion and transport across membranes

Chair: **Julia Monjaras Fera** (Queen's University Belfast, UK)

15:20-15:45 **Andrew J. Roe** (University of Glasgow, UK)
 "Host-associated niche metabolism controls enteric infection through fine-tuning of type 3 secretion"
 15:45-16:05 **Daniel Storey** (Queen's University Belfast, UK)
 "The type VI secretion system of *Klebsiella pneumoniae*: a weapon for antibacterial warfare"
16:05-16:35 Coffee break
 16:35-16:55 **Fabiana Bisaro** (Queen's University Belfast, UK)
 "A novel *Burkholderia cenocepacia* intracellular toxin causing actin disruption and inflammation"

16:55-17:15 **Jesús Cámara-Almirón** (Universidad de Málaga, ES)
 "The pivotal functionality of the amyloid protein TasA in *Bacillus* physiology and fitness"
 17:15-17:40 **Andrew K. Fenton** (University of Sheffield, UK)
 "Identification of new cell wall biogenesis factors in *Streptococcus pneumoniae* using Tn-Seq"
 19:00-21:00 Guest speakers dinner - by invitation only

Tuesday 28th August 2018

08:30-09:00 Tea/coffee and biscuits
 09:00-09:10 Introduction
Liang Yang (Nanyang Technological University, SG)

Session III: Infection and immunity

Chair: **Joana Sa Pessoa Graca Santos** (Queen's University Belfast, UK)

09:10-09:35 **Suzana Salcedo** (University of Lyon, FR)
 "Characterizing *Brucella* nuclear-targeting effector proteins"
 09:35-09:55 **Ana Monserrat-Martínez** (University of New South Wales, AU)
 "Enteropathogenic *E. coli* hijacks programmed host-cell death pathways by interfering with the higher order oligomerization of immune system proteins"
 09:55-10:15 **Sarah Mc Cormack** (University College Dublin, IE)
 "Investigations of the role of a putative DNA mimic in the adaptation of *Burkholderia cenocepacia* during chronic colonisation in cystic fibrosis"
10:15-10:45 Coffee break
 10:45-11:05 **Ciara Ross** (Queen's University Belfast, UK)
 "Disentangling bacterial virulence mechanisms: targeting post translational modifications to manipulate host immunity."
 11:05-11:30 **Clare Bryant** (Cambridge University, UK)
 "Pattern recognition receptors in bacterial infection"
 11:30-12:15 **Arthur Mitchell Brown Memorial lecture by Alain Filloux** (Imperial College London, UK)
 "*Pseudomonas aeruginosa* lifestyles, bacterial warfare and novel antimicrobials"

"Hot-spot" poster talks: Part II

Chair: **Brendan Gilmore** (Queen's University Belfast, UK)

12:15-12:25 **Maria Kusmirek** (Helmholtz Centre for Infection Research, DE)
 "Identification of regulatory mechanisms important to control the *Yersinia pseudotuberculosis* type III secretion and virulence"
 12:25-12:35 **Marwa Naguib** (Queen's University Belfast, UK)
 "Role of bacterial lipocalin proteins in the adaptation of *Burkholderia cenocepacia* to antibiotic-induced membrane lipid peroxidation"
 12:35-12:45 **Rocio Canals** (University of Liverpool, UK)
 "Identification of key transcriptomic differences between global and African sequence types of *Salmonella* Typhimurium"
 12:45-12:55 **Sara Alina Neumann** (Humboldt-Universität zu Berlin, DE)
 "The diguanylate cyclase CdgC is essential for coordinated progress of the *Streptomyces venezuelae* life cycle"
 12:55-13:05 **Toby Bartholomew** (Queen's University Belfast, UK)
 Endotoxin hydroxylation and its role in *Acinetobacter baumannii* pathogenesis and antimicrobial resistance
13:05-15:00 Lunch and poster session

Session IV: Antibiotics and resistance mechanisms

Chair: **Laura Hobley** (University of Nottingham, UK)

15:00-15:25 **Kimberly Kline** (Nanyang Technological University, SG)
 "A cell envelope stress response links antimicrobial resistance and virulence factor assembly in *Enterococcus faecalis*"
 15:25-15:45 **Sergii Krysenko** (University of Tübingen, DE)
 "Newly discovered gamma-glutamylpolyamine synthetase (GlnA3) is a key enzyme in the polyamine utilization in *Streptomyces* and *Mycobacterium*"
15:45-16:05 Coffee break

- 16:05-16:25 **Carly B. Webb** (Queen's University Belfast, UK)
"Investigating the molecular mechanisms and role(s) in infection of biofilm formation by *Klebsiella pneumoniae*"
- 16:25-16:45 **Yichen Ding** (Nanyang Technological University, SG)
"Ribosomal protection protein relieves macrolide-mediated quorum sensing inhibition in *Pseudomonas aeruginosa*"
- 16:45-17:10 **Fiona Walsh** (Maynooth Univeristy, IE)
"Novel nalidixic acid resistance from a soil functional metagenomic library"
- 17:10-17:55 **Microbiology Society lecture by Jörg Vogel** (University of Würzburg, DE)
"Bacterial RNA biology on a genome scale"
- 17:55-18:25 Closing remarks and Prizes (Director of the Centre)
- 19:30** **Jose Bengoechea** (Queen's University Belfast, UK)
Social dinner and Irish céili

Selected Posters

- Alba Pacheco-Moreno
Examining the influence of barley genotype on the rhizosphere *Pseudomonas* population (John Innes Centre, UK)
- Amy J. Sterling
Investigating a novel mechanism of outer membrane lipid transport in *Burkholderia cenocepacia* (Queen's University Belfast, UK)
- Ana Álvarez-Mena
A locus widely distributed in the *B. cereus* group with functionality in biofilm formation (Universidad de Málaga, ES)
- Andrew O'Connor
Determining the role of universal stress proteins in the chronic colonisation of *Burkholderia cepacia* complex in cystic fibrosis (University College Dublin, IE)
- Bernd Vollmer
Effect of eukaryotic-type serine/threonine protein kinases (ESTPKs) on differentiation and spore wall synthesis of *Streptomyces coelicolor* A3(2) (University of Tübingen, DE)
- Brenda Morris
Harnessing the *Klebsiella* macrophage arms race (Queen's University Belfast, UK)
- Brendan Gilmore
Understanding host-pathogen interactions in *Proteus mirabilis* (Queen's University Belfast, UK)
- Carina M. Schmöhl
Transcriptional landscape of *Yersinia enterocolitica* O:8 and O:3 (Helmholtz Centre for Infection Research, DE)
- Carlos Molina-Santiago
Overtake, resilience and escape: three ecological strategies that define the *Pseudomonas-Bacillus* interactions (Universidad de Málaga, ES)
- Carlos Núñez Otero
Target identification of 2-pyridone amides in *Chlamydia trachomatis* (Umeå University, SE)
- Chao-ying Deng
Proteolytic cleavage sequesters histidine kinase signaling and promotes bacterial stress tolerance (Chinese Academy of Sciences, CN)
- Chris Proctor
Hydrogel based delivery of halogenated furanones for the inhibition of quorum sensing and prevention of biofilm formation (Ulster University, UK)
- Conor Quinn
Identification of novel bacterial adhesins to prevent Verocytotoxinogenic *Escherichia coli* infections in children (University College Dublin, IE)
- Daniel Moody
Macrophage sabotage: undermining macrophage signalling by *Klebsiella pneumoniae* (Queen's University Belfast, UK)
- Danna Lee
Rhs toxin-antitoxin systems in *E. coli* (Uppsala University, SE)
- Danny Ward
Regulation of type III-mediated virulence by cyclic-di-GMP, a Key bacterial signal (John Innes Centre, UK)
- Elia Riquelme-Zubiria
Analysing the role of protein secretion systems in the physiology and pathogenesis of *Brucella* (UFR Médecine Site de Nîmes, FR)
- Elisabeth Vatareck
Post-transcriptional regulation in *Pseudomonas aeruginosa* mediated by tRNA (Helmholtz Centre for Infection Research, DE)
- Enrique Joffré
Glycoconjugated cholate activates the transcription factor *csvR* which mediates bacterial aggregation and inhibits motility in enterotoxigenic *Escherichia coli* (ETEC) (Karolinska Institutet, SE)
- Frances Entwistle
Wax moth larvae as a model for *Mycobacteria infections* – a rapid, low cost and efficient model for antibiotic efficacy testing (University of St Andrews, UK)
- Franziska Faber
Global discovery of RNA-protein complexes in *Clostridium difficile* using Grad-seq (University of Würzburg, DE)
- Georgiana Parau
Intracellular survival of *Enterobacter cloacae* complex in human macrophages may interfere with the function of pannexin-1 (Queen's University Belfast, UK)
- Ines Vollmer
Analysis of the RNA-based regulatory mechanisms controlling type III secretion systems (Helmholtz Centre for Infection Research, DE)
- Iris Barragán
Study of the function of the $\beta(1,3)$ glucan synthase Bgs3 in the septum and cell wall construction from the fission yeast (Universidad de Salamanca, ES)
- Itziar Chapartegui-González
comparative genomic analysis of *Acinetobacter baumannii* and *A. pittii* clinical strains (Instituto de Investigación Valdecilla, ES)
- James Connolly
Fine-tuning of multiple virulence factors by a new global regulator in distinct pathogenic *Escherichia coli* (University of Glasgow, UK)
- Jennifer Okoye
Glycosylation of the major outer membrane protein (MOMP) of *Campylobacter jejuni* and its effect on binding and susceptibility to natural and synthetic ligands. (University of Nottingham, UK)
- Jindrich Smid
The influence of bacteria on the growth of cyanobacteria and on the production of substances with retinoid activity in cyanobacteria blooms and their effects on the organism *Danio rerio* (University of Hardec Kralove, CZ)
- July Fong
Combination therapy strategy of quorum quenching enzyme and quorum sensing inhibitor in suppressing multiple quorum sensing pathways of *P. aeruginosa* (Nanyang Technological University, SG)
- Lisa Neffe
Development of a MassARRAY® based diagnostic assay for genotype tracking and resistance profiling (Helmholtz Centre for Infection Research, DE)
- Marcel Volk
Ribosome profiling as a tool to study type 3 secretion regulation in *Yersinia* (Helmholtz Centre for Infection Research, DE)
- María Dolores Ferreiro-García
Global regulation by the GAC-RSM pathway in *Pseudomonas syringae* pv *tomato* D3000 (Estación Experimental del Zaidín-CSIC, ES)

- Maria Kusmerek
Identification of regulatory mechanisms important to control the *Yersinia pseudotuberculosis* type III secretion and virulence (Helmholtz Centre for Infection Research, DE)
- Martina Pasqua
Discovering the role of efflux pumps in the interplay between *Shigella* and the host cells (Sapienza Università di Roma, IT)
- Marwa Naguib
Role of bacterial lipocalin proteins in the adaptation of *Burkholderia cenocepacia* to antibiotic-induced membrane lipid peroxidation (Queen's University Belfast, UK)
- Mary B. Turley
Effects of bile on adhesion, biofilm formation and antibiotic resistance in cystic fibrosis isolates of *Staphylococcus aureus* (Trinity College Dublin, IE)
- Matthew James
Identification of cellular proteins essential for the replication of rhinovirus, the common cold virus (Queen's University Belfast, UK)
- Michael Gilmore
Exposure to the innate immune system of *Galleria mellonella* larvae increases polymyxin resistance in *Enterobacter cloacae* complex clinical isolates (Queen's University Belfast, UK)
- Michael J. Ormsby
Propionic acid enhances the virulence of Crohn's disease-associated adherent-invasive *Escherichia coli* (University of Glasgow, UK)
- Nicky O'Boyle
Escherichia coli pathotypes display diverse transcriptional responses to D-serine (University of Glasgow, UK)
- Paweena Chaoprasid
Molecular and functional analysis of the exotoxin CNF γ of *Yersinia pseudotuberculosis* YPIII during infection (Helmholtz Center for Infection Research, DE)
- Qiao-zhu Su
Akkermansia muciniphila ameliorates metabolic inflammation and insulin resistance by regulating LDL receptor and TMAO metabolism (Queen's University Belfast, UK)
- Rebecca Mills
Polyamine synthesis in *Klebsiella pneumoniae*: a novel target for antimicrobial therapies? (Queen's University Belfast, UK)
- Ricardo Sánchez de la Nieta Moreno
AbRA1/A2, a new piece in the integration of primary metabolism and antibiotic production in *Streptomyces coelicolor* (Universidad de Salamanca, ES)
- Richard X.E. Valli
Chemical-genetic investigation of the regulatory network controlling *Pseudomonas aeruginosa* cell polarity and motility (University of Southern Denmark, DK)
- Rocío Canals
Identification of key transcriptomic differences between global and African sequence types of *Salmonella* Typhimurium (University of Liverpool, UK)
- Ronni A. G. da Silva
Identification of a novel, unprocessed species of Factor H binding protein on the surface of meningococcal strains (University of Nottingham, UK)
- Sara Alina Neumann
The diguanylate cyclase CdgC is essential for coordinated progress of the *Streptomyces venezuelae* life cycle (Humboldt-Universität zu Berlin, DE)
- Sarina Tsui
Sugar cane endophytic *Burkholderia seminis* TC3.4.2R3 antagonist activity against plant pathogenic fungi (Instituto de Ciências Biomédicas, BR)
- Stuart Woodcock
The sweet side of dessication: stress relieving sugars in *Pseudomonas spp.* (John Innes Centre, UK)
- TEH Wooi Keong
Cyclic-di-AMP controls osmotic homeostasis, biofilm formation, adherence to intestinal cells and expression of colonisation factors in *Streptococcus gallolyticus* subsp. *gallolyticus* (Nanyang Technological University, SG)
- Toby Bartholomew
Endotoxin hydroxylation and its role in *Acinetobacter baumannii* pathogenesis and antimicrobial resistance (Queen's University Belfast, UK)
- Vanessa Knittel
Molecular analysis of regulatory factors and environmental signals controlling secretion systems important for *Yersinia* virulence (Helmholtz Centre for Infection Research, DE)
- Visanu Wanchai
What have we learned from 140,000 bacterial genomes (University of Arkansas, US)
- Yasir Almuhanha
The interaction between *Pseudomonas aeruginosa* biofilms and neutrophils (University of Nottingham, UK)
- Ying-ying Cheng
Biofilm formation and H1 type VI secretion system are important for *Pseudomonas aeruginosa* competition in complex microbial community (Nanyang Technological University, SG)
- Zulema Udaondo Dominguez
Large-scale genome-wide analysis of *Enterococcus* species (University of Arkansas, US)

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