

Curriculum vitae

Name: Ross Stuart McInnes

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Track record

Dr Ross McInnes is an expert in the use of multi-omics techniques to investigate antibiotic resistance in microbiomes. During his PhD he used metagenomics, functional genomics, transcriptomics and phylogenomics to track the spread of antibiotic resistance in the environment and in the clinic. He has a keen interest in the spread of antibiotic resistance genes (ARGs) between human gut commensals and opportunistic pathogens with a particular focus on the bacterium *Enterococcus faecium*. In his current role as a Research Fellow, he uses the chromosome conformation capture technique Hi-C and selective anaerobic culturing to link antibiotic resistance genes to their bacterial hosts in the human gut microbiome. The use of these techniques provides a novel and exciting approach to capture the complex dynamics of ARG carrying mobile genetic elements in the gut microbiome. Alongside his research he has sat on college and institute level committees as both a PGR and ECR representative and is an advocate for the involvement of ECRs in college decision making. Ross has supervised students at school, undergraduate and postgraduate level and particularly enjoys supervising laboratory-based projects. He has also participated in public engagement events both inside and outside of the university and feels strongly that researchers have a duty to share their research with the public.

Employment

University of Birmingham – Research Fellow (2022-Present)

JPIAMR funded research titled “Microbiota Intervention Strategies Limiting Selection and Transmission of Antibiotic Resistance burden in the One Health domain (MISTAR)”.

Supervisor: Professor Willem van Schaik

Education

University of Birmingham – PhD (Wellcome Trust AAMR DTP) (2018-2022)

Wellcome Trust funded research titled “Metagenomic, Genomic and Functional Genomic Approaches for the Characterisation of Antibiotic Resistance”.

Joint supervisors: Professor Willem van Schaik & Professor Alan McNally.

University of Birmingham & University of Nottingham - MRes (2017-2018)

Wellcome Trust funded research titled “Construction and optimisation of a novel fluorescent reporter system for use in Gram-negative and Gram-positive bacteria”.

Supervisor: Professor Willem van Schaik.

University of Hamburg (2016)

ERASMUS funded summer project titled “Elucidating the structure of tRNA”.

Supervisor: Professor Dr Zoya Ignatova

University of Strathclyde - BSc Biochemistry & Microbiology (First Class) (2013-2017)

Research titled “Metagenomic and Metabolomic analysis of two five-year-old Winogradsky columns to investigate the effect of Molybdate supplementation.”

Joint supervisors: Dr Nicholas Tucker & Dr Katherine Duncan

Skills

Molecular Microbiology

- Cloning (Restriction & Gibson)
- Gene insertion/deletion
- DNA gel electrophoresis and PFGE
- PCR and qRT-PCR
- Nanopore long-read sequencing
- Illumina short-read sequencing
- Transposon insertion sequencing (Tn-Seq)

Bioinformatics

- Bash scripting
- R scripting
- HPC / Slurm
- GitHub

Conference posters and presentations

Ross S. McInnes, Ann E. Snaith, Steven J. Dunn, Maria Papangeli, Katherine J. Hardy, Abid Hussain and Willem van Schaik. No Time to Die: Rapid Conversion to Resistance in Vancomycin-variable *Enterococcus faecium*. 6th International Conference on Enterococci. Porto, Portugal. 11-14th September 2023. Oral presentation.

Ross S. McInnes, Ann E. Snaith, Steven J. Dunn, Maria Papangeli, Katherine J. Hardy, Abid Hussain and Willem van Schaik. No Time to Die: Rapid Conversion to Resistance in Vancomycin-variable *Enterococcus faecium*. Microbiology Society, Understanding and Predicting Microbial Evolutionary Dynamics. Manchester, England. 22-23rd November 2022. Poster #39.

Ross S. McInnes, Vincent de Maat and Willem van Schaik. Identification of auxiliary vancomycin resistance genes in *Enterococcus faecium*. World Enterococcus Day. Online. 15th July 2021. Oral presentation.

Ross S. McInnes, Vincent de Maat and Willem van Schaik. Identification of auxiliary vancomycin resistance genes in *Enterococcus faecium*. Microbiology Society Annual Conference. Online. 26-30th April 2021. Oral presentation.

Ross S. McInnes, M. Hassan Zaman, Imam Taskin Alam, Siu Fung Stanley Ho, Niyaz Ahmed, M. Sirajul Islam and Willem van Schaik. Metagenomes and resistomes of rural and urban surface water in Bangladesh. British Society for Antimicrobial Chemotherapy, Antibiotic resistance, and mechanisms. Birmingham, England. 28-29th November 2019. Poster #38.

Ross S. McInnes and Willem van Schaik. Construction of novel reporter systems to identify horizontal gene transfer of antimicrobial resistance genes in complex bacterial communities. Copenhagen Bioscience Conferences, Averting the post-antibiotic era – challenges and developments. Copenhagen, Denmark. 31st October – 3rd November 2018. Poster #69.

Peer review

Access Microbiology
FEMS Microbiology Reviews
Journal of Antimicrobial Chemotherapy
JAC-Antimicrobial Resistance
Microbiome

Funding secured

Society Conference Grant. Microbiology Society. February 2020. £240.
Society Supported Conference Grant. Microbiology Society. August 2019. £1,320.
Event Support Grant. Society for Applied Microbiology. April 2019. £1,800.
Event Support Grant. Institute of Microbiology & Infection, University of Birmingham. March 2019. £1,000.
Public Engagement Grant. University of Birmingham. March 2019. £200.

Travel grant. Wellcome Trust. October 2018. £430.

Wellcome Trust Antimicrobials and Antimicrobial Resistance Doctoral Training Program Studentship (215154/Z/18/Z). October 2018. £146,651.

Teaching experience

Supervision of students at both undergraduate and postgraduate level during their lab project and write-up.
Demonstrated at the IMI University of Birmingham summer school for secondary school children.
Delivered a training course in bioinformatics for researchers from Bangladesh.

Leadership roles

Institute of Microbiology and Infection PGR representative (2018-2020) – College PGR Committee.
Research Fellow representative (2022-2023) – IMI Executive Committee.

Further information

Co-lead of Junior Awards for Microbiology (JAM) talks seminar series.
Co-founder of Contamination club – a social media-based outreach project.
Participated in public engagement events at CoCoMAD and Green Heart festivals.
