



BSMT 40th Annual Microbiology Conference

15 May 2025

Laboratory Microbial Diagnostics: Current and future practices

Speaker profiles

Professor Paul Dark

National Institute for Health Research, National Specialty Lead for Critical Care



Professor Dark originally studied undergraduate physics and then medicine. Graduating from the Manchester Medical School in 1989, he went on to study clinical academic surgery, emergency medicine and critical care at the Universities of Glasgow and Manchester in the UK, and at the Catholic University of Leuven, Belgium. He returned to Manchester in 1998 as MRC Clinical Training Fellow and completed his PhD in 2002 he was appointed to his current substantive clinical academic post at the University of Manchester in 2003, developing clinical services and academic practice in Critical Care Medicine as Honorary NHS Consultant at Salford Royal NHS Foundation Trust. He is the National Institute for Health Research's National Specialty Lead for Critical Care and has also served on NIHR's Urgent Public Health Research Advisory Group, providing expert advice on research priority for DHSC and UK's CMOs during the COVID-19 pandemic. In April 2021 Professor Dark has been NIHR National Specialty Cluster Lead at King's College London. In addition, he is Research Professor in The Humanitarian and Conflict Response Institute at the University of Manchester, providing strategic interdisciplinary collaborative leadership and translation of acute care research in low resource settings. Professor Dark will be presenting on developing the best evidence for effective molecular diagnostic technologies in sepsis: impacts of a viral pandemic.

Professor Hermine Mkrтчyan

Professor of Microbiology and Head of Research at the University of West London.



Professor Mkrтчyan leads a multidisciplinary research group that studies interactions between human/livestock/environmental microbiomes and transmission of antimicrobial resistance (AMR) to develop interventions within the One Health continuum. Her pioneering work on low biomass microbiomes (air) resulted in the development of methodologies and pipelines to capture and link AMR to relevant species. Projects in her research group include the development of a new non-invasive test for rapid pathogen and AMR detection (respiratory diseases) and new laboratory methods for both targeted and untargeted metagenomic sequencing to characterise "unculturable" gastrointestinal pathogens and linked AMRs, directly from clinical specimens (stool and gastric biopsy).

Her group uses long and short read whole genome sequencing and proteomics to develop broad host lytic bacteriophages and an ultra-rapid diagnostic Raman Spectroscopy platform.

Dr Alessandre Natale

Research Co-ordinator Medicines Sans Frontieres and Scientific and Technical Manager AALFA



After completing a PhD in Microbial Ecology at the University of Warwick, Dr Natale held post doc positions at the University of Cambridge working on R&D diagnostics and Guy's and St Thomas's looking at multidrug resistance. She then obtained an MSc in Control of Infectious Diseases at the London School of Hygiene and Tropical Medicine and in 2018 joined MSF Mini-Lab group as Research Coordinator focusing on the evaluation studies of the diagnostic tests integrated in the prototype of the Mini-Lab, and of its evaluation in MSF fields.

In March 2024 Dr Natale, in conjunction with other colleagues from MSF set up a non-profit organisation to develop and more widely distribute the mini lab system.

Dr Daniel Carter

Genomics Specialist for the UK public health Rapid support team



Dr Carter has worked for UKHSA and its predecessors since 2010 in diagnostics and research of rare and emerging human pathogens, mostly at the Porton Down site. During this time he has worked as a biomedical scientist at the Rare and Imported Pathogens Laboratory, as a research scientist in the Research team and as a technical specialist in the pathogen genomics group. He has been involved in various outbreak responses, including the Anthrax outbreak in injecting drug users, the establishment of Ebola diagnostic laboratories in Sierra Leone, the creation of high-throughput SARS-CoV-2 sequencing laboratories and the

development of sequencing workflows to respond to the 2022 Mpox outbreak. Dan recently completed a part-time PhD at the University of Liverpool focussing on assay development to detect and characterise tick-borne pathogens in the UK.

Dr Carter is now the genomics specialist for the UK Public Health Rapid Support Team (UK-PHRST) and currently focusses on the implementation of metagenomic sequencing for capacity strengthening, outbreak response and research projects in low- and middle-income countries.”

Dr Alexander Shaw

Research Fellow. Vaccine Epidemiology Research Group. Imperial College London.



After completing an MSc in bioinformatics at Imperial Dr Shaw studied for a PhD at the University of Manchester where he applied Systems Biology approaches to the study of DNA replication in human cell lines. He returned to Imperial and joined the Department of Paediatrics, initially focusing on the microbiota of neonatal infants and characterising the relationships between bacterial colonisation and gut-related diseases. He progressed to the Department of Infectious Disease Epidemiology and is now the laboratory lead for the Vaccine Epidemiology Research Group. Dr Shaw develops

direct nanopore sequencing methods for detection of poliovirus in stool and wastewater which are now being trialled in WHO national poliovirus laboratories with the aim of wider adoption.

Dr Shaw is currently working to expand these methods to facilitate cost-effective detection of multiple pathogens from wastewater whilst also lecturing on genomics and laboratory methods

Dr Riina Rautemaa-Richardson

Senior Clinical Lecturer in Infectious Diseases and Medical Education in the Division of Evolution, Infection and Genomics, University of Manchester and an Honorary Consultant Medical Mycologist at the Manchester University NHS Foundation Trust.



Dr Rautemaa-Richardson is the Clinical Head of Service for the Mycology Reference Centre Manchester and a member of the Infectious Diseases team. She is an internationally recognised expert, senior researcher, educator and clinician in the field of fungal infectious diseases. She is an academic clinician who has published over 180 peer-reviewed articles and books or book chapters in the field of medical microbiology, medical mycology, mucosal immunology, infectious diseases and oral medicine.

Dr Richardson has special expertise in the management of a spectrum of mycoses including fungal sinusitis and infections in compromised patients, and a special interest in chronic mucosal candidosis and mucosal immunology. She also has expertise in antimicrobial stewardship and infection prevention. She is an author of the recently updated BASHH guideline on vulvovaginal candidiasis as well as the ECMM/ISHAM Candidiasis and Rare Yeasts guidelines. She is the Lead for Infectious Diseases learning for Manchester Medical School, the Chair of the UK Standards for Microbiology Investigations Bacteriology Working Group, and the lead for the ESCMID Academy. She has years of editorial experience and is currently an Editor for the Journal of Antimicrobial Chemotherapy.