

# Laboratory Microbial Diagnostics: Current and Future Practice

On Thursday 15 May 2025, the BSMT will celebrate its 40th Anniversary Microbiology Conference. Renowned for the quality of its presentations and speakers, the event will once again offer a cutting-edge programme not to be missed.

This year's British Society for Microbial Technology (BSMT) conference, at the RAF Museum in Hendon, North London, will host a range of speakers from different fields of microbiology, including those in academia, research and clinical practice. As well as the scientific programme, the day will also feature a trade exhibition featuring 20 leading microbiology companies that are supporting the event (further company information is available elsewhere in this issue). All attendees are invited to visit each trade stand and come armed with questions for the commercial representatives.

The conference provides scientists with the opportunity to discuss and debate their experiences. Registration is now open, and early booking is advised to secure a place. The conference has also been accepted for CPD by the Institute of Biomedical Science (IBMS) and The Royal College of Pathologists (RCPath). This article focuses on brief biographies provided by the six speakers contributing to this anniversary event.

## Professor Paul Dark

Professor Dark originally studied undergraduate physics and then medicine. Graduating from 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, and 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.

Professor Dark 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 to the DHSC and UK's CMOs during the COVID-19 pandemic. From 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's presentation is entitled 'Biomarker-guided antibiotic treatment for patients with sepsis: providing value for patients and services?'

## Professor Hermine Mkrtchyan

Professor Mkrtchyan 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



The RAF Museum in Hendon, North London; venue for the BSMT 40th Anniversary Microbiology Conference.

# The speakers



**Professor Paul Dark**, National Institute for Health Research, National Specialty Lead for Critical Care.

**Professor Hermine Mkrtychyan**, Professor of Microbiology and Head of Research at the University of West London.



**Dr Alessandra Natale**, Research Coordinator, Médecines Sans Frontières, and Scientific and Technical Manager AALFA.

**Dr Daniel Carter**, Genomics Specialist for the UK Public Health Rapid Support Team.



**Dr Alexander Shaw**, Research Fellow. Vaccine Epidemiology Research Group, Imperial College London.

**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 Honorary Consultant Medical Mycologist at Manchester University NHS Foundation Trust.



(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 (WGS) and proteomics to develop broad host lytic bacteriophages and an ultra-rapid diagnostic Raman spectroscopy platform.

Professor Mkrtychyan's talk will cover 'Novel technologies and the fight against antimicrobial resistance'.

## Dr Alessandra Natale

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 at Guy's and St Thomas' 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 the 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.

In her presentation, Dr Natale will introduce 'The Mini-Lab: accessible clinical bacteriology at the district level'.

## Dr Daniel Carter

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.

Dr Carter recently completed a part-time PhD at the University of Liverpool focusing on assay development to detect and characterise tick-borne pathogens in the UK. He is now the genomics specialist for the UK Public Health Rapid Support Team (UK-PHRST) and currently focuses on the implementation of metagenomic sequencing for capacity strengthening, outbreak response and research projects in low- and middle-income countries.

Dr Carter's presentation is entitled 'Developing the UK public health rapid support team Rapid Response Mobile Laboratory as a tool for global outbreak response'.

## Dr Alexander Shaw

After completing an MSc in bioinformatics at Imperial College, 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 World Health Organization (WHO) national poliovirus laboratories with the aim of wider adoption. He is currently working to expand these methods to facilitate cost-effective detection of multiple pathogens from wastewater while also lecturing on genomics and laboratory methods.

Dr Shaw will talk about 'Wastewater surveillance for epidemiological surveillance'.

## Dr Riina Rautemaa-Richardson

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*.

Dr Richardson's presentation will cover 'Advances in the diagnosis of invasive/systemic fungal infections'.



For more information on the programme, registration details, and participation, please visit the BSMT website.  
[www.bsmt.org.uk](http://www.bsmt.org.uk)