International Pathology Day **2020**

Virtual Conference

Infection through the lens of COVID-19 with an international viewpoint

Wednesday 11 November 2020 10.30-14.35 (GMT)



The event is accredited by The Royal College of Pathologists and is worth four CPD points.









A word from Dr Maadh Aldouri,

Clinical Director for International Activities



A very warm welcome to International Pathology Day 2020, in collaboration with <u>The Pathologist magazine</u>, <u>the British Society for</u> <u>Haematology</u> (BSH) and the event's sponsor <u>Sonic Healthcare UK</u>.

For the seventh year, we come together to celebrate the work of pathologists and laboratory medicine professionals worldwide.

This year also marks the final time that Professor Jo Martin will lead this event as President of the Royal College of Pathologists. I would like to take this opportunity to give a special thanks to Professor Martin, College President and Dr Rachael Liebmann as outgoing VP for Communications and International for their support of, and contributions to, International Pathology Day over the past three years.

Thanks also to all you for joining us today. We hope you enjoy the event.



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How early testing contributed to a robust pandemic response in Germany (and saved the Bundesliga along the way ...)

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Professor Ali Hajeer, Laboratory Director, King Abdulaziz Medical City Page 7

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Special music tribute performance

for laboratory professionals, doctors and healthcare professionals around the world.

Rod Gozzett Page 14



10.30-10.35

Welcome and opening address

President of the Royal College Professor Jo Martin



Jo's qualifications: Cambridge University and London Hospital Medical College 1984; MRC Training Fellowship 1988, MRC Fellowship 1990 and Welcome Trust Advanced Research Training Fellowship 1991; PhD London University 1997; and Kings Fund programme MA in Leadership in 2005. Jo has published more than 130 papers, including in the Nature group and Science journals, and is Professor of Pathology at Queen Mary University, London. She is a founding Director of <u>Biomoti</u>, a drug-delivery platform technology company, and app creator, including an <u>elearning platform</u>, <u>eCPD</u>, with more than 46,000 modules completed by healthcare staff.

She has very broad experience in healthcare management, ranging from running clinical departments and divisions to acting as Medical Director, and subsequently Chief Medical Officer at <u>Barts Health NHS Trust</u>. As Director of Academic Health Sciences, she is responsible for <u>CRN North Thames</u>, hosted by Barts. She has led research across the Trust as well as the training and education of 16,000 staff across Barts Health. Her clinical specialist expertise is in the pathology of gastrointestinal motility disorders.

As National Clinical Director of Pathology for NHS England, April 2013–2016, Jo worked across a broad range of programmes and projects in all pathology disciplines, including genetics, transfusion, digital pathology, data, networks and working with diagnostic professional bodies such as the Academy of Medical Royal Colleges.

She is involved with a range of professional bodies as a board member, including as Chairs of the Research Advisory Board of the <u>Motor</u> <u>Neuron Disease Association</u>, and the Strategic Clinical Reference Group of the National Information Board

10.35-10.40

Introducing

President-elect of the Royal College of Pathologists: Dr Mike Osborn



Mike studied medicine at Guy's and St Thomas' Hospitals, London, qualifying in 1995. He became a member of the Royal College of Surgeons in 2000 and a Fellow of the Royal College of Pathologists in 2004.

He currently works as a consultant histopathologist for North West London Pathology at <u>Imperial College Healthcare NHS Trust</u>, London, where he is clinical lead. His working time is divided between post mortems, diagnostic gastrointestinal histopathology, bowel cancer screening and teaching. He runs a BSc in Humanities, Philosophy and Law at Imperial College, London. He sits on the Council of the Royal College of Pathologists and is Chair of its Cellular Pathology Speciality Advisory Committee and Death Investigation Committee. In June this year, he was appointed President-elect of the College.



10.40-11.00

Talk one:

How early testing contributed to a robust pandemic response in Germany (and saved the Bundesliga along the way ...)

For all laboratories, priority testing has necessarily focused on people who are symptomatic, as well as part of contact-tracing programs, and at-risk patients and health and social care staff, healthcare workers and residential care providers. A small number of operators, however, have found themselves in 'exotic' projects, such as the design of a hygiene and diagnostics concept for the German Bundesliga, which ultimately became the first professional sports league in the Western world to resume regular matches (closely followed by the Premier League).



Speaker: Evangelos Kotsopoulos

Evangelos is the CEO of <u>Sonic Healthcare</u> <u>Continental Europe and Sonic Healthcare</u> <u>Germany</u>. Before relocating to Berlin, Germany, in late 2010, to establish a new Sonic head-office for Europe, he spent several years working in Sonic Healthcare's Sydney head office as Business Development Director. Prior to joining Sonic Healthcare, having a background in economics and finance, he had a career in investment banking with J.P.Morgan's healthcare investment banking team in New York, London and Sydney.

He is married with two children and is currently based in Berlin, <u>Germany. Evangelos also serves</u> on the Boards of the German–Australian <u>Business Council</u> and the Accredited Medical Laboratories Association, and is a Trustee of the <u>World Doctors Orchestra</u>.



Talk two: Serology of MERS-CoV and SARS-CoV-2

Middle East respiratory syndrome coronavirus (MERS-CoV) and severe acute respiratory syndrome coronavirus (SARS-CoV-2) belong to the coronavirus family, which consists of many viruses characterised by being enveloped RNA viruses that cause respiratory illnesses of varying severity.

MERS-CoV is very similar to SARS-CoV2; both are betacoronaviruses. SARS-CoV-2 is a new coronavirus that was recently found to infect humans, causing coronavirus disease 2019 (COVID-19), the virus currently spreading wildly worldwide.

As with other acute respiratory viruses, detection of virus-specific antibodies might lag sometime after the detection of viral genome by molecular methods. Making an accurate diagnosis is important for managing patients with SARS-CoV-2 or MERS-CoV and stopping the spread of these viruses. So far, molecular detection of the virus is the gold standard method. Serology was used in several studies, detecting IgG, IgM and IgA specific to SARS-CoV-2 and MERS-CoV.

In this presentation, we will review current knowledge of serology testing for both SARS-CoV-2 and MERS-CoV, and classes of antigen and antibody used in serology assays. We will examine the role of serology in pandemics of coronavirus origin and ask whether serology has a part to play in 'immunity passports'. Among other questions, we will also ask: how long do antibodies to betacoronaviruses usually last and is there a role for rapid antibody testing in the clinical setting?



Speaker: Professor Ali Hajeer

Ali obtained his BSc in medical sciences from Yarmouk university in 1985 and his master's degree in immunology from the same university. In 1991, he obtained his PhD in immunology from the University of Manchester, where he continued to a Fellowship in Immunogenetics.

In 2000, he obtained a Royal College of Pathology Fellowship in Histopathology and Immunogenetics (London) and, in 2010, became a Diplomate of the <u>American Board of</u> <u>Histocompatibility and Immunogenetics</u>.

In 2001, he joined the Ministry of <u>National</u> <u>Guard Health Affairs</u> as Director of the Immunopathology Laboratory. He has published more than 200 peer-reviewed publications and contributed to five textbooks.

Follow Professor Ali Hajeer on Twitter



11.30 - 11.50

Talk three: The South African perspective on COVID-19: developing new diagnostic approaches

In common with many other countries, the SARS-CoV-2 virus arrived in South Africa in March and began to spread rapidly, prompting the government to announce a period of lockdown commencing on 27 March 2020. At the time of writing, there have been more than 700, 000 diagnosed cases and more than 4.5 million tests performed. However, a recovery rate of 90%, and a mortality rate significantly lower than many other countries, have prompted much speculation, some of it centring on the potential protective role of BCG vaccination in South Africa.

In terms of diagnosis, there has been heavy reliance on nucleic acid testing because of high throughput and sensitivity but this was initially dogged by severe worldwide shortages of reagents. The resulting procurement bottleneck placed severe constraints on the ability of all South African laboratories to diagnose infection within an acceptable timeframe for implementing isolation and safety protocols.

Over the initial four months of the lockdown, the debate gradually moved on to the question of serology tests for antibodies.

The government also deployed health workers in densely populated communities to conduct door-to-door consultations to find active cases by testing with nasopharyngeal swabs. This helped to identify some of the hotspots for infection.

Trials of the Oxford vaccine have commenced in South Africa and results will be available towards the end of 2020.

Many researchers have begun to think of alternative diagnostic approaches, including isothermal amplification of viral nucleic acid and rapid antigen tests to detect viral protein. One approach we have taken has been to use nanobodies to develop both biosensors and rapid lateral flow immunoassays. Single domain antibodies ("nanobodies") have the potential to revolutionise diagnostic testing. Their size, stability and robustness make them ideal for gene manipulation and alteration in the laboratory, and production costs are low.

The control of the current COVID-19 pandemic requires detailed mapping of the spread of the disease. This is usually achieved by laboratory testing or by point-of-care testing using expensive equipment and diagnostic reagents that are generally closed proprietary systems, e.g. GeneXpert from Cepheid; Abbott ID NOWTM.

An affordable robust open-system test that can be carried out rapidly anywhere would alleviate this situation immensely. This urgent need dictated the development of locally produced, robust, and inexpensive tests for the SARS-CoV-2 virus, using readily available reagents.

Population testing is vitally important and not just for testing people showing severe symptoms. We are developing methods that can test rapidly for viral protein antigens using nanobodies, allowing us to implement community testing with ease. Our test will use saliva or nasopharyngeal secretions. This will make possible self - and home-testing without the need for intervention of a healthcare worker or invasive nasopharyngeal swab sampling.

These tests can be used to complement nucleic acid and serology testing, and identify reservoirs of the virus, helping to prevent subsequent waves of infection. Furthermore, nanobodies are also being evaluated for the treatment of Covid-19 and can potentially replace the expensive monoclonal antibody and convalescent plasma therapy.





Speaker: Professor Tahir Pillay

Tahir has an MBChB (University of Natal) and PhD in biochemistry (University of Cambridge). He trained at Hammersmith Hospital, Imperial College, London, and the University of California, San Diego, and is a Fellow of the Royal College of Pathologists.

He is Professor and Head, Department of Chemical Pathology, <u>University of Pretoria</u>, South Africa; Editor-in-Chief, <u>Journal of Clinical Pathology</u>; Chair of the Communications Division, <u>International</u> <u>Federation of Clinical Chemistry (IFCC)</u> and President of the South African <u>Association for</u> <u>Clinical Biochemistry</u>.

He is pioneering the use of nanobodies in clinical laboratory diagnostics and point-of-care testing with new robust, low-cost immunoassay methodology.

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11.50-12.10

Talk four:

Endemic pathogens and international research projects during a pandemic: Toxoplasma gondii and international research project TOXOSOURCES as an example

The protozoan parasite Toxoplasma gondii has been described as the world's most successful parasite. It is estimated that more than 30% of the global population have been infected with this protozoan parasite, which can infect a wide range of mammalian and bird species. Although the majority of T. gondii infections in most host species are subclinical and chronic, the parasite can cause serious disease and even kill its host. The disease burden in humans is high and the impact on farm animal welfare and productivity is significant.

As a highly successful parasite, T. gondii can be expected to survive the ongoing COVID-19 pandemic well, supported by its wide host range and an environmental reservoir of robust oocysts. Toxoplasma gondii has a complex lifecycle and can infect humans in numerous ways, including through consumption of infected meat, ingestion of vegetables, fruit and water contaminated with oocysts, and transmission during pregnancy. COVID-19-related changes may affect the relative importance of these different transmission routes.

'TOXOSOURCES – Toxoplasma gondii sources quantified' is a 2.5-year (2020–2022) Joint Research Project of the One Health European Joint Programme (One Health EJP), with a focus on T. gondii at the interface between humans, animals, food and the environment. The TOXOSOURCES Consortium, comprising 20 One Health EJP partners across Europe and several external partners, has shown impressive adaptability to the current global situation. The TOXOSOURCES research question – What are the relative contributions of the different sources of T. gondii infection? – is being addressed using several multidisciplinary approaches, and novel and improved methods, to yield robust outputs that can inform risk managers and policymakers. The research question became even more timely due to the COVID-19 pandemic, and some of the results might be useful as a new baseline of consumption habits with relevance to transmission of several foodborne pathogens.

The main outcomes of TOXOSOURCES will be: quantitative estimates of the contribution of the main sources and transmission routes of T. gondii infection based on improved source attribution models covering both meat-borne and environmental exposure; new data filling the knowledge gap regarding the role of increasingly popular but unstudied ready-to-eat fresh produce; a novel serological method specifically detecting infections caused by oocysts; a novel typing method enabling detection of the introduction of atypical T. gondii strains by import; and tracing the infection sources in outbreaks.

The results of TOXOSOURCES will contribute to developing efficient interventions at national, regional, European and global levels.

TOXOSOURCES is supported by funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No 773830: One Health European Joint Programme EJP.





Speaker: Dr Pikka Jokelainen

Pikka is a veterinarian and did her PhD on Toxoplasma gondii at the University of Helsinki, where she continues as Adjunct Professor in Zoonotic Parasitology.

She works at the <u>Statens Serum Institut</u> in Denmark and is first Vice President of <u>the World</u> <u>Federation of Parasitologists</u> and President of <u>the</u> <u>Scandinavian-Baltic Society for Parasitology</u>. In the <u>One Health EJP</u>, she is the Project Leader of <u>TOXOSOURCES</u>, consortium member of projects PARADISE, MEME and OH-Harmony-CAP, as well as the Deputy Leader of the WP3 (Joint Research Projects) and Collaborator of WP5 (science to policy translation).

Follow Dr Jokelainen on <u>Twitter</u>



Speaker: Dr Martha Betson

Martha studied at the University of Cambridge and University College London.

She is Senior Lecturer at <u>University of Surrey</u> <u>School of Veterinary Medicine</u> and Head of Department of Veterinary Epidemiology and Public Health. Martha studied at the University of Cambridge and University College London. She has extensive postdoctoral experience from UK and overseas institutions and is Principal Investigator of the MRC-funded <u>ZooTRIP project</u>, which investigates zoonotic transmission of intestinal worms in the Philippines.

She is also a consortium member of the <u>One Health EJP projects TOXOSOURCES</u> and PARADISE.

Learn more about Dr Martha Betson



12.10-12.30

Speaker panel Q&A

You are invited to contribute questions and comments about the talks presented

12.30-13.10

Lunch and lunchtime activity

Poster competition

Sponsored by Sonic Healthcare UK

For IPD2020, entrants were asked to submit a poster that gets to the core of pathology, or to tell us how pathology laboratories have been crucial to the world's COVID-19 response.

Enjoy viewing the superb entries on the International Pathology Day Poster Competition page. Tell us about the poster that most caught your attention, and why, on <u>Twitter</u> or <u>Facebook</u> using **#IPD2020.** The IPD2020 poster competition will be judged by Professor Jo Martin, Dr Mike Osborn and Dr Shubha Allard.

A range of features will be judged – poster appearance and originality, scientific and medical content, and which entrant presents and communicates the message in their poster in the most professionally powerful way.

Winners will be announced after the break – who will they be?

13.10-13.20

Winning posters announced

Judges reveal the three winners of the International Pathology Day Poster competition



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13.20-14.20

Roundtable: Why international knowledge sharing is a winner

The roundtable will discuss the importance of international information exchange – especially in a pandemic – and how screening, diagnosis, treatment selection, and health monitoring differ

between regions. Against the setting of COVID-19, it is more important than ever not to place boundaries on our ability to learn from one another.

Meet our mediator and panellists



Mediator: Professor Tahir Pillay



Panellist: Professor Jo Martin



Panellist: Professor Ali Hajeer



Panellist: Evangelos Kotsopoulos



Panellist: Dr Pikka Jokelainen



Panellist: Dr Josh Wright



14.20–14.25

Closing remarks:

From Professor Jo Martin, President of the Royal College of Pathologists

14.25–14.35

Special music tribute performance

For professionals, doctors, and healthcare professionals around the world



Singer songwriter: Rod Gozzett

Rod is a UK-born singer/songwriter whose musical influences are Pink Floyd, Oasis, The Beatles and Neil Young.

A passionate and emotive performer, he is intuitively able to portray the human condition through a remarkably raw and honest voice.

His journey as a musician began at the age of 14 when he was taught to play the guitar by his late uncle Ted, who would send him away with songs to practise.

Rod has played a vast number of different venues up and down the country, including small festivals. When the UK went into lockdown in March, Rod was inspired about the search to find a vaccine to take up his guitar to cover 1990s, topical and recent hits. He posted his songs on social media, including a tribute to scientists and healthcare professionals. This year, he also signed to DareDream Records and will be releasing new music soon.

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You can follow Rod on Facebook



The artwork in design of this programme

The College runs an annual Art of Pathology competition. The theme for 2020 was 'Pathology: at the heart of healthcare'. This year, the competition was also open to international entrants as well as those from the UK. We are delighted to incorporate into the design of this programme artwork created by Meredith Herman, from Michigan, USA – one of the highly commended international entrants. On the next page, you can see the original piece and below the story and inspiration behind it.

Life magnified

What do you see? You peer into the microscope, mesmerised and bewildered, and study the slide for this case. Neurons in your brain fire as you examine the cells, nuclei and patterns. This patient's care depends upon your expertise and final diagnosis. This slide is more than a case, a cell block or peripheral smear. It is the patient. My inspiration arose from my enjoyment of learning pathology in medical school and during a post-sophomore pathology fellowship in the United states. Studying pathology and gaining hands-on experience in the laboratory has helped deepen my understanding of disease, the importance of the hospital laboratory in healthcare, and the critical role pathology has in developing treatments and vaccines.



