FACULTY OF NATURAL, MATHEMATICAL & ENGINEERING SCIENCES CENTRE FOR THE PHYSICAL SCIENCE OF LIFE



Centre for the Physical Science of Life Symposium 2025

Centre for the Physical Science of Life Annual Symposium

Friday 2 May 2025, 12:30 – 18:00

Great Hall, King's Building Strand, London WC2R 2LS

AGENDA

- 12.30 13.00 Symposium Registration
- 13.00 13.05 Welcome. Dr Amy Beedle (King's)
- 13.05 14.00 Lunch and networking opportunity
- 14.00 14.10 Opening remarks from Centre Co-Directors, Professor Paula Booth and Professor Sergi-Garcia Manyes (King's)
- 14.10 14.50 Keynote 1: Professor Philipp Kukura (Oxford), 'Towards universal single molecule biophysics'
- 14.50 15.10 Talk: Dr Siân Culley (King's), 'The Good, The Bad and The Ugly in Fluorescence Microscopy'
- 15.10 15.30 Talk: Dr Ciro Chiappini (King's), "Exploring Cells with Nanoneedles'
- 15.30 15.50 Coffee and Networking
- 15.50 16.10 Talk: Dr Tim Nott (King's), 'Surface tension and wetting of model membraneless organelles'
- 16.10 16.50 Professor Ewa Paluch (Cambridge), "Cross-talk between cell mechanics, cell shape and cell fate'
- 16.50 17.00 Closing Remarks: Professor Michael Malim, Senior Vice Dean for Academic Strategy & Partnerships (King's)
- 17.00 18.00 Drinks reception
 - 18.00 Close

SPEAKER BIOGRAPHIES

KEYNOTES

Philipp Kukura is Professor of Chemistry and Fellow of Exeter College at the University of Oxford. He received an MChem from the University of Oxford (2002) and a Ph.D. from the University of California, Berkeley (2006). After postdoctoral work at ETH Zurich, he joined the Chemistry Department at the University of Oxford as Research Fellow (2010) before becoming a Lecturer (2011), and promotion to full Professor (2016). Honours and awards include the Royal Society Wolfson Research Merit Award (2018), the Klung- Wilhelmy Science award in Chemistry (2018), the Blavatnik Award for Young Scientists UK in Chemistry (2019), the Emil Thomas Kaiser Ward by the Protein Society (2022), and the Sackler Prize for Biophysics (2023). He is the founder of Refeyn Ltd, which has commercialised and thereby enabled broad access to Mass Photometry. His current research focusses on the application of light microscopy combined with mass measurement at the single molecule level to study biomolecular structure and interactions.

<u>Ewa Paluch</u> graduated in Physics from the Ecole Normale Supérieure in Lyon in 2001 and did a PhD in Biophysics at the Curie Institute in Paris between 2001 to 2005. She started her research group in 2006 at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, as a joint appointment with the IIMCB in Warsaw. In 2013, she was appointed Professor of Cell Biophysics at the MRC LMCB, University College London. In 2018 she was elected Chair of Anatomy at the University of Cambridge. She has received a number of awards, including the BSCB Hooke Medal (2017), the UK Blavatnik Award for Young Scientists (2019), and EMBO member (2018). Ewa's lab combines cell biology, biophysics, quantitative imaging and modelling to investigate the principles underlying cellular morphogenesis.

TALKS

<u>Siân Culley</u> is a Royal Society University Research Fellow interesting in applying image analysis techniques to fluorescence microscopy data. Siân is particularly interested in developing methods that let microscopists measure the quality of their acquired images and assess what biological information can be accurately extracted from this data. In the future Siân hopes to use these metrics to develop image restoration methods that can restore degraded microscopy images. Prior to starting my group, Siân did a postdoc with Ricardo Henriques at the MRC Laboratory for Molecular Cell Biology, UCL and developed analytical methods for super-resolution microscopy.

<u>Ciro Chiappini</u> is Senior Lecturer in Nanomaterials and Biointerfaces. He joined King's College London in 2016. His research blends nanotechnology, bioengineering and cell biology to develop functional materials that direct cell behaviour. Ciro was Marie Curie Fellow and Newton International Fellow at Imperial College London from 2011 until 2016, and holds a doctorate from the University of Texas at Austin. In 2018 he was awarded an ERC Starting Grant. Ciro has authored more than 40 publications with over 3500 citations across material science and bioengineering and holds international patents.

Tim Nott is a Reader in Chemical Biology in the Department of Chemistry at King's College London. He received his PhD in Molecular Structure at the National Institute for Medical Research (UK). He then undertook postdoctoral work with Tony Pawson in Toronto (Canada) and, following the closure of the Pawson lab, with Andrew Baldwin at the University of Oxford. In 2016 Tim was awarded a Sir Henry Dale Fellowship from the Wellcome Trust and Royal Society and started his lab in the Department of Biochemistry at the University of Oxford. In 2023, Tim moved to the Department of Chemistry at the King's College London. His work focusses on understanding the chemical principles of cellular organisation.

Michael Malim FRS FMedSCi is Professor of Infectious Diseases and Senior Vice Dean for Academic Strategy & Partnerships in the Faculty of Life Sciences & Medicine at King's. His laboratory studies the processes, factors and mechanisms that regulate the replication of pandemic human viruses, including HIV-1, influenza A virus and SARS-CoV-2. In recent years, his group has focused on innate and intrinsic immunity, and were the first to describe the anti-viral properties of APOBEC3 proteins, MX2 and NCOA7. Broader objectives of his work include

highlighting potential strategies for viral control or eradication, as well as understanding the fundamental principles of animal and cell biology. He has served on numerous advisory boards and grant & fellowship review panels in the US and Europe, is Editor-in-Chief for the Open Access journal PLOS Pathogens, and was recently Vice President (non-clinical) of the Academy of Medical Sciences. In 2021, he was awarded Officier dans l'Ordre des Palmes académiques (République Française).

CO-DIRECTORS, CENTRE FOR THE PHYSICAL SCIENCE OF LIFE

Paula Booth was appointed Daniell Chair and Head of Department of Chemistry at King's College London in 2014. Her research addresses the biosynthetic folding of integral membrane proteins, studying reaction mechanisms, regulation by membrane lipids and constructing biomembranes for Synthetic Biology applications. Her innovative research has been recognised with awards including a Royal Society Wolfson Research Merit Award and Philip Leverhulme Prize, and her funding includes a Wellcome Trust Investigator Award, ERC Advanced Grant, EPSRC-NFS award, BBSRC-EPSRC Synthetic Biology Centre funding as well as grants from BBSRC, EPSRC and the Leverhulme Trust. Paula has extensive experience at executive and advisory level, for example serving on the UK Biochemical Society, US Protein Society and University of Bristol Councils as well as several Scientific Advisory Boards including the Rosalind Franklin Next Generation Chemistry Board that she will Chair in 2021. She is also a REF 2021 panel member, sits in BBSRC Appointments Board and has served on many funding panels including BBSRC, EPSRC, ERC and The Wellcome Trust.

<u>Sergi Garcia-Manyes</u> is the Chair of Biophysics at the Department of Physics of King's College London and a Senior Group Leader at the Francis Crick Institute, where he is also an Assistant Research Director. Sergi obtained his PhD in Physical Chemistry from the University of Barcelona, and conducted his postdoctoral training in the Biology Department of Columbia University in New York. Sergi's lab is interested in mechanobiology across different length-scales from the single molecule to the individual cell and beyond. Sergi held an EPSRC Early Career Fellowship, and has been awarded the Leverhulme Research Leadership Award and a Wellcome Trust Investigator Award. Sergi is the director of the BIPAS and the Leverhulme Trust 'Mechanics of life' Centres for Doctoral Training, and the co-director of the Centre for the Physical Sciences of Life and the King's Centre for Mechanobiology. He is a Royal Society Wolfson Fellow.