Biochemical Society 2023 award winners

Lucy Ollett (Grants, Awards and Events Officer, Biochemical Society)

The work and contribution of 12 bioscientists and early career researchers has been honoured in the Biochemical Society's Awards 2023. Each recipient has been recognized for excellence in their field, ranging from RNA-binding proteins and centrosome assembly to molecular medicine and anti-cancer drugs, as well as the profound impact their research has had on the scientific community and wider society.

Colin Bingle, Professor of Respiratory Cell and Molecular Biology at the University of Sheffield and Chair of the Biochemical Society's Awards Committee, said: "I want to offer my congratulations to all of the 2023 Biochemical Society Award winners, whose names have been announced. As ever, the Awards Committee was presented with the difficult task of selecting nominees from an impressive group of candidates. The chosen recipients represent a cross-section of the outstanding work taking place in our community, across a range of career stages. They should all be justly proud of their achievements. Well done to them all."

The Centenary Award

The 2023 Centenary Award will be presented to Professor Matthias Hentze. Matthias is the Director of the European Molecular Biology Laboratory (EMBL) and Co-director of the Molecular Medicine Partnership Unit (MMPU). Following medical training in Germany and the UK, he co-discovered 'iron-responsive elements' as the first mammalian regulatory elements in mature mRNAs during his postdoctoral research at the NIH. After two decades of elucidating mechanisms of RNA regulation by RNA-binding proteins, the Hentze group recently uncovered hundreds of new RNA-binding proteins, including many metabolic enzymes. Their current work focuses on riboregulation in metabolism and cell biology.

Matthias is a co-founder of the MMPU, an interdisciplinary and translational research unit between EMBL and Heidelberg University. His work has been widely recognized, with achievements including Germany's most prestigious Gottfried Wilhelm Leibniz Prize and the Lifetime Achievement Award of the RNA Society. He is an elected member of the European Molecular Biology Organisation, the German Academy of Sciences Leopoldina, the Academia Europaea, the Australian Academy of Science and the American Academy of Arts and Sciences. Matthias serves on numerous scientific advisory and editorial boards and in 2020 initiated the Environmental Research Initiative and Fund.

Matthias said: "I feel deeply honoured to receive this prestigious award which I want to share with the many outstanding team members whom I had the pleasure to mentor. RNA science holds so many more exciting secrets and I hope that the award helps to draw attention to this."

The Colworth Medal

The 2023 Colworth Medal will be awarded to Dr Stephen Wallace. Stephen is a UKRI Future Leaders Fellow and Senior Lecturer in biotechnology in the School of Biological Sciences at the University of Edinburgh. His lab uses a combination of chemical and biological tools to convert renewable feedstocks (e.g., CO_2, sugar and waste material) into value-added chemicals (e.g., pharmaceuticals, flavours and fragrances). This multidisciplinary approach enables the bio-production of industrial chemicals that cannot be accessed via synthetic biology alone and would otherwise remain reliant on fossil fuels.

Stephen has an MChem from the University of Edinburgh and a PhD in synthetic organic chemistry from the University of Oxford (with Professor Martin Smith). He has held postdoctoral fellowships in chemical and synthetic biology at the MRC Laboratory of Molecular Biology (with Professor Jason Chin), Harvard University, USA (with Professor Emily Balskus), Massachusetts Institute of Technology, USA (with Professor Kristala Prather) and the University of Cambridge (with Professor Steve Ley).

Current projects in his lab include the use of unexplored microorganisms for green chemical synthesis, the combination of chemical and enzymatic catalysis in cells, the construction of new biosynthetic pathways to APIs, the evolution of new enzymatic chemistry and the valorization of industrial waste using designer microbial cells.

Stephen said: "Receiving the Colworth Medal from the Biochemical Society is an incredible honour and one I'd like to share with my amazing lab and all of the trailblazing scientists who have mentored me through the years. I think we're only beginning to glimpse what microbes can achieve in the field of sustainable chemical synthesis and so this award is a tremendous motivation for me and my team to keep pushing forward our work in this area."

Early Career Research Award

One of the two 2023 Early Career Research Awards will be presented to Dr Amy Vincent. Amy is a Sir Henry Wellcome postdoctoral fellow at the Wellcome Centre for Mitochondrial Research in Newcastle. Her work focuses on studying the pathological mechanisms underlying mitochondrial myopathy and disease progression, and recently the contributions of mitochondrial DNA replication, mito-nuclear signalling and cell and mitochondrial morphology to the clonal expansion of mitochondrial DNA deletions and the spread of mitochondrial DNA mutations and dysfunction through muscle fibres.

Amy said: "I am delighted to be recognised with this award and incredibly grateful to Prof Chrzanowska-Lightowlers for nominating me. This award is very much a reflection of the highly talented people I have the pleasure of working and collaborating with and those who have and continue to support me. I would particularly like to thank Prof Sir Doug Turnbull who has been an inspiration, exceptional supervisor and mentor. I am also exceptionally grateful for support and mentorship from Professor Bob Lightowlers, Professor Linda Greenfield, Professor Liz Sockett and Dr Amy Reeve"

Early Career Research Award

One of the two 2023 Early Career Research Awards will be presented to Dr Tom Deegan. Tom has been a Programme Leader at the MRC Human Genetics Unit in Edinburgh since September 2021, and prior to this, he undertook his PhD with John Diffley (The Francis Crick Institute) and postdoctoral work as a Sir Henry Wellcome postdoctoral fellow with Karim Labib (University of Dundee).

Throughout this time, Tom's research has focused on the fundamental molecular mechanisms that eukaryotic cells use to replicate their DNA prior to cell division. In recent years, Tom has harnessed innovative biochemical and structural biology approaches to unpick the ill-defined 'termination' stage of this fundamental biological process.

Tom said: "I am absolutely delighted to have won this award. The list of previous winners is very impressive; I'm honoured to join them, and I hope this will be a springboard for starting my group at the MRC Human Genetics Unit. I would like to thank all the people who supported my nomination, particularly Drs. John Diffley and Karim Labib, who have been fantastic mentors to me, as well as all the brilliant scientists that I have had the pleasure to work alongside over the years."

Excellence in Science Award

The 2023 Excellence in Science Award will be presented to Professor Jordan Raff. Jordan studied biochemistry as an undergraduate at the University of Bristol (1983–1986). He then studied for his PhD with David Glover in the Department of Biochemistry, Imperial College London (1986–1989), where he first started to work on centrosomes and cell division in the fruit fly *Drosophila melanogaster*. He continued to work in this area as a postdoctoral fellow with Bruce Alberts in the Department of Biochemistry and Biophysics at the University of California, San Francisco, USA (1990–1994). He started his own group at the Gurdon (formerly Wellcome/CRC) Institute in Cambridge, first as a Wellcome Trust senior research fellow (1994–2004) and then as a CRUK-funded research fellow (2004–2009). He moved to the Sir William Dunn School of Pathology in Oxford in 2009 to take up the César Milstein Chair of Cancer Cell Biology. He is currently combining genetic, biochemical, and cell biological approaches together with advanced microscopy and mathematical modelling to try to understand the fundamental principles that regulate centriole and centrosome assembly. He has always taken a keen interest in promoting the public understanding of science.

Jordan said: "When I look at the previous winners of this prize I am truly astounded to be included in this list. I am very lucky to have worked with a talented group of people who generated the body of work that led to this award, and I should also acknowledge my wife Rachel, who helped support me when I was a relatively poor graduate student, and then took on the majority of the work in bringing up our children. I will always be grateful for all their insights,

support and hard work. I'm hopeful that this award will provide a much needed post-COVID-19 boost for the lab so we can start to really enjoy doing science again."

Industry & Academic Collaboration Award

The 2023 Industry & Academic Collaboration Award will be presented to Dr Jacob Bush. Jacob is a Director in the Chemical Biology department at GlaxoSmithKline (GSK). After completing a degree in chemistry from the University of Oxford, Jake studied for a DPhil in chemical biology in the lab of Chris Schofield. With an interest for translational science, he joined GSK in 2015 to explore ways to accelerate drug discovery. By combining chemoproteomic and chemogenomic approaches using reactive fragments, Jake and his team aim to discover new targets with therapeutic potential and use machine learning algorithms to accelerate the drug discovery process.

Jacob said: "I am delighted to receive this award as it recognises cutting edge work by a team of outstanding scientists both at GSK and at our academic partner institutions. It is a privilege to work with a diverse and energised team to build chemical biology approaches that have the potential to transform biomedical research and accelerate the discovery medicines for patients."

International Award

The 2023 International Award will be presented to Dr Antonina Roll-Mecak. Antonina is currently the Senior Investigator and Chief of the Unit of Cell Biology and Biophysics at the National Institute of Neurological Disorders and Stroke and holds a joint appointment in the Biochemistry and Biophysics Center at the National Heart, Lung and Blood Institute at the National Institutes of Health (NIH) in the USA. After completing her PhD in structural biology of the protein synthesis machinery at Rockefeller University, USA, she shifted gears and pursued mechanistic cell biology studies of microtubule cytoskeletal regulators as a postdoctoral fellow at the University of California, San Francisco, USA. In 2010, she became an independent group leader at the NIH, where she started an interdisciplinary program focused on understanding how the genetic (isoform variation) and chemical diversity (post-translational modifications) of tubulin regulates the dynamics and mechanical properties of microtubules and constitutes a code, a 'tubulin code' that is interpreted by microtubule-based motors and associated proteins.

Antonina said: "I am thrilled to receive the International Award from the Biochemical Society. This award is a recognition of the wonderful work people in my lab have done throughout the years and spotlights the beauty and importance of the tubulin code which has emerged as an exciting frontier in microtubule biology. I thank Dr Nico Tjandra for nominating me and for being a steadfast supporter since I arrived at the NIH. I am especially thrilled that my nomination was supported by Dr Eva Nogales and Dr Cynthia Wolberger, two amazing scientists who I have admired since I was a graduate student."

The Sir Philip Randle Lecture

The 2023 Sir Philip Randle Lecture will be awarded to Professor Guy Rutter. Guy is a principal research fellow at the Research Centre CHUM, University of Montreal, Canada, Professor of Cell Biology at Imperial College London and Visiting Professor at Nanyang Technological College, Singapore.

Professor Rutter undertook a PhD on the hormonal control of mitochondrial metabolism with Professor Dick Denton FRS in the Department of Biochemistry first established by Sir Philip Randle at the University of Bristol, UK. He then won an MRC Travelling Fellowship to study insulin secretion under Claes Wollheim in Geneva, in collaboration with Tullio Pozzan and Rosario Rizzuto in Padua. He returned to Bristol in 1993, moved to Imperial in 2006 to establish the Section of Cell Biology and joined the University of Montreal in 2021.

His current research focuses on diabetes mellitus, a condition which currently affects almost 10% of the adult population worldwide. His chief goals are to develop new means to enhance insulin secretion in type 2 diabetes by studying the fundamental signalling pathways through which glucose, incretins and other hormones act on the pancreatic β-cell. He deploys knowledge flowing from genome-wide and other genetic studies for this disease and state-of-the-art technologies ranging from mouse models through genome editing, electrophysiology, super-resolution imaging, optogenetics, transcriptomics and proteomics.

Guy said: "This award means a lot to me, having known Sir Philip personally, and studied under one of his own students (Denton)! I'm also pleased that the lecture will allow me to present some of our work on insulin secretion, an area in which Sir Philip made important contributions."

The Sir Philip Randle Lecture

The 2023 Sir Philip Randle Lecture will be awarded to Grahame Hardie, Professor of Cellular Signalling at the University of Dundee.

His group discovered that protein kinases phosphorylating and inactivating the key metabolic enzymes acetyl-CoA carboxylase (ACC) and HMG-CoA reductase were the same entity, which they renamed AMP-activated protein kinase or AMPK (the idea to pursue this arose over a couple of beers with his then mentor, Philip Cohen). AMPK is now known to have dozens of downstream targets regulating most aspects of cellular function. Grahame's group elucidated the canonical mechanism by which AMPK is activated by energy stress, revealing it to be a critical sensor of cellular metabolic status. They identified the sites phosphorylated on ACC and AMPK, now used as universal biomarkers for AMPK activation. More recently they showed that AMPK is activated by diverse non-canonical mechanisms in response to agents that increase intracellular Ca^{2+}, glucose starvation or DNA damage. AMPK is now a key target for drugs with potential to treat metabolic disorders and cancer. Grahame was awarded the Rolf Luft Prize for Endocrinology and Metabolism in 2008, the Novartis Medal of the Biochemical Society in 2010, and the Solomon Berson Distinguished Lecture of the American Physiological Society in 2015.

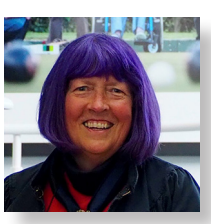
Grahame said: "I am delighted and honoured to be selected to deliver the Sir Philip Randle lecture. I was lucky enough to meet Sir Philip on several occasions. He was a pioneer in the field of metabolic regulation that I entered, and he was one of the few biochemists that I looked up to both metaphorically and literally (I am 6 feet 6, but he was even taller)!"

Teaching Excellence Award

The 2023 Teaching Excellence Award will be presented to Dr Barry Ryan. Barry is an SFHEA, a CSci Teach and a research active applied biochemist with a proven expertise in practitioner use of, and leadership in, evidenced-based pedagogies in modern higher education. His approach to teaching has always been transformative and is underpinned by his integration of pedagogical research to inform and shape his practice. This approach is embodied by his early adoption, and continued research-led development, of the student as co-creator paradigm. Barry was awarded the Irish National Award for Innovation in Teaching and Learning (2014), the Royal Society of Chemistry Higher Education Award (2019) and an Irish National Teaching and Learning Research Fellowship (2020) in recognition of his development and dissemination of this philosophy. Concurrently, his lab-based research aligns with his educational research, resulting in a multi-faceted research profile incorporating community, laboratory and pedagogical research to support and nurture biochemists at all levels of higher education.

He seamlessly weaves these research strands together, promoting a student-centred, research-informed approach to biochemistry education that is both original and innovative. Away from the lab and lecture hall, Barry has led curriculum reimagination in TU Dublin, Ireland (CoCREATE), and is currently on secondment developing and implementing the TU Dublin Education Model.

Barry said: "I am delighted to receive this prestigious award from the Biochemical Society. It is an honour to be selected for this award and to join the fantastic past awardees as a representative of excellence in biochemical teaching and learning. This award validates my student-centred approach and will inspire me to continue to innovate and share my practice."



The Heatley Medal and Prize

The Heatley Medal and Prize 2023 will be awarded to Professor Nicola Curtin. Nicola is Professor of Experimental Cancer Therapeutics at Newcastle University where she began her postdoctoral career in 1982.

Her research focuses on the development of anti-cancer drugs, particularly against the DNA Damage Response optimizing their use, including identification of potential predictive biomarkers. Her greatest contribution is to the development of the PARP inhibitor (PARPi), rucaparib (Rubraca®) and the identification of the synthetic lethality of PARPi in tumours defective in the Homologous Recombination DNA repair pathway. PARPis are a major

breakthrough in the treatment of ovarian cancer and are also approved for other cancer types. She was awarded the *Robert R. Ruffolo Career Achievement Award in Pharmacology* by the American Society for Pharmacology and Experimental Therapeutics in 2021 for her work. She enjoys enthusing and mentoring her PhD students, clinical fellows and ECRs. She is editor-in-chief of *Expert Reviews in Molecular Medicine*, working with a team of young and enthusiastic editors and has recently been elected as a fellow of the Academy of Medical Sciences.

Nicola said: "I am honoured to be awarded the Heatley Medal, which is special to me because I am driven by both scientific curiosity and a desire to improve human health and, like Norman Heatley, I recognise that luck and teamwork has contributed to the success of this work."

The Thudichum Medal lecture

The 2023 Thudichum Medal will be awarded to Professor Frances Platt. Frances obtained her BSc from Imperial College London (zoology) and her PhD from the University of Bath. She was a postdoctoral fellow at Washington University Medical School in St. Louis, USA. She was a Lister Institute senior research fellow and is currently Professor of Biochemistry and Pharmacology at the University of Oxford. Her main research interests include the biology and pathobiology of glycosphingolipids and lysosomal disorders. Her research led to the development of miglustat for the treatment of glycosphingolipid lysosomal storage diseases.

Professor Platt was awarded the Alan Gordon Memorial Award and the Horst Bickel Award for advances in metabolic disease therapy. She was elected a fellow of the Academy of Medical Sciences in 2011 and was the recipient of a Royal Society Wolfson Merit Award in 2013. In 2016, she became a Wellcome Trust investigator in science. She was appointed head of the Department of Pharmacology in 2020 and was elected a Fellow of the Royal Society in 2021.

Frances said: "This is a great honour and reflects the hard work and dedication of the many talented members of my lab that I have had the pleasure of working with over the years. I hope it will also encourage more people to work on the enigmatic sphingolipids and raise awareness of the rare and common diseases associated with defects in sphingolipid metabolism." ■