

67TH

**LONDON
INTERNATIONAL
YOUTH SCIENCE
FORUM**

LIYSF



A young woman wearing a yellow and red hijab is smiling and holding a large Indian flag. She is surrounded by other people, some of whom are also holding flags, suggesting a multicultural event. The background is slightly blurred, focusing attention on the woman and the flag.

67TH LONDON INTERNATIONAL YOUTH SCIENCE FORUM

TRUTH THROUGH SCIENCE

19TH JULY – 1ST AUGUST 2026

LIYSF

LONDON INTERNATIONAL YOUTH SCIENCE FORUM (LIYSF)

Founded in 1959, LIYSF aims to give a deeper insight into science (STEM) and its applications, for the benefit of humankind and to develop a greater understanding between young people of all nations.

LIYSF is an impartial, accredited not-for-profit social enterprise. We are part of a diverse international network of social enterprises who put the interests of people and the planet above financial gain.

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Executive Director

Richard Myhill: [2009 – Present]

President

Professor Clare Elwell: [2018 – Present], Alumni 1984

Royal Patron

HRH The Princess Royal: [2020 – Present]

Science Patron

Professor Richard O’Kennedy [2018 – Present], Alumni 1972

Chief Scientific Advisor

Dr Émer Hickey: [2023 – Present], Former Chief of Staff, Alumni 2014

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Peter Brewer, Steve Brosnan & Vanessa Smith

Founder Patron

HRH Prince Philip, Duke of Edinburgh [1959 – 1969] & Past Patron: HRH The Duke of Kent [1983 – 1988]

Past Presidents

The Rt Hon Lord Nathan, **Sir John Cockcroft OM**, **Sir Lawrence Bragg CH FRS**, Dame Kathleen Lonsdale FRS, **Professor Sir Joseph Rotblat KCMG CBE FRS**, Professor Sir Hermann Bondi FRS FRAS, The Rt Hon Lord Ritchie Calder, The Rt Hon Lord Briggs, **The Rt Hon Lord Porter OM PRS**, Sir John Meurig Thomas FRS, Professor Brian FG Johnson FRS FRSE FAcad & Professor Richard O’Kennedy PhD FSB **bold typography denotes Nobel Prize winners.*

Memorial Scholarships awarded to commemorate

George McGowan, John Needle & Tim Rooke

Former Directors

George McGowan & John Needle





HRH THE PRINCESS ROYAL



As Patron of the London International Youth Science Forum, I am pleased to welcome you to this, the sixty-seventh edition of the Forum.

You are joining LIYSF at a time when the importance of science, engineering and technology to society has rarely been more evident. The challenges facing the world are increasingly complex, from global health and food security to sustainable energy, biodiversity loss and the implications of emerging technologies. Science has a vital role to play in helping us understand these challenges and in shaping informed, practical responses.

Over the coming two weeks, you will learn from leading scientists and researchers, visit institutions at the forefront of discovery, and meet fellow students from many nations and backgrounds who share your curiosity and ambition.

One of the enduring strengths of LIYSF is its ability to bring young people together through science, encouraging not only the exchange of knowledge and ideas, but also mutual understanding, cooperation and friendship across borders.

I encourage you to make the most of every opportunity before you. Be inquisitive, engage fully, and take advantage of the remarkable experience and expertise available to you throughout the Forum.

I hope that you enjoy your time at LIYSF and that it proves to be both inspiring and rewarding.

A handwritten signature in black ink, reading "Anne". The signature is elegant and cursive, with a long horizontal stroke at the end.

HRH The Princess Royal
Royal Patron of the London International Youth Science Forum



AFGHANISTAN
ALGERIA
ARGENTINA
ARMENIA
AUSTRALIA
BAHRAIN
BELGIUM
BRAZIL
BULGARIA
CAMEROON
CANADA
CHILE
CHINA
CONGO DR
COSTA RICA
CROATIA
CYPRUS
CZECH REPUBLIC

DENMARK
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ENGLAND
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GREECE
GUERNSEY
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HUNGARY
INDIA
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LUXEMBOURG
MACAU SAR
MALAWI
MALAYSIA
MALTA
MEXICO
MOROCCO
NEPAL
NETHERLANDS
NEW ZEALAND
NIGERIA

NORFOLK ISLAND
NORWAY
OMAN
PAKISTAN
PALESTINE
PANAMA
PHILIPPINES
POLAND
PORTUGAL
PUERTO RICO
QATAR
ROMANIA
RUSSIA
SAINT KITTS AND NEVIS
SAUDI ARABIA
SCOTLAND
SERBIA
SIERRA LEONE

SINGAPORE
SOUTH AFRICA
SOUTH KOREA
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TURKEY
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UKRAINE
UNITED ARAB EMIRATES
UNITED STATES
UZBEKISTAN
VIETNAM
WALES
ZAMBIA
ZIMBABWE



WELCOME

LIYSF

We are delighted to welcome you to the 67th London International Youth Science Forum, whether you are joining us in London or taking part online from elsewhere in the world. Over the next two weeks, you will become part of an international community of curious minds, united by a shared passion for science, discovery and learning.

Our theme this year, 'Truth Through Science', has been chosen to reflect the importance of evidence-based knowledge to build a better world. Science provides us with a framework to continually challenge assumptions, test ideas and deliver solutions. From advances in medicine and artificial intelligence to climate science, sustainable energy and space exploration, science helps us navigate uncertainty and shape a better future.

Throughout the Forum, you will engage with world-leading scientists, engineers and innovators, explore cutting-edge research, and gain insights into the many different paths a career in STEM can take. Just as importantly, you will exchange ideas with fellow participants from over 90 countries and territories, each bringing their own perspectives, experiences and ambitions.

LIYSF is about much more than lectures. It is about asking questions, embracing new ideas, learning from one another and building friendships that cross cultures and continents. Many of the connections you make here will last far beyond these two weeks and become part of your future scientific journey.

We encourage you to make the most of every opportunity. Be curious. Be open-minded. Challenge ideas respectfully, share your own perspectives with confidence, and use this life-changing experience to inspire your own ambitions in science.

Welcome to the LIYSF family and have a wonderful time at this year's Forum!

Richard Myhill
Executive Director

Professor Clare Elwell
President

SCHEDULE OF EVENTS

	MORNING	AFTERNOON	EVENING
SUN 19 JUL		Arrivals	Welcome Talks & Introductions from the LIYSF Staff Team
MON 20 JUL	Opening Ceremony & Keynote Address: Professor John O'Keefe & Welcome Address, Professor Clare Elwell	Principal Lecture Demonstration: Professor Dame Ijeoma Uchegbu	Pin Exchange & LIYSF Grand Quiz
TUE 21 JUL	Visit to Research & Scientific Establishments in London	Principal Lecture Demonstration: Professor Claire Carmalt	Great Crossword Treasure Hunt
WED 22 JUL	Subject Specialist Lectures	Principal Lecture Demonstration: Professor Daniel Tozadore	Debate Evening led by Dr Jason Nurse
THU 23 JUL	Day Visits to Oxford & Cambridge Research and Scientific Establishments	Day Visits to Oxford & Cambridge Research and Scientific Establishments	Principal Lecture Demonstration: Dr Anna Ploszajski
FRI 24 JUL	Principal Lecture Demonstration: Professor Brian Bigger	Research Project Poster Session: The Science Forum Bazaar	Perform at LIYSF: Sign-Up & Auditions for Traditions of Home and International Cabaret
SAT 25 JUL	Principal Lecture Demonstration: Dr Mark McCaughrean	Science Communication Forum & Research Session led by Dr Sarah Cosgriff	Traditions of Home – Sharing World Customs & Fashion Evening

	MORNING	AFTERNOON	EVENING
SUN 26 JUL	Visit to the Science Museum or Optional Visits to Oxford, Cambridge, Hampton Court or Tower of London	Visit to the Science Museum or Optional Visits to Oxford, Cambridge, Hampton Court or Tower of London	Optional Guided Coach Tour of London
MON 27 JUL	Alumni Specialist Lectures	Principal Lecture Demonstration: Professor John Morton	LIYSF Olympics Sports Day Session
TUE 28 JUL	Day Visit to UK Research & Scientific Establishments	Day Visit to UK Research & Scientific Establishments	Scientific Careers and PhD Pathways: Insights from Researchers and Industry
WED 29 JUL	Specialist Study Day led by Professor Tolullah Oni	Specialist Study Day led by Professor Tolullah Oni	Optional Theatre Night
THU 30 JUL	Specialist Lectures	Optional Visit to the State Rooms at Buckingham Palace or the London Eye	International Cabaret: Showcase Performance Evening
FRI 31 JUL	The LIYSF Closing Debate: Science and Society	Closing Keynote Lecture: Professor Joy Hirsch and Closing Ceremony	Farewell Party
SAT 1 AUG	Departures		

Principal Lectures & Demonstrations

Specialist Lectures

Scientific Visits

Social Programme

Optional Visits

KEYNOTE ADDRESS



20TH JULY

COGNITIVE MAPS IN THE BRAIN: THE HISTORY OF A NEUROSCIENCE THEORY

Professor John O'Keefe
University College London

The hippocampal cognitive map theory is one of the most influential theories in brain science. As such, it can give us valuable insights into how theories are created, tested, and confirmed or rejected. In this talk Professor John O'Keefe will describe the discovery of the hippocampal place cells in the rodent which was the initial stimulus for the creation of the theory and in addition other surprising influences which contributed to its development. In the latter part of the talk, he will bring the theory up to date and discuss how it applies to human episodic memory, an important property of the human hippocampus.

Professor John O'Keefe is Director of the Sainsbury Wellcome Centre for Neural Circuits and Behaviour at University College London. He was awarded the 2014 Nobel Prize in Physiology or Medicine, together with May-Britt and Edvard Moser, for discovering the brain's positioning system. His pioneering research identified "place cells" in the hippocampus, revealing how the brain creates an internal map that enables navigation and spatial memory. A leading figure in cognitive neuroscience, Professor O'Keefe has received numerous international honours, including the Kavli Prize, and is a Fellow of the Royal Society and the Academy of Medical Sciences.



*Awarded the 2014 Nobel Prize
in Physiology & Medicine*

PRINCIPAL LECTURES



20TH JULY

CHAIN REACTION

Professor Dame Ijeoma Florence Uchegbu
University of Cambridge & UCL

Every moment of life is governed by chemistry. Bonds form and break, reactions unfold, and the materials of our world are constantly transforming. In Chain Reaction, Professor Ijeoma Uchegbu reveals how chemistry shapes the living world around us. With warmth and personal anecdotes, she explores how our bodies are held together by weak chemical bonds, how food is stitched together by the balance between water and oil, and how we respond to life-changing medicines. Chain Reaction transforms the familiar into the extraordinary, revealing why caring about chemistry means caring about the everyday miracles that hold everything together.

Professor Dame Ijeoma F. Uchegbu DBE, FMedSci, HonFRSC is President of Wolfson College, University of Cambridge, and Professor of Pharmaceutical Nanoscience at UCL. An internationally recognised pharmaceutical scientist and inventor, she co-founded Nanomerics Ltd, a clinical-stage biotechnology company developing innovative medicines using technologies invented in her laboratory. She is a Fellow of the Academy of Medical Sciences, an Honorary Fellow of the Royal Society of Chemistry, and serves on the boards of Wellcome and the Biotechnology and Biological Sciences Research Council. She was appointed Dame Commander of the Order of the British Empire (DBE) in 2025.

21ST JULY

SELF CLEANING SURFACES: LEARNING FROM NATURE

Professor Claire J. Carmalt
University College London (UCL)

Extremely water-repellent (superhydrophobic) surfaces cause water to ball into tight droplets, which on rolling about on the surface, pick up dirt, viruses and bacteria, cleaning it without any scrubbing. Inspired by nature, such as the water repelling properties of lotus leaves, superhydrophobic surfaces have been developed. The biggest challenge for the widespread application of such surfaces is finding a way to make them tough enough to withstand everyday damage. These surfaces tend to be mechanically weak and rub off easily, but use of adhesives/polymers, allows robust self-cleaning surfaces to be designed, making them effective even after being scratched, scuffed or exposed to oil.

Professor Claire Carmalt obtained her BSc and PhD from the University of Newcastle. She was then a postdoctoral fellow at the University of Texas at Austin, USA. She has worked at UCL since 1997 (1997-2002: Royal Society Dorothy Hodgkin fellowship and Lecturer; 2002-4: Senior Lecturer; 2004-9: Reader; 2009: Professor). In 2016 she became the 18th Head of Department for Chemistry and the first woman appointed to the position. She was awarded the RSC 2000 Meldola Medal and Prize, the RSC 2019 Applied Inorganic Chemistry Award and the RSC 2024 Tilden Prize for her work in materials chemistry.



PRINCIPAL LECTURES



22ND JULY

COGNITIVE ROBOTS FOR GOOD

Dr Daniel Tozadore

University College London (UCL)

Join the Intelligent Robotics team as we explore the exciting world of cognitive robots and their potential to create positive change! In this talk, we will explain robotics in simple terms (what is it, where it is used) and present the team's state-of-the-art work in related areas such as locomotion, manipulation, and Human-Robot Interaction.

The Intelligent Robotics team is based at UCL East campus with a mission to develop smart robots that can help humans in various tasks, such as search-and-rescue, manufacturing, biodiversity monitoring, human-robot interaction. The team that prepared the talk and demo includes Dr. Daniel Tozadore, Prof. Dimitrios Kanoulas, Dr. Valerio Modugno, Hongbo Li, and Monkogoi Galeitsiwe at UCL, Department of Computer Science.

22ND JULY

GENERATIVE AI: A CATALYST FOR PROGRESS OR A SOURCE OF PERIL?

Dr Jason Nurse

University of Kent

Generative AI, like ChatGPT, represents a groundbreaking advancement in technology, reshaping how we interact with information. This talk delves into the transformative potential of these systems, from enhancing creativity and productivity to revolutionizing industries. However, it also explores the darker side, addressing concerns like cyber security risks, ethical dilemmas, misinformation, and privacy issues. Join us as we unravel the complexities of generative AI, offering insights and sparking debate among young scientists about harnessing its power responsibly and ethically.

Dr Jason R. C. Nurse is a Reader in Cyber Security at the Institute of Cyber Security for Society (iCSS) and School of Computing at the University of Kent. He is also an Associate Fellow at the Royal United Services Institute (RUSI) for Defence and Security Studies, visiting academic at the University of Oxford, visiting Fellow in Defence and Security at Cranfield University, a professional member of the British Computer Society, a research member of Wolfson College Oxford and a member of the Security Awareness Special Interest Group (SASIG).



PRINCIPAL LECTURES



23RD JULY

A LIFE IN PLASTIC

Dr Anna Ploszajski

Storyology Science

Plastic began as a miracle in Anna Ploszajski's family: a material that helped save her grandfather's life. Decades later, after a degree in Materials Science and a doctorate in plastic composites, she was shocked at the public wrath on plastics sparked by David Attenborough's *Blue Planet II*, and found herself asking an unpopular question: are plastics really as bad as people think? This lecture travels from childhood memory to molecular structure, from natural polymers to pop culture, from medical breakthroughs to microplastics, the monsters within. Along the way, Anna argues that plastics are neither heroes nor villains, but mirrors of human nature.

Dr Anna Ploszajski is a materials scientist and storyteller from London. On stage, airwaves and page, it's her professional mission to engage underserved communities with materials science and engineering. She's the author of *Handmade: A Scientist's Search for Meaning Through Making* (2021) and two children's books out later this year. She fronts the award-winning industry podcasts, such as *Things You Can't Live Without*, and is the founder of Storyology Ltd. to train other scientists in the art of storytelling. In her spare time, she plays the trumpet and walks her border collie, Spud. Oh, and it's pronounced "Por-shy-ski".

24TH JULY

GENE THERAPY FOR THE BRAIN

Professor Brian Bigger

University of Edinburgh, Scotland



In this lecture we will focus on the development of gene therapy for the brain and how this is evolving to treat certain childhood dementias. I will touch on the development of different gene therapy approaches, the type of childhood dementias that can currently be treated with this exciting new therapy, including results in children from our own clinical trials and the role that gene therapy may have in the future for treatment of more common dementias. Lastly I will cover the real world impact of these therapies, and touch on outstanding issues with manufacturing, costs and access to all.

Professor Brian Bigger studied at the University of Bath and Imperial College London before establishing a research lab at the University of Manchester, which moved to the University of Edinburgh in 2024. For over 20 years, his lab has researched the pathology, biomarkers, and treatment of mucopolysaccharide diseases, developing advanced gene and stem cell therapies for childhood dementias including Sanfilippo and Hunter diseases. His work has a strong clinical focus, with multiple gene therapy trials underway internationally. Brian co-founded Orchard Therapeutics, chaired the European Study Group for Lysosomal Diseases, and was recognised in the 2026 TIME100 Health list for his work on blood-brain-barrier crossing gene therapy for Hunter disease.

PRINCIPAL LECTURES



25TH JULY

THE JAMES WEBB SPACE TELESCOPE: A REVOLUTION IN ASTRONOMY

Dr Mark McCaughrean
Max-Planck-Institute, Germany

After decades of work, the NASA/ESA/CSA James Webb Space Telescope was launched from Europe's spaceport in French Guiana on Christmas Day 2021 and has been in full scientific operation since July 2022. In this lecture, Mark McCaughrean gives an overview of the scientific and technical challenges that motivated the development of a large cryogenic infrared space telescope and provides insights into key aspects of its novel architecture. He presents some of the highlights of the first four years of observations, spanning the formation of galaxies in the early universe to the birth of stars and planets in our Milky Way. He also places JWST in the wider context of other current and upcoming space science missions and new observatories.

Mark McCaughrean is an adjunct scientist at the Max-Planck-Institute for Astronomy in Heidelberg and the former Senior Advisor for Science & Exploration at the European Space Agency. He worked at universities and research organisations in the UK, the US, and Germany before joining ESA in 2009 where he was responsible for communicating results from ESA's astronomy, heliophysics, planetary, and exploration missions to the scientific community, media, and wider public. His scientific research focuses on the formation of stars and their planetary systems, and he has worked on JWST for almost 30 years. He is also the co-founder of Space Rocks, which celebrates space exploration and the art, music, and culture it inspires through public events and more.

27TH JULY

THE PHYSICS OF INFORMATION & THE RISE OF THE QUANTUM AGE

Professor John Morton
University College London (UCL)



For over 40,000 years, humans have encoded information into physical objects, from carved bones and clay tablets to punched cards and silicon chips. This lecture traces the evolution of information storage and computing, exploring how advances in physical systems have shaped technology. It will examine what happens when information is stored in quantum systems such as single electrons or atoms, where bits can exist as both one and zero at once, revealing how quantum physics is redefining the future of computing and information technology.

John Morton is Professor of Nanoelectronics and Nanophotonics at University College London (UCL) and has spent over 20 years researching spin-based quantum technologies, including quantum computers and quantum sensors. After studying Electrical Engineering at the University of Cambridge, he completed a PhD at the University of Oxford focused on controlling spins as quantum bits. He is Director of UCL's Quantum Science and Technology Institute and Principal Investigator of the UK Quantum Biomedical Sensors Hub (Q-BIOMED). John has received major awards in experimental physics, published extensively in quantum science, and co-founded several quantum technology companies, including Quantum Motion and Phasecraft. He is also active in public engagement through exhibitions, documentaries, and science communication.

PRINCIPAL LECTURES



29TH JULY

PUBLIC HEALTH: CHRONIC DISEASE IMPACT IN URBAN ENVIRONMENTS

Professor Tolullah Oni
University of Cambridge

Over half of global greenhouse gas emissions come from cities, making urban environments central to tackling climate change and protecting public health, especially in rapidly urbanising regions such as Africa. Many African cities face challenges including poor land use, limited access to safe public spaces, clean air, healthy food, and walkable environments, alongside rising rates of diseases such as obesity and diabetes. This lecture explores how youth-led citizen science and participatory research can support integrated policies for healthier, more climate-resilient cities through urban planning, digital innovation, and prevention-focused public health approaches.

Tolullah Oni is Clinical Professor of Global Public Health and Sustainable Development at the University of Cambridge and Founder of UrbanBetter. An Honorary Professor at the University of Cape Town, she is a pan-African British public health physician and urban epidemiologist with deep ties to Nigeria, South Africa and the UK. Her work bridges science, policy and society to design healthier, climate-resilient cities, grounded in the conviction that health must be built into environments. A widely published scholar, she is a Fellow of the International Science Council and the African Academy of Sciences and a World Economic Forum Young Global Leader.

31ST JULY

CLOSING KEYNOTE ADDRESS: “WILD-TYPE” NEUROSCIENCE & THE HUMAN BRAIN



Professor Joy Hirsch
Yale School of Medicine, USA

Humans, by nature, are profoundly social, yet the brain mechanisms that underlie our social behaviours are not well-understood. The overarching goal of my research is to address this knowledge gap by discovering the fundamental neural mechanisms that underlie interactive social behaviors between humans. My laboratory has developed cutting edge multi-modal two-person neuroimaging technologies based on near infrared spectroscopy, fNIRS, configured for neural and behavioural measures of real-time live face-to-face and dialogue interactions between humans. Converging evidence from simultaneous measures of neural and behavioural responses including facial classifications, eye-tracking, pupillometry, EEG, fMRI, and behavioural reports of subjective effects provides a foundation for a theoretical framework for a new “neuroscience of two” and quantum leap in understanding who we are.

Joy Hirsch is currently the Mears and Jameson Professor of Psychiatry, Comparative Medicine, and Neuroscience at Yale School of Medicine where she is also the founder and Director of the Brain Function Laboratory and on the faculty at the Wu Tsai Institute, Yale University in New Haven CT., USA. Prior to joining the faculty at Yale, she was a Professor of Neuroscience at Columbia University in New York where she was the founder and Director of the Functional Imaging Center. Her PhD is in Experimental Psychology from Columbia University where she studied visual psychophysics and the human visual system.

SPECIALIST LECTURES



22.1

TAKING THE MYC OUT OF LYMPHOMA

Dr Farhat Khanim

University of Birmingham

The MYC oncogene is a protein that regulates expression of 1000s of genes involved in essential processes such as cell metabolism, growth and death. MYC is mutated or dysregulated in >60% of all cancers. Despite this, there are no drugs targeting MYC. Dr Farhat Khanim and her team have identified an over-the-counter oral supplement that is able to rapidly switch off MYC expression and kill certain cancer cells, namely Burkitt Lymphoma (BL). BL is one of the most common childhood cancers in sub-Saharan Africa. In this talk, Dr Khanim will share the journey of this discovery and how her team is working to help children in Africa with BL.

Dr Farhat Khanim is a British-born Pakistani Muslim woman. She completed her PhD at the University of Birmingham and trained as a molecular and cellular cancer biologist. Her passion and the driving force behind her work is to identify affordable, effective treatments for cancers and diseases of unmet need, especially for (i) older, frailer patients who are often not eligible for intensive treatment, and (ii) paediatric cancers in low- and middle-income countries (LMICs).

22.2

EXTRACELLULAR VESICLES IN HEALTH & DISEASE ACROSS THE ANIMAL KINGDOM

Professor Sigrun Lange

University of Westminster



Extracellular Vesicles (EVs) are small membrane vesicles released from cells and are taken up by neighbouring cells. EVs play important roles in cellular communication, both in normal physiological processes, as well as in various disease processes through transport of proteins, RNAs and lipids. EV based cell-communication is conserved across phylogeny from bacteria to humans. EVs can be isolated from many different body fluids, including blood, saliva, tears, cerebrospinal fluid and milk, and they are therefore of great interest for biomarker discovery. This talk will discuss EV research in selected animal models of human disease and wildlife biology.

Sigrun Lange is Professor of Molecular Pathobiology at the University of Westminster, London. She completed a BSc in Biology and an MRes and PhD in Comparative Immunology at the University of Iceland in collaboration with the University of Oxford and University Hospital Basel, followed by postdoctoral research in regenerative medicine and neuroscience at University College London. Since 2016, she has led a cross-disciplinary research programme in Experimental Pathology focused on extracellular vesicles and post-translational modifications, with particular interest in animal models with unusual regenerative and immunological traits to inform human health and therapeutic development. She is a member of the MISEV board and a Fellow of both the Royal Society of Biology and the Linnean Society.



22.3

BUBBLES AND BANGS THE PHYSICS OF VOLCANIC ERUPTIONS

Dr Ed Llewellyn
Durham University

Volcanic eruptions are spectacular, fascinating and diverse. Some produce explosions that blast many cubic kilometres of rock into the stratosphere and cause regional devastation. Others produce fountains and rivers of lava that create dramatic natural tourist attractions. Many do no more than quietly release gas into the atmosphere. Despite this diversity of eruptive style, all volcanic eruptions are driven by the same fundamental mechanism – the formation and growth of bubbles of magmatic gas. So why do some volcanoes explode violently, whilst others bubble quietly? Answering this question is one of the key goals of physical volcanology. In this talk, Professor Ed Llewellyn will show how laboratory experiments at a range of scales combine with fieldwork and numerical modelling to help us understand the fascinating physics of volcanic eruptions.

Ed Llewellyn is Professor of Volcanology at Durham University and was a participant in LIYSF 1992. After reading Natural Sciences at Cambridge University, Ed undertook his doctoral research in Physical Volcanology at Bristol University. His research combines laboratory experiments, numerical modelling and fieldwork to understand how and why volcanoes erupt.

22.4

WHAT TYPE OF INNOVATOR ARE YOU?

Ada Adeyemi Nwadigo
Eng Treprenuer & HS2



This lecture details different types of innovators, helping students understand that innovation is not limited to one path, one background, or one way of thinking. The lecture encourages young people to recognise that innovation begins with how they think, the problems they notice, and the courage they have to create change. By exploring different innovation styles, students will be encouraged to discover their own strengths and understand how they can use their ideas to make a positive impact. Through sharing her personal journey, from growing up in Nigeria to becoming a recognised engineer, Ada hopes to show young people that their background does not limit their potential. Her story is a reminder that bold ideas can come from anywhere, and that every young person has the power to think differently, solve problems, and help shape a better world.

Ada Nwadigo is an award-winning civil engineer, entrepreneur, author, and innovation advocate dedicated to inspiring the next generation of engineers and leaders. She is the founder of Eng Treprenuer, a platform empowering young people and professionals through engineering, innovation, leadership, and entrepreneurship. As a STEM ambassador and experienced engineer on major infrastructure projects, she promotes STEM as a tool for solving real-world problems and driving meaningful change. She is also the author of *A-Z of STEM: Innovation Edition* and *The SHE-E-OH Mindset*.

SPECIALIST LECTURES



22.5

PROJECT EARTH: HOW CAN WE SUPPORT YOU TO CHANGE THE WORLD

Professor Becky Parker
Queen Mary University

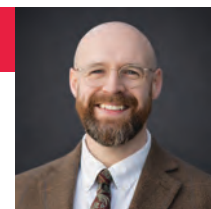
Project Earth empowers and supports young people to innovate to help tackle the climate and biodiversity crisis. We offer advice to bring your ideas to fruition and to showcase your phenomenal creativity. We are affiliated to the Earthshot Prize and supported by a brilliant group of 125 expert advisors. In June 2026 Project Earth hosted 'Pitch for the Planet' at the Royal Institution. This was an opportunity for students from across the world to pitch ideas to an audience of investors, advisors and special guests. The event was so successful, and demand was so high, that we are expanding to have similar events across the world.

Becky is Visiting Professor in the School of Physics and Astronomy at Queen Mary, University of London, teaches and is Director of Project Earth, a charity supporting young people around the world to innovate for the planet (www.projectearth.global). She has helped students flourish in research in particle physics and space science but is now focused on amplifying their innovative contributions to tackling climate change. Becky was awarded an MBE in 2008.

22.6

UNRAVELLING THE MYSTERIES OF MENTAL ILLNESS

Dr Thomas Reilly
University of Oxford



Despite recent advances in medical science, genetics, and neuroscience, mental illness remains largely mysterious. Most of our treatments were first discovered, serendipitously, around 70 years ago. Are we now getting closer to understanding the mechanisms that drive mental disorders, and to developing genuinely novel treatments? This lecture offers a realistic but hopeful overview of the current psychiatric landscape, highlighting what we know, what remains uncertain, and where meaningful breakthroughs may emerge.

Dr Thomas Reilly studied Medicine at the University of Aberdeen before completing foundation training in Glasgow and specialist training in Psychiatry in London. Observing that many female patients' symptoms worsened with hormonal fluctuations, he undertook a DPhil (PhD) at the University of Oxford investigating the role of the menstrual cycle in psychosis. He will shortly take up a position as a clinical-academic Consultant Psychiatrist at Imperial College London.



22.7

ANATOMY: DON'T WE ALREADY KNOW EVERYTHING?

Professor Michelle Spear
University of Bristol

Anatomy is often imagined as one of the oldest and most complete sciences: a subject mapped, labelled and finished centuries ago. Yet the human body continues to surprise us. This lecture explores why anatomy remains a living discipline, from newly described structures and overlooked variations to the ways technology, surgery, imaging and diverse bodies are reshaping what we think we know. It will ask how anatomical knowledge is made, why some bodies have historically been treated as “standard” and others as exceptions, and why understanding human variation matters for science, medicine and society.

Professor Michelle Spear is Professor of Anatomy and Head of Department at the University of Bristol. She leads anatomy education across medical, dental, veterinary and science programmes, and has particular interests in human variation, anatomical history and public engagement. Her research focuses on reverse translational anatomy and human variation. She is also a widely published popular science writer, exploring the body, the brain and the science behind everyday experiences.

22.8

THE LANGUAGE OF MUSIC IN A SCIENTIFIC WORLD

Dr Domenico Vicinanza
Anglia Ruskin University



Music is a richly structured language, and since the Renaissance, composers have explored deep connections between sound, mathematics and the natural world. From Bach's symmetry to Mozart's cycles, music has long served as a bridge between artistic intuition and scientific thinking. In this talk, Domenico Vicinanza explores music as a way to communicate science, connecting art and technology. He demonstrates how he has worked with NASA, CERN and Yellowstone National Park to turn scientific data into melodies, harmonies and soundscapes. Through musical stories, live demonstrations and video examples, students will listen to science in a new way and discover how art and technology can work together to make complex ideas resonate.

Domenico Vicinanza is Associate Professor of Intelligent Systems and Data Science at Anglia Ruskin University, Senior Research Engagement Manager at GÉANT, a science journalist and a composer specialising in data sonification. His work explores the intersection of science, technology and music, transforming complex scientific data into sound and musical structures. He has collaborated with organisations including NASA, CERN and Yellowstone National Park, and regularly writes and speaks about science, technology and creativity for public audiences.

ALUMNI SPECIALIST LECTURES



27.1

THE IMPACT OF HYDROGEN FUEL TECHNOLOGY

Maurice Brown – LIYSF 1986

Utrecht University, The Netherlands

The Hydrogen fuel cell has been around since 1839. This relatively obscure, but highly valued technology, helped power the United States Space Programme from the 1960s and still today. The technology holds great promise, as it presents a real alternative to fossil fuel energy. However, the industry will face a tough future. Promoters of this energy source must master the learning curve of the energy industry, if it is to become a feasible alternative. How does this technology work, what are its applications and what problems does it face as an industry?

Maurice Brown is from Kingston, Jamaica, studying at Campion College and the College of Arts Science and Technology. He moved to the Netherlands in 1994 and completed his Bachelor's degree in International Business Administration and Master's Degree in Business Management. He became a consultant to the aviation industry and later, held financial positions in various international companies. Currently, he is a lecturer in Finance and Business Strategy at the University of Applied Sciences, Utrecht, (Netherlands) and is owner of a small company looking into promoting and exporting to developing countries.

27.2

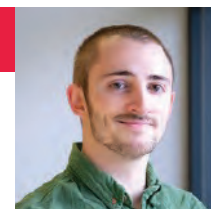
COMPLEXITY SCIENCE: THE STUDY OF EMERGENT BEHAVIOURS

Enrico Caprioglio – LIYSF 2016

University of Sussex

Complex systems are characterised by collective properties that transcend those of their individual components. In other words, “the whole is greater than the sum of its parts.” In this lecture, Enrico Caprioglio will introduce the fundamentals of information theory—entropy and mutual information—and recent advancements that attempt to formalise the concept of emergence. This novel framework defines synergistic information: higher-order statistical interdependencies that arise exclusively at the collective level. The lecture will include some typical examples of this, how a detective can use synergistic information to solve murder cases, and how the human brain displays intricate emergent patterns of neuronal activity.

Enrico Caprioglio was born in Italy and, after participating in the 2016 LIYSF, he moved to the UK to study Physics. He earned his theoretical physics undergraduate and master's degrees at UCL and Imperial College London, where he specialised in quantum information theory and the theory of complexity. During these years, he returned to LIYSF as a staff member for 6 years, and co-authored a Classical Mechanics textbook published by the Institute of Physics. He is now finishing his PhD at the University of Sussex, where he uses complexity theory and computational modelling to try to understand brain function and organisation.





27.3

PHOTONICS SOLUTIONS TO TRANSFORM THE BRAIN

Professor Clare Elwell – LIYSF 1984
University College London (UCL)

Recent advances in neuroimaging have revolutionised how we study the human brain. One key innovation is near infrared spectroscopy, or NIRS: a portable, wearable and affordable optical method for imaging brain activity. In this lecture, Professor Clare Elwell will highlight how NIRS enables studies of brain oxygen metabolism in both infants and adults, supporting research into early autism markers and brain development. Its success in resource-limited settings has also established NIRS as a powerful tool in global health. Alongside these breakthroughs, Clare will explore the ethical considerations raised by the increasing accessibility of brain imaging and the data it generates. She will also discuss the important role of medical physicists in ensuring neuroimaging is used responsibly, both in clinical and international research contexts.

Clare Elwell is Professor of Medical Physics at University College London and Vice Dean for Impact at UCL Engineering. She develops optical brain imaging tools, with projects spanning infant development, autism, migraine and global health. She leads the BRIGHT project, which produced the first infant brain scans in Africa, and received a Brocher Foundation Fellowship in 2023 for her work on ethical neuroimaging. Clare is Past President of two major scientific societies and currently leads the London International Youth Science Forum. A Fellow of the Institute of Physics and the Royal Society for Arts, she also served as a British Science Association Media Fellow at the Financial Times. She founded the charity Young Scientists for Africa and in 2024 directed the UCL Festival of Engineering, which attracted over 10,000 attendees from industry, government and education.

27.4

BORN PROTECTED: THE SCIENCE OF MATERNAL IMMUNITY TRANSFER

Dr Émer Hickey – LIYSF 2014
University of Exeter

Have you ever wondered how newborns are protected from infections right after birth? As placental mammals, pregnant women and their foetuses share an incredible connection during pregnancy, allowing the transfer of vital immune components. This fascinating process doesn't stop at birth; it continues through breastfeeding, providing newborns with crucial protection while their own immune systems are still developing. In this session, you will discover how immunity is transferred from mother to child during pregnancy and nursing. We'll dive into the transfer of immune cells, explore the intriguing development of microchimerism, and discuss how these processes help control infections in early life. Additionally, we will examine the emerging role of maternal vaccinations in extending neonatal immunity.

Dr Émer Hickey is a Postdoctoral Research Fellow at the MRC Centre for Medical Mycology at the University of Exeter. Her research in the Horsnell Group focuses on maternal immunity and its impact on mucosal infections caused by fungi, helminths, and bacteria. Émer first attended LIYSF as a student in 2014, where her interest in science flourished. She later returned as a staff member, serving as Chief of Staff from 2019 to 2023, and now continues to contribute as a Scientific Advisor. In 2013, she won the BT Young Scientist and Technology Exhibition with her team, who went on to represent Ireland at the European Union Contest for Young Scientists and the Google Science Fair, securing first place in both competitions. She was also recognised by TIME magazine as one of the most influential teenagers globally.



ALUMNI SPECIALIST LECTURES



27.5

FUTURE-PROOFING OUR PLANET: THE RISE OF INDUSTRIAL CLIMATE TECH

Simran Mohnani – LIYSF 2013
Stanford Climate Ventures

Climate intrapreneurship is about exploring alternative models to entrepreneurship; building green solutions in-house within a company's corporate venture labs, otherwise known as the 'innovation arm of the business'. Join Simran as she discusses how to build climate inventions, prototypes, MVPs (minimum viable products) and ventures by bringing together industry, academia and startups to decarbonise high-emitting sectors. Simran has worked across the innovation lifecycle: from designing bioreactors for cultured meat in R&D labs, to automating chocolate-cooling at the Cadbury chocolate factory, and digitising COVID-19 vaccine manufacturing to make factories go 'paperless'. Many of these are first-of-a-kind inventions that require ecosystem approaches across industry, startups and academia e.g. creating the first digital traceability passport for EU medicines, or the UK's first reverse supply chain for textiles! Simran's lecture will cover novel examples of industrial climatetech in our pursuit of NetZero and how to build industrial green innovation at different scales.

Simran is a Chemical Engineer and ClimateTech intrapreneur currently pursuing an MBA at Stanford Graduate School of Business. Originally from Malta, she focuses on developing first-of-a-kind solutions to reimagine manufacturing and energy systems for a more sustainable future. She has worked across R&D, process engineering, consulting, and venture capital on innovations in cultured meat, food production, and vaccine manufacturing. She was Malta's 2013 LIYSF delegate and has been recognised as a TechWomen100 honouree, JCI Malta Top 10 Under 40, Fulbright scholar, and World Economic Forum Global Shaper, and will serve as the UK Youth Delegate to COP31.

27.6

SEEING DIFFERENTLY: TREATING EYE DISEASE BY CHANGING BIOLOGY

Helen Peregrine – LIYSF 2009
East Sussex Healthcare NHS Trust



How do we treat disease in one of the most delicate and complex organs in the body? Starting with hands-on demonstrations, this session explores how eye diseases affect vision in conditions such as glaucoma, keratoconus, and age-related macular degeneration. We will then examine the science behind modern treatments developed in recent years, including selective laser trabeculoplasty, corneal cross-linking, and anti VEGF therapy. Focusing on how we modify biological systems rather than replace them, this session connects fundamental science with real-world clinical practice.

Helen Peregrine BSc (Hons) MCOptom DipTP(IP) Higher Cert Glauc. Helen is Head of Optometry at East Sussex Healthcare NHS Trust, where she leads a team delivering specialist ophthalmic care across glaucoma, cornea, medical retina, eye casualty, and laser services. She studied Optometry and Vision Sciences at Cardiff University and trained at Oxford Eye Hospital, before completing further postgraduate qualifications in ophthalmology. Helen has a strong interest in direct patient care and training clinicians. She first attended LIYSF as a student in 2009 and returned in subsequent years as Counsellor and Chief of Counsellors. Outside work, she has led charity eye care projects in Moldova and enjoys living by the sea.



27.7

THE QUANTUM HANDSHAKE: HOW DOES NATURE CONNECT GALAXIES, CELLS & MAGNETS?

Dr Pius Theiler – LIYSF 2012

TU Vienna, Austria

Have you ever wondered why nature chooses sides? From the structures of the universe to the biological materials around us, nature relies on handedness (chirality). This lecture explores a research frontier where biochemistry meets quantum physics: Chirality-Induced Spin Selectivity (CISS). CISS is a striking phenomenon where electron spin uniquely interacts with twisted material structures. Remarkably, this allows organic molecules to sort quantum spins at room temperature without actual magnets. This unexpected trick might hold the key to understanding the beginning of life, rewriting the future of renewable energy, and unlocking an entirely new tuning knob for quantum technology. Using nanoscale tools like mechanical resonators, we will dive into an experimental mystery where laboratory results dramatically challenge our best theoretical models. This lecture introduces these deep mysteries and offers a glimpse at some answers you won't find in any textbook.

Raised in the Swiss Alps, Pius Theiler began his science journey with an award-winning climbing safety invention at the Swiss Youth in Science competition, later attending the London International Youth Science Forum in 2012. He studied mechanical engineering and physics at EPFL, followed by Micro- and Nanosystems at ETH Zurich, completing a master's thesis at MIT and a doctorate on the quantum capacitance of chiral molecules. He has since conducted postdoctoral research on chirality-induced spin phenomena and is currently an OeAW USA-Apart fellow at TU Vienna, using mechanical resonators to study interactions between chirality and spin.

27.8

CAUGHT AFTER THE KISS: TRACKING CELL INTERACTIONS WITH LIPSTIC

Natalija Vujacic – LIYSF 2018

Francis Crick Institute



Immune cells constantly communicate through brief, dynamic encounters that shape our body's response to infection, cancer, and disease. But how can scientists identify which cells have interacted once those encounters are over? Traditional approaches, such as intravital microscopy, rely on proximity as a surrogate for cellular contact and provide limited information about the molecular interactions involved. In 2018, LIPSTIC (Labeling Immune Partnerships by SortTagging Intercellular Contacts) was published, enabling researchers to capture bona fide "kiss-and-run" interactions between immune cells, in vivo. Natalija is harnessing this technology in her PhD research to investigate how PD-1-mediated signalling drives immunosuppression during cancer progression.

From Buenos Aires, Argentina, Natalija moved to the UK in 2019 to pursue an undergraduate degree in Biochemistry at the University of Bristol. Her thesis focused on bacterial immunity: restriction-modification systems; work that solidified her passion for research. She entered the field of human immunology in the lab of Laura Rivino where she worked on uncovering molecular mechanisms involved in severe dengue pathogenesis. In 2024 she began a PhD under Aleksey Chudnovskiy at the Francis Crick Institute using in vivo LIPSTIC models to dissect PD-1-driven immunosuppression during tumorigenesis.

SPECIALIST STUDY DAY *led by Professor Tolullah Oni*



29.1

BRIDGES BETWEEN GEOMETRY AND AI

Dr David Alfaya Sánchez

Comillas Pontifical University, Spain

Computer data is sometimes thought of as a flat sequence of ones and zeroes, but, actually, in many applications the information has its own natural geometry. Taking this geometry into account can help build better AI systems working on the data. Curiously, we can also work in the opposite direction and use AI and other computational systems to study open problems in geometry and, more generally, to help mathematical research. In this talk we will explore this two-way multidisciplinary interaction between mathematics and computation.

David Alfaya is Associate Professor in the Department of Applied Mathematics at ICAI and Researcher at the Institute for Research in Technology at Comillas Pontifical University. He holds degrees in Mathematics and Computer Science Engineering, receiving the First Spanish National Bachelor Prize in both Science and Engineering & Architecture in 2013. He also holds Master's degrees in Mathematics and Applications and in Research and Innovation in Communications and Information Technologies from Universidad Autónoma de Madrid. He completed his PhD in Mathematics at the Institute of Mathematical Sciences (ICMAT-CSIC), where he later held a postdoctoral position. His research spans pure and applied mathematics, including Algebraic Geometry, Information Retrieval, Information Geometry, and the interaction between Artificial Intelligence and Mathematics. He currently participates in several national and international research projects, including the ERC Synergy Grant MALINCA "Mathematicae Lingua Franca: Bridging the linguistic gap between the mathematician and the machine".

29.2

THE IMPORTANCE OF MATERIAL DISCOVERY

Professor Nicholas Harrison

Imperial College London

From smartphones and batteries to medical implants and space exploration, breakthroughs in materials science underpin many of the technologies that shape our everyday lives. In this lecture, Professor Nicholas Harrison will explore how discovering and designing new materials is driving innovation across science and engineering. Students will gain an insight into how advanced computational methods and quantum modelling are helping scientists predict the properties of new materials before they are created, accelerating the development of cleaner energy technologies, more powerful electronics and sustainable solutions for the future.

Professor Nicholas Harrison is Professor of Physics at Imperial College London and a leading researcher in computational materials science. His research uses advanced quantum mechanical modelling and high-performance computing to understand and predict the behaviour of materials at the atomic level. His work spans electronic materials, energy technologies and the discovery of novel materials with applications ranging from semiconductors to sustainable technologies. An internationally recognised scientist, Professor Harrison has collaborated with leading research institutions and industry partners worldwide, helping to advance our understanding of the materials that will underpin the next generation of scientific and technological innovation.





29.3

WHAT'S SO SPECIAL ABOUT RELATIVITY

Raymond Isichei

Imperial College London

This year marks the 120th anniversary of Albert Einstein's Annus Mirabilis (Miracle Year). In 1905 Einstein published four papers on different concepts which completely changed the way we understand the universe. The most revolutionary of these concepts was Einstein's Theory of Relativity. For thousands of years humans were mostly ignorant about space and time. For hundreds of years humans considered space as where things exist and time as being absolute and independent of space. Einstein's breakthrough was not to consider them as separate, but to consider them a unified fabric. To fully appreciate Einstein's revolution and its incredible consequences, we're going to travel through time and space to understand space-time!

Raymond is a 2nd year PhD student in theoretical physics at Imperial College London. His research attempts to understand the mysterious relationship between gravity and thermodynamics in a variety of contexts such as black holes and cosmology. In 2023 Raymond was awarded one of only ten Bell-Burnell Graduate Scholarships in the UK by the Institute of Physics. These scholarships are awarded to highly talented students from underrepresented groups in physics to pursue a PhD in physics. Prior to PhD, Raymond completed his MSc in theoretical physics at Imperial College London where he was awarded the Bayforest Technologies Ltd prize for the best MSc dissertation across all physics courses.

29.4

POWERING THE FUTURE: BUILDING THE ELECTRICITY NETWORKS FOR NET ZERO

Susan McDonald

Deloitte UK



Achieving a net zero future depends not only on generating clean energy, but also on transforming the electricity networks that deliver it. In this lecture, Susan McDonald will explore the challenges of designing the resilient, flexible and intelligent energy systems needed to support growing demand, renewable energy and emerging technologies. Students will discover how engineering, digital innovation and strategic planning are helping to create the infrastructure that will power homes, businesses and communities for generations to come, and the exciting career opportunities available in the global energy transition.

Susan McDonald is a Director at Deloitte UK, specialising in the transformation of energy infrastructure and electricity transmission networks. She works with governments, regulators and industry to help deliver the transition to a secure, resilient and low-carbon energy system. Her expertise spans strategic infrastructure planning, energy policy and the development of future electricity networks that will enable the UK's net zero ambitions. Susan has led major projects across the energy sector, combining engineering insight with commercial and policy expertise to help shape the future of sustainable energy infrastructure. She is passionate about developing the next generation of engineers and energy leaders who will drive the transition to a cleaner future.

SPECIALIST STUDY DAY



29.5

THE AIR WE BREATHE: UNPACKING THE HIDDEN LINKS

Dr Ian Mudway

Imperial College London

We take around twenty thousand breaths every day, but what are we actually inhaling? This session dives into the wider breathed environment to explore how urban air pollution and climate change form a dangerous partnership. We will look at the cutting edge of environmental toxicology to see exactly how inhaled microscopic particles slip past our physical defences to alter our cellular chemistry. Beyond the biology, we will debate the tough political trade-offs and the massive health co-benefits of creating cleaner cities, showing why fixing the air we breathe is one of our most powerful tools to fight climate change and protect human health.

Ian Mudway is Professor of Environmental Toxicology at Imperial College London and Visiting Professor of Environmental Health at Gresham College. He is a leading scientist studying how air pollution and climate change affect our bodies. Professor Mudway co-leads the landmark CHILL study, which tracks how city air impacts the lung development of thousands of school children. His research into cellular biology and health biomarkers helps global leaders create smarter public health policies and design healthier cities for the next generation.

29.6

DESIGNING NET ZERO & CLIMATE-RESILIENT BUILDINGS FOR A CHANGING WORLD



Dr Eng Ofetotse

University of Greenwich

In this session, Eng Ofetotse will explore one of the biggest questions facing society: how do we design buildings that use less energy, produce fewer carbon emissions, and still support people's comfort, health, and wellbeing? Buildings are where we live, learn, work, worship, recover, and connect with others. However, they are also major users of energy. Through this session, Eng Ofetotse will examine how engineers and designers can rethink buildings not just as structures, but as active systems that can generate and store energy, respond to climate conditions, and support communities. The lecture will explore ideas such as passive design, renewable energy, smart technologies, energy storage, and climate resilience. Students will be challenged to think creatively about what the buildings of the future should look like, how they should perform, and how they can help us respond to climate change in a fair and practical way.

Dr Eng Ofetotse is a Senior Lecturer in the Built Environment at the University of Greenwich and a consultant in energy management and sustainable engineering. With over a decade of experience across academia, industry, and international development, her work focuses on net zero buildings, energy systems optimisation, and climate-responsive design. She has led multinational projects, including Innovate UK-funded initiatives delivering clean energy solutions in sub-Saharan Africa. She is a Chartered Engineer and Fellow of the Chartered Institution of Building Services Engineers, and holds BREEAM AP, WELL AP, LEED GA, and Fellow of the Higher Education Academy accreditations.



29.7

PUBLIC HEALTH: CHRONIC DISEASE IMPACT IN URBAN ENVIRONMENTS

Professor Tolullah Oni
University of Cambridge

Over half of global greenhouse gas emissions come from cities, making urban environments central to tackling climate change and protecting public health, especially in rapidly urbanising regions such as Africa. Many African cities face challenges including poor land use, limited access to safe public spaces, clean air, healthy food, and walkable environments, alongside rising rates of diseases such as obesity and diabetes. This lecture explores how youth-led citizen science and participatory research can support integrated policies for healthier, more climate-resilient cities through urban planning, digital innovation, and prevention-focused public health approaches.

Tolullah Oni is Clinical Professor of Global Public Health and Sustainable Development at the University of Cambridge and Founder of UrbanBetter. An Honorary Professor at the University of Cape Town, she is a pan-African British public health physician and urban epidemiologist with deep ties to Nigeria, South Africa and the UK. Her work bridges science, policy and society to design healthier, climate-resilient cities, grounded in the conviction that health must be built into environments. A widely published scholar, she is a Fellow of the International Science Council and the African Academy of Sciences and a World Economic Forum Young Global Leader.

29.8

PATHOGENS, PENGUINS AND THE PLANET

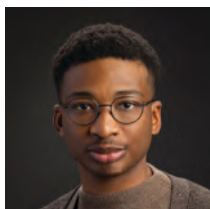
Dr Jane Usher
University of Exeter

This lecture explores the emerging threat of fungal pathogens in the context of antimicrobial resistance (AMR) and climate change. Fungi are evolving rapidly, with rising global temperatures expanding their range and virulence. Antarctica, once thought isolated, now reveals critical insights into microbial evolution under extreme conditions. We will examine how climate-driven environmental shifts may foster novel resistant strains and facilitate global spread. Understanding fungal dynamics in such remote ecosystems is key to forecasting global AMR trends and developing effective mitigation strategies in a warming world.

Dr Jane Usher is a Senior Lecturer in Medical Mycology at the University of Exeter's MRC Centre for Medical Mycology. Her research focuses on the fungal pathogen *Candida glabrata*, particularly its resistance to antifungal treatments and immune responses, using genome sequencing to inform new therapeutic approaches. She earned her PhD in Eukaryotic Gene Regulation from Trinity College Dublin, following an MSc in Molecular Medicine and a BSc in Biology and Statistics, and held postdoctoral roles in Dublin and at the University of Ottawa. She is a BBSRC Discovery Fellow and is active in public engagement on antimicrobial resistance, including the "Researching Resistance" exhibition.



SPECIALIST LECTURES



30.1

BUILDING A HEART FROM SCRATCH: HOW CLOSE ARE WE?

Dr Akinola Akinbote
University of Oxford

Have you heard of 3D bioprinting, stem cells, or organ-on-chips? This lecture will introduce the fundamental concepts of tissue engineering, or regenerative medicine, which aims to repair or replace damaged organs with functional human tissues. These in vitro tissues are built from basic blocks—cells, biomolecules, and scaffolds—to approximate the in vivo environment. We will learn how technologies like these are used to engineer heart tissues, with examples ranging from early-stage ideas to recent in vivo trials, with a strong focus on microfluidic devices. Given its potential to transform medicine, we will close with interactive team discussions, evaluating current advances and limitations, and propose ways to advance the field.

Dr Akinbote earned his PhD jointly from EMBL Barcelona and the University of Heidelberg in the Haase group, where he engineered vascularised cardiac tissues using iPSC technologies and microfluidics to study coronary microvascular function. Earlier, he studied Polymers and Biomaterials Engineering at Case Western Reserve University, briefly worked in medical devices and was a visiting researcher at MIT. He recently joined Oxford's Department of Physiology, Anatomy and Genetics as a postdoctoral researcher in the Simões group, developing 3D models to advance cardiac regenerative therapies. Through his involvement in training and advocacy, he seeks to create an inclusive scientific community.

30.2

MOVING TOWARDS TREATMENTS FOR DEMENTIA & MOTOR NEURON DISEASE

Dr Rubika Balendra
University College Hospital (UCLH)



The health and socioeconomic burden of dementia and neurodegenerative diseases continues to grow worldwide. This lecture explores recent advances in neurodegeneration research, with a focus on how genetics is improving our understanding of diseases such as Motor Neuron Disease and supporting the development of new treatments. It will highlight innovative disease models, including human stem cell-derived neurons and fruit flies, used to investigate clinically relevant pathways and therapeutic approaches.

Rubika is a Specialty Registrar in Neurology and the National Hospital for Neurology and Neurosurgery. She completed a PhD as a Wellcome Trust and UCL Leonard Wolfson Research Training Fellow investigating motor neuron disease and frontotemporal dementia at the UCL Institute of Neurology. She read medicine at Cambridge University and UCL. She trained in clinical and academic medicine as an Academic Clinical Neurosciences Foundation Trainee at Cambridge University. She continued clinical and academic training as an Academic Clinical Fellow at King's College London and as an Academic Clinical Lecturer at UCL. She enjoys teaching science and medical students and is actively involved in public engagement in science. She was an LIYSF participant in 2003 and a staff member from 2004-2007.



30.3

QUANTUM WORLD OF SUPERCONDUCTORS

Professor Amalia Coldea
University of Oxford

Superconductors are remarkable materials that can conduct electricity without resistance, offering enormous potential for future technologies. In this lecture, Professor Amalia Coldea will explore the fascinating quantum world of superconductivity and introduce the research behind discovering and understanding new superconducting materials. Drawing on cutting-edge experiments using high magnetic fields and low temperatures, she will explain how studying the behaviour of electrons at the quantum level is helping scientists develop new theories and pave the way for future technological advances.

Professor Amalia Coldea is Group Leader of the Quantum Matter in High Magnetic Fields group at the University of Oxford, Senior Research Fellow at Somerville College, and a Fellow of the American Physical Society. Her research explores quantum materials and superconductivity using high magnetic fields and advanced experimental techniques. She is Co-Director of the Oxford Centre for Applied Superconductivity and has received numerous prestigious awards, including the 2023 APS Fellowship and the Institute of Physics Brian Pippard Prize. Alongside her research, she is a passionate advocate for inspiring young people, particularly women, to pursue careers in physics.

30.4

AI IN STEM: UNLOCKING POTENTIAL & NAVIGATING RISKS

Dr Howard Haughton
King's College London

Artificial Intelligence (AI) is revolutionising the fields of Science, Technology, Engineering, and Mathematics (STEM), offering unprecedented opportunities and posing significant challenges. In this talk, we will explore how AI enhances research capabilities, accelerates innovation, and opens new frontiers in STEM disciplines. Conversely, we will also delve into the potential threats, such as ethical dilemmas, data privacy concerns, and the risk of widening the digital divide. By examining both sides of the coin, we aim to foster a balanced understanding of AI's role in shaping the future of STEM, preparing the next generation to harness its power responsibly.

Dr Howard Haughton is an expert in quantitative financial risk with a focus on computational finance. He is a Senior Visiting Research Fellow at King's College London. He is the EDI (Equity, Diversity & Inclusion) Champion at the Institute of Mathematics and Chair of Sporting Equals, the UK's leading organisation for racial equality in sports. He has a PhD in Mathematical Computer Science and worked in risk and capital markets across prominent institutions, including JP Morgan Chase, Deutsche Bank, Merrill Lynch, and Dresdner Bank AG. He has provided advisory services to government bodies and other organisations on sustainable development, leadership, corporate governance, diversity, and inclusion.



SPECIALIST LECTURES



30.5

ROVER AND OVER AGAIN

Abigail Hutty

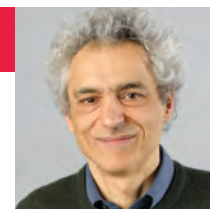
ispace Europe SA, Luxembourg

Space Rovers have been used to explore the moon and other planets for decades. Abbie has worked on six different Rover missions, two for Mars and four for the moon. Some parts look very similar between the final designs of these and other space rover missions, but other areas of the designs are totally different. Why? In this session we will explore the design drivers for these missions, such as concept of operations, traverse distance, operational life, signal delay, thermal environment, terrain type, materials restrictions, planetary protection and so on, and how they impact the optimal rover design.

Abbie Hutty is Chief Engineer at ispace Europe SA, where she leads the development of Lunar Rover missions, including MAGPIE – the first European Space Agency funded rover mission for the moon. Prior to this role, she spent 12 years at Airbus space in the UK, working primarily on Mars Rover missions; first on ExoMars – Europe’s first Rover mission to Mars, and then on the NASA-ESA collaboration for the Mars Sample Return mission, the Sample Fetch Rover. Abbie is a chartered engineer, holding a Master’s Degree in Mechanical Engineering from the University of Surrey.

30.6

FROM “PLATELET DUST” TO EXTRACELLULAR VESICLES



Professor Jameel Inal

London Metropolitan University

Thirty years ago, extracellular vesicles (EVs) were thought to be cellular debris with little significance. Today, they are recognised as key mediators of intercellular communication and a rapidly growing area of biomedical research. This lecture explores the evolution of EV biology, from early observations to current understanding of their biogenesis, cargo, and roles in health and disease. It also highlights their translational potential as drug delivery systems, tools for tissue repair, and minimally invasive biomarkers for conditions such as cancer and infectious disease, tracing their journey from “platelet dust” to powerful diagnostic and therapeutic tools.

Professor Jameel M. Inal is an internationally recognised immunobiologist and Professor of Immunobiology at London Metropolitan University, with over three decades of research, teaching and leadership experience spanning infectious diseases, cancer immunology and extracellular vesicle (EV) biology. He is also Visiting Professor of Biomedical Science at the University of Hertfordshire and a founding member of the International Society for Extracellular Vesicles. His pioneering research has advanced understanding of EVs in disease diagnosis and therapy, leading to major grants, patents, and highly cited publications. He has supervised 18 PhD completions, held senior academic leadership roles, and is ranked among the world's leading researchers in extracellular vesicle research.



30.7

THE BEAUTY OF FALLING

Professor Claudia de Rham
Imperial College London

Gravity is the overarching miracle connecting everything, everywhere, forever in the Universe. It has been tested with impeccable agreement in the most challenging environments from the edges of black holes to the weakest strain of gravitational waves. Yet, at the core of all its successes, its most profound feature yet is that it predicts its own fall. Join groundbreaking physicist, Claudia de Rham, as she uncovers the downfall of gravity, pushing the limits of knowledge and argues how navigating through the foundations of gravity may underpin the origin and fate of the Universe while naturally explaining its accelerated expansion without postulating the need for a new kind of ad hoc and unknown dark energy.

Claudia de Rham is a Professor of Theoretical Physics at Imperial College London, where she is also the Director of the Abdus Salam Centre of Theoretical Physics. Her research challenges gravity, particle physics and cosmology in pursuit of a more fundamental description of the nature of our Universe and the laws that govern it. She is ranked among the most impactful researchers in fundamental physics of the past decade and her contributions to science have been recognised by numerous grants and awards. She's the author of an Encyclopaedia of Cosmology and her first popular science book "The Beauty of Falling – A Life in Pursuit of Gravity" is being translated in over 10 languages so far.

30.8

WHY SLEEP IS GOOD FOR YOU

Professor William Wisden
Imperial College London

We have all felt the effects of a poor night's sleep. If we don't sleep well we feel generally groggy. And if we don't sleep at all, our body takes over and forces us to go to sleep, at least for a while. It seems that regular sleep is needed to maintain the body's health. But researchers still do not understand why we need to sleep. In this lecture, Professor William Wisden will outline current research findings on how sleep may help the brain.

William Wisden, born in Shoreham-by-Sea, Sussex, was educated at the University of Cambridge, where he completed a first-class BA in Natural Sciences (Zoology) and then subsequently a PhD. At Imperial, Wisden is Director of the UK Dementia Research Institute Centre. He is a Fellow of the Academy of Medical Sciences, a Member of the Academia Europea, and a Fellow of the Royal Society (2024).



SCIENCE COMMUNICATION EVENING & RESEARCH SHOWCASE

Following the Science Bazaar, selected students will take to the stage to present their research in dynamic three-minute FameLab-style talks. The session also explores the importance of science communication, giving every participant practical skills to communicate science with clarity, confidence and impact.



25TH JULY

Dr Sarah Cosgriff

Science Communicator

Sarah Cosgriff (she/they) is an award-winning science communicator who specialises in youth and community engagement, with extensive experience of delivering interactive activities and presenting science talks and shows. Sarah has previously had roles at the Institute of Physics and Association for Science Education working on equity, diversity and inclusion initiatives, and was recently the coordinator and co-trainer for FameLab Academy in Swindon.



LEAD JUDGE

Professor Richard O'Kennedy

LIYSF Science Patron

Professor Richard O'Kennedy is the Science Patron of LIYSF. Richard is a former LIYSF President (2005-2017) and attended LIYSF in 1972 representing Ireland. He has served as the Vice President for Research, Development and Innovation at Qatar Foundation, Scientific Director of the Biomedical Diagnostics Institute, and Head of the School of Biotechnology of Dublin City University, Ireland.

SCIENCE BAZAAR JUDGES

Dr Daniel Amund, Enrico Caprioglio, Filippo Cotta Ramusino, Abi Gilbertson, Dr Dan Korbel, Susan McDonald, Simran Mohnani, Sean O'Callaghan, Professor Richard O'Kennedy, Rishit Shaquib, Dr Emmanuel Shofoluwe, Dr Kiu Sum and Clare Thomson.

SCIENTIFIC CAREERS & PhD PATHWAYS

28TH JULY



Dr Émer Hickey

University of Exeter

Dr Émer Hickey is a Postdoctoral Research Fellow at the MRC Centre for Medical Mycology at the University of Exeter, researching maternal immunity and mucosal infections caused by fungi, helminths, and bacteria. She first attended LIYSF as a student in 2014 and later served as Chief of Staff from 2019 to 2023 before becoming a Scientific Advisor. In 2013, she won the BT Young Scientist and Technology Exhibition and later secured first place at both the European Union Contest for Young Scientists and the Google Science Fair.



Raj Shekhar Peri

University of Strathclyde, Scotland

Raj Shekhar Peri is an ESA-sponsored Doctoral Researcher at the University of Strathclyde, specialising in Explainable AI and wildfire prediction using Copernicus satellite data. He has experience in the aerospace and defence sectors, including work at Bharat Dynamics Limited, and also serves as an Engineering Project Manager at The Orbital Locker. Raj holds a postgraduate degree in Aerospace Propulsion from Cranfield University and is a Queen Elizabeth Prize for Engineering Ambassador.



Dr Inès Tunga

Energy Systems Catapult

Dr Inès Tunga is a Chartered Engineer and Practice Manager at Energy Systems Catapult, where she leads work on integrating renewable energy into the grid. With over 17 years of experience across chemical engineering, offshore energy, and low-carbon systems, she specialises in grid resilience, system integration, and clean energy innovation. She holds an Engineering Doctorate in Offshore Renewable Energy and is an active mentor and advocate for diversity and inclusion in engineering.



Meng Wu

Heriot-Watt University, Scotland

Meng Wu is a CDT SuMMer PhD Student of Heriot-Watt University in the writing-up phase. He is a Liveryman of The Worshipful Company of Scientific Instrument Makers, a Data Science Professional awarded by The Alliance for Data Science Professionals, a Member of UKRI Talent Peer Review College, a Fellow of the Institution of Analysts and Programmers, the Specialist Groups Officer of BCS Early Careers Executive, and a QEPrize Ambassador.

LONDON SCIENTIFIC VISITS

21.A Association of Anaesthetists Of Great Britain & Ireland

Founded in 1932 by Dr Henry W Featherstone, The Association of Anaesthetists of Great Britain and Ireland (AAGBI) represents the medical and political views of over 11,000 anaesthetists in the UK, Ireland and internationally.

21.B Chelsea Physic Garden

Since 1673 Chelsea Physic Garden has occupied four acres of land on the edge of the Thames. First established by the Apothecaries in order to grow medicinal plants, this extraordinary garden in London has had wide reaching impact around the world.

21.C Imperial College London, Department of Aeronautics

Develop next-generation aerial robots. Use computers to solve complex fluid flow problems. Turning ideas into impact is what we live for at Imperial.

21.D Imperial College London, School of Convergence Science

Imperial's School of Convergence Science advances discovery across four mission-led areas: Health and Technology; Sustainability; Space, Security and Telecoms; and Human and Artificial Intelligence. Climate Fresk is an interactive workshop that makes climate science accessible through collaborative learning based on IPCC findings.

21.E Imperial College London, Department of Life Sciences

One of the largest life science groups in Europe, it conducts research across the full breadth of modern life science activity including, Molecular Bio-sciences, Cell & Molecular Biology and Ecology & Evolution.

21.F Imperial College London, Department of Mechanical Engineering

Imperial's Department of Mechanical Engineering combines world-class teaching, research, and innovation. This interactive visit includes an introductory lecture, a hands-on Design-Make-Test activity, and tours of labs, workshops, and practical teaching facilities.

21.G Imperial College London, Department of Physics

One of the largest physics departments in the UK with an outstanding international reputation for excellence in research, undergraduate education and postgraduate training.

21.H King's College London, Centre for Gene Therapy & Regenerative Medicine

Based inside Guy's Hospital, the centre's research environment is enriched by expertise in pluripotent and adult tissue stem cells and includes researchers studying a range of diseases such as diabetes, skin fibrosis and acute liver failure. In the Sancho lab at the Centre for Gene Therapy and Regenerative Medicine, stem cells and organoids are used to study pancreas development and diabetes. The research group is interested in the underlying molecular mechanisms in health and disease, and in designing the tools for future diabetes treatment.

21.I London Metropolitan University – Science Centre

£30 million science centre which is home to the Superlab, a state-of-the-art teaching lab with room for 280 students. The four-floor science centre also houses modern research labs for HIV and microbiology research, as well as a forensic science lab and NMR spectrometer.

21.J National Physical Laboratory

The National Physical Laboratory (NPL) is the UK's National Measurement Institute, developing and maintaining national measurement standards. You will be introduced to measurement science and meet scientists working in areas such as atomic clocks, quantum detectors, digital image correlation, and data science.

21.K The Royal Institution

The Royal Institution (Ri) is an independent charity dedicated to connecting people with the world of science with over 200 years of history. At the L'Oréal Young Scientist Centre students will undertake a magnets and motors workshop, seeing a demonstration of Faraday's original electric motor and then building a simple battery powered motor that uses similar principles.

21.L Sonic Healthcare UK

Sonic Healthcare UK is the largest provider of independent pathology services in the UK. With over 30 years of experience in the UK pathology market and more than 20 years of partnership with the NHS, it delivers consultant-led diagnostic services across the healthcare system.

21.M University College London, Jill Dando Institute of Security and Crime Science

Visit the first Institute in the world devoted to crime science. Research is concentrated on new ways to cut crime and increase security.

21.N University College London, Medical Physics

Visit UCL's Department of Medical Physics and Biomedical Engineering to explore how physics and maths are applied in healthcare. The session includes talks, demonstrations, conversations with researchers, and a guided campus tour, showcasing state-of-the-art research and student pathways into medical physics.

21.O University College London, PEARL

A visit to the Person-Environment-Activity Research Laboratory in Dagenham. PEARL is a place in which we explore the ways in which people interact with their environments. Within our facility, we can simulate life-sized environments under controlled conditions, manipulating its ground, lighting, soundscape and smell so that we can examine how people interact. Learning about how we respond to such conditions then allows us to design the world in a way which is healthier and more sustainable for all.

OXFORD & CAMBRIDGE SCIENTIFIC VISITS

23.A BMW Mini Plant Oxford

Experience production and take a look behind the scenes with our experts. The products made by BMW Group inspire with unique design, dynamics and agility. It is exciting and fascinating to experience live production.

23.B University of Cambridge, Cavendish Laboratory – Department of Physics

Visit the world-famous Cavendish Laboratory at the University of Cambridge, known for groundbreaking discoveries including the electron, neutron, and DNA structure. The session includes an introduction to Natural Sciences, a hands-on physics activity, and a chance to see historic experimental apparatus.

23.C University of Cambridge, Human Anatomy Centre, Department of Physiology, Development and Neuroscience

Human dissection at Cambridge dates back over 450 years in colleges such as Gonville & Caius, and Magdalene, and 2016 marked the 300th anniversary of the establishment of the Anatomy School in Queens' Lane in 1716. Today, Cambridge continues to offer students the irreplaceable experience of full-body dissection in the Functional Architecture of the Body course. The Human Anatomy Centre is actively engaged in anatomical research in collaboration with clinicians and other specialists in Cambridge and at other institutions in the UK.

23.D University of Cambridge, Milner Therapeutics Institute

The Milner Institute provides a unique interactive and multifaceted environment for therapeutic innovation where academics, pharma and biotech work side-by-side. In the Milner, researchers are developing their own research programme and target discovery pipeline. The methods and approaches fostered are disease-agnostic and are currently applied in oncology, respiratory disease, metabolic disorders, infectious disease, inflammatory bowel disease and CNS diseases.

23.E University of Cambridge, Neuro Optics Lab

The Neuro Optics Lab is a multidisciplinary research group that operates jointly between the Department of Engineering and Department of Physics at the University of Cambridge that develops and validates new optical methods to monitor brain function and metabolism non-invasively. The lab focuses on near infrared spectroscopy (NIRS)-based methods to perform in-vivo monitoring of metabolic markers such as haemoglobin oxygenation, mitochondrial function and blood flow. Researchers at the Neuro Optics Lab are interested in pioneering tools and techniques to monitor relevant physiology for both basic science and medical applications, from developing wearable brain monitoring for dementia diagnosis and monitoring, to building new optical methods to measure seal physiology non-invasively.

23.F University of Cambridge, Scott Polar Research Institute

The Scott Polar Research Institute (SPRI) was founded in 1920, as a memorial to Capt. Robert Falcon Scott, RN, and his four companions, who died returning from the South Pole in 1912 and is the oldest research institute of its kind. Now part of the Geography Department at the University of Cambridge, SPRI's mission is to enhance the understanding of the polar regions through scholarly research and publication, educating new generations of polar researchers, caring for and making accessible its collections and projecting the history and environmental significance of the polar regions to the wider community.

23.G Culham Science Centre, UK Atomic Energy Authority

The Culham Centre for Fusion Energy (CCFE) is the UK's national laboratory for fusion research, owned and operated by the United Kingdom Atomic Energy Authority (UKAEA). CCFE hosts the world's largest magnetic fusion experiment, JET (Joint European Torus), on behalf of its European partners along with MAST (Mega Amp Spherical Tokamak), the UK's magnetic fusion experiment.

23.H Fortescue Zero

Visit Fortescue Zero, an advanced engineering business building on the legacy of Williams Advanced Engineering and developing zero-emissions technologies. Explore innovations in battery systems, electric powertrains, autonomous vehicle technologies, and intelligent energy solutions, and learn how engineering and data science are driving industrial decarbonisation across sectors from motorsport to heavy industry.

23.I HR Wallingford

HR Wallingford has been involved in research and consultancy to solve water-related challenges worldwide for 70 years. The company has impressive physical modelling facilities which include seven wave basins, used to build and test scale models of ports, harbours and beaches. It also has numerous wave flumes, the largest of which, the Fast Flow Facility, can house a tsunami simulator, or be used to test the stability of renewable energy foundations. The company's UK Ship Simulation Centre offers virtual reality ship simulation, used for pilot training, but also as part of port and harbour design where simulating vessel navigation plays a vital role in the design process.

23.J University of Oxford, Oxford Botanic Garden and Arboretum

Our collections house over 5,000 plant species, some of which grow nowhere else. Join leading researchers and educators at Oxford Botanic Garden for insights into our interdisciplinary research and conservation during its 400th anniversary year.

23.K University of Oxford, History of Science Museum

The History of Science Museum houses an unrivalled collection of historic scientific instruments in the world's oldest surviving purpose-built museum building. By virtue of the collection and the building, the Museum occupies a special position, both in the study of the history of science and in the development of Western culture and collecting.

23.L University of Oxford, Pandemic Sciences Institute

The Pandemic Sciences Institute (PSI) brings together experts from across the University of Oxford to tackle some of the world's greatest infectious disease challenges. During this visit, you will hear from leading researchers, explore the laboratories of the Gilbert Group, and take part in an interactive pandemic workshop. Discover how multidisciplinary research is helping to understand, predict and respond to future epidemics and pandemics.

23.M The Oxford Museum of Natural History

Oxford University Museum of Natural History was established in 1860 to draw together scientific studies from across the University of Oxford. Today, the award-winning Museum continues to be a place of scientific research, collecting and fieldwork. Highlights in the collections include the world's first scientifically described dinosaur – *Megalosaurus bucklandii* – and the world-famous Oxford Dodo, the only soft tissue remains of the extinct dodo.

23.N Oxford Nanopore Technologies

Visit Oxford Nanopore Technologies, a University of Oxford spin-out at the forefront of DNA and RNA sequencing. Through its pioneering nanopore technology, the company is transforming how genetic information is analysed, with applications spanning healthcare, infectious diseases, environmental science and biodiversity. The visit will include talks, networking opportunities and a tour of the facilities, providing an insight into one of the UK's most innovative biotechnology companies.

NATIONAL SCIENTIFIC VISITS

28.A Airbus UK and Aerospace Bristol

Explore the world of aerospace engineering through a unique visit to Airbus UK and Aerospace Bristol. At the Airbus Filton site, discover how engineers design and develop wings, fuel systems and landing gear integration for Airbus aircraft, while learning about exciting early-career opportunities in the aerospace industry. You will also have the opportunity to explore Aerospace Bristol, home to the last Concorde ever to fly, and discover more than a century of aviation innovation through its inspiring collection of aircraft and exhibits.

28.B University of Birmingham, Department of Biomedical Sciences, College of Medicine and Health

Visit the University of Birmingham's Department of Biomedical Sciences, part of the College of Medicine and Health, where world-leading research and teaching advance understanding of human health and disease. The session includes a hands-on laboratory practical on cancer drug research and a guided tour of the Medical School and campus landmarks.

28.C University of Birmingham, School of Civil Engineering

The School of Civil Engineering at the University of Birmingham is tackling global challenges through research in sustainable infrastructure, resilient cities and the future of the built environment. During this visit, you will take part in an interactive engineering activity, see demonstrations of current research, and explore the School's facilities while discovering how civil engineers are helping shape a more sustainable future.

28.D Bristol Robotics Laboratory

The Bristol Robotics Laboratory (BRL) is the UK's most comprehensive centre for multidisciplinary robotics research, a collaboration between the University of the West of England and the University of Bristol. Its work explores the science, engineering, and societal role of robotics and embedded intelligence, including challenges in adaptive robotics for complex human and environmental interactions.

28.E University of Bristol, Department of Anatomy

The Bristol Anatomy Centre offers an immersive introduction to human anatomy, combining traditional teaching with modern clinical approaches. The visit includes a tour of facilities such as the Dissection Room, Dynamic Anatomy Laboratory, and Anatomy Museum, alongside hands-on sessions using anatomical specimens and medical imaging, and an interactive workshop exploring structure, movement, and function.

28.F Cranfield University, Magan Centre of Applied Mycology

Visit Cranfield University's Magan Centre of Applied Mycology, where researchers explore how fungi can support sustainable innovation. Discover how applied mycology is driving solutions in renewable energy, materials, food production, and environmental remediation.

28.G University of Kent

The University of Kent is excited to welcome you to their beautiful Canterbury campus, situated on a hill above the city centre. The day will feature a variety of STEM talks and workshops, giving you a chance to learn more about how topics such as forensic science and physics are taught and researched there, as well as a chance to see some of the facilities. There will also be time for a tour of the campus, alongside a Q&A with current science students.

28.H Liverpool School of Tropical Medicine (LSTM)

Visit the Liverpool School of Tropical Medicine (LSTM), the world's first institution dedicated to research and teaching in tropical medicine. Founded in 1898, LSTM is at the forefront of global health research, tackling some of the world's most pressing infectious disease challenges, including malaria, tuberculosis, antimicrobial resistance and emerging epidemics. Discover how scientists, clinicians and public health experts work together to improve health outcomes for vulnerable communities around the world through pioneering research, innovation and international collaboration.

28.I National Space Academy

Join the National Space Academy to discover how space science, exploration and satellite technology are shaping our understanding of the Universe and solving challenges here on Earth. Enjoy an inspiring masterclass, experience a spectacular planetarium show, and explore the National Space Centre, home to interactive exhibits, space artefacts and one of the UK's largest planetariums.

28.J University of Nottingham, School of Chemistry

Meet world-leading researchers in Sustainable Chemistry at the University of Nottingham! Hear the latest research in electrochemical energy storage and conversion for the development of batteries, and how enzymes can be applied to the field of biofuel production. Experience what it is like to work in a modern undergraduate teaching laboratory, and visit research facilities on two different campuses. Home to the award-winning Periodic Table of Videos YouTube channel, meet some of the presenters and see some of the filming locations!

28.K University of Southampton, School of Biological Sciences

Visit the University of Southampton's Faculty of Environmental and Life Sciences, School of Biological Sciences, where research and teaching explore the living world from molecules to ecosystems. You will gain insight into how biological science is applied to challenges in health, sustainability, and the environment through cutting-edge research and academic study.

28.L University of Sussex, School of Life Sciences

Sussex has world-changing impact in many areas, including renewable energy, drug design and quantum chemistry. Biology is for those who are curious about the natural world and who want to understand the past, present and future of life on Earth, seeking solutions to some of the most important problems facing humanity – from managing environmental change to controlling disease.

28.M University College London, Mullard Space Science Laboratory

The Mullard Space Science Laboratory (MSSL) is UCL's Department of Space and Climate Physics and one of the world's leading centres for space research. Since its establishment in 1966, MSSL has participated in over 50 space missions and more than 200 rocket experiments, with instruments travelling to Earth orbit, Mars, Venus, Saturn, comets and beyond. In this visit, you will visit the laboratory and learn how scientists and engineers work together to design, build and test instruments for major international space missions. Research at MSSL spans planetary exploration, solar physics, the wider Solar System and astrophysics, helping to push forward the boundaries of space science.

28.N UK Regeneron

Join Regeneron for a full day of educational and interactive sessions designed to give you insight into how medicines are brought to patients worldwide. The day will include an introduction to Regeneron and its mission, sessions exploring our science, a career journey panel, and opportunities to meet colleagues across different departments. The experience concludes with an interactive session to help you apply what you've learned. Breakfast and lunch will be provided, with snacks available throughout the day.

PROGRAMME VENUES

Blue Halls of Residence
Hall Host: Milena Hayashi



Prince's Gardens



Queen Alexandra's House

Red Halls of Residence
Hall Host: Celeste Nutley



Metrogate House



Astor Hyde Park

Yellow Halls of Residence
Hall Host: Joseph Blake

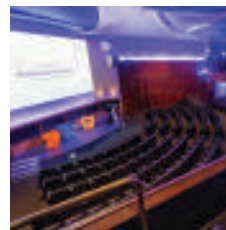


Copthorne Tara Hotel

Programme Venues



Imperial College London

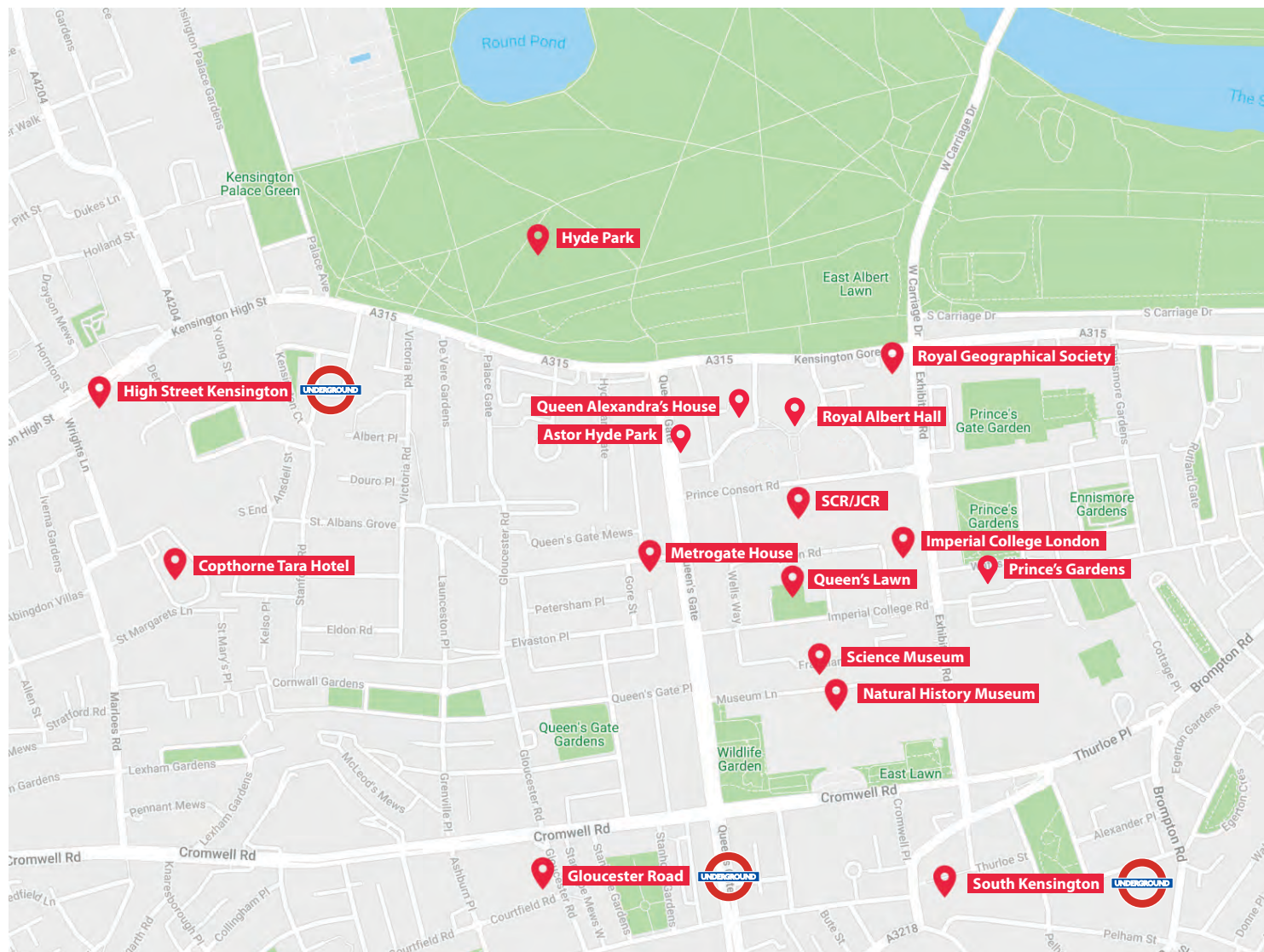


Royal Geographical Society



Copthorne Tara Hotel

LIYSF CAMPUS MAP



OUR PARTNERS

LIYSF is proud to work in association with many worldwide organisations, including:



CORE STAFF TEAM



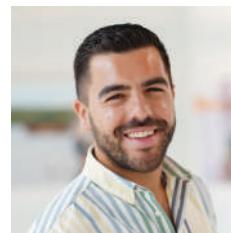
Richard Myhill
Executive Director
England



Jess Scopel
Programme Manager
Brazil



Adam Kawosha
Enrolment Manager
Nigeria



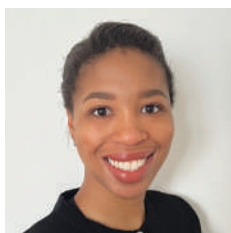
Zach Cassar
Executive Operations Manager
Malta



Claire Marlow
Finance Director
England



Tutu Tugce Arel
Engagement Manager
Turkey



Priscilla Sibanyoni
Student Wellbeing Manager
South Africa



Candela Tejedo Raga
Chief of Staff
Spain



Moses Moloi
Videographer
South Africa



Angeline Ward
Africa Region Representative
Kenya



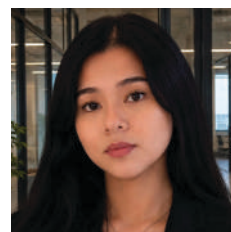
Gustav Brochmann
Software Engineer
Sweden



Siddhant Gupta
SEO Manager
India



Jeetendra Kumar
Website Manager
India



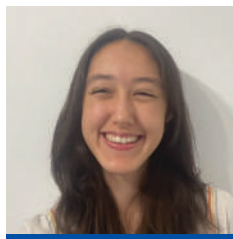
Kazue Nishi
Brazil Representative
Brazil



Ryan Holland
Digital Marketing Specialist
England

STUDENT STAFF TEAM

BLUE HALLS OF RESIDENCE



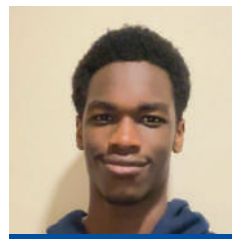
Milena Hayashi
Hall Host
Brazil



Gustav Brochmann
Academic Liaison
Sweden



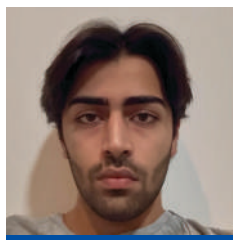
Kevin Jang
Deputy Host
South Korea



Ojeaga Ohi
Senior Counsellor
Nigeria



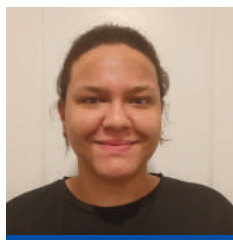
Leire Gómez
Counsellor
Spain



Vivaan Khushani
Counsellor
Singapore



Isabel Paroli
Counsellor
New Zealand



Michelle Pemberton
Counsellor
Canada

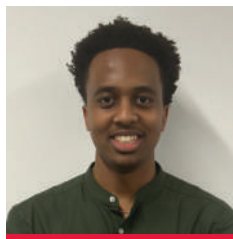
RED HALLS OF RESIDENCE



Celeste Nutley
Hall Host
Australia



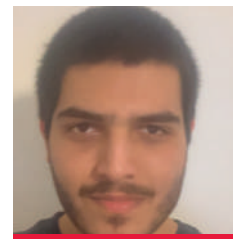
Abigail Alvarez Fernandez
Academic Liaison
Mexico



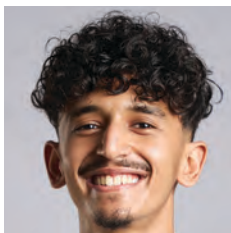
George Mbuthia
Deputy Host
Kenya



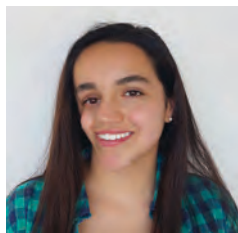
Srikar Garimidi
Senior Counsellor
Jamaica



Enayatullah Ismat
Counsellor
England



Ammar Janmohamed
Counsellor
Tanzania



Ignacia Núñez Ulloa
Counsellor
Chile

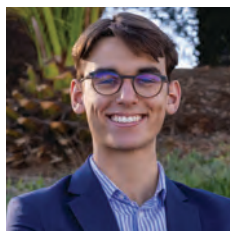
YELLOW HALLS OF RESIDENCE



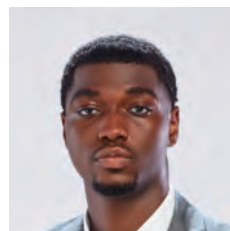
Joseph Blake
Hall Host
Guernsey



Rhianna Lyons
Deputy Host
Australia



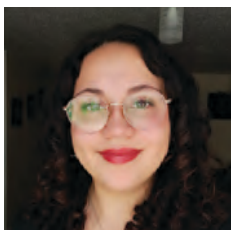
Jurie Blignaut
Counsellor
South Africa



David Okuonghae
Counsellor
Nigeria



Callum Russell
Counsellor
Guernsey



Isidora Vargas
Counsellor
Chile

SUPPORTING ORGANISATIONS

LIYSF is very proud to have the support across the globe of: National Government Offices, British Council Offices, National and International Science Competitions, Science Organisations, Foundations, Schools and Universities. We are truly grateful to all organisations for their work in nominating and supporting students to attend, a selection of them are shown here:

Akadeemia Foundation	<i>Poland</i>	Korea Science Service	<i>Korea</i>
ASDAN	<i>China</i>	MAGMA	<i>Spain</i>
ASTRA DK	<i>Denmark</i>	MAWHIBA	<i>Saudi Arabia</i>
Bergen County Technical Schools	<i>USA</i>	Ministry of Education, Youth Development Admin.	<i>Taiwan (ROC)</i>
British American Foundation of Texas	<i>USA</i>	MINT-Talentförderung	<i>Germany</i>
British School Madrid	<i>Spain</i>	MOHERI	<i>Oman</i>
British School of Brussels	<i>Belgium</i>	National Academy of Science	<i>Armenia</i>
Brookhouse International School	<i>Kenya</i>	National Science and Technology Forum	<i>South Africa</i>
Campion College	<i>Jamaica</i>	National Taiwan Science Education Center	<i>Taiwan (ROC)</i>
Celia Allen	<i>Guernsey</i>	National Youth Science Forum	<i>Australia</i>
Club Ciencias	<i>Chile</i>	Nepal Astronomical Society	<i>Nepal</i>
Dublin City University	<i>Ireland</i>	OKSEF / BUCA	<i>Turkey</i>
Professor Sir David MacMillan	<i>Scotland</i>	Polish Children's Fund	<i>Poland</i>
Engineering UK	<i>UK</i>	RED Science & Technology Youth Activities Network	<i>Mexico</i>
English School	<i>Cyprus</i>	REGENERON	<i>USA</i>
The Estonian Research Council	<i>Estonia</i>	SACGC	<i>Kuwait</i>
EXSTEMPLAR	<i>India</i>	Stiftung Jugend Forscht	<i>Germany</i>
Federazione delle Associazioni Scientifiche e Tecniche	<i>Italy</i>	Swedish Federation of Young Scientists	<i>Sweden</i>
Foundation Jeunes Scientifiques Luxembourg	<i>Luxembourg</i>	Swiss Youth in Science	<i>Switzerland</i>
Fundació Catalunya La Pedrera	<i>Spain</i>	Technologie & Innovation	<i>Austria</i>
University of Fraser Valley	<i>Canada</i>	Dr. Tom Ingram, LIYSF Alumni	<i>UK</i>
Ghana High Commission	<i>Ghana</i>	The Senior School	<i>Cyprus</i>
GC School of Careers	<i>Cyprus</i>	The Yale Undergraduate Research Association	<i>USA</i>
Horizons Academy	<i>Palestine</i>	Young Scientists for Africa	<i>UK, Africa</i>
Hungarian Association for Innovation	<i>Hungary</i>	Youth Science Canada	<i>Canada</i>
John Roan School	<i>England</i>	Yuteh International School	<i>Taiwan (ROC)</i>

LIYSF GLOBAL SCIENCE FELLOWS

We deeply value educators who guide and inspire students. The LIYSF Global Science Fellow programme is our way of honouring teachers, STEM leads, and school leaders, giving them an opportunity to nominate deserving students to attend LIYSF.

We are delighted to confirm the below Fellows for the 2026 year:

<i>Madhuchhanda Banerji</i>	Armenia	UWC Dilijan
<i>Rukevwe Bateren</i>	Australia	Cranbrook School
<i>Rajiv Narendra Kawa</i>	Georgia	New School, International School of Georgia
<i>Anupama Yarnal</i>	Georgia	New School, International School of Georgia
<i>Rachel Makle</i>	Germany	Stuttgart High School
<i>Hans Schmidt</i>	Germany	Munich International School
<i>Chrisna van Mieghem</i>	Germany	International School of Bremen
<i>Ana Belén García Vázquez</i>	Germany	Create Schools
<i>Selina Robyn Rayment</i>	Germany	Phorms Berlin Süd
<i>Ko Chung Wong</i>	Hong Kong, China	Victoria Shanghai Academy
<i>Kshetrimayum Bimol Singh</i>	India	King's College India
<i>Soumya Krishnan</i>	India	Sadhbhavana World School
<i>Sandhya Kamble</i>	India	Indus International School Pune
<i>Priyanka Tayde</i>	India	SGSITS
<i>Georgena Marsh</i>	Italy	International School of Milan
<i>Anna Chiara Arecchi</i>	Italy	Istituto Superiore Ascanio Sobrero
<i>Kalamkas Kulchimbayeve</i>	Kazakhstan	Quantum STEM School
<i>Graham Miller</i>	Malaysia	British International School Kuala Lumpur
<i>Roberto Faustino Hidalgo Rivas</i>	Mexico	Universidad Popular Autónoma del Estado de Puebla - UPAEP
<i>Winsome Saldanha</i>	Myanmar	Sals Virtual AP IB IGCSE nexus
<i>Hikmat Budha Chhetri</i>	Nepal	Kopila Valley School
<i>Sharon Titus</i>	Netherlands	Amsterdam International Community School
<i>Hans Mulder</i>	Netherlands	Jan Tinbergen College
<i>Obiageli Okebugwu</i>	Nigeria	International Community School Abuja
<i>Noemi Francisco Formaran</i>	Qatar	Philippine School Doha
<i>Brian van Niekerk</i>	Romania	Cambridge School of Bucharest
<i>Diana-Gabriela Oprea</i>	Romania	Cambridge School of Bucharest
<i>Brindusa Scheaua</i>	Romania	Cambridge School of Bucharest
<i>Elif Olgun</i>	Romania	Cambridge School of Bucharest
<i>Marcus Sturrock</i>	Saudi Arabia	British International School of Jeddah
<i>Sameera Damaree</i>	Saudi Arabia	British International School Riyadh
<i>Aladdin Jamal Bodon</i>	Saudi Arabia	King Faisal School
<i>Amy Wells</i>	Spain	British School of Barcelona
<i>Jenny Chen</i>	Taiwan (ROC)	American School in Taichung
<i>Lisa Luo</i>	Taiwan (ROC)	Yuteh International School
<i>Harold Lugangiza Mashauri</i>	Tanzania	KCMC University
<i>Metin Ferhatoglu</i>	Turkey	ENKA Schools
<i>Hakan Özkaynak</i>	Turkey	Halil Inalcik Science and Art Center
<i>Najera Maknojia</i>	United Arab Emirates	Victoria International School, Sharjah
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NOTES

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