27TH JULY TO
10TH AUGUST
2016

LIYSF
London International
Youth Science Forum

GREAT SCIENTIFIC DISCOVERIES

58TH LIYSF

THE LONDON INTERNATIONAL YOUTH SCIENCE FORUM

United Nations
Educational, Scientific and
Cultural Organization

Under the patronage of
UNESCO

Founder Patron
HRH Prince Philip, Duke of Edinburgh OM KG KT, 1959-1969

Past Patron
HRH The Duke of Kent KG, 1983-1988

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Chairman
Mr Mike Clark (2009 - present)

Director
Mr Richard Myhill (2009 - present)

Past Directors
Mr John Needle (2003-2008) Associated with LIYSF since 1984
Mr George McGowan (1964 - 2003)
Mr Phillip S. Green MBE (1959 -1963)

LIYSF Advisors
Dr Daniel Amund, Professor Sir Roy Anderson, Professor Clare Elwell, Mr John Needle, Dr Tim Slingsby, Ms Annette Smith and Sir Colin Terry

Front Cover Image

Andreas Cellarius, illustration of the Copernican system, from the Harmonia Macrocosmica (1660). Nicolaus Copernicus (1473 – 1543) was a mathematician and astronomer who formulated a heliocentric model of the universe which placed the Sun, rather than the Earth, at the centre.

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

LONDON INTERNATIONAL YOUTH SCIENCE FORUM

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THE PRIME MINISTER
2010 - PRESENT

DOWNING STREET
LONDON SW1A 2AA

July 2016

It is once again my very great pleasure to support the London International Youth Science Forum, which this year will focus on 'Great Scientific Discoveries'.

Now in its 58 year, the Forum remains a fantastic opportunity for young scientists from all over the world to come together, exchange ideas, collaborate and engage in a programme designed to educate, stimulate and inspire.

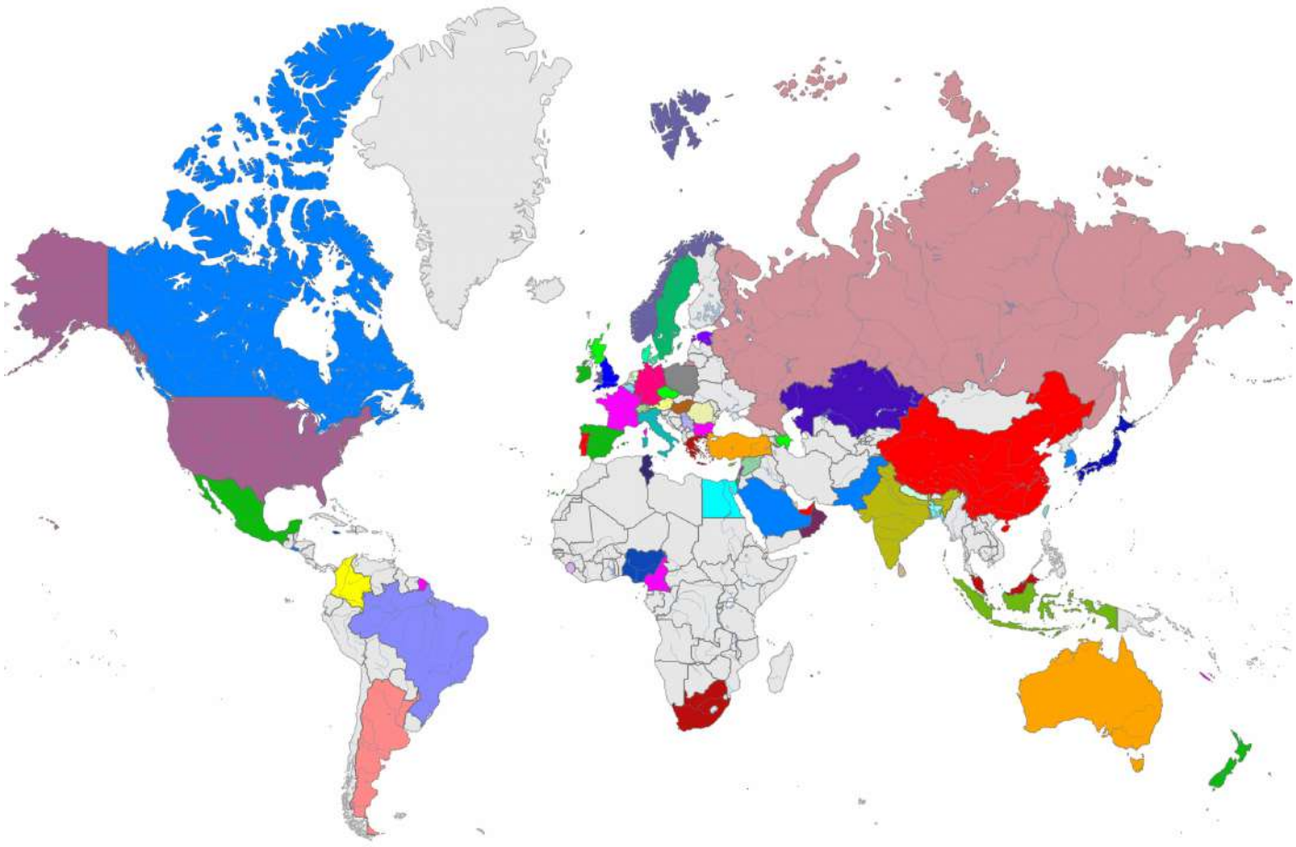
I am hugely proud of the UK's rich heritage of great scientific discovery. The UK is a world leader in diverse areas of science which are often at the frontiers of human knowledge.

For the UK to continue to be at the forefront of scientific discovery in the future, I believe that it is imperative that we work together because many of the issues that we need to address are issues of global concern and cannot be resolved without worldwide collaboration and commitment.

The UK is a great place to study and visit and I am delighted to be able to welcome you. I encourage you to make the most of every single opportunity over the next two weeks to learn, share and question everything about the world around you.

David Cameron
The Prime Minister

REPRESENTED COUNTRIES



The following 75 countries and territories will be represented this year:

Argentina
Australia
Austria
Azerbaijan
Bangladesh
Belgium
Brazil
Bulgaria
Cameroon
Canada
Catalonia
China
Colombia
Cyprus
Czech Republic
Denmark
Egypt
El Salvador
England
Estonia
France
Germany
Greece
Guernsey
Hong Kong
Hungary
India
Indonesia
Ireland
Israel
Italy
Jamaica
Japan
Kazakhstan
Kuwait
Lebanese Republic
Luxembourg
Macau
Malaysia
Malta
Mexico
Netherlands
Nepal
New Zealand
Nigeria
Norway
Northern Ireland
Oman
Pakistan
Poland
Portugal
Qatar
Romania
Rwanda
Russia
Saudi Arabia
Samoa
Scotland
Serbia
Sierra Leone
Singapore
Spain
South Africa
South Korea
Sri Lanka
Sweden
Switzerland
Syria
Taiwan
Trinidad and Tobago
Tunisia
Turkey
UAE
USA
Wales

PRESIDENT
PROFESSOR RICHARD O'KENNEDY

July 2016

It gives me great pleasure, as President, to welcome you to the London International Youth Science Forum (LIYSF) 2016.

Participation in LIYSF is a great way for you to meet and get to know young scientists from almost every part of the world, to learn about their scientific backgrounds and cultures, and to discuss the many issues that are common to us all. Scientific endeavour is a catalyst that is universal in its approach. In the current global situation it is extremely important that we all understand and value international communications and collaborations as ways of greatly enhancing scientific progress and resolving shared challenges.

At LIYSF you will have the opportunity of hearing from world experts in many areas, you will learn about great scientific discoveries, your ideas will be challenged and you may well find exciting new areas of science that will ignite your imagination. Make sure you take full advantage of this unique opportunity, as it can change your view of the world, establish great new friendships and help you to decide your future career. I know this was true for me when I was a participant.

I am sure that coming on the Forum will be an amazing experience and I look forward to meeting you.

Richard O'Kennedy

Richard O'Kennedy
President, London International Youth Science Forum
Professor of Biological Sciences & Scientific Director, Biomedical Diagnostics Institute
Dublin City University (DCU)

DIRECTOR
RICHARD MYHILL

In 1959, what was then called the 'Science Fortnight', began with the belief that "out of like interests, the strongest friendships grow", gathering students from a handful of countries. Today in 2016, we hold the same belief: with our focus on cultural interaction and the very best science and engineering, but have expanded somewhat in numbers, attracting this year a record number of students, 500 students from 75 countries worldwide. LIYSF has as full, rich and varied programme with incredible lectures and speakers, visits to incredible lectures departments, debates and an engaging social programme. As Director, it is my job each year to bring this all together. I work throughout the entire year, carefully managing all aspects and development of the Forum, to ensure that we fulfil and exceed the responsibility and expectations of our attending students, supporting organisations and governments. It is with great pleasure that I welcome you to London and hope that you have a wonderful time at the Forum.

Richard Myhill
Director

UNESCO PATRONAGE AND LIYSF HISTORY

Under the patronage
UNESCO

United Nations
Educational, Scientific and
Cultural Organization

The 58th LIYSF has been granted UNESCO patronage for the very first time and we are very proud. UNESCO Director General, Irina Bokova, wrote the following to LIYSF when granting patronage to LIYSF:

"LIYSF contributes to UNESCO's aim to build capacity in science for youth and is in line with the Organisation's core belief that sharing knowledge in the sciences is a prerequisite for sustainable development. LIYSF is in line with UNESCO's goal to promote global citizenship and appreciation of cultural diversity, as well as with the goal of achieving gender equality. LIYSF demonstrates a sound understanding of how science and culture go hand in hand, while sharing knowledge and experiences."

HISTORY

LIYSF was the brainchild of the late Philip S Green. In the aftermath of the Second World War an organisation was founded in Europe by representatives from Denmark, Czechoslovakia, the Netherlands and the United Kingdom in an effort to overcome the animosity resulting from the war. Philip decided to provide a coordinated programme on science with home to home exchanges between schools and communities. HRH The Duke of Edinburgh agreed to be Patron of the event and spoke at the first Opening Ceremony in 1959. Within a short period, interest in LIYSF spread across the UK and beyond Europe to the USA and Canada, and later across the five continents. As a result, the meeting gradually changed. Instead of being based on home to home exchanges, it became a residential meeting with its participants living in University Halls of Residence.

In the seventh decade of its existence the structure of LIYSF and its participation is constantly evolving, but our core principle remains. We pride ourselves in welcoming the best science students from across the world to participate in plenary lectures, seminars, visits to research establishments and cultural exchanges to put science into perspective and to encourage those attending to be aware of the needs of the world. For more information please visit www.liysf.org.uk/liysf-history.

CHAIRMAN
MIKE CLARK

July 2016

The theme of LIYSF 2016 is Great Scientific Discoveries. As ever, LIYSF this year will cover all areas of science, but this specific theme will be considered in the keynote address at the Opening Ceremony, in the student debate and during the specialist study day.

LIYSF 2016 will seek to dissect the process of scientific discovery from the eureka moment through to the widest, successful scientific development seeking to understand whether our current regulated testing processes and peer review models are up to the task of managing pandemics where there is a desperate need for quick discoveries e.g. Ebola.

LIYSF is a global event with 500 participants representing 75 countries this year. Given the events of recent weeks in the UK, many of our students will be seeking to understand the impact that this decision will have on opportunities to study, undertake post graduate work and/or seek employment in the UK. We echo the message of UK Science, that world-class research requires international co-operation; with flexible movement and exchange of researchers, resources and ideas, to facilitate collaboration and partnerships within Europe and beyond. Britain has a proud heritage of world-class scientific research with an investment in international exchange intrinsic to this success. It is essential that we welcome and support current and future students and colleagues from across the world and show them how much they are appreciated.

It therefore gives me great pleasure this year in welcoming a truly global audience to LIYSF 2016. As ever, the success of this year's Forum will occur through your energy, enthusiasm, questions and contributions plus the friendships you will make here and what you will learn from each other amid the diverse cultures that LIYSF brings together.

A very warm welcome to London and LIYSF 2016.

M Clark

Mike Clark
Chairman

THE AGENDA

Wed 27th July	10.00hrs – 16.00hrs	Arrivals
	19.30hrs – 21.00hrs	Welcome, Sir Alexander Fleming Building
Thurs 28th July	11.00hrs – 12.30hrs	LIYSF Opening Ceremony, Ondaatje Theatre - Royal Geographical Society
		Key Note Address - Professor Romain Murenzi, UNESCO President's Address – Professor Richard O'Kennedy
	15.15hrs – 15.45hrs	Programme Introductions. The Great Hall
	15.45hrs – 17.30hrs	Lecture/Demonstration - Professor Steve Cowley: 'The Quest for Fusion' The Great Hall
	17.30hrs – 18.30hrs	Sale of Optional Excursions. The Great Hall
	20.30hrs – 23.30hrs	Welcome Party, Chelsea Old Town Hall
Fri 29th July	09.00hrs – 13.00hrs	Visits to Research & Scientific Establishments in London
	14.30hrs – 16.00hrs	Lecture/Demonstration - Professor Kevin Shakesheff: 'Growing Human Tissues', The Great Hall
	18.30hrs – 22.00hrs	The Science Forum Bazaar - Student Project Poster Board Evening Imperial College Atrium
Sat 30th July	10.30hrs – 12.00hrs	Lecture/Demonstration - Professor Monica Grady: 'Landing on a Comet: The Story of Rosetta and Philae', The Great Hall
	14.00hrs – 16.00hrs	Optional London Sightseeing Tour and The London Eye
	19.30hrs – 21.30hrs	FameLab LIYSF - Student Topics, The Great Hall
Sun 31st July	09.00hrs – 17.00hrs	Optional visit to Stonehenge & Salisbury
	19:30hrs – 21.00hrs	Student Debate Evening, Led by Tom Tsuchiya: 'Art Meets Science', The Great Hall
Mon 1st Aug	10.00hrs – 12.00hrs	Specialist Lectures. Meet at Queen's Lawn
	13.30hrs – 14.30hrs	Plenary Discussion – Intel/UNESCO 'Young Innovators and Global Citizens'. The Great Hall
	15.30hrs – 17.00hrs	Lecture/ Demonstration – Dervilla Mitchell: 'Engineering, Construction and Design'. The Great Hall
	19.30hrs – 22.00hrs	Great Crossword Treasure Hunt. Queen's Lawn and South Kensington area
Tues 2nd Aug	08.00hrs – 18.00hrs	National Visits to Research & Scientific Establishments
	19.00hrs – 22.30hrs	Optional Theatre night

Wed 3rd Aug	09.30hrs – 17.00hrs	Specialist Study Day – 'Great Scientific Discoveries', The Great Hall
	19.30hrs – 21.00 hrs	Plenary Session – Dr Tim Slingsby: 'International Careers and Opportunities through Science', The Great Hall
Thurs 4th Aug	08.00hrs – 17.30hrs	Day Visits to Oxford & Cambridge Research and Scientific
	19.00hrs – 21.00hrs	Rehearsals, Ethos Sports Hall
Fri 5th Aug	10.00hrs – 12.00hrs	LIYSF Alumni Specialist Lectures, Meet at Queen's Lawn.
	13.30hrs – 15.00hrs	Lecture/Demonstration - Dr Peter Wothers: 'Just Add Water'. The Great Hall
	15.30hrs – 18.00hrs	Visits to Science & Natural History Museums
	20.30hrs – 22.00hrs	International Cabaret – Cultural Showcase Performance Evening Chelsea Old Town Hall
Sat 6th Aug	10.30hrs – 12.30hrs	Lecture/Demonstration - Professor Laura Rodrigues: 'The Epidemic of Congenital Zika Syndrome'. The Great Hall
	15.00hrs – 17.00hrs	LIYSF Sports Day Session. Ethos Sports Hall
	19.30hrs - 21.00hrs	Lecture/Demonstration - Dr Michael Londesborough: 'The Amazing Boron Hydrides'. The Great Hall
Sun 7th Aug	09.00hrs – 16.00hrs	Optional visit to Hampton Court Palace and the Tower of London
	20.30hrs – 22.00hrs	Traditions of Home – Sharing World Customs and Fashion Chelsea Old Town Hall
Mon 8th Aug	10.00hrs – 12.00hrs	Specialist Lectures. Meet at Queen's Lawn
	14.00hrs – 16.00hrs	Optional Visits to State Rooms at Buckingham Palace & London Eye
	19.00hrs – 22.30hrs	Optional Theatre Night
Tues 9th Aug	09.30hrs – 11.30hrs	Participant's Forum. The Great Hall
	13.30hrs – 14.45hrs	Closing Lecture - Professor Ada Yonath: 'Key Issues in Modern Medicine Resistance to Antibiotics'. The Great Hall
	15.30hrs – 16.00hrs	Closing Ceremony. The Great Hall
	20.30hrs – 23.00hrs	Farewell Party. Chelsea Old Town Hall
Wed 10th Aug	08.00hrs – 10.00hrs	Departures

Principal Lectures and Demonstrations	Specialist Lectures	Visits	Social Programme	Optional Visit

PLENARY LECTURES AND DEMONSTRATIONS

KEY NOTE ADDRESS

PROFESSOR ROMAIN MURENZI

DIRECTOR OF SCIENCE POLICY AND CAPACITY BUILDING

UNESCO

Professor Murenzi has been recently appointed to the position of Director of UNESCO's Division of Science Policy and Capacity Building.

Professor Murenzi has over 30 years of experience in capacity building in science, science policy and diplomacy, in both the public sector and in academia. Since 2011, he has served as Executive Director of The World Academy of Sciences for the advancement of science in developing countries (TWAS).

From 2001 to 2006, he served as Rwanda's Minister of Education, Science, Technology and Scientific Research, and subsequently as Minister in the President's Office in Charge of Science, Technology, and Scientific Research, with responsibilities including ICT.

In 2009, he left Rwanda to serve as Director of the American Association for the Advancement of Science (AAAS) - Center for Science, Technology and Sustainable Development. As part of AAAS's International Office, the centre focuses on issues related to science-based sustainable development, especially in the developing world.

Professor Murenzi was born in Rwanda and raised in Burundi, he has a bachelor's degree in mathematics from the University of Burundi, a master's degree and a doctorate degree in physics from the Catholic University of Louvain in Belgium. In 1990, he was named a postdoctoral researcher at the European Center for Advanced Training and Research in Scientific Computation (CERFACS), France. In 2001, he moved to the United States to become a principal investigator at the Clark Atlanta University Center for Theoretical Studies of Physical Systems and then physics professor and later selected as chair of the physics department. Professor Murenzi's research has focused on applications of multidimensional continuous wavelet transforms to quantum mechanics, and image and video processing.

PRESIDENT'S WELCOME

PROFESSOR RICHARD O'KENNEDY

LIYSF PRESIDENT

DUBLIN CITY UNIVERSITY

Since 2005, Professor Richard O'Kennedy has been the academic President of LIYSF. Richard is Professor of Biological Sciences and Scientific Director of the Biomedical Diagnostics Institute at Dublin City University (DCU). He is former Vice-President for Learning Innovation in DCU, (since, Vice- President of the Institute of Biology of Ireland and represents Ireland and the Royal Irish Academy (RIA) on the Biosciences committee of the European Academies Science Advisory Council).

He directs the Applied Biochemistry Research Group, internationally recognised for its expertise in antibody generation and immuno/ biosensor assay development, has published extensively (210 peer-reviewed papers, 25 reviews, 30 book chapters, 1 book and another in preparation) and has mentored 60 PhDs to completion. He is a member of the Industrial Research and Commercialisation Committee at Enterprise Ireland, reviews for many journals/ international scientific bodies, edits three journals, has patents and licensed technologies/reagents and works closely with Irish/ international companies. He is a recipient of the Biochemistry medal of the RIA, President's awards for Teaching and for Research, the Fujitsu Innovation award and he coordinates the Masters in Biomedical Diagnostics which received the Outstanding Masters award in 2011. In 2014, he was elected to membership of the Royal Irish Academy.

THURS 28TH JULY

PROFESSOR STEVE COWLEY
UKAEA & IMPERIAL COLLEGE LONDON

THE QUEST FOR FUSION

Fusion is the power source of the stars — making power from fusion is one of the great scientific quests. The Joint European Torus (JET) at Culham has achieved a fusion power output of 16MW. In 2017-18, we will try to break this record. The next step is a self-sustaining fusion burn in ITER, the international experiment under construction in France. However, to make commercial electricity from fusion we need to reduce the cost and scale of fusion devices. This lecture will describe the science that determines the scale and the cost.

Steven Cowley was appointed Chief Executive Officer of the UK Atomic Energy Authority in 2009. Steven is also part-time Professor in Plasma Physics at Imperial College London. He co-chaired the US National Academy's decadal assessment of, and outlook for, plasma science. He joined the faculty at the University of California Los Angeles in 1993, rising to the rank of Full Professor in 2000. He is a Fellow of the American Physical Society and the Institute of Physics, and a member of the Prime Ministers Council on Science and Technology. He was elected a Fellow of the Royal Society and a Fellow of the Royal Academy of Engineering in 2014.

FRI 29TH JULY

PROFESSOR KEVIN SHAKESHEFF
NOTTINGHAM UNIVERSITY

GROWING HUMAN TISSUES

How biology, chemistry and engineering collide to create a breakthrough in medicine. The human body is a remarkable structure that grew itself from a single cell. We are learning how the tissues and organs of the body formed and how some of them can self-repair throughout our lives. If we can learn how to grow heart, nerve, pancreas, liver and other tissues, then we could transform the medical treatment of many diseases and injuries. This lecture will explore how world-wide collaborations of teams of biologists, chemists and engineers are trying to create some of the most complex medicines ever made.

Kevin is the Pro-Vice Chancellor for Science at the University of Nottingham and Director of the UK Regenerative Medicine Platform for Acellular Materials. He started his career as a Pharmacist and then worked at MIT on polymers that interact with human cells. He has set up two companies and has more than 13 patent families. In 2014, Kevin was selected as one of the 10 most inspirational scientists in the UK by the Engineering and Physical Sciences Research Council (RISE Leader Award).

SAT 30TH JULY

PROFESSOR MONICA GRADY CBE
OPEN UNIVERSITY

LANDING ON A COMET

This lecture will detail the Rosetta space mission to comet 67/P Churyumov-Gerasimenko, including details of the Philae lander. The lecture will discuss the significance of comets in understanding the origin of water (and life) on Earth, and include description of one of the instruments on the lander, the Ptolemy mass spectrometer, and the results it gathered from the comet's surface.

Monica Grady is Professor of Planetary and Space Sciences at the Open University. She studies asteroids and comets by analysing small pieces from meteorites in her laboratory, in order to understand the origin and evolution of the Solar System and the processes that led to the evolution of life on earth. She studied at Durham university and obtained her PhD from the University of Cambridge. She is a Fellow and former President of the Meteoritical Society, fellow of the Institute of Physics and Geochemical Society and former fellow of the Royal Astronomical Society. She is a member of STFC's Science Board and ESA's Solar System Advisory Committee. Asteroid (4731) was named "Monicagrady" in her honour.

SUN 31ST JULY

TOM TSUCHIYA
DEBATE

ART MEETS SCIENCE

Join us for this debate evening where will consider whether creative artistic forms have a place in science. Does art enhance the scientific message and/or attract and engage more interaction? Can art excite and interest people in science? Does science need the help of art or is research alone better to focus on? Creativity, culture and the arts are being systematically removed from some education systems – is this a good idea?

This debate will be led by Tom Tsuchiya. Tom's interest in Greek and Roman archaeology led to a BA in Classical Civilization from the University of Cincinnati and a career in sculpture. His sculptures are located at universities, stadiums and museums throughout the United States. This year, Tom was selected as the sculptor of the National Baseball Hall of Fame in Cooperstown, New York. In the past decade, Tom's pursuit for ecological sustainable solutions has inspired an energy efficient studio and various iterations of Atlas Recycled.

MONDAY 1st AUGUST
PLENARY LECTURES AND DEMONSTRATIONS

MON 1ST AUGUST

DR MARTINA ROTH & ROVANI SIGAMONEY
INTEL & UNESCO
YOUNG INNOVATORS AND GLOBAL CITIZENS

Each of us can spark change and innovation – for individuals, families, communities, and the world. Fueled by innovative technology and working together with governments, NGOs, industries and other organisations we can connect people to their potential, and make economic empowerment a reality everywhere. The future needs you now.

Dr. Roth is responsible for Global Strategy and Alliances at Intel's Corporate Affairs Group. She is member of various global and regional boards and committees, author and co-author of numerous publications in the field of education, research and policy, multi-stakeholder partnerships and has presented on those subjects worldwide. Dr. Roth holds a M.A. in Pedagogy and a Ph.D. in Philology from the University of Jena/Germany. Rovani Sigamoney is a Chemical/Environmental Engineer from South Africa and is currently Engineering Programme Specialist at UNESCO HQ. The Engineering Programme is working with 195 Member States, international partners and programme experts to strengthen engineering education through curricula development, hands-on training and capacity building. Rovani is passionate about women in engineering and encouraging more youth to pursue careers in engineering.

MON 1ST AUGUST

DERVILLA MITCHELL CBE
ARUP
ENGINEERING, CONSTRUCTION AND DESIGN

This lecture will consider a number of large scale aviation projects, including T5 Heathrow, T2 Dublin and Abu Dhabi Mid Field Terminal. Discussing the design drivers for each and how different factors influence how our designs are realised.

Dervilla Mitchell is a Director of Arup, an independent firm of designers, planners, consultants and technical specialists who offer a wide range of professional services. She is a member of their Global Board with a responsibility for ethics, and sits on the UK, Middle East and Africa Regional Board and leads the aviation business. She is a Fellow of Engineers Ireland, the Institution of Civil Engineers and the Royal Academy of Engineering where she has served as Vice President. She is a member of the Council for Science and Technology advising the Prime Minister on science and technology policy issues. In 2014, she was awarded a CBE for services to engineering.

WEDS 3RD AUGUST

DR TIM SLINGSBY
BRITISH COUNCIL
INTERNATIONAL CAREERS THROUGH SCIENCE

Tim Slingsby will discuss the British Council's role in the international STEM landscape, with specific reference to research programmes, the UK as a hub for international collaboration and the relationship between research, science communication and education. Tim will also introduce Huw James to show that science is not all about stained lab coats and cluttered laboratories and will also have other speakers to provide insight and aspiration!

Since 1934, the British Council has worked in more than 100 countries, connecting millions of people with the United Kingdom through programmes and services in the English language, the arts, education and society. In this way, the British Council use science to develop links between researchers and institutions in the UK and overseas.

FRI 5TH AUGUST

DR PETER WOTHERS MBE
UNIVERSITY OF CAMBRIDGE
JUST ADD WATER

Water is all around us – most of the planet's surface is covered with it and it is the main ingredient in you. This exciting demonstration lecture will explore some of the surprising properties and reactions of this substance you thought you knew so well. How can a drop of water start a fire or cause an explosion? Why can't you put a chip pan fire out with water or boil an egg on Mount Everest? What is 'heavy water' and why is water blue?

Peter Wothers is a Teaching Fellow in the Department of Chemistry, University of Cambridge and a Fellow of St Catharine's College. He has authored a number of popular textbooks including the first edition of Organic Chemistry with Clayden, Greeves and Warren, and Chemical Structure and Reactivity with colleague James Keeler. Peter is heavily involved in promoting chemistry to young students and members of the public and has fronted the lectures at the department for the Cambridge Science Festival for over 15 years. Peter is known nationally and internationally for his demonstration lectures and in 2012 he presented the Royal Institution Christmas Lectures, titled The Modern Alchemist. He was awarded an M.B.E. for "Services to Chemistry" in the 2014 Queen's Birthday Honours.

SAT 6TH AUGUST

SAT 6TH AUGUST

PROFESSOR LAURA RODRIGUES
LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

THE EPIDEMIC OF CONGENITAL ZIKA VIRUS

The epidemic of microcephaly, now known to be a manifestation of Congenital ZIka Syndrome is a public health emergency of international concern; Zika is epidemic in 50 countries at time of writing. During the lecture, Laura will give a view from inside of the process of recognising and reacting to this public health emergency.

Laura is a Professor of Infectious Disease Epidemiology, at the London School of Hygiene and Tropical Medicine (LSHTM). She was Dean of the Faculty of Epidemiology and Population Health, a member of international and national scientific committees and awarding boards and of relevance for this session, a member of the ZIka Pre-SAGE (Scientific Advisory Group for Emergencies, UK), participated in several Zika related WHO or PAHO meetings and is a member of MERG the committee set by the Brazilian government to investigate the epidemic of microcephaly. She is involved in a number of epidemiologic studies of Zika in Brazil. Laura was born in Brazil and qualified initially in medicine and worked as a public health doctor in Brazil, before coming to London to train as an epidemiologist at LSHTM. She obtained her MSc and PhD from LSHTM.

DR MICHAEL LONDESBOROUGH
CZECH ACADEMY OF SCIENCES

THE AMAZING BORON HYDRIDES

Two elements form a diverse and rich series of hydrides - carbon and boron. The hydrocarbons define the chemistry of our planet (you are a hydrocarbon!). The boron hydrides (boranes) do not occur naturally, and were first made 100 years ago by the German chemist Alfred Stock. Whereas the hydrocarbons form chain-like and ring structures, the boranes form polyhedral cluster architectures. Since their first syntheses, borane chemistry has passed through an initial period of top secret research, to current day ground-breaking usage in modern medicine, microelectronics and now as a new laser material.

Michael obtained his degree in Chemistry and PhD from the University of Leeds (thesis on Macropolyhedral Boranes won JB Cohen prize). He is a researcher at the Institute of Inorganic Chemistry, Czech Academy of Sciences. In 2015, he published the discovery of the first borane laser. Author/co-author of 40 scientific papers (242 citations), two book contributions and one international patent. Author and presenter of a weekly science program broadcasted on national Czech television, winning the 2008 TECHFILM award. Awarded the Vojtéch Náprstek Medal, the SCIAP special prize and Czech Academy President's medal.

TUES 9TH AUGUST CLOSING CEREMONY

PROFESSOR ADA YONATH
WEIZMANN INSTITUTE OF SCIENCE

KEY ISSUES IN MODERN MEDICINE RESISTANCE TO ANTIBIOTICS, THE MICROBIOME AND ECOLOGICAL CONCERNS

Structures of complexes of eubacterial-ribosomes with antibiotics paralyzing them illuminated common pathways in inhibitory-actions, synergism, differentiation and resistance. Recent structures of ribosome from a multi-resistant pathogen illuminated features that can account for species-specific diversity in infectious-diseases susceptibility. These may lead to design of degradable species-specific drugs, thus preserving the microbiome.

Ada Yonath is focusing on protein biosynthesis and the antibiotics hampering it. In the seventies, she established the first structural-biology laboratory in Israel. She is the Director of Kimmelman Center for Biomolecular-Structure. During 1986-2004 she also headed Max-Planck-Research-Unit for Ribosome Structure in Hamburg. Among others, she is a member of US-National-Academy-of-Sciences; Israel Academy; German Science Academy; Pontificia Accademia-delle-Scienze (Vatican). She holds honorary doctorates from Oslo, NYU, Mount-Sinai, Oxford, Cambridge, Hamburg, Berlin-Technical, Patras, De-La-Salle, Xiamen, Lodz universities. Her awards include the Israel Prize; Louisa-Gross-Horwitz Prize; Linus-Pauling Gold Medal; Wolf-Prize; UNESCO/L'Oreal Award; Albert-Einstein World Award for Excellence; and a Nobel Prize for Chemistry.

MONDAY 1st AUGUST
SPECIALIST LECTURES

LECTURE 1.1

PROFESSOR LUKE ALPHEY
UNIVERSITY OF OXFORD
GENETIC CONTROL OF MOSQUITOES

The long-term rise in dengue and recent emergence of Zika highlight the lack of sustainable and efficient control of its primary vector Aedes aegypti. We are developing genetic control tools to augment current methods. Field trials of engineered "genetically sterile" male mosquitoes have now been successfully completed in several countries. Public acceptance of the technology at the field sites has been very positive. These field projects have set the scene for larger scale programmes. I will discuss our experience so far, and the prospects for genetics-based control of major insect pests.

Professor Luke Alphey is a leader in the emerging field of genetic pest management, focusing particularly on mosquitoes. At Oxitec Ltd, a spin-out company from Oxford University that he co-founded in 2002, he showed in a series of field trials that wild mosquito populations could be successfully suppressed by genetics-based methods. After 11 years at Oxitec he moved to The Pirbright Institute in Feb 2014. In September 2015 Intrexon Inc acquired Oxitec for $160m. Prof Alphey was selected as a Technology Pioneer of the World Economic Forum in 2008 and BBSRC Innovator of the Year 2014.

LECTURE 1.2

DR CERI BRENNER
RUTHERFORD APPLETON LABORATORY
SUPER POWERFUL LASERS

Pressing FIRE on the most powerful laser in the world delivers a packet of light that is a thousand billion billion times more intense than the sunlight you feel while out on the beach in peak summer! Just one single pulse from these lasers can heat matter to millions of degrees in less than a billionth of a second. Join physicist Dr Ceri Brenner as she reveals the beauty and curiosity behind her work, how she is inspired by the world-changing applications and the innovative technology that she is creating. Ceri will explore how this extreme process is being used to design micro-accelerators and how she is developing the technology for applications that can spot and zap away cancer, locate landmines and even take a snapshot of a jet engine rotating at full speed.

A graduate of Oxford University and PhD from University of Strathclyde, Ceri has established a unique position working for the Science and Technology Facilities Council as an Application Development Scientist combining research, innovation and business development. She works in the Central Laser Facility, specialising in high power laser applications, in which her passion for application-focused research can work alongside pursuing fundamental understanding of extreme condition physics.

LECTURE 1.3

PROFESSOR CHRIS BUNCE
UNIVERSITY OF BIRMINGHAM
BLOOD CELLS

Studies of the origins of our blood cells have underpinned many central concepts in stem cell and cancer biology and I have seen remarkable things happen in this arena during my professional lifetime. This lecture will consider the landmarks in Chris's journey and try to explain his hopes and expectations for the future and some of the challenges that we face.

Chris is Professor of Translational Cancer Biology, Head of School, School of Biosciences at the University of Birmingham. Chris directs a translational research group dedicated to the development of novel therapies for leukaemias and lymphomas. A particular focus is the exploitation of drug redeployment strategies using off- patent drugs to provide affordable therapies that can be exploited by all including the world's poorer nations. For the last four years, he was Research Director at Bloodwise, the UK's largest research charity dedicated to Blood Cancer Research. In April 2016, he became Head of School, School of Biosciences at the University of Birmingham.

LECTURE 1.4

DR SIAN ESTDALE AND ANDREW HOCKIN
COVANCE
HORSES FOR COURSES

This presentation will focus on innovations in the drug development and food industries, based around real life stories. During the session a review of developments in the last 10 years that have revolutionised this industry will be undertaken, and look forward to possible developments in the future. The session will talk about the science, technological, financial and political drivers that have and continue to influence our industries.

Dr Sian Estdale is Global Scientific Head, BioPharm CMC at Covance and Andrew Hockin is the Associate Director of Operations at Covance Food Solutions. Covance is a global contract research organization (CRO) and drug development services company that has helped bring one-third of prescription drugs to market (US).

LECTURE 1.5

PROFESSOR NIGEL GILBERT
UNIVERSITY OF SURREY
SIMULATING SOCIETIES

Using computers, one can simulate people, organisations and nations and use such simulations to develop and test theories about societies. This lecture shall introduce one way of doing this, called agent-based modelling (ABM), and describe some examples of how it can offer new insights into the ways in which societies work. An advantage of ABM is that one can run simulations oneself on a laptop and it is not difficult to use free software to develop one's own models.

Nigel Gilbert is Professor of Sociology at the University of Surrey, Guildford. He has a first degree in Engineering and obtained his doctorate on the sociology of scientific knowledge from the University of Cambridge. His research and teaching interests in processual theories of social phenomena, the development of computational sociology and the methodology of computer simulation, especially agent-based modelling, have reflected his continuing interest in both sociology and computer science (and engineering more widely). He is Director of the University of Surrey's Centre for Research in Social Simulation. He is the author or editor of several textbooks on sociological methods of research and statistics and was the founding editor of the Journal of Artificial Societies and Social Simulatior.

LECTURE 1.6

DR DAVID ROBERT GRIMES
UNIVERSITY OF OXFORD
THE PHYSICS OF CANCER RESEARCH

Cancer is a ubiquitous disease, and improving detection, therapy and prognosis requires a deeply interdisciplinary approach. From diagnosis to treatment and basic underpinnings, physicists stand at the vanguard and play a range of vital roles. This lecture will explore a number of physical applications in cancer research, including the fundamental role of physics in diagnostic imaging (from MRI machines to PET scans), the advent of radiation physics as a treatment modality and an exploration into how physical insight into the mechanisms of disease and treatment can improve our understanding, and ultimately disease prognosis and treatment efficacy.

Dr David Robert Grimes is a physicist and cancer researcher, currently based at the University of Oxford. His research focuses on the application of radiotherapy physics, and oxygen modelling. He is also a science writer and frequently contributes to the Guardian, Irish Times and BBC on a wide spectrum of science, society and philosophical topics. He was joint recipient of the 2014 Nature / Sense About Science Maddox Prize for Standing Up for Science.

LECTURE 1.7

DR MARY O'CONNELL
UNIVERSITY OF LEEDS
LIFE: MESSING UP IS THE BEST THING EVER !

Every time a cell divides, every time a gamete is formed or a pathogen replicates, errors creep in to the DNA sequences that code that living system. These errors provide the raw materials for genetic variation and evolution. This lecture will take a look at how mutations happen, how they spread though populations and how they are essential for survival of species.

Dr Mary J. O'Connell is the "250 Great Minds" University Academic Fellow in Computational Evolutionary Biology at the University of Leeds. Mary obtained her PhD in 2005 from the National University of Ireland Maynooth, Ireland. She got her first fully tenured academic post 10 years ago and has run her independent research group since then. Mary was awarded her Fulbright scholarship in 2012. She worked at Harvard University with Professor Scott Edwards and his team at the Department of Organismic and Evolutionary Biology and the Museum of Comparative Zoology. Mary's research is focused on the molecular patterns and processes of evolution that produce phenotypic diversity.

LECTURE 1.8

DR ANDREW STEELE
FRANCIS CRICK INSTITUTE
CAN WE CURE AGEING?

Ageing is the world's biggest killer. By causing diseases like cancer, heart disease and stroke, ageing is responsible for two thirds of deaths globally. But is our gradual decline inevitable, or could we slow the process down, or even reverse it? A single change to the DNA of a nematode worm can double its lifespan; mice fed less than normal can live 50% longer; and some creatures never seem to age at all. Are these hints that this seemingly fundamental process could be flexible? And could this one day lead to real anti-ageing medicine?

Andrew is a computational biologist at the Francis Crick Institute in London, and recovering physicist after a PhD at Oxford. He talks about science on TV, as a resident expert on Impossible Engineering, as well as on BBC and Discovery; created Lab, Camera, Action! on YouTube; and writes for The Guardian and The Conversation. He also campaigns for more investment in science.

WEDNESDAY 3rd AUGUST - GREAT SCIENTIFIC DISCOVERIES SPECIALIST STUDY DAY

LECTURE 3.1

PROFESSOR CLARE ELWELL
UNIVERSITY COLLEGE LONDON

SHEDDING LIGHT ON THE HUMAN BRAIN

Innovations and breakthroughs in physics and engineering have led to a host of exciting new technologies, particularly in brain imaging. Novel optical techniques are transforming the possibilities for when, where and how we image human brain opening up whole new areas of research. This lecture will describe how optical brain imaging is transforming our understanding of the human brain with examples of projects investigating acute brain injury in critically ill patients, brain development in infants at risk of autism and the effects of malnutrition in rural Africa.

Clare was inspired to study Medical Physics by a lecture she attended at LIYSF and is now a Professor in Medical Physics at University College London (UCL). She obtained a BSc and MPhil in Physics with Medical Physics at Exeter University, and a Ph.D in Medical Physics at UCL. She leads an interdisciplinary research group developing novel optical systems for monitoring and imaging the human body and brain. Her research projects include studies of autism, acute brain injury in adults, children and infants, sports performance, migraine, malaria and malnutrition. In 2012, she won the UCL Public Engagement award and has contributed to numerous science festivals, schools events and media broadcasts.

LECTURE 3.2

PROFESSOR FREYA BLEKMAN
UNIVERSITÉ LIBRE DE BRUXELLES

THE SUBATOMIC ZOO OF ELEMENTARY PARTICLES

In this lecture, students will learn what it is like to be a scientist at CERN, and how the collisions at CERN are collected, identified and categorised. Students will use genuine LHC data collected with the Compact Muon Solenoid experiment and learn how to interpret and identify the different particles that can be produced at the LHC. Different particles leave different signatures in LHC collisions, and understanding why the particles are behaving in this way, helps to grasp the basic principles of particle physics and the physics theory that describes it. The lecture will also touch on how these strategies are used in the scientific experiments at CERN to search for new particles.

Freya has led many large international research teams at CERN and CMS. Before becoming a Professor at the Vrije Universiteit in Brussels, she received her PhD from the Dutch National institute for High Energy Physics (Nikhef) and consequently worked as a researcher for Imperial College and Cornell University. Nowadays, Freya leads a team of graduate students looking for new particles and working at the Interuniversity Institute for High Energies, the particle physics institute of the Université Libre de Bruxelles and Vrije Universiteit Brussel.

LECTURE 3.3

DR NIRA CHAMBERLAIN
IMPERIAL INSTITUTE OF MATHEMATICS

MATHEMATICS: THE QUEEN OF SCIENCE

Mathematical modelling has always played a leading role in human achievements, from the discovery of Blacks Holes and the Planet Neptune to driving Bloodhound SSC Land-speed record attempt. Nevertheless, is there a 'dark side' of mathematical modelling? Was mathematical modelling responsible for the World Economical Crash of 2008? Is it right that we have mathematical models controlling systems that we do not fully understand? Will mathematical modelling create automated algorithms robots that will surpass human intelligence?

Nira is a professional mathematician with over 20 years of experience of writing mathematical models/simulation algorithms that solve complex industrial problems across Europe. The Science Council listed Nira as 'one of the UK's 100 Leading Practicing Scientists' and in 2015 was featured in the autobiographical reference book Who's Who. Nira is an elected council member of the Institute of Mathematics and its Applications (IMA). He is also one of the few British Mathematicians to feature in the American Encyclopedia of Mathematics & Society. He is currently the Principal Consultant for Data Science and Mathematical Modelling at Babcock International Group.

LECTURE 3.4

DR MARKUS FREY
BRITISH ANTARCTIC SURVEY

UNLOCKING THE SECRET OF SNOW AND ICE

Snow-packs emit many chemical species to the overlying atmosphere, which affect air quality and even climate. Gases released by snow alter concentrations of ozone, a pollutant and greenhouse gas, and the hydroxyl radical, which is responsible for the removal of many other atmospheric pollutants. As up to 40% of the Earth's land surface is covered seasonally by snow or ice, these processes can have a substantial impact. Furthermore, chemical ice core records from the polar ice sheets provide a window to past atmosphere and climate, which can only be opened if snow processes are well understood. This lecture will consider current research in Greenland and Antarctica including Markus's own projects, which seek to understand global impacts of snow on atmospheric composition as well as to decipher the polar ice core records.

Markus is a physical chemist from Freiburg (Germany) with a research interest in the chemistry of air, snow and ice and links to global air quality and climate. In 2005, he obtained a PhD in hydrology and atmospheric sciences at the University of Arizona (Tucson, USA) specialising in the analysis of trace chemical species. He has been on 13 international expeditions to remote ice covered regions, including Antarctica, Greenland and the Bolivian Andes.

LECTURE 3.5

ABIGAIL HUTTY

AIRBUS

EXOMARS ROVER- ENGINEERING FOR THE RED PLANET

ExoMars will be Europe's first Rover mission to Mars. Due to launch in 2020, engineers are still finalising the design of the rover before the final build. But designing a rover for Mars is not easy – engineers must overcome many challenges such as radiation, temperature, dust, landing conditions, planetary protection and a very tight limit on mass, but still be able to fulfil all of the science that we hope to learn from the mission. Abbie is the lead structures Engineer on the rover, and will introduce some of the hazards of Mars, as well as how engineering is finding solutions to these difficult demands.

Abbie is a Spacecraft Structures Engineer for Airbus Defence and Space, currently working on ExoMars – Europe's first Mars Rover mission. As Lead Structures Engineer for this mission she is responsible for aspects including Stress analysis, design office, materials and processes, testing, and design support to manufacture. Alongside her day job Abbie is also an active STEM Ambassador, promoting engineering careers to the next generation. She won the IET's Young Woman Engineer of the Year Award in 2013.

LECTURE 3.6

DR ALEXANDER KUMAR

SCIENCE IN CONTEXT

Dr Alexander Kumar is a British doctor. He has lived, worked and travelled through over 70 countries and is an experienced expedition medic to remote areas of the world. Realizing knowledge and a sense humour weigh nothing, Alex travels light, armed only with a stethoscope and curiosity for life.

Alex graduated with a Medical Degree from Guy's, King's & St. Thomas' in London, following numerous medical placements including in India, Israel, Shetland and the Amazon. He also holds a first class honours degree in International Health. Fascinated by life in the Polar Regions from a young age, he followed his heart to the Canadian Arctic, where he completed his dissertation conducting the first piece of research on HIV among Inuit. He holds a special research interest in tropical medicine and snake bite- having witnessed its devastating effects to communities in Asia, Africa and South America alongside disaster relief and humanitarian work.

LECTURE 3.7

DR SHINI SOMARA

GO WITH THE FLOW

Computational Fluid Dynamics (CFD) allows engineers to visualise the invisible in a wide range of applications. This lecture will take students on a journey through the development history of CFD. What did engineers use originally and how does CFD change engineering today? Having immersed herself in the beauty of fluid dynamics for almost eight years, Shini will reflect on how CFD has personally impacted her view of the world and herself.

Shini obtained her BENG(Hons) in Mechanical Engineering and her PhD in CFD from Brunel University. Shini has advised engineers on how air would flow over aircraft wings, Formula1 cars and within high-rise buildings. She has covered technology stories on subjects including food, climate change, space, health and medicine. Her passion for science communication has led her to speak about technology and innovation on the television for the BBC, Al Jazeera America, Discovery and Sky. Shini also demystifies science online through educational media on shows like Crash Course: Physics on PBS Digital. She is passionate in promoting STEM, particularly to youth, and has spoken internationally to audiences of all ages.

LECTURE 3.8

DR LUCY THORNE

UNIVERSITY COLLEGE LONDON

THE SECRETS TO A VIRUS' SUCCESS

The main goal of a virus is to spread. Everything about the way a virus infects your body, turns it into a virus-making factory and causes disease is geared towards securing its transmission to the next person or host. Human norovirus (Winter Vomiting Bug) is very efficient at spreading and has been called the perfect human virus, yet we have no drugs or a vaccine to stop it. In the past few years, the Ebola virus has caused the largest known outbreak in West Africa. This lecture will look into and compare the reasons behind the success of these different viruses, and by how researching their molecular secrets we can discover antiviral drugs and develop vaccines to use against them.

Dr. Lucy Thorne studied biochemistry at the University of Oxford, specialising in virology and immunology. She went on to complete at PhD at Imperial College London in infectious disease and immunology. After her PhD, she moved to the University of Cambridge to continue this work and in 2015, she went to Sierra Leone to contribute to research on Ebola virus. She has recently moved to University College London to take up a Wellcome Trust postdoctoral research fellowship studying how HIV interacts with the immune system.

FRIDAY 5th AUGUST
ALUMNI SPECIALIST LECTURES

LECTURE 5.1

MAURICE BROWN
UTRECHT UNIVERSITY, THE NETHERLANDS - LIYSF 1986
THE IMPACT OF HYDROGEN FUEL TECHNOLOGY

The Hydrogen fuel cell has been around since 1839. This relatively obscure, but highly valued technology, helped power the United Space programme from the 1960's 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 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.

LECTURE 5.2

JAMEER EMAMALLY
NUVIA GROUP - LIYSF 2003
ENGINEERING OUR LIVES

How do discoveries made today become tomorrow's reality? How does science move from the classroom to something you can touch and feel, or something that can help you solve a problem, investigate an idea, meet the needs of a city, a person or a company? This interactive lecture will give you an introduction to engineering and an awareness of the design process as we go on a brief journey to take an idea from concept to reality.

Jameer attended LIYSF 2003. Jameer has a strong background in engineering and management,with a good track record of working in collaborative teams on both the national and international level. Jameer has project managed complex teams to deliver key submarine systems and has worked on a number of defence projects in various phases of the product lifecycle. During his career, he has worked in civilian and defence industries and across varying disciplines.

LECTURE 5.3

DAVID HUDSON
TATA MOTORS - LIYSF 1978
PLANES, TRAINS AND AUTOMOBILES

In a career that spans more than 40 years, David has been mainly associated with the mobility industry in a number of forms – air and land-based! This lecture aims to show the science behind some of the facets of this career path and to reinforce the message that the field of science and technology is not always a dry, academic world, but has strong elements of fun and adventure for those who are prepared to find it.

David started his automotive industry career in 1975, initially with Jaguar Cars UK, based in the Vehicle Research department of Product Engineering. At Jaguar, he developed the team that was responsible for the noise and vibration refinement of the all-new AJ6 engine and the XJ40 car - Jaguar's first all-new vehicle in 30 years. David subsequently spent a significant time working in Far East and USA in technical and managerial consulting roles. Joining Tata Motors European Technical Centre in 2008, he spent 3 years based in Pune, India running the NVH team, and more recently has taken the lead role as Programme Chief Engineer for several new vehicle projects for Tata Motors based from the European Technical Centre at University of Warwick.

LECTURE 5.4

PROFESSOR CHRISTOPHER KENNARD
UNIVERSITY OF OXFORD - LIYSF 1964
ART, ILLUSIONS AND THE VISUAL BRAIN

The visual brain processes the images received by our eyes. But how does the brain achieve this remarkable feat to provide us with the full richness of our visual perception? Within a fraction of a second, all the attributes of the scene - form, colour, motion, depth and much else besides, are each processed in separate but interconnected cortical areas, which then somehow generate a unitary visual percept. How can visual illusions, brain imaging in normal subjects and the visual consequences of damage to the visual brain in stroke patients help us to understand these processes?

Professor Christopher Kennard is the head of the Nuffield Department of Clinical Neurosciences, University of Oxford, a senior Kurti fellow at Brasenose College and fellow of the Academy of Medical Sciences. He was the first professor of clinical neurology at Charing Cross and Westminster Medical School; head of Neurosciences, and deputy principal of the Imperial College faculty of medicine. He is currently the president of the European Neuro-ophthalmological Society, former president of the Association of British Neurologists and editor of the Journal of Neurology, Neurosurgery and Psychiatry. He chaired the UK Medical Research Council's Neuroscience and Mental Health Board.

LECTURE 5.5

OJALI NEGEDU

IMPERIAL COLLEGE NHS TRUST - LIYSF 2006

PURSUING A CURE: HIV EUREKA MOMENTS

This lecture will give an overview on the development of antiretroviral therapy (ART) in the battle against human immune deficiency virus (HIV) from the start of therapy in the 1980s to the sophisticated and highly active treatments currently available and on to curative treatment strategy options as we build the armamentarium in HIV therapy. We will be looking at how the evolution of treatment has led to the continued successful management of HIV in the 21st century as well as exploring the struggles which lie ahead in resources, limited settings and the combined global efforts in tackling this condition.

Ojali attended LIYSF in 2006. She returned as a member of staff for several years and was chief of staff for two years. She studied pharmacy at King's College London and went on to work at Chelsea and Westminister Hospital, where she developed her interest and passion in the HIV and sexual health field, becoming a specialist pharmacist there. She is currently a specialist HIV Pharmacist working at St Mary's Hospital, Imperial College London, working with both adolescent and adult patient groups. Ojali has managed and organised trips to East Africa with a charity organisation and helped to facilitate educational sessions to village healthcare workers as well as managing projects for adolescents, women in-patient hospital visitations.

LECTURE 5.6

JUDITH O'TOOLE

MOUNT TEMPLE SCHOOL, IRELAND - LIYSF 1985

ANIMALS DON'T READ THE TEXT BOOKS

In recent years, the veterinary world has provided us with many examples which illustrate how nature and science are constantly changing. The emergence of new diseases in recent years has shown us that we can never afford to become complacent, believing that if we know the facts of a subject today, we will know them tomorrow. This seminar will take a look at the history of veterinary medicine and explain how scientific advances have helped to reveal mysteries of the past. We will discuss the evolution of new pathogens, whilst also considering the understanding of certain diseases as merely a new way of looking at old information.

Judith attended LIYSF 1985 and graduated with a degree in Veterinary Science (Bristol) in 1990. Judith worked as a veterinary surgeon until 1998. She obtained a Post Graduate Diploma in Education (UCD)1998, set up Diploma in Veterinary Nursing in UCD 2001-2003, teaching Science in Mount Temple Comprehensive School 1998 to present.

LECTURE 5.7

HELEN PEREGRINE

NHS EAST SUSSEX HOSPITALS - LIYSF 2009

COMBATING BLINDNESS IN THE MODERN WORLD

Open your eyes into a world of ophthalmology where the research is advancing, the rewards are out of sight, but the jokes just get 'cornea'. The lecture will focus on topics of: medical contact lenses, futuristic contact lenses, research developments with gene therapy, recent treatments which have been life changing and what conditions still require a cure. Will you be the scientist who comes up with the next eye-dea (idea)?

Helen Peregrine first attended LIYSF as a participant in 2009 having won an award for a research project at St. Thomas' Hospital in London. She returned in 2010 as a Counsellor and 2011 as Chief of Counsellors. She studied Optometry and Vision Sciences at Cardiff University, moving on to qualify and train in hospital work at Oxford Eye Hospital, John Radcliffe. After this, she moved to East Sussex, where she worked in hospital optometry clinics whilst training up in ophthalmology clinics and taking an extra prescribing qualification. She is now Deputy Head Optometrist for the East Sussex Hospitals, working in four ophthalmology specialties and training optometrists in hospital work.

LECTURE 5.8

STACY WILLIAMS

LIYSF 1990

THE SCIENCE OF FINANCIAL MARKETS

The study of financial markets has become a major discipline in its own right. Combined with economic theory, it now brings a new dimension of understanding to the financial world. Global financial markets behave as a huge, interdependent, complex system and the methods developed by mathematicians, scientists and engineers to model physical systems can now be employed. This lecture will consider how complex system techniques are used to gain deep insights into the behaviour of markets, and how this can be used to make better investment decisions and improve financial stability.

Stacy attended LIYSF 1990. He holds various visiting academic positions, having spent most of his career in senior research roles in investment banks. He holds an MA in Physics and an MPhil in Nanoscale engineering.

MONDAY 8th AUGUST
SPECIALIST LECTURES

LECTURE 8.1

LYNDA NWIKE
SHELL

A DAY IN THE LIFE OF A DRILLING ENGINEER

This lecture will consider the work of an offshore drilling engineer on the SWIFT 10 jack up in the Southern sector of the North Sea.

Lynda works for Shell as a Wellsite drilling engineer. She previously worked on Brent Delta platform in the Northern North Sea for the Abandonment and Decommissioning project. Lynda has also worked as a field engineer offshore in the North Sea - Aberdeen and Holland, using advanced, high tech tools, to view and record mode data regarding spatial positioning, drilling mechanics and formation evaluation.

LECTURE 8.2

PROFESSOR CHRIS DRAKELEY
LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

CAN WE REALLY ELIMINATE MALARIA?

This lecture will consider malaria, the biology and public health relevance, what affects malaria in different settings - environmental and ecological factors in different parts of the worlds and how we measure malaria - classic and new methods, including molecular and immunological. The lecture will consider the current state of control; what are the methods used and what affects their success. Finally this lecture will consider if elimination of malaria is possible.

Chris is Professor of Infection & Immunity at the London School of Hygiene & Tropical Medicine (LSHTM). He has more than 25 years' experience of working on malaria with much of his time spent working overseas in a variety of African countries including Tanzania & The Gambia. His research centres on developing a better understanding of malaria transmission of parasites in different settings. His group is involved in the comparison and optimisation of approaches to measure transmission with a focus on serological markers for exposure to infection. These components are linked together by the evaluation of strategies designed to reduce and block transmission including transmission blocking vaccines and drugs.

LECTURE 8.3

DR LOUISE SIME
BRITISH ATLANTIC SURVEY

HEAVY STUFF: DECODING PAST CLIMATE

Heavy water isotopes (deuterium and oxygen-18) in polar ice represent a key long-term proxy record of climate. Using these heavy water measurements, alongside climate models, helps us understand how ice sheets, sea ice, and climate behaved in the past. This gives us hugely valuable insights into what we may expect in future. It helps us understand how changes in carbon dioxide, and other greenhouse gases, affect global climate over long time-scales. This lecture will look at how the British Antarctic Survey drills for ice cores in Antarctica, how those ice cores are interpreted using numerical climate models, and finally what the results tell us about our possible future.

Louise has been a full time scientist with the British Antarctic Survey for the past nine years. Before that she worked briefly, in ocean modelling, at the University of East Anglia. Since 2015, she has led a small paleoclimate research group within the British Antarctic Survey. The research of her group is mainly concerned with understanding changes in the ice sheets, sea ice and climate in polar regions over the last 800 000 years.

LECTURE 8.4

DR JONATHAN NZAKIZWANAYO
UNIVERSITY OF BRIGHTON

DEVELOPMENT OF THERAPIES TO COMBAT INFECTION

Patients with long-term urethral catheterisation are predisposed to the acquisition of infections. Proteus mirabilis causes particular complications in these patients. The catheter blockage leads to reflux of infected urine to the upper urinary tract causing serious conditions such as kidney infection, septicaemia, and shock. This lecture will explore therapeutic developments to control catheter blockage, include findings of recent research on novel infection-responsive coating that provides an early visual indication of approaching blockage, and releases antimicrobial compounds to fight the infection.

Jonathan is a Research Fellow in School of Pharmacy and Biomolecular Sciences, University of Brighton. He is actively involved in projects exploring both pathogenic and mutualistic interactions between bacteria and humans. Jonathan received his PhD in 2014 at Brighton University. He completed his first degree in 2005, a BSc in Food Science and Technology in his native Rwanda and then gained an MSc in Biotechnology at the University of Strathclyde.

LECTURE 8.5

DR DIMITRIS KOUREAS
NATURAL HISTORY MUSEUM

TOOLING UP SCIENTISTS IN THE BIG DATA ERA

Science is today generating more data than ever before. Significant advancements in technology, including laboratory and field equipment, is contributing to an unprecedented volume of datasets. To effectively address big challenges of our times, including climate change or biodiversity loss, it is critical to bring together these datasets and provide online platforms and tools to enable scientists across the world to access and analyse them. Science is gradually becoming digital and researchers are challenged, for the first time after centuries, to change the way they do science.

Dimitris received a PhD in the field of plant systematics and biodiversity. He developed a cross-discipline expertise working on the application of information tools to the study of biodiversity. Currently working at the Natural History Museum London as the lead for research data. He is the general secretary of the Biodiversity Information Standards organisation and active member of the Research Data Alliance. An invited lecturer at several universities, including University of Oxford and Reading.

LECTURE 8.6

PROFESSOR JIM LYNCH OBE
UNIVERSITY OF SURREY

LAND USE AND LAND USE CHANGE

There is increasing concern on how the finite availability of land globally is used. Deforestation has a major impact on climate change and trade. REDD+ (Reduction of Emissions from Deforestation and Forest Degradation) is potentially an instrument to effectively manage tropical forests, reduce carbon emissions and improve the livelihoods of communities. Controlling deforestation needs to be considered in relation to global food security and the potential to use crops as biofuel.

Jim Lynch graduated BTech in Industrial Chemistry from Loughborough, then PhD and DSc in Microbiology from Kings College London. He is a Fellow of the Royal Society of Chemistry, the Royal Society of Biology, and the Royal Society of Arts. He has worked at various research institutes, universities and companies, including being Chief Executive of the Forestry Commission Research Agency and Coordinator of the OECD Research Programme on Biological Resource Management. Currently, he is Distinguished Professor of Life Sciences at the University of Surrey and Chair of Governors at the University of Chichester. He was awarded the UNESCO Prize in Microbiology, and the OBE for his work on sustainability.

LECTURE 8.7

YEHUDA LETHBRIDGE & PETER WARREN
DEPARTMENT OF ENERGY AND CLIMATE CHANGE

SCIENTISTS IN GOVERNMENT

Across Government, there are numerous scientists working in a multitude of departments. Be it in defence, agriculture, health, climate change, energy and more, scientific expertise plays a crucial part of forming policies that affect our everyday lives. This presentation will explain how energy efficiency, smart technologies, energy use data and alternative fuels play a vital role in fulfilling our energy needs.

Following his Masters of Research in Physics of the Earth and Atmosphere, Yehuda is a Technical Energy adviser for the Department of Energy and Climate Change, where he uses scientific evidence and knowledge to ensure that the UK has reliable, secure and affordable energy whilst also adhering to the UK's Carbon commitments. Peter currently works as a Government Scientist in the Department of Energy and Climate Change, specialising in smart energy and energy efficiency. He also teaches energy and climate change at University College London (UCL).

LECTURE 8.8

DR DAN LAMB
SWANSEA UNIVERSITY

THIN FILM SOLAR CELLS AND THEIR APPLICATIONS

Much of our everyday lives are dependent on space technology from global positioning to mobile phone communication, television broadcasts to weather forecasts. Solar cells provide the electrical power to the satellites that make these applications possible. This lecture will describe the history of solar cells in space and some of the exciting emerging applications that are driving the need for a new type of solar cell technology to be devised. Much larger areas of solar cells will be required to be deployed in space to provide the electricity for technologies such as Solar Electric Propulsion, Space Based Solar Power and Lunar and Martian Bases.

Dan is a senior researcher at the Centre for Solar Energy Research, Swansea University. He has researched many aspects of thin film solar technology and authored over 30 journal publications more recently relating to thin films solar cell use with emerging large-area extraterrestrial applications. A recent highlight saw Dan collaborate with the Surrey Space Centre to build a flight demonstrator solar cell which has been selected as one of only three experiments to take part in the UK Space Agency's next satellite mission due to launch July 2016.

FRIDAY 29th JULY
LONDON SCIENTIFIC VISITS

29.A The Anaesthesia Heritage Centre
The Anaesthesia Heritage Centre at the Association of Anaesthetists of Great Britain and Ireland was founded from a donation by A Charles King but has since embraced numerous contributions. The collection encompasses the entire history of anaesthesia, from Morton's demonstration of ether inhalation in 1846 to modern anaesthetic machines and appliances still in use today. An archive and library provide excellent facilities for research into the history of anaesthesia.

29.B BDA Dental Museum
The BDA Dental Museum tells the fascinating story of how people have looked after their teeth - or not! - in the past. The Museum has the largest collection of dental heritage in the UK. It houses over 20,000 objects and images telling the story of how dentistry has developed from a marketplace spectacle to the complex procedures and treatment of today. From 19th century dental floss to toothache cures, clockwork drills to toothpaste adverts there is more to discover than you might imagine.

29.C Imperial College London, Department of Chemical Engineering
See the laboratories, pilot plant and computing facilities of one of the UK's largest departments of its kind.

29.D Imperial College London, Department of Life Sciences
One of the largest life science groups in Europe, research of full breadth of modern life science activity including, Molecular Biosciences, Molecular Biosciences; Cell & Molecular Biology and Ecology & Evolution.

29.E Imperial College London, Department of Materials: Biomaterials in Regenerative Medicine
Research into biomaterials for tissue engineering and regenerative medicine; and bio-nanotechnology for nanostructures and create Nano-biomaterials.

29.F Imperial College London, Department of Mechanical Engineering, Energies Futures Lab
The Energy Futures Lab is the focal point for the dynamic and diverse multi-disciplinary energy research across Imperial College London. We enable funding, training, and global partnerships for our researchers and students.

29.G Jodrell Laboratory at the Royal Botanic Gardens, Kew
World-famous centre for botanical research and study; includes a visit to the Jodrell Laboratory.

29.H King's College London - Centre for Stem Cells & Regenerative Medicine
Led by Professor Fiona Watt, located on the Guy's Hospital campus, the Centre acts as a focus for cutting-edge stem cell research taking place across the College and its partner NHS Trusts. The centre is particularly interested in how stem cells interact with their local environment, or niche and how an understanding of these interactions is important for developing effective cell therapies.

29.I London Metropolitan University, Faculty of Life Sciences and Computing - Sports Science
Sports courses at London Met are led a by a team of passionate and experienced lecturers with varied experience within sports teams, private practice and research environments. Teaching and learning is built around a mix of practical and theoretical sessions in custom built facilities.

29.J The Old Operating Theatre and Herb Garret
Original Operating Theatre dating from 1821, with original instruments; find out about surgery before anaesthesia and antiseptics.

29.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.

29.L The Alexander Fleming Museum
St Mary's Hospital is home to the Alexander Fleming Laboratory Museum. Fleming discovered the antibiotic penicillin at St Mary's Hospital in 1928, a breakthrough that revolutionised medicine and earned him a Nobel Prize. Visitors to the Museum can see Fleming's laboratory, restored to its 1928 condition, and explore the story of Fleming and the discovery and development of penicillin through displays and video.

29.M The Tate - Conservation Department
Conservation scientists investigate artists' materials and techniques and study parts of the collection that are both difficult to conserve and poorly understood in terms of construction and materials. They also develop and provide analysis of materials to support conservation and collection-related activities.

29.N University College London - Haematology and Blood Transfusion Department
The laboratory issues approximately 50,000 blood and plasma products per annum, supporting the large Haemato-Oncology Department, a tertiary referral centre for the North West London area and the large Sickle Cell and Thalassaemia Unit which transfuses more patients than any other Trust in the UK.

29.O Queen Mary University of London - School of Engineering and Materials Science
The School of Engineering and Materials Science (SEMS) is ranked as one of the best in the UK, with cutting-edge research focused in: Modelling and Simulation in Engineering Systems, Bioengineering and Materials Science. SEMS provides outstanding degree programmes coupled with internationally leading research.

29.P University College London, Institute of Neurology
The Faculty of Brain Sciences brings together expertise at the forefront of neurology, ophthalmology, audiology, psychology and language sciences, cognitive neuroscience and mental health sciences.

29.Q 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.

29.R London Wetland Centre
Over 100 acres of wetland sites, with extensive populations of wild birds, plants and insects. Talk to the experts about biodiversity and conservation.

TUESDAY 2nd AUGUST
NATIONAL SCIENTIFIC VISITS

2.A Airbus UK
Core activities at Filton include the design, engineering and support for Airbus wings, fuel systems and landing gear integration.

2.B The Animal & Plant Health Agency (APHA)
The Animal and Plant Health Agency (APHA) is the UK Government agency responsible for animal, plant and bee health. APHA are responsible for; identifying and controlling endemic and exotic diseases and pests in animals, plants and bees, and surveillance of new and emerging pests and diseases; scientific research in areas such as bacterial, viral, prion and parasitic diseases and vaccines, and food safety; and act as an international reference laboratory for many farm animal diseases.

2.C British Geological Survey
The British Geological Survey is a UK public sector research establishment with the prime function of compiling national inventories of geological resources and managing the resource environment. We provide essential research and baseline evidence to support policy on energy supply, natural resources, infrastructure planning and environmental management.

2.D Cardiff University - School of Pharmacy and Pharmaceutical Sciences
University Department with a strong tradition of innovative pharmaceutical education, scientific research and service to the pharmacy profession. In the 2014 Research Excellence Framework ranked the joint top School of Pharmacy in the country.

2.E Cranfield University
Cranfield University (a wholly postgraduate institution) has a global reputation for inspirational teaching and research, industrial-scale facilities and superior links with industry and commerce. From unique cabin evacuation research to finding life on Mars, from a frost blanket for racecourses to zero-emission cars, and from the next generation of anti-landmine devices to a new blood glucose monitor, Cranfield's focus is squarely on the application of its research.

2.F Rutherford Appleton Laboratory
The Science and Technology Facilities Council (STFC) is trying to answer some of the biggest questions about our World today. From the infinitesimally small to astronomically large, from blue skies research to improving current technologies. The Rutherford Appleton Laboratory is home to many of the UK's most advanced research facilities and supports work in a range of areas including space science and astronomy, particle physics, high powered lasers, physical and life sciences and developing new materials.

2.G The John Innes Centre, Norwich Research Park
An independent, international centre of excellence in plant science and microbiology working to generate knowledge of plants and microbes through innovative research to benefit agriculture, the environment, human health and well-being.

2.H University of Leicester Space Research Centre & National Space Centre
Students will learn about Earth Observation science and the latest technology being developed here at Leicester for future Mars Sample Return missions. At the National Space Centre, students will tour the exhibit and attend a Masterclass in space-related physics.

2.I The National Oceanography Centre & University of Southampton's School of Ocean and Earth Science
NOCS is the national focus for oceanography in the UK with a remit to achieve scientific excellence in its own right as one of the world's top five oceanographic research institutions.

2.J Rolls Royce
Visit to see Rolls-Royce, from its beginnings to present day product range. See the largest collection of aero engines in the country, ranging from World War 1 era piston engines, the famous Merlin, right up to modern day jet engines.

2.K The Rothamsted Research Centre
The longest running agricultural research station in the world, providing cutting-edge science and innovation, in areas of crop productivity and quality and sustainable solutions for food and energy production.

2.L Syngenta's International Research Centre at Jealott's Hill
Syngenta is a leading agriculture company helping to improve global food security by enabling millions of farmers to make better use of available resources. Jealott's Hill International Research Centre is the company's largest R&D site with key activities including the discovery of new active ingredients, new formulation technologies, product safety, technical support of our product range and seeds research.

2.M University of East Anglia - The Tyndall Centre and the School of Environmental Sciences
UEA is a pioneering British University, leading the way in fields as diverse as climate change, social work, creative writing, international development, food science and much more. They are part of the most cited research centre outside of Oxbridge and London, and have won two Nobel Prizes.

2.N University College London, Mullard Space Science Laboratory
Exploiting the capabilities of rockets and spacecraft as platforms for scientific instruments it strives to understand our physical environment and our place in the Universe.

2.O University of Kent, Electronics Laboratory
Design and research in electronics and digital multimedia equipment.

2.P University of Warwick, Electrochemistry & Interfaces/ Electron Microscopy Department
The application of electrochemistry to the understanding of fundamental and industrially significant interfacial chemical processes at the micro to nanoscale.

THURSDAY 4th AUGUST
OXFORD AND CAMBRIDGE SCIENTIFIC VISIT DAY

4.A Babraham Institute
The Babraham Institute is a world-class research institution, situated at the heart of the Babraham Research Campus, near Cambridge. Our mission is to be an international leader in research focusing on basic cell and molecular biology with an emphasis on healthy ageing through the human lifecycle.

4.B The Cambridge Crystallographic Data Centre (CCDC)
The CCDC is a leading provider of structural databases and software for pharmaceutical discovery, materials development, research and education.

4.C University of Cambridge, Department of Chemistry
The Department includes a large number of internationally recognised research groups covering an exceptionally broad spectrum of chemical science ranging from molecular biology to geophysics. Our enthusiastic research culture embraces new challenging areas, including strong collaborations with other academic disciplines and institutions, while maintaining a powerful presence in the traditional core areas of chemistry.

4.D University of Cambridge, Department of Earth Sciences
From geophysics and applied mathematics, geochemistry and sedimentology, petrology and volcanism, palaeontology and evolutionary biology, to the physics and fundamental properties of materials.

4.E University of Cambridge, MRC Laboratory of Molecular Biology
The MRC Laboratory of Molecular Biology (LMB) is a world-class research laboratory, dedicated to understanding important biological processes at the molecular level - with the goal of using this knowledge to tackle major problems in human health and disease.

4.F University of Cambridge. NIHR Cambridge Biomedical Research Centre and Cambridge Science Centre
A partnership between Cambridge University Hospitals Foundation Trust and the University of Cambridge. The partnership between the hospital and the University creates an environment where internationally outstanding biomedical and clinical scientists work alongside clinical practitioners to achieve translation of research for the benefit of patients.

The Cambridge Cancer Centre is a dynamic collaboration of researchers, clinicians, and the pharmaceutical and biotech industries based in the Cambridge area. We combine world-class science and technology with excellent patient care to pioneer new ways to prevent, detect and treat cancer.

4.G University of Cambridge, Scott Polar Research Institute
The Scott Polar Research Institute was founded in 1920, as a memorial to Captain 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.

4.H Wellcome Genome Campus
A leader in the Human Genome Project, this institute is focused on understanding the role of genetics in health and disease with research into connection between genetics and infectious disease.

4.I Culham Centre for Fusion Energy
The UK centre for magnetic confinement fusion research and the home of the major European fusion experiment JET. It has a high technology incubator, Culham Innovation Centre and an technology transfer programme.

4.J HR Wallingford
HR Wallingford research covers all things aquatic, from the headwaters of river catchments out to the deep sea. They carry out research to provide specialist solutions for industry. See work in progress in the wave basins, wave flumes and the Fast Flow Facility and step into the UK Ship Simulation Centre.

4.K University of Oxford - Department of Computer Science & Chemistry
Oxford Physics Department work on major facilities worldwide, develop the most advanced experimental techniques and the most sophisticated theoretical methods to investigate nature at every scale.

4.L University of Oxford, Jenner Institute for Vaccine Development
The Jenner Institute was founded in November 2005 to develop innovative vaccines against major global diseases and has grown into one of the largest non-profit sector research and development activities in vaccinology. Uniquely it focuses both on diseases of humans and livestock and tests new vaccine approaches in parallel in different species. A major theme is translational research involving the rapid early-stage development and assessment of new vaccines in clinical trials, most recently illustrated by vaccines against Ebola and Zika. New vaccines against malaria, tuberculosis and HIV are currently in field trials in the developing world.

4.M University of Oxford - Nuffield Department of Clinical Neurosciences
The Nuffield Department of Clinical Neurosciences (NDCN) provides a focus for world-leading translational neuroscience allowing the swift transfer of basic biomedical findings to the clinical setting and the delivery of evidence-based therapies for the benefit of society and the economy.

4.N University of Oxford, Pitt Rivers Museum
The Pitt Rivers Museum displays the archaeological and anthropological collections of the University of Oxford. The museum was founded in 1884 by Lt-General Augustus Pitt Rivers, who donated his collection to the University of Oxford.

4.O University of Oxford, Department of Zoology
The Department of Zoology is at the centre of Oxford's research and teaching in whole organism biology. Research is centred on the four themes of behaviour, disease, ecology and evolution.

FRIDAY 5th AUGUST
VISITS TO SCIENCE & NATURAL HISTORY MUSEUMS

Science Museum
The Science Museum has over 300,000 objects in its care, with particular strengths in the history of western science, technology and medicine since 1700. It has been uniquely placed to acquire objects recording the Industrial Revolution and nowholds unrivalled collections in this area. Medical artefacts from all periods and cultures also form an important part of its holdings.

Natural History Museum
NHM's vision is to advance knowledge of the natural world, inspiring bettercare of our planet with the mission to maintain and develop collections and use them to promote the discovery, understanding, responsible use andenjoyment of the natural world. The 8-storey, landmark Darwin Centre andcocoon structure is the most significant development at the Natural History Museum since it moved to South Kensington in 1881. Thisdramatic newpublic space and state-of-the-art scientific and collections facility opens itsdoors to reveal a whole new Museum experience for visitors.

FRIDAY 29th JULY
SCIENCE BAZAAR - STUDENT PROJECTS EVENING

All students are invited to take part in the Science Forum Bazaar, either presenting a project or visiting the stands and asking questions. The Science Bazaar is an exciting opportunity to present an independent research project in a non-competitive environment with fellow students from all over the world and our science experts.

LIYSF is very privileged to have the support and help of a team of science experts who will be asking questions at the stands and giving feedback.

SCIENCE BAZAAR JUDGES

Professor Richard O'Kennedy
DCU - LIYSF President
HEAD JUDGE

Dr Daniel Amund
Coventry University, Assistant Lecturer

Ellie Buchdahl
British Council, Great Campaigns Manager

Gabriele Butkute
Royal Society of Biology and the Biochemical Society, Science Policy Assistant

Dr Riccardo Guidi
The Francis Crick Institute, PostDoc

Shaun Holmes
British Council, Science Adviser, Research and Partnerships

Steven Simpson
Royal Society, Outreach Officer

Annette Smith
Association for Science Education, Immediate Past-CEO

Max Swinscow
British Council, Science Communications Manager

Sue Thompson
Royal Society of Chemistry, Education Coordinator

FAMELAB LIYSF

10 projects will be chosen to be presented on Saturday 30th July in the FameLab LIYSF evening. This evening will provide an introduction to FameLab and how you can join in the future with some former FameLab winners presenting. FameLab is a communications competition designed to engage and entertain by breaking down science, technology and engineering concepts into three minute presentations - www.famelab.org

International FameLab TALKING SCIENCE

BRITISH COUNCIL

CHELTENHAM FESTIVALS

SOCIAL PROGRAMME

There is an active social calendar with events designed to enable those from around the world to learn about different cultures.

Thurs 28th July	20.30hrs – 23.30hr	Welcome Party, Chelsea Old Town Hall
Fri 29th July	18.30hrs – 22.00hrs	The Science Forum Bazaar - Student Project Poster Board Evening Imperial College Atrium
Sat 30th July	19.30hrs – 21.30hrs	FameLab LIYSF - Student Topics – The Great Hall
Mon 1st Aug	19.30hrs – 22.00hrs	Great Crossword Treasure Hunt. Queen's Lawn and surrounding South Kensington
Thurs 4th Aug	19.00hrs – 21.00hrs	Rehearsals, Ethos Sports Hall
Fri 5th Aug	20.30hrs – 22.00hrs	International Cabaret – Cultural Showcase Performance Evening Chelsea Old Town Hall
Sat 6th Aug	15.00hrs – 17.00hrs	LIYSF Olympics. Ethos Sports Hall
Sun 7th Aug	20.30hrs – 22.00hrs	Traditions of Home – Sharing World Customs and Fashion Chelsea Old Town Hall
Tues 9th Aug	20.30hrs – 23.00hrs	Farewell Party. Chelsea Old Town Hall

OPTIONAL VISITS

LIYSF offers a varied programme of optional visits. On Thurs 28th July at 17.30hrs tickets will be on sale from LIYSF staff after the plenary lecture demonstration. Please see website for full details.

Sat 30th July	14.00hrs	Optional London Bus Sightseeing Tour
	14.30hrs	Optional Visit to The London Eye
Sun 31st July	09.00hrs – 17.00hrs	Optional visit to Stonehenge & Salisbury
Tues 2nd Aug	19.00hrs – 22.30hrs	Optional Theatre night
Sun 7th Aug	09.00hrs – 16.00hrs	Optional Visit to Hampton Court Palace and the Tower of London
Mon 8th Aug	14.00hrs	Optional visits to State Rooms at Buckingham Palace
	17.00hrs	Optional visit to The London Eye
	19.30hrs – 22.30hrs	Optional Theatre Night

LIYSF Alumni Association

After your time at LIYSF stay connected with us and your new friends in our dedicated, LIYSF exclusive community.

The association is made up of people that are very passionate about the Forum. This association has been formed to help alumni of LIYSF stay in touch. We will be working hard in lots of way to keep the alumni information up to date. We are always looking for past participants that can help in our efforts and encourage you to contact us with any ideas or suggestions and photos from your time at LIYSF.

For more information please visit
http://alumni.liysf.org.uk/

PROGRAMME VENUES

HALLS OF RESIDENCE

Beit Halls of Residence

Beit Halls of Residence

Prince Consort Road

Hall Host: Emmanuel Shofoluwe

M&M Halls of Residence

Millennium Gloucester

Harrington Gardens

Hall Host: George Kettle

M&M Halls of Residence

Meininger

Queen's Gate

Hall Host: George Kettle

Southgate Halls of Residence

Southside Halls of Residence

Prince's Gardens

Hall Host: Simran Mohnani

Southgate Halls of Residence

Metrogate House

Queen's Gate Terrace

Hall Host: Simran Mohnani

PROGRAMME VENUES

Royal Geographical Society

Kensington Gore

Imperial College London

South Kensington Campus

Chelsea Old Town Hall

King's Road

LIYSF STAFF

LIYSF SUPPORT STAFF

Executive Assistant
Nyree Wilkie
England

Media and Communications
Deepesh Patel
England

LIYSF STUDENT STAFF

Chief of Staff
James North
England

MEDIA TEAM

Senior Media Assistant
Zach Cassar
Malta

Media Assistant
Kennedy Wiltshier
New Zealand

Media Assistant
Sheng Yu Shia
Malaysia

BEIT HALLS OF RESIDENCE

Hall Host
Emmanuel Shofoluwe
England

Programme Liaison
Shweta Julka
USA

Deputy Host
Ndiuwem Essien
Nigeria

Counsellor
Ariadna Gistas
Catalonia, Spain

Counsellor
Alexander Hannides
Cyprus

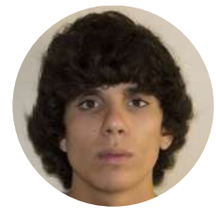
Counsellor
Chelsea Herbert
England

PROGRAMME VENUES

M&M HALLS OF RESIDENCE

Hall Host
George Kettle
Australia

Programme Liaison
Gemma Prunes
Catalonia, Spain



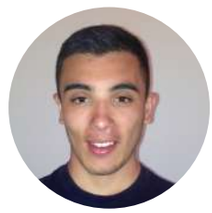
Deputy Host
Ricardo Rodrigues
Portugal

Senior Counsellor
Guilherme Winter
Brazil

Senior Counsellor
Afiq Hatta
Malaysia

Counsellor
Krsna Mohnani
Malta

Counsellor
Miranda Sessarego
Argentina



Travel Assistant
John Steven Romero
Colombia

SOUTHGATE HALLS OF RESIDENCE

Hall Host
Simran Mohnani
Malta

Deputy Host
Michael Oliafsoye
Nigeria

Senior Counsellor
Emer Hickey
Ireland

Counsellor
Palmira Llorens
Catalonia, Spain

Counsellor
Anin Luo
Taiwan (ROC)

Counsellor
Sam Thomas
England

Dr Arthur Tarrant

In memory of Dr Arthur Tarrant PhD FIstD FCIBSE FSLL CPhys CEng, who for the last four decades LIYSF has been privileged to have had his unrivalled contribution and support. Dr Tarrant initially came to the Forum to deliver his amazing lecture: 'Colour is Fun' and he swiftly became part of the LIYSF family. Over the years, his advice, both academic and practical, has been invaluable. His enthusiasm for LIYSF has been a vital part of the event for generations of participants. He will be greatly missed.

LIYSF PARTNERS

BRITISH COUNCIL
GREAT BRITAIN & NORTHERN IRELAND
PEOPLE to PEOPLE INTERNATIONAL STUDENT TRAVEL PROGRAMS expand your world...
Arkwright Scholarships Trust
Imperial College London
Imperial

SUPPORTING ORGANISATION

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, 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:

Akademeia	Poland
Aprosio Science High School Ventimiglia	Italy
ASDAN	China
Beijing NGO Association for International Exchanges	China
Binus International School Serpong	Indonesia
British Council	Qatar
British Council	Taiwan (ROC)
British Council School Madrid	Spain
British School of Brussels	Belgium
Calouste Gulbenkian Foundation	Portugal
Cathedral and John Connon School	India
Celia and Glyn Allen	Guernsey
China Association for Science and Technology	China
Dublin City University	Ireland
English School	Cyprus
Fallibroome Academy	England
Federazione delle associazioni scientifiche e tecniche (FAST)	Italy
Foundation Jeunes Scientifiques Luxembourg (FJSL)	Luxembourg
University of Fraser Valley	Canada
Fundació Catalunya-La Pedrera	Catalonia, Spain
GC School of Careers	Cyprus
John Roan School	England
Macau Anglican College	China
Memorial University of Newfoundland	Canada
Ministry of Education	UAE
National Student Travel Foundation	Malta
National Youth Science Forum	Australia
Pakistan Science Foundation	Pakistan
Polish Children's Fund	Poland
RED Science and Technology Youth Activities Network	Mexico
REDE POC	Brazil
Research Council of Norway	Norway
Rotary National Science & Technology Forum	New Zealand
Royal Society of New Zealand	New Zealand
Society for Science and the Public	United States
South African Agency for Science & Technology Advancement	South Africa
Swedish Federation of Young Scientists	Sweden
Swiss Youth in Science	Switzerland
Weizmann Institute of Science	Israel

ACKNOWLEDGEMENTS

LIYSF offers its thanks to all those who so generously assisted in the planning and preparation of LIYSF 2016 and, in particular, to the lecturers and speakers, whose contribution is invaluable.

The universities, industries and research centres for their generosity in hosting visits to their establishments.

The Government departments, schools, colleges, universities, educational groups, science competitions and foundations worldwide, which select and sponsor overseas participation, including: The European Commission, The British Council, Education UK and the GREAT campaign.

Various individuals who provided much appreciated support and advice including; Dr. Daniel Amund, Professor Sir Roy Anderson, Ms Ellie Buchdahl, Mr Ray Lewis, Mr John Needle, Mr Deepesh Patel, Professor David Phillips, Ms Roberta Roggeri, Dr Tim Slingsby, Ms Annette Smith and Sir Colin Terry.

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National Youth Science Forum	Australia
Pakistan Science Foundation	Pakistan
Polish Children's Fund	Poland
RED Science and Technology Youth Activities Network	Mexico
REDE POC	Brazil
Research Council of Norway	Norway
Rotary National Science & Technology Forum	New Zealand
Royal Society of New Zealand	New Zealand
Society for Science and the Public	United States
South African Agency for Science & Technology Advancement	South Africa
Swedish Federation of Young Scientists	Sweden
Swiss Youth in Science	Switzerland
Weizmann Institute of Science	Israel

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NOTES

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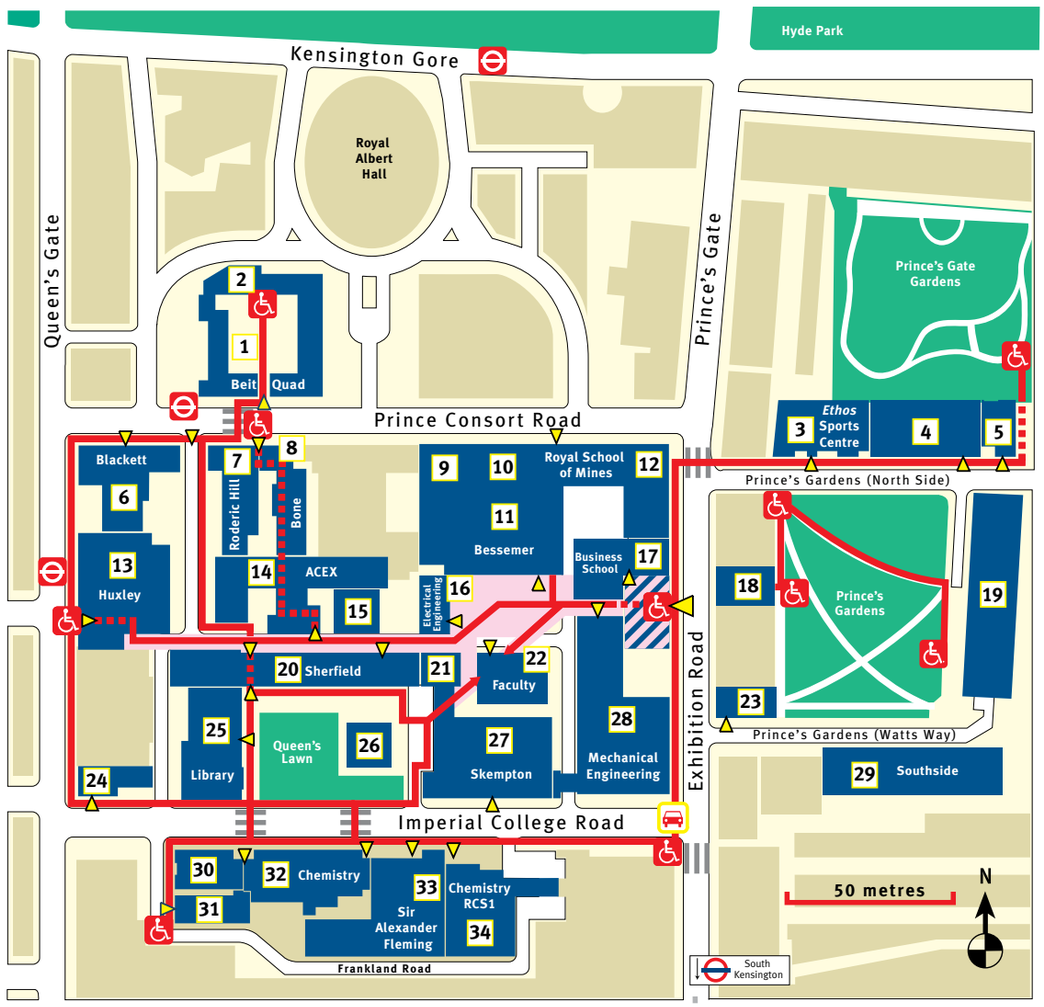
South Kensington Campus



Buildings where wheelchair access is not possible at this time

1	Beit Quadrangle
2	Imperial College Union
3	*Ethos* Sports Centre
4	Prince's Gdns, North Side Garden Hall
5	Weeks Hall
6	Blackett Laboratory
7	Roderic Hill Building
8	Bone Building
9	Royal School of Mines
10	Aston Webb
11	Bessemer Building
12	Goldsmiths Building
13	Huxley Building
14	ACE Extension
15	William Penney Laboratory
16	Electrical Engineering
17	Business School
18	53 Prince's Gate
19	Eastside
20	Sherfield Building Student Hub Conference Office
21	Grantham Institute for Climate Change
22	Faculty Building
23	58 Prince's Gate
24	170 Queen's Gate
25	Imperial College and Science Museum Libraries
26	Queen's Tower
27	Skempton Building
28	Mechanical Engineering Building
29	Southside
30	Wolfson Building
31	Flowers Building
32	Chemistry Building
33	Sir Alexander Fleming Building
34	Chemistry RCS1

LONDON INTERNATIONAL YOUTH SCIENCE FORUM

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59th LIYSF: **26th July to 9th August 2017**

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