LIYSF

LONDON INTERNATIONAL YOUTH SCIENCE FORUM 2018

60TH LONDON INTERNATIONAL YOUTH SCIENCE FORUM

25TH JULY – 8TH AUGUST 2018

'SCIENCE FOR THE FUTURE'

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United Nations
Educational, Scientific and
Cultural Organization

Under the patronage of
UNESCO

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.

President
Professor Clare Elwell: 2018 – Present

Chairman
Mr Mike Clark: 2009 – Present

Director
Mr Richard Myhill: 2009 – Present

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

Past Patron
HRH The Duke of Kent KG 1983 – 1988

Past Presidents

The Rt Hon Lord Nathan 1959 – 1962

Sir John Cockcroft OM 1963 – 1967

Sir Lawrence Bragg CH FRS 1968 – 1969

Dame Kathleen Lonsdale FRS 1970 – 1971

Professor Sir Joseph Rotblat KCMG CBE FRS 1972 – 1974

Professor Sir Hermann Bondi FRS FRAS 1975 – 1979

The Rt Hon Lord Ritchie Calder 1980 – 1982

The Rt Hon Lord Briggs 1983 – 1986

The Rt Hon Lord Porter OM PRS 1987 – 1989

Sir John Meurig Thomas FRS 1990 – 1993

Professor Brian FG Johnson FRS FRSE FAcad 1994 – 2004

Professor Richard O'Kennedy PhD FSB 2005 – 2017

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THE PRIME MINISTER
2016 – PRESENT

10 DOWNING STREET
LONDON SW1A 2AA

July 2018

I am delighted to send a message for the 60th London International Youth Science Forum.

It is wonderful that you have come from all over the world to attend this Forum. Science is the key to meeting the challenges of the 21st Century. The emergence of artificial intelligence, big data and biotechnologies, among others, provide the possibility of solving health and environmental challenges, and has the potential to significantly improve our lives and drive our economy.

This year's theme, 'Science for the Future' resonates strongly; the demand for STEM skills is growing and the need for diverse talent is crucial. This Forum provides you all with a unique opportunity to take part in activities that could propel you to become the leading scientists of the future.

I hope you enjoy the fantastic programme on offer and take full advantage of this experience.

Theresa May
The Prime Minister

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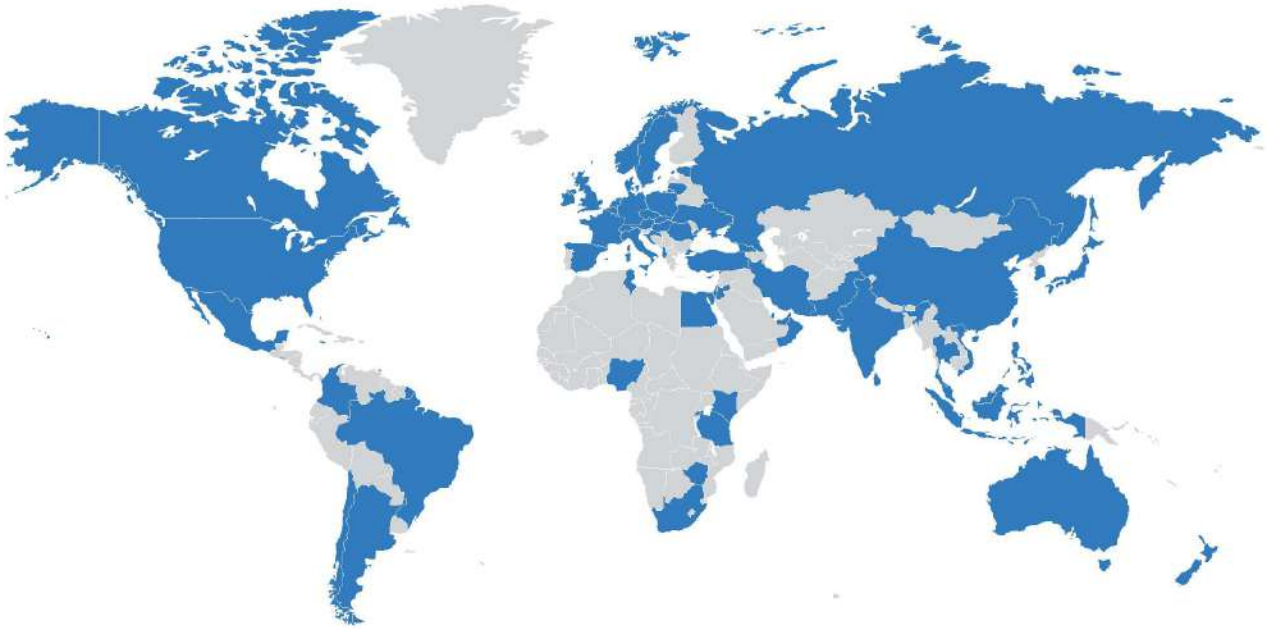
Represented Countries
2018



The following 70 countries and territories will be represented this year:

Albania
Argentina
Australia
Austria
Belgium
Brazil
Canada
Chile
China
Colombia
Croatia
Cyprus
Czech Republic
Denmark
Egypt
England
Estonia
France
Georgia
Germany
Guernsey
Hong Kong
Hungary
India
Indonesia
Iran
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kenya
Lithuania
Luxembourg
Malaysia
Malta
Mexico
Netherlands
New Zealand
Nigeria
Norway
Oman
Pakistan
Phillipines
Poland
Qatar
Romania
Russia
Rwanda
Scotland
Singapore
Slovakia
South Africa
South Korea
Spain
Sri Lanka
Sweden
Switzerland
Taiwan
Tanzania
Thailand
Tunisia
Turkey
Uae
Ukraine
Usa
Vietnam
Wales
Zimbabwe

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PRESIDENT
2018 – PRESENT

UCL
DEPARTMENT OF MEDICAL PHYSICS & BIOMEDICAL ENGINEERING

July 2018

It is with great pleasure that I welcome you, as President, to the London International Youth Science Forum (LIYSF) for 2018. You join us as the Forum celebrates its 60th anniversary and I celebrate my first year as its President.

Over the last six decades, scientific discoveries and innovations have affected enormous change in our world and the way in which we live our lives. During that same period, the values and aims of LIYSF have remained constant; to provide 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.

During the next two weeks, the Forum will give you the opportunity to engage with world leading scientists from a range of disciplines and to learn about today's discoveries and breakthroughs. You will be encouraged to debate, communicate and challenge scientific ideas. And, in the true spirit of the Forum, you will interact, and share these experiences with other young scientists from all over the globe.

I know how impactful and inspiring these experiences can be, as I attended the Forum myself as a student over thirty years ago. It was here that I was first introduced to Medical Physics – an area of science which I have pursued as a career ever since. Importantly the Forum also opened my eyes to the power of collaboration and communication across scientific disciplines and national borders to address global challenges – something which has formed a key element of my journey in science, and which the world needs now more than ever. I am therefore hugely proud to be taking on the Presidency of an event which changed my life.

Enjoy this fortnight. Grab all of the opportunities this Forum will give you. Use them to shape your future, and the future of science. Change the world.

Clare Elwell
President, London International Youth Science Forum
Professor of Medical Physics,
Department of Medical Physics and Biomedical Engineering,
University College London

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Director
Richard Myhill

July 2018

In 1959, what was then called the 'Science Fortnight', began with the belief that "out of like interests, the strongest friendships grow". Today in 2018, we hold the same belief: with our focus on cultural interaction and the very best in science and engineering.

LIYSF was founded in the aftermath of the Second World War - in an effort to overcome the animosity resulting from war with a coordinated programme in science. HRH The Duke of Edinburgh agreed to be Patron and spoke at the first, second and third LIYSF. 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. 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 put science and culture into perspective and to encourage those attending to; be aware of and consider how to help address the needs of the world. LIYSF has a full, rich and varied programme with students participating in incredible lectures from world renowned speakers, visits to leading university departments and research organisations, debates and an engaging social programme.

As Director, it is my job to bring this all together. I work throughout the 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

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CHAIRMAN
MIKE CLARK

July 2018

Welcome to you all. In this, our 60th Anniversary, we are delighted to welcome over 500 students from 70 countries to this very special annual event. It is also apt in our 60th Forum that we welcome our keynote speaker and incoming President, both LIYSF alumni, who have gone on to illustrious scientific careers after attendance as young, discovering science students. Both are inspiring examples of the possibilities available to you and we hope that your time at LIYSF will help open doors to many new opportunities with international perspectives.

'Science for the Future' is our theme this year and what better time to consider the opportunities that science offers to enhance mankind's environment through continued rigorous investigation. A recurring observation from attendance at this event highlights that the key challenges we face are most likely to be resolved by multi-disciplinary and multinational research teams. This at a time, when both actual and perceived barriers to international collaboration continue to concern.

So, make the best of your time in London and your participation at LIYSF, be it in the lecture theatre, on science and culture related visits or debating with new found colleagues and friends. The last 60 years tells us that many of these new friendships are likely to stay with you permanently and shape your future careers.

Finally, enjoy your time in our great capital city and have fun!

M G Clark.

Mike Clark
Chairman

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Schedule

Wednesday 25th July	**10:00 – 16:00**	Arrivals
	19:30 – 21:00	Welcome to LIYSF 2018 – Kensington Suite, Millennium Gloucester
Thursday 26th July	**11:00 – 12:30**	LIYSF Opening Ceremony – Ondaatje Theatre, Royal Geographical Society
		President's Address: Professor Clare Elwell Key Note Address: Dr Michael H. Moloney
	15:00 – 15:30	Programme Introductions – Ondaatje Theatre, Royal Geographical Society
	15:30 – 17:00	Dr Andrew Szydlo : 'Historical Highlights of Chemistry' Ondaatje Theatre, Royal Geographical Society
	17:00 – 19:00	Sale of Optional Excursions – Sentosa Suite, Millennium Gloucester
	20:30 – 23:30	Welcome Party – Orchard Suite, Millennium Gloucester
Friday 27th July	**09:00 – 13:00**	Visits to Research & Scientific Establishments in London
	14:30 – 16:00	Dr Kathy Niakan: 'Early Human Embryo & Stem Cells' Ondaatje Theatre, Royal Geographical Society
	19:30 – 21:30	Great Crossword Treasure Hunt – Queen's Lawn & South Kensington Area
Saturday 28th July	**10:30 – 12:00**	Professor Mark Miodownik: 'Materials for the 21st Century' Ondaatje Theatre, Royal Geographical Society
	14:00 – 16:00	Optional Visit to the London Eye
	18:30 – 22:00	The Science Forum Bazaar, Student Project Poster Board Evening Royal Geographical Society
Sunday 29th July	**08:30 – 17:00**	Optional Visit to Stonehenge & Salisbury
	19:30 – 21:00	Student Debate Evening – Ondaatje Theatre, Royal Geographical Society
Monday 30th July	**09:30 – 12:00**	Specialist Lectures – Queen's Lawn, Imperial College London
	14:30 – 16:00	Professor Michael Wooldridge: 'Artificial Intelligence: Fact & Fiction' Ondaatje Theatre, Royal Geographical Society
	19:30 – 21:00	FameLab LIYSF, Student Topics –Ondaatje Theatre, Royal Geographical Society
Tuesday 31st July	**07:30 – 18:00**	National Visits to Research & Scientific Establishments
	19:00 – 22:30	Optional Theatre Shows
Wednesday 1st August	**09:15 – 17:00**	Specialist Study Day – 'Science for the Future'. Ondaatje Theatre, Royal Geographical Society
	19:30 – 21:00	Professor Sophie Scott: 'The Science of Laughter' Ondaatje Theatre, Royal Geographical Society

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Thursday 2nd August	**08:00 – 17:30**	Visits to Oxford and Cambridge Research and Scientific Institutions
	19:00 – 21:00	Rehearsals and Auditions – Kensington Suite, Millennium Gloucester
Friday 3rd August	**09:30 – 12:00**	LIYSF Alumni Specialist Lectures – Queen's Lawn, Imperial College London
	13:45 – 15:15	Mark Shuttleworth: 'An Adventurer's Guide to Science and Life' Ondaatje Theatre, Royal Geographical Society
	15:30 – 18:00	Visits to Science and Natural History Museums
	20:30 – 22:00	International Cabaret: A Cultural Showcase Performance Evening Orchard Suite, Millennium Gloucester
Saturday 4th August	**10:30 – 12:00**	Dr Evelyn Gitau: 'Investing in Youth to Secure Global Health for Our Future' Ondaatje Theatre, Royal Geographical Society
	15:00 – 17:00	LIYSF Sports Day Session – Ethos Sports Hall, Imperial College London
	19:30 – 21:00	Professor Phillip Moriarty: 'Bit from It: Manipulating Matter Bond By Bond' Ondaatje Theatre, Royal Geographical Society
Sunday 5th August	**08:30 – 17:30**	Optional Visit to Oxford or Cambridge
	09:00 – 16:00	Optional Visit to the Tower of London & Thames Sightseeing River Cruise
	20:30 – 22:00	Traditions of Home: Sharing World Customs and Fashion Orchard Suite, Millennium Gloucester
Monday 6th August	**09:30 – 12:00**	Specialist Lectures – Queen's Lawn, Imperial College London
	14:00 – 17:00	Optional Visits to Buckingham Palace and the London Eye
	19:00 – 22:30	Optional Theatre Shows
Tuesday 7th August	**09:30 – 11:30**	Participants' Forum Ondaatje Theatre, Royal Geographical Society
	13:30 – 15:00	Closing Address: Dr Jeremy Farrar OBE: 'Science in a Changing World' Ondaatje Theatre, Royal Geographical Society
	15:30 – 16:00	Closing Ceremony – Ondaatje Theatre, Royal Geographical Society
	20:30 – 23:30	Farewell Party – Orchard Suite, Millennium Gloucester
Wednesday 8th August	**08:00 – 10:00**	Departures

Principal Lectures & Demonstrations	Specialist Lectures	Visits	Social Programme	Optional Visits

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Keynote Address

Dr Michael H. Moloney

American Institute of Physics

It has been thirty-three years since a young ambitious, curious, nervous science undergraduate student attended the 27th International Youth Science Fortnight, as it was called then. Michael was one of 10 participants from Ireland – 20 if you included the participants from Northern Ireland – who had been chosen to attend this wonderful event. Little did he know then that the experience over those 14 days would be a major milestone in the winding path to his position, today leading one of the premier scientific nonprofit organizations in the United States, the American Institute of Physics. In his presentation to the participants on the occasion of the 60th LIYSF, Dr. Moloney will share personal reflections on his career path and what he has learnt along the way about the role of the scientist in our changing, challenging, fascinating and inspiring world.

Michael H. Moloney is the ninth CEO of the American Institute of Physics where he leads the federation's programmes serving the physical sciences community, including AIP's ten Member Societies. Previously, he was the Director for Space and Aeronautics at the U.S. National Academies of Sciences, Engineering, and Medicine – where in a 16 year career he worked on about 100 reports on physics, space sciences, materials science, aeronautics and many more topics. He also spent seven years as a foreign service officer for the Government of Ireland. He earned his PhD in physics from Trinity College Dublin.

UK Minister of State for Universities, Science, Research and Innovation

Sam Gyimah MP

Minister

Sam Gyimah was appointed as a joint Minister for Higher Education at the Department for Business, Energy and Industrial Strategy and the Department for Education on 9 January 2018. He was elected the Conservative MP for East Surrey in 2010. He studied philosophy, politics and economics at Somerville College, Oxford University. Sam has spent 5 years working for Goldman Sachs and then went on to help build and develop a number of small businesses in the training, recruitment and internet sectors.

Mayor of London

Sadiq Khan

Mayor of London

The Mayor's role as the executive of London's strategic authority is to promote economic development and wealth creation, social development, and improvement of the environment. Sadiq Khan was born in London and has lived here all his life. He was state-school educated in Tooting before studying Law at the University of North London. Sadiq became a solicitor specialising in human rights and was a councillor in the London Borough of Wandsworth. He became Minister of State for Transport, becoming the first Muslim and first Asian to attend Cabinet. Sadiq is a big sports fan, especially football, boxing and cricket. He ran the 2014 London Marathon, raising money for the Evening Standard's Dispossessed Fund.

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Plenary Lectures & Demonstrations

26th July
Historical Highlights of Chemistry

Dr Andrew Szydło
Highgate School

This lecture will look to insights into historical aspects of chemistry, considering this branch of science and how it has evolved over the ages. The lecture will consider; early ideas of the elements – Chinese, Arabic, Ancient Greek; the alchemists and their belief in transmutation; some insights into the history of the discovery of oxygen; the states of matter, particles, energy, the liquefaction of gases and the discovery of fluorine, and redox chemistry of the halogens.

Andrew Z. Szydło has a PhD in the History and Philosophy of Science (University College, London), and is an expert on the history of alchemy. His book *"Water Which Does Not Wet Hands"* (1994) is considered to be the standard reference work on the Polish alchemist Michael Sendivogius. He is an internationally acclaimed teacher and demonstrator of the chemical sciences and teaches at Highgate School in North London.

27th July
Early Human Embryo Development & Stem Cells

Dr Kathy Niakan
Francis Crick Institute

During preimplantation development totipotent human 1-cell zygotes undergo a series of mitotic cleavage divisions that lead to the divergence of embryonic and extraembryonic cells. Pluripotent embryonic epiblast cells will eventually form the fetus while extra-embryonic primitive endoderm cells with form the yolk sac and the extra-embryonic trophectoderm will give rise to fetal components of the placenta. The central question we are addressing is what are the molecular mechanisms that regulate early cell fate choices and how do pluripotent cells become distinct in their fate and function from extra-embryonic cells during human development?

Kathy Niakan is a group leader at the Francis Crick Institute in London, where she investigates the mechanisms that direct cell fate in human embryos and stem cells. Dr Niakan was the first scientist in the world to use CRISPR/Cas9 genome editing techniques. Research equipment and objects from her lab have been exhibited at the "Who Am I?" exhibit at the Science Museum in London. In 2016, Kathy has been named Time Magazine's 100 Most Influential People, Nature Journal "Ones to Watch", Guardian Newspaper's "Rising Stars" and The Evening Standard London's most influential people in Medicine.

28th July
Materials for the 21st Century

Professor Mark Miodownik
University College London

As a result of our greater understanding of matter, the distinction between animate and inanimate matter is now becoming blurred, ushering in a new materials age. Bionic people with synthetic organs, bones and even brains are becoming a reality. Just as we are becoming more synthetic, so our man-made environment is changing to become more lifelike: buildings, objects, materials that heal-themselves are being developed. This talk reviews the science behind these new animate material technologies and considers whether a particular goal, that of creating self-repairing cities, is achievable.

Mark Miodownik is the UCL Professor of Materials & Society. He received his Ph.D in turbine jet engine alloys from Oxford University, and has worked as a materials engineer in the USA, Ireland and the UK. For more than fifteen years he has championed materials science research that links to the arts and humanities, medicine, and society. This culminated in the establishment of the UCL Institute of Making, where he is a director and runs the research programme. Mark is also the multi-award winning author of the book Stuff Matters and regularly presents BBC TV and radio programmes on materials science and engineering. In 2014, he was elected a fellow of the Royal Academy of Engineering. In 2018, he was awarded an MBE for services to materials science, engineering and broadcasting.

29th July
Student Debate Evening

Professor Mark McCaughrean
European Space Agency

Professor Mark McCaughrean will lead our student debate evening where we will consider the role and place of space exploration and future space missions within our theme of "Science for the Future". Mark will set this in the current space research context with the first results from ESA's Gaia Milky Way surveyor and its LISA Pathfinder gravitational wave detection technology testbed, as well as the arrival of its ExoMars Trace Gas Orbiter and Schiparelli lander at the Red Planet, and the amazing Rosetta comet-chasing mission.

Mark McCaughrean is the Senior Advisor for Science & Exploration at the European Space Agency. He is also responsible for communicating results from ESA's astronomy, heliophysics, planetary, exploration, and fundamental physics missions to the scientific community and wider general public. Following a PhD from the University of Edinburgh, he worked at the NASA Goddard Space Flight Centre, followed by astronomical institutes in Tucson, Heidelberg, Bonn, and Potsdam, and taught as a professor of astrophysics at the University of Exeter. He is also an Interdisciplinary Scientist for the NASA/ESA/CSA James Webb Space Telescope.

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Plenary Lectures & Demonstrations

30th July
Artificial Intelligence: Fact and Fiction

Professor Michael Wooldridge
University of Oxford

Long regarded as an impossible dream, Artificial Intelligence (AI) is now an everyday reality. Advances in AI regularly make headline news and the steady advance of AI looks set to change our world dramatically. In this lecture, Professor Michael Wooldridge explores the reality of AI today: what makes AI work after half a century of effort, what is possible, and what the implications are for all of us.

Michael Wooldridge is a Professor of Computer Science and Head of Department of Computer Science at the University of Oxford. He has been an AI researcher for more than 25 years and has published more than 350 scientific articles on the subject. He is a Fellow of the Association for Computing Machinery (ACM), the Association for the Advancement of AI (AAAI) and the European Association for AI (EurAI). From 2014-16, he was President of the European Association for AI and from 2015-17 he was President of the International Joint Conference on AI (IJCAI).

1st August
The Science of Laughter

Professor Sophie Scott
University College London

This lecture will outline the sometimes counterintuitive science of laughter - from the evolution of laughter, to its use as a social and communicative signal. This lecture will address the acoustics of laughter and its neurobiological bases - from production to perception and will finish by considering the role of laughter in emotional regulation.

Sophie Scott is a Professor of Cognitive Neuroscience at UCL, where she is Deputy Director of the Institute for Cognitive Neuroscience and group leader for the Speech Communication Lab. She held a Wellcome Trust Career Development fellowship from 2001-2004, and a Wellcome Trust Senior Fellowship from 2005-2016. Her research addresses the use of models and theories of primate auditory neuroanatomy and neurophysiology to inform the neurobiology of human vocal perception and production. Her work addresses both verbal and non-verbal aspects of vocal communication. She was the 2017 Royal Institution Christmas Lecturer.

3rd August
An Adventurer's Guide to Science and Life

Mark Shuttleworth
Canonical Group

Former LIYSF participant and staff member Mark Shuttleworth will talk about how curiosity and a love of science have inspired his choices and adventures. Mark has founded several businesses in the technology world. Along the way, he has trained as a cosmonaut and flown to the International Space Station. He provides venture funding for tech activists who bring new approaches to social challenges. He lives on a farm which is slowly becoming a botanical garden and wilderness.

Mark Shuttleworth founded Thawte, an internet commerce security company in 1996 while studying finance and IT at the University of Cape Town. Mark is also an alumni of LIYSF. In 2000 he founded HBD, an investment company, and created the Shuttleworth Foundation to fund innovative leaders in society with a combination of fellowships and investments. In 2002 he flew to the International Space Station as a member of the crew of Soyuz mission TM34, after a year of training in Star City, Russia. After running a campaign to promote code, science and mathematics to aspiring astronauts and other ambitious types at schools in SA, he started work on Ubuntu. Today he lives on the lovely Mallards botanical garden in the Isle of Man.

4th August
Investing in Youth to Secure Global Health for our Future

Dr Eveyln Gitau
APHRC

The number of youth between the ages of 15 to 24 is 1.1 billion; constituting 18% of the global population. Too many of these young people see their potential hindered by extreme poverty, discrimination or lack of information. Investments in youth, particularly health and education, foster opportunities for developing a skilled and healthy labour force who can contribute more significantly to economic growth. Nations need to make investments to develop a labor force well equipped to move into new opportunities that emerge from the youth demographic dividend.

Evelyn Gitau is the Director of the Research Capacity Strengthening at the African Population and Health Research Center (APHRC). Her main role is to support the growth of APHRCs signature fellowship program, Consortia for Advanced Training in Africa (CARTA), and expand opportunities across the continent for African scholars to become great research leaders. Evelyn has over 15 years' experience in biomedical research having worked at KEMRI-Wellcome Trust Program since 2002. Evelyn sits on the advisory board of several organizations including the Independent Scientific Advisory Board, Malawi Liverpool Wellcome Trust Clinical Research Programme College of Medicine, Blantyre, Malawi, University of Oxford (MSc International Health and Tropical Medicine) and the Investment Committee Grand Challenges Canada.

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4TH AUGUST
BIT FROM IT: MANIPULATING MATTER BOND BY BOND

Professor Phillip Moriarty
University of Nottingham

It is now literally child's play to manipulate matter at the single atom level. Each "blob" is a single Ag atom (or a Ag dimer, where two atoms have been pushed just a little too close together), constructed by my eight year old son by pointing-and-clicking to drag individual atoms. But seeing and moving single atoms is now rather passe in state-of-the-art nanoscience. We are instead now at the point where individual chemical bonds – electron orbitals – are routinely imaged, and increasingly made and broken, under computer control. This lecture will consider the exciting advances that have been made in controlling the basic building blocks of matter with a particular focus on the following question: can we do 3D printing with atoms?

Philip Moriarty is a Professor of Physics at the University of Nottingham. His research interests lie in what has occasionally been described as "extreme nanotech" in that he works alongside a talented bunch of nanoscientists to prod, poke, push, pick, and pull individual atoms and molecules in order to explore forces and interactions down to the single chemical bond limit. He also has a keen and long-standing interest in science communication and public engagement. He is a member of the Sixty Symbols team that was awarded the Institute of Physics Kelvin prize in 2016 for "innovative and effective promotion of the public understanding of physics". While he doesn't share his infamous namesake's fascination with the binomial theorem, Moriarty enjoys exploring the maths-music-physics interface including, in particular, the deep and fundamental links that exist between quantum mechanics and heavy metal music (a theme discussed at length in his book, "When the Uncertainty Principle Goes to 11").

7TH AUGUST
CLOSING ADDRESS: SCIENCE IN A CHANGING WORLD

Dr Jeremy Farrar OBE
Wellcome Trust

As the world continues to change dramatically, science must be able to innovate, evolve and stay ahead of the world's greatest challenges.

Jeremy Farrar is Director of the Wellcome Trust, a global charitable foundation (both politically and financially independent) which exists to improve health for everyone by helping great ideas to thrive. Wellcome supports scientists and researchers, takes on big problems, fuels imaginations and sparks debate.

Jeremy is a clinician scientist who before joining Wellcome was, for eighteen years, Director of the Oxford University Clinical Research Unit in Vietnam, where his research interests were in infectious diseases and global health with a focus on emerging infections. He has published over 500 peer-reviewed scientific papers, mentored many dozens of students and fellows and served as chair on several advisory boards for governments and global organisations including the World Health Organization. He was named 12th in the Fortune list of 50 World's Greatest Leaders in 2015.

Jeremy was appointed OBE in 2005 for services to tropical medicine, was awarded the Memorial Medal and the Ho Chi Minh City Medal by the Government of Vietnam. He is a Fellow of both the Academy of Medical Sciences and The Royal Society, an elected member of the European Molecular Biology Organisation (EMBO) and an elected international member of the National Academy of Medicine (NAM).

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Monday 30th July – Specialist Lectures

30.1 The Physics of Cancer Research

Dr David Robert Grimes
Queens University Belfast

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. In this talk, we 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.

David Robert Grimes is a physicist and cancer researcher, currently based at Queen's University Belfast and a visiting researcher at the University of Oxford. His research focuses on the application of radiotherapy physics and oxygen modelling. He is also a science writer and communicator, frequently contributing to outlets such as 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.

30.2 Space Astronomy: From the Edge of the Universe to our own Earth

Professor Graziella Branduardi
University College London

Virtually all astronomers make use of instruments in space to learn more about the Universe. This lecture focuses on X-ray astronomy, explains the basics of how observations are carried out in space and describes some of the recent results from space observatories built by the European Space Agency and NASA. Cosmic X-ray sources encompass some of the most energetic and exotic phenomena in the Universe: from distant active galaxies, harbouring supermassive black holes around which energy production is more efficient than in nuclear reactors, to the magnetic environment of our own Earth, where X-rays are produced by the dynamic injection of the wind of charged particles emanating from the Sun.

Graziella Branduardi has been fascinated by astronomy and space research since she was a teenager. After a degree in Physics at the University of Milano, Italy, and a PhD in X-ray Astronomy at UCL, she worked at the Harvard-Smithsonian Center for Astrophysics, USA and then returned to UCL's Mullard Space Science Laboratory where she is based. After participating in major X-ray observatory missions over many years, she is now co-leading the development of a joint ESA-Chinese Academy of Sciences mission called SMILE which will investigate the X-ray emission produced in the near Earth environment by the dynamic impact of the solar wind.

30.3 Addressing the Challenges of Engineering Complex Systems

Dr Peter Hollingsworth
University of Manchester

Traditional engineering approaches have enabled some of man's greatest achievements. From the development of computers, to putting a man on the moon, the field of Systems Engineering has made our lives better and more fulfilling. However, we are hitting the limits of what our current methods are capable of. Modern engineering product development is increasingly likely to be late, expensive and underperform. From the International Space Station to Boeing's 787, we are finding it increasingly difficult to meet the goals of each programme. Delving into the interaction of human behaviour with uncertainty, technical capability and engineering ambition, we hope to address these issues and enable future artefacts that better meet society's needs.

Peter Hollingsworth is a senior lecturer in Aerospace Engineering at the University of Manchester with a focus on aerospace systems and aerospace design. He is a recognised expert in the area of advanced systems engineering methods focusing on how to improve our ability to engineering increasingly complex systems for the modern world.

30.4 Discovery of New Functional Materials for Energy Applications

Dr Shan Jiang
Durham University

Energy generation and storage are key challenges faced by current and future generations. Functional materials are important in applications such as gas storage, separation, catalysis, energy generation and transport. Shan has developed both two and three dimensional functional materials with new properties, such as porosity switching, shape-specific molecular sieving and CO_2 capture and conversion.

Shan Jiang was born and raised in China. After graduating with a MChem from the University of Liverpool, Shan obtained a PhD with Professor Andy Copper at the University of Liverpool. Shan is currently a research associate in the Department of Chemistry, Durham University. Her research background is in rational design of functional materials for energy storage and generation. Her PhD research was funded by the Overseas Research Student Award Scheme. In addition, she received the prestigious Outstanding Students Abroad Award from the Chinese Government, in 2011, as one of the only 28 Chinese PhD students who received the award in the UK. She was awarded the gold medal for the European Young Chemist Award at the 4th EuCheMS conference. She is also a resident mentor at the Josephine Butler College of Durham University, providing support and advice for undergraduate students.

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30.5 RECYCLING DRUGS: WHAT IS IT AND HOW DO WE DO IT BETTER

Dr Farhat Khanim
University of Birmingham

Drug repurposing (reprofiling, repositioning, redeployment) is a complementary approach to new drug discovery, and has been gaining ground across the world as a viable route to finding affordable new therapies for diseases. This is particularly true for rare diseases and diseases of low/middle income countries. Using some fascinating case studies, the talk will discuss some of the history, the current state of affairs and the future of drug repurposing as a pipeline. We will debate how do we, as a global community, accelerate the pipeline and deliver better, affordable drugs to clinic as quickly as possible.

Farhat Khanim obtained an honours degree in Biological Sciences and then went on to study Epstein Barr Virus in nasopharyngeal carcinoma for a her PhD at the University of Birmingham. After a fellowship at the Karolinska Institute, she returned to Birmingham to continue her research. For the last 14 years, Farhat has been using drug repurposing, the use of existing drugs for new conditions, to help to identify and develop new drug therapies for cancer. The work of the team has resulted in several clinical trials and current studies have identified several new combinations that are being developed for the clinic.

30.6 WHAT DO MINEHUNTERS, TYPHOONS & CYBER SECURITY HAVE IN COMMON?

David Mareels
BAE Systems

The Sigma Leadership Programme within BAE Systems is a three year, fast-track programme created for people with the right combination of leadership potential and engineering competence. It's unique, quick paced and aimed at giving a breadth and depth of knowledge from across multiple business areas. This lecture will detail the work of the Futures and Innovation team within the BAE Cyber Security division. This lecture will also detail David's work with Saudi Minehunters, a Combined Heat and Power plant and our Eurofighter Typhoon Aircraft.

David Mareels is an Australian-Belgian-Croatian engineer who has lived and studied in Australia, Singapore, Spain and the UK. David has a Masters of Engineering (Mechanical) from the University of Melbourne, Australia and is a current member of the Engineering Sigma Leadership Programme within BAE Systems. He has worked on various complex projects which deploy cutting edge technologies across Maritime, Air and Cyber Security divisions. In his spare time, David tutors engineering, physics, maths and economics as well as managing Chiron Tutors, a private tutoring agency based in London and Melbourne.

30.7 ANTIMICROBIAL RESISTANCE: AN EVOLVING AND INTERNATIONAL PROBLEM

Dr Alison Mather
Quaram Institute Bioscience

Antimicrobial resistance (AMR) is one of the most serious health threats we face today – if nothing is done to reduce the problem, it is estimated that resistant infections globally will cause more deaths than cancer by 2050. An inability to treat resistant bacterial infections will have a profound effect on human medicine and on animal health and welfare. Infectious diseases are an international problem, one that doesn't recognise borders; in this lecture, we will focus on AMR in bacteria, what it is and how it spreads. We will also explore how the application of technological advances, such as large-scale whole genome sequencing, has given us a greater understanding of the problem and what we could do about it.

Alison Mather is an epidemiologist who uses approaches from ecology, statistics, and genomics to study bacteria that can infect multiple host species. Her particular research focus is on bacteria that are resistant to antimicrobial drugs, using whole genome sequencing to understand where both the bacteria and antimicrobial resistance come from and how they spread. She is a Research Leader at Quadram Institute Bioscience in Norwich, UK.

30.8 UNDERSTANDING ELASTIC DEFORMATIONS: WRINKLES ON GAUSS' PIZZA THEOREM

Professor Dominic Vella
University of Oxford

Thin objects are easy to deform is familiar from everyday life: a piece of paper crumples, while bridges may vibrate in the wind. A guiding principle of such deformations is that the material will choose to bend, rather than change its length, whenever possible. Gauss' "Remarkable Theorem" has a lot to say about how such bending deformations can happen, and its consequences are everywhere from pizza slices to the domed roofs of buildings. However, as I will show, this is not the whole story and super-thin objects have some neat ways around Gauss' Theorem.

After undergraduate study at Cambridge, a year at Harvard and a PhD back in Cambridge, Dominic Vella worked in Paris as a post-doc supported by the Royal Commission of 1851. He returned briefly to Cambridge, before moving to Oxford to take up his current position in 2011. He works to develop mathematical models of a range of physical problems including floating objects (the 'Cheerios effect') and the wrinkling of thin elastic objects and his current research is supported by the European Research Council and the Leverhulme Trust.

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Wednesday 1st August – Specialist Study Day

1.1 Bio-Medical Physics

Professor Clare Elwell
University College London

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 Elwell was inspired to study Medical Physics by a lecture she attended at LIYSF and is now a Professor in Medical Physics at 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. Clare has won the UCL Provost's Public Engagement Award, Medical Research Council Science Suffrage Award, UK Inspirational Teacher Award and the Women in Science and Engineering Research Award. Clare has been awarded the UCL Engineering Engagement Outstanding Contribution Award and a British Science Association Media Fellowship. She is Founder of the charity Young Scientists for Africa.

1.2 Designing New Batteries & Supercapacitators for a Low Carbon Economy

Professor Clare Grey
University of Cambridge

The development of light, long-lasting rechargeable batteries has been an integral part of the portable electronics revolution. This revolution has transformed the way in which we communicate, transfer and access data globally, and has impacted developing nations as much as industrial societies. The invention of the lithium-ion (Li-ion) battery has been an integral part of these advances. Rechargeable batteries are now poised to play an increasingly important role in transport and grid applications, but the introduction of these devices comes with different sets of challenges. This talk will describe existing battery technologies and how they can be used to increase energy efficiency in transport and grid applications.

Clare Grey is a Geoffrey Moorhouse Gibson Professor in the Department of Chemistry at the University of Cambridge, a Fellow of Pembroke College, Cambridge and the Associate Director of the Northeastern Chemical Energy Storage Center at Stony Brook University, USA. Clare has won various awards, recently including Arfvedson-Schlenk-Preis from the German Chemical Society, Davy Medal from the Royal Society and an Honorary Fellowship, Balliol College Oxford.

1.3 Mathematical Modelling: Preventing Artificial Intelligence Takeover

Dr Nira Chamberlain
Institute of Mathematics

How do you prevent artificial intelligence from taking over the world? In this talk, we will discuss how mathematics is providing crucial answers. Mathematical modelling is the most creative side of applied mathematics which itself connects pure maths with science and technology. Mathematical models look into the real world, translate it into mathematics, solve that mathematics and then apply the solution back into the real world. Nevertheless, how can mathematical modelling provide future strategies in order to minimise the probability of an artificial intelligence takeover?

Nira Chamberlain is the Vice President of the Institute of Mathematics and its Application. As well as this, is listed by the Science Council as one of the UK's top 100 scientists and according to the PowerList 2018 is the 5th Most Influential Black Person in the UK. In his day to day job, Chamberlain is the principal consultant for data and decision science for FTSE 100 Company. He has more than 25 years of experience of writing mathematical modelling algorithms that solve complex industrial problems all over Europe.

1.4 Bugs, Bites and Saving Lives

Professor Janet Hemmingway
Liverpool School of Tropical Medicine

Insects transmit many of the World's most deadly infectious diseases. These diseases afflict the poorest populations in the World who have the least access to effective healthcare. Turning scientific discovery into new interventions that can be used in disease endemic countries to control or eliminate diseases like malaria is a passion of mine. The progress we have made over the last 10 years, literally saving millions of children's lives will be described.

Janet Hemmingway is the Director of the Liverpool School of Tropical Medicine, alongside this role she established a product development partnership with the Bill and Melinda Gates Foundation. Janet trained originally in genetics and zoology with a PhD in tropic medicine before a lectureship in toxicology at the University of California, USA. She returned to London to a Royal Society Junior Fellowship and was appointed Head of Biological Sciences and Preclinical Sciences at the University of Wales, Cardiff, in 1990, as the youngest female professor in the UK.

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1.5 PARTICLE PHYSICS & CERN

Dr Sarah Malik
Imperial College London

The discovery that 85% of the matter in the Universe is composed of some 'dark matter' that we have little knowledge about, has revolutionized humankind's understanding of the Universe and our place in it. This talk will take you through the engineering marvel that is the world's most powerful particle collider, the Large Hadron Collider, and its quest to understand the fundamental building blocks of the Universe and answer one of the most puzzling and long standing questions in physics; what is the nature of this dark matter?

Sarah Malik is a Royal Society University Research Fellow at Imperial College London. She studied Physics as an undergraduate at Oxford University and obtained her PhD in particle physics from University College London. Her current research involves searching for dark matter at the Large Hadron Collider experiment at CERN.

1.6 ENGINEERING OUR LIVES

Jameer Emmamally
Nuvia Group

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 Emamally 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.

1.7 THE AFFECTIVE BODY IN A TECHNOLOGY-MEDIATED WORLD

Professor Nadia Berthouze
University College London

This talk will highlight how we express affect through our bodies in everyday activities and how technology can be designed to read those expressions and even to modulate them. Among various applications, the lecture will present work on technology for chronic pain management and discuss how such technology can lead to more effective physical rehabilitation through integrating it in everyday activities and supporting people at both physical and affective levels. This lecture will also discuss how this sensing technology enables us to go beyond simply measuring and reflecting on one's behaviour by exploiting embodied bottom-up mechanisms that enhance the perception of one's body and its capabilities.

Nadia Berthouze is a Professor in Affective Computing and Interaction at the Interaction Centre of the University College London. Her research focuses on body movement and touch behaviour as a means to both automatically recognize a person's affective state as well as to modulate it while interacting with technology. She has investigated these modalities in the context of full-body computer games, physical rehabilitation, education and product experience.

1.8 NANOROBOTS AS FUTURE TOOLS IN NANOMEDICINE

Dr Samuel Sanchez
Institute for Bioengineering of Catalonia

The combination of biological components and artificial ones emerges into what we called hybrid machines or robots. Hybrid nano-robots convert fuels available in our body to generate propulsion force to swim and will eventually be used in vivo for transporting drugs to target locations in a controlled manner. On a larger scale, we use 3D bioprinting to fabricate cm-scaled hybrid BioRobots based on the combination of hydrogels and cells that contract in synchrony upon external stimuli, alike artificial muscles. These nano and microsystems could be one day be used as novel tools in nanomedicine.

Samuel is a Research Professor at the Institute for Bioengineering of Catalonia (IBEC) and the Catalan Institute for Research and Advanced Studies (ICREA) in Barcelona. Before that, he worked at the Max Planck Institute for Intelligent Systems in Stuttgart; IFW Dresden, Germany, MANA-NIMS in Japan, UAB in Barcelona and TU Twente in the Netherlands. His work spans from fundamental aspects of catalytic and biocatalytic nano-micromotors, 3D Bioprinted BioBOTS to applications in biomedical and environmental fields. He received several awards and recognitions such MIT TR35 as Top Innovator in the Spanish edition, Guinness World Records in 2010 and 2017, the Princess of Girona Scientific Research Award 2015 and the National Research Award for Young Talent 2016.

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Friday 3rd August – Alumni Specialist Lectures

3.1 The Power of Genetics and Stem Cells

Dr Rubika Balendra – LIYSF 2003
University College London

The health and socioeconomic burden of dementia is vast, and will only increase over the next few decades. Motor neuron disease is a devastating neurodegenerative disease which affects one in 250 people. How will we move towards finding treatments for these diseases? This lecture will discuss recent developments in this field of neurodegeneration with a focus on using genetics to drive forwards our understanding of mechanisms and therapeutics. We will discuss novel disease models, including human stem cell-derived neurons and fruit flies, as approaches to investigate clinically applicable pathways in neurodegeneration.

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

3.2 The Impact of Hydrogen Fuel Technology

Maurice Brown – LIYSF 1986
Utrecht University

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.

3.3 Is This My Heart?

Dr Tom Ingram – LIYSF 1993
Royal Shrewsbury Hospital

Examine one of the world's biggest killers - ischaemic heart disease reflecting upon the evolution of our understanding of angina and heart attacks. We will look at the pathology, the treatment and the complications which can occur. Then we will look to the future, on the one hand exploring the exciting therapies of stem cell transplantation and reperfusion injury limitation. However, an appreciation will also be given as to why, despite the significant advances we have made, the rate of decline in the incidence of heart disease has slowed and may even be on the rise again. The worrying prediction that this could be the first generation to be outlived by their parents should sharpen all of our minds as we enter an uncertain future.

Tom Ingram is a Consultant Cardiologist working in the West Midlands region of the United Kingdom. He graduated from the University of Leeds in northern England. He was selected onto the All Wales specialist training programme in Cardiology. Most recently, he has been awarded a three year competitive research grant from the British Heart Foundation to look into blood flow characteristics during times of reduced oxygen supply to the heart. He was an attendee at the science forum in 1993 and then returned as a member of staff for four years.

3.4 Cancer – The Patient Journey

Dr Stephen Maher – LIYSF 1997
Trinity College Dublin

This lecture will provide participants with an understanding of the basic biological nature of cancer, the history of cancer and how biological and technological research advances have gone hand-in-hand with the modern management of cancer. We will answer questions, such as, what is cancer and why do we get cancer? Why is cancer increasing in society? How is cancer detected? What happens when cancer is diagnosed? How is cancer treated? Why so many different treatments? Why do some treatments work and others do not? Importantly, we will address the ultimate question; can cancer be cured?

Stephen Maher is the James Ussher Assistant Professor in Translational Oncology at Trinity College Dublin, where he leads the Cancer Chemoradiation Research Group. He has a BSc in Analytical Science and a PhD in Oncology. He has mentored numerous PhD students and postdocs, and has published extensively in the area of oesophageal cancer and therapeutics research. His current research interests include investigation of the molecular and cellular mechanisms underpinning resistance to cancer treatment, in particular radiotherapy, microRNA biology, drug delivery and hypoxia signalling. Stephen was a participant at the 39th LIYSF.

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3.5 PAST, PRESENT AND FUTURE: IN HIV TREATMENT

Ojali Yusuff – LIYSF 2006
HCA Healthcare UK

This lecture will consider the development of antiretroviral therapy (ART) in the battle against human immune deciency virus (HIV) from the start of therapy in the 1980s during the AIDS epidemic to the sophisticated and highly active treatments currently available. Considering the current research into curative treatment strategy options as we continue to build the armamentarium in HIV therapy and 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 resource limited settings and the combined global efforts in tackling HIV.

Ojali attended LIYSF in 2006 and returned as 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 HIV and sexual health. She was also 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 and women in-patient hospital visitations.

3.6 WHAT RESEARCH CAN YOU DO NOW TO CHANGE THE WORLD?

Dr Becky Parker – LIYSF 1978
The Institute of Research in Schools

This lecture will introduce the opportunities available for you to do fundamental research right now including particle physics, space science, genomics, sustainable chemistry, biodiversity and well-being, and climate change and Earth Observation.

The Institute for Research in Schools where Becky is Director, encourages contributions from young people in cutting edge research while they are at school. She set up the Institute for Research in Schools with Trustees including Professor Sir Leszek Borysiewicz, Vice-Chancellor of the University of Cambridge and Professor Dame Julia Goodfellow, Vice-Chancellor of The University of Kent. This will empower young people and their teachers to take part in authentic research.

The aim is to produce papers, speak at scientific conferences and tackle some of the huge challenges that we face. Come and see how you can get involved and how we can establish a research community from LIYSF.

3.7 AERODYNAMICS, TURBULENT FLOW AND COMPUTATIONAL FLUID DYNAMICS

Dr Stephan Priebe – LIYSF 2000
General Electric

Aerodynamics, the study of the motion of air around objects, is relevant in a broad range of applications, including aircraft and jet engines. The lecture will introduce basic aerodynamic principles with a focus on those that enable flight, from the fundamental question of why an aircraft flies to explaining aerodynamic features found in modern aircraft and jet engines. This lecture will also introduce more advanced topics such as turbulence and computational fluid dynamics (CFD). Most flows encountered in nature and engineering applications are turbulent, rather than laminar. Turbulent flows are characterized by seemingly-random fluctuations in contrast to orderly, laminar flow. Turbulence is an active area of research and we will provide an introduction to this fascinating topic.

Stephan Priebe's main interests are in turbulent flows and computational fluid dynamics. He is a lead engineer at the General Electric Research Center in Niskayuna, New York, where he works on applications such as turbines and jet engines. He studied aeronautical engineering at Imperial College in London, followed by a PhD in Mechanical and Aerospace Engineering at Princeton University. He attended LIYSF as a participant in 2000 and returned as a member of the student staff in the following years, including as Chief of Staff in 2004.

3.8 DAWN OF THE LIVING CHEMICALS

Dr Erik Szabo – LIYSF 2004
Univeristy of Bratislava

Where is the line between the non-living and the living? We have come a long way in understanding the living matter in terms of its molecular principles. But what about the reverse? Instead of explaining life in the language we developed for simple molecules, could we investigate the world of basic chemicals for features characteristic of the living? In this lecture we will look at chemical systems, which are relatively simple, yet show spectacularly counter-intuitive behaviour, spontaneously turning chaotic motion of individual particles into regular patterns of ordered collective activity. And we will see that similar seeds of life-like phenomena may be hiding all around us. Could they be the key for opening the right doors in the fields of origins of life, search for extra-terrestrial life or designing synthetic living structures?

Erik Szabo is a specialist in the dynamics of complex chemical reactions and chemical self-organization. He received his PhD in Physical Chemistry in 2012 from Comenius University in Bratislava, Slovakia, where he now continues his work with chemical oscillators as an Assistant Professor. In 2013 he accepted an offer from Harvard University, and as a Postdoctoral Fellow he collaborated on applications of oscillating chemical reactions for Biologically Inspired Chemically Operated Synthetic Systems, one of the projects of Harvard's Origins of Life Initiative.

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Monday 6th August – Specialist Lectures

6.1 Shining Light on the Brain: Optics in Medicine

Dr Gemma Bale
University College London

Near-infrared spectroscopy is a technique to monitor changes in brain activity using infrared light. It is becoming an important tool in neuroscience and intensive care as it can monitor the activity and health of the brain in a safe, non-invasive way. This lecture will cover a broad range of topics to reflect the multidisciplinary nature of medical physics. In particular: the physics of light transport through tissue, the engineering of optical medical devices, the physiology of the brain in health and disease, and how these are linked together.

Gemma Bale is a Research Associate in the Biomedical Optics Research Laboratory at University College London. Her work focuses developing new neuromonitoring techniques for the measurement of cerebral oxygenation and metabolism to help diagnose and treat brain injury in newborn babies. Dr Bale received the Dietrich Lubbers award from the International Society on Oxygen Transport to Tissue in 2016, and in 2015 she was awarded the UCL Provost's Engineering Engager of the Year award for her work in communicating science to the public. Recently, Gemma has launched an award-winning public engagement platform called MetaboLight.

6.2 The Oceans are our Future

Dr Simon Boxall
University of Southampton

It is estimated that the oceans contain 80% of the Earth's remaining resources of oil, gas and rare earth minerals. According to a UNESCO report they have sufficient food stocks to meet our needs for protein if managed correctly. They are also the hope for green energy, from offshore wind farms to tidal power. Simon will present the state of the art on these advances and the political obstacles that stand in the way of the science from the oceans for our future.

Simon Boxall is a senior lecturer in Oceanography at the University of Southampton, National Oceanography Centre (UK).. He has worked on secondment for projects for UNESCO, The European Union Research Centre, The World Bank, The British Council, and European Space Agency over the years. He is an advocate of using the oceans as the source for green energy of the future and supports projects involving tidal power, bio-energy and offshore wind. Simon has a responsibility for public understanding and has been involved in numerous documentaries and regularly appears on radio and TV news and current affairs broadcasts world-wide.

6.3 Extracellular Vesicles and Key Roles in Infections and Cancer

Professor Jameel Inal
University of Hertfordshire

In infectious diseases, Extracellular Vesicles (EVs) are released by pathogens and host cells alike. In a similar vein, within the tumour microenvironment there is a two-way EV-mediated communication between tumour cells and immune cells. This lecture will explore the attempts of pathogens to overcome host defence mechanisms and for host cells to diminish pathogen infection; to emphasise the complex nature of these communications it will be shown how pathogens may in turn opportunistically capitalise on the presence host EVs.

After a degree in Microbiology from King's College, London Jameel worked in vaccine development at the Centre for Applied Microbiology and Research at Porton Down. He had two W.H.O. fellowships at the London School of Hygiene and Tropical Medicine and then brief stints at the Ludwig Institute for Cancer Research (UCL/Middlesex branch) and the MRC Immunochemistry Unit at the University of Oxford. Jameel is now a Professor in Biomedical Science at the University of Hertfordshire. He is an Editorial Board Member of Scientific Reports (2017-) the Journal of Extracellular Vesicles (2012-), and holds various editorial board memberships in Frontiers Journals. He is a Fellow of the Royal Society of Biology and member of the American Association of Immunologists.

6.4 A Day in the Life of a Drilling Engineer

Lynda Nwike
Shell

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. This lecture will consider choosing and maturing concepts for the abandonment of the Heron & Skua fields at ETAP (Eastern Trough Area Project), with an aim to optimise concepts and ensure the execution of a truly optimum abandonment design by leveraging on existing applicable technologies, identifying and tapping into the value of staircase opportunities whilst ensuring effective contract management and strong stakeholder relationships.

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.

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6.5 UNRAVELLING THE FORMATION OF MILKY WAY-LIKE GALAXIES

Dr Michelle Collins
University of Surrey

Learning how galaxies like our own formed is one of the outstanding puzzles in astrophysics. In this lecture, I will discuss the field of Galactic Archaeology, where we use the stars of the Milky Way and Andromeda as a fossil record of their creation. I will discuss the types of telescopes and observations we use for this, and the numerical simulations that underpin our understanding of galaxy formation and evolution. I will also look to the future of the field, and cover some of the cutting edge research taking place with the Gaia satellite, and future facilities like LSST.

Michelle Collins is a lecturer in astrophysics at the University of Surrey. She got her undergraduate degree at the University of Manchester, and her PhD at Cambridge. She was a Galaxies and Cosmology Fellow at the Max Planck Institute for Astronomy, and a Hubble Fellow at Yale University.

6.6 MULTIFUNCTIONAL STRUCTURAL POWER MATERIALS

Professor Milo Shaffer
Imperial College London

Nanocarbon-based electrodes offer cheap printable, flexible, potentially transparent films crucial for large area plastic electronics. The intrinsic performance of individual perfect nanocarbon structures is extraordinary, in both conducting and semi-conducting regimes. The challenge is to manifest these characteristics at large scale by developing reliable synthesis, processing, and assembly techniques. Recent developments in mouldable thin film transistors based on semiconducting carbon nanotubes, and the demonstration of the first "all nanotube" computer, highlight the potential of such systems.

Milo Shaffer is Professor of Materials Chemistry at Imperial College and co-Director of the London Centre for Nanotechnology. His research combines nanomaterials synthesis, modification, for applications including composites and electrochemical devices. Recent work has produced two complementary new routes for the dispersion and surface functionalisation of carbon nanomaterials. He has previously spent time working as a consultant in new technology development and exploitation, and has ~30 patent applications, 9 licensed commercially. He was awarded the RSC Meldola Medal (2005), an EPSRC Leadership Fellowship (2008), and the RSC Corday-Morgan Prize (2014).

6.7 MALARIA IN THE 21ST CENTURY

Dr Colin Sutherland
London School of Hygiene & Tropical Medicine

Dr Sutherland will use current and past examples to explore the possibility that malaria might be heavily contained, and in places eliminated, during this century. However, he will also argue that we are in danger of repeating past mistakes, and seeing a resurgence of malaria in the coming decades, if we do not heed the lessons of past failed eradication campaigns.

Colin Sutherland is a biologist and parasitologist who joined LSHTM in 1998 to work with Geoffrey Targett on the gametocytes of Plasmodium falciparum. Colin began working on malaria drug resistance in the context of the team's clinical studies in The Gambia from 1998 – 2002, and this remains his main focus. Since 2004, Colin has also developed new molecular diagnostics for malaria with Peter Chiodini and Spencer Polley in the Hospital for Tropical Diseases. The evolutionary biology of malaria underpins all Colin's studies, using the tools of molecular genetics and genomics. Parasite adaptation to both host immunity and antimicrobial drugs is of particular interest.

6.8 DATA SCIENCE AND AI: OPPORTUNITIES AND THREATS

Professor Paul Watson
Newcastle University

Vast amounts of data are being generated in every area of industry, and in every aspect of our everyday lives. How can we use this data to improve the economy and society for everyone's benefit? Data Science and AI are increasingly proposed as ways to achieve this, but what are they, and what are their strengths and limitations? This talk will introduce Data Science and AI, giving real-world examples of the opportunities and threats that they bring.

Paul Watson is Professor of Computer Science and Director of the Digital Institute at Newcastle University. He has led major projects in scalable computing, including the RCUK Digital Economy Hub on social inclusion through the digital economy, which focused on using technology to transform the lives of older people and those with disabilities. After a PhD at the University of Manchester, he took a lectureship before spending time in industry to productise the result of a research project. He received the 2014 Jim Gray eScience Award and is a Fellow of the Royal Academy of Engineering.

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Friday 27th July
London Scientific Visits

27.A Imperial College Healthcare, Alexander Fleming Laboratory 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.

27.B 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.

27.C Imperial College London, Department of Electrical Engineering / Energy 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.

27.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, Cell & Molecular Biology and Ecology & Evolution.

27.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.

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

27.G 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.

27.H Linnean Society
The Linnean Society of London is the world's oldest active biological society. The Society takes its name from the Swedish naturalist Carl Linnaeus (1707–1778) whose botanical, zoological and library collections have been in its keeping since 1829. These unique collections are of continuing fundamental importance as a primary reference for taxonomy.

27.I Lloyds Register Foundation
The Lloyd's Register Foundation is a UK charity which aims to protect the safety of life and property, and to advance transport and engineering education and research.

27.J London Metropolitan University Faculty of Life Sciences & 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.

27.K 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.

27.L National Physical Laboratory
UK's principal facility in measurement and materials science. Visit state of the art facilities ensuring accuracy, consistency and innovation in physical measurement.

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

27.N 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.

27.O 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'Oreal 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.

27.R University College London Hospitals – Department of Haematology and Blood Transfusion
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.

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

27.T 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.

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Tuesday 31st August
National Scientific Visits

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

31.B Animal & Plant Health Agency (APHA)
APHA is the UK Government agency 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.

31.C University of Birmingham, School of Biosciences
One of the top biology schools in the UK, delivering internationally excellent teaching and research across the broad span of modern biology.

31.D British Geological Survey
The British Geological Survey has the prime function of compiling national inventories of geological resources and managing the resource environment.

31.E Cardiff University - School of Pharmacy and Pharmaceutical Sciences & Cardiff University Brain Research Imaging Centre
The school has a strong tradition of innovative pharmaceutical education, scientific research and service to the pharmacy profession. Cardiff University Brain Research Imaging Centre (CUBRIC) is set to become one of Europe's top facilities for brain imaging.

31.F Cranfield University
Cranfield University has a global reputation for inspirational teaching and research, industrial-scale facilities and superior links with industry and commerce.

31.G University of Essex, Human Performance Unit
The HPU provides physiological testing, nutritional support and body composition assessments to athletes. Athletes are attracted to Essex University due to the high calibre coaching and sports science services.

31.H 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.

31.I University of Leicester Space Research Centre & National Space Academy
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.

31.J Liverpool School of Tropical Medicine (LSTM)
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.

31.K Morgan Motor Company
Morgan Motor Company is a family-owned manufacturer since 1909 that hand-builds iconic British sports cars, famous the world over for their unique blend of craft, heritage and pure driving experience. Explore the factory and meet the Technical Director.

31.L 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.

31.M University of Nottingham, The School of Chemistry - Carbon Neutral Laboratories
A £4 million HEFCE-STEM funded award is supporting new teaching laboratories, with the creation of a new teaching laboratory that is fully equipped with cutting-edge facilities.

31.N Public Health England
PHE aims to improve the health of the population by sharing information and taking on public health challenges. It is responsible for protecting and supporting the nation in cases of public health hazards.

31.O 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.

31.P Rothamsted Research Centre
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.

31.Q Rutherford Appleton Laboratory
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.

31.R 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. Key activities include the discovery of new active ingredients, new formulation technologies, product safety and seeds research.

31.S 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.

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Thursday 2nd August
Oxford and Cambridge Scientific Visits

2.A Babraham Institute
The Babraham Institute is a world-class research institution, with a 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.

2.B British Antarctic Survey
The British Antarctic Survey (BAS) is an international leader in Antarctic science. BAS provide world-leading research infrastructure that enables scientists to work safely and effectively in the polar regions.

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

2.D University of Cambridge, MRC Laboratory of Molecular Biology
The MRC Laboratory of Molecular Biology is one of the world's leading research institutes. Its scientists work to advance understanding of biological processes at the levels of atoms, molecules, cells and organisms.

2.E University of Cambridge. NiHR Cambridge Biomedical Research Centre and Cambridge Science Centre
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 to pioneer new ways to prevent, detect and treat cancer.

2.F University of Cambridge, Scott Polar Research Institute
The institute is the oldest research institute of its kind, with a mission to enhance the understanding of the Polar Regions through scholarly research and publication.

2.G Department of Zoology, University of Oxford
The Department is a large university zoology department, containing the Biodiversity Institute; Edward Grey Institute of Field Ornithology; Institute for Emerging Infections and the Wildlife Conservation Research Unit.

2.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.

2.I Culham Centre for Fusion Energy
The Culham Centre for Fusion Energy (CCFE) is the UK's national laboratory for fusion research, owned and operated by the United Kingdom Atomic Energy Authority (UKAEA). CCFE hosts the world's largest magnetic fusion experiment, JET (Joint European Torus).

2.J HR Wallingford
HR Wallingford has been involved in research and consultancy to solve water-related challenges worldwide for 70 years. The company has impressive physical modelling facilities which include seven wave basins, used to build and test scale models of ports, harbours and beaches.

2.K Oxford Brookes University, Department of Mechanical Engineering & Mathematical Sciences
The department provides a range of professionally accredited mechanical, automotive, motorsport, mathematical and statistical programmes, with high quality teaching and applied research.

2.L University of Oxford, Jenner Institute & Oxford Vaccine Group
The Jenner Institute was founded develop innovative vaccines against major global diseases and has grown into one of the largest non-profit sector research and development activities in vaccinology. New vaccines against malaria, tuberculosis and HIV are currently in field trials in the developing world.

2.M University of Oxford - 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.

2.N University of Oxford, Pitt Rivers Museum
The museum displays the archaeological and anthropological collections of the University of Oxford. The museum was founded in 1884 by Lt-General Augustus Pitt Rivers.

2.O University of Oxford - Department of Physics
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.

Friday 3rd August

3.A Natural History Museum
NHM's vision is to advance knowledge of the natural world, inspiring better care of our planet with the mission to maintain and develop collections, and use them to promote the discovery, understanding, responsible use and enjoyment of the natural world. The 8-storey, landmark Darwin Centre and cocoon structure is the most significant development at the Natural History Museum since it moved to South Kensington in 1881.

3.B 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 now holds unrivalled collections in this area. Medical artefacts from all periods and cultures also form an important part of its holdings.

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Saturday 28th 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


Ahmed Alboksmaty


Elizabeth Chambers


Ndiuwem Essien


David Robert Grimes


Shaun Holmes


David Mareels


Claire McNulty


Sean O'Callaghan


Michael Olafisoye


John Romero


Clare Thomson


Ojali Yusuff

FameLab at LIYSF

Ten projects will be chosen to be presented on Monday 30th July during 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.

FameLab TALKING SCIENCE

BRITISH COUNCIL

CHELTENHAM Science Festival

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Programme Venues

Halls of Residence

Beitside Halls of Residence
Hall Host: Emer Hickey

Beit Halls

Southside Halls

MGM Halls of Residence
Hall Host: Simran Mohnani

Millennium Gloucester

Metrogate House

Richmond Halls of Residence
Hall Host: Anin Luo

Atlantic House

Ambassador House

Programme Venues

Royal Geographical Society

Imperial College London

Millennium Gloucester

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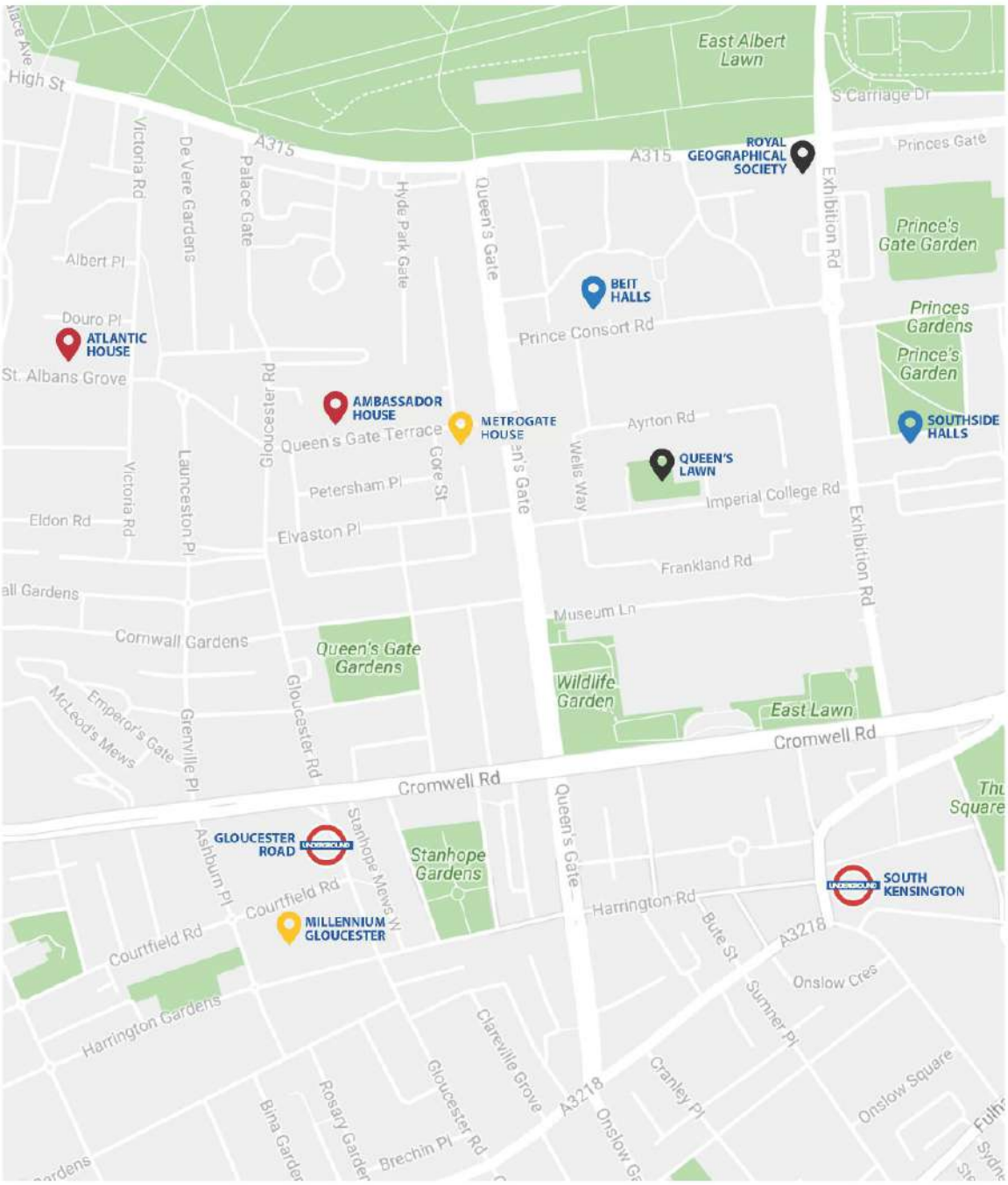
LIYSF Campus



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England

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England

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Videographer
Romania

Vilius Uksas
Videographer
Lithunaia

Beitside Halls of Residence

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Hall Host
Ireland

Ariadna Gistas
Programme Liaison
Spain

Enrico Caprioglio
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Athina Zitti
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Counsellor
Kenya

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MGM Halls of Residence

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Hall Host
Malta

Sam Thomas
Programme Liaison
England

Aranza Meza Dorantes
Deputy Host
Mexico

Julia Dela Rosa
Counsellor
Switzerland

Salomé Brunon
Counsellor
France

Arnau Sola
Counsellor
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Christa Teta
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The Research Council

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Supporting Organisations

LIYSF is very proud to have the support across the globe of; National Government Offices, British Council Offices, National and International Science Competitions, Science Organisations, 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*	John Roan School	*England*
Arkwright Scholarships Trust	*UK*	Kang Chiao International School	*Taiwan*
ASDAN	*China*	Korea Science Service	*South Korea*
Binus International School Serpong	*Indonesia*	Louisiana State Univeristy Laboratory School	*USA*
British Council	*Taiwan*	Memorial University of Newfoundland	*Canada*
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British School of Brussels	*Belgium*	National Youth Science Forum	*Australia*
Cathedral and John Connon School	*India*	Polish Children's Fund	*Poland*
Celia and Glyn Allen	*Guernsey*	RED Science & Technolody Youth Activities Network	*Mexico*
China Association for Science and Technology	*China*	REDE POC	*Brazil*
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English School	*Cyprus*	Rotary National Science & Technology Forum	*New Zealand*
Fallibroome Academy	*England*	Royal Society of New Zealand	*New Zealand*
Federazione delle Associazioni Scientifiche e Tecniche	*Italy*	Agency for Science & Technology Advancement	*South Africa*
Foundation Jeunes Scientifiques Luxembourg	*Luxembourg*	Swedish Federation of Young Scientists	*Sweden*
University of Fraser Valley	*Canada*	Swiss Youth in Science	*Switzerland*
Fundació Catalunya-La Pedrera	*Spain*	The Research Council	*Oman*
GC School of Careers	*Cyprus*	Young Scienctists for Africa	*UK*

Acknowledgements

LIYSF offers its thanks to all those who so generously assisted in the planning and preparation of LIYSF 2018 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, Professor Clare Elwell, Mr Ray Lewis, Mr John Needle, Mr Michael Olafisoye, Professor David Phillips, Dr Tim Slingsby, Mr John Romero, Ms Annette Smith and Sir Colin Terry.

Imperial College London for providing facilities, accommodation, meals and working with us across the University to integrate all aspects of the College with LIYSF. The Royal Geographical Society for hosting our plenary sessions. The Millennium Gloucester for providing facilities and hosting our social programme. The Foundation for International Education and Richmond, the American International University in London for providing accommodation.

61st London International Youth Science Forum

24th July – 7th August 2019

London International Youth Science Forum
Royal Parade Mews
Chislehurst
BR7 6TN
United Kingdom

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LONDON INTERNATIONAL YOUTH SCIENCE FORUM

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