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Scientific Committee
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SCIENCE IN PARLIAMENT SPECIAL STEM for Britain



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Human Factors in Aviation Safety

13-14 November 2017 | Gatwick

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Monday 13 November

Session 1: How do we improve human performance in aviation systems?

- **Keynote:** Health – the forgotten human factor in aviation? Sian Blanchard, EasyJet
- Introducing the Aviation Academy Safety Culture Prerequisites Tool. Selma Piric, Amsterdam University of Applied Sciences Aviation Academy
- How does managing a formation of multiple unmanned vehicles impact operator performance? Jaina Mistry, BAE Systems
- Can the use of angle of attack systems help to mitigate Loss of Control In Flight (LOC-I) events? Mike Bromfield, Coventry University
- Human performance data collection – lessons learned and future challenges. Anna Collard-Scrubby, NATS
- Predicting human performance aspects of human error in Fast Jet cockpits. Will Tutton, Dstl/Coventry University
- Helicopter pilot perception of air traffic controller responsibility. Dan Martin, AvMax Ltd
- Human performance - international regulatory update. Kathryn Jones, CAA

Session 2: Is adaptive automation still a useful concept?

- **Keynote:** Is adaptive automation still on the horizon? Kathy Abbott, FAA
- Autonomous systems: designing pilots out of the loop or back into the loop? Fiona Cayzer, BAE Systems
- The STRESS project. Stefano Bonelli
- A cockpit designer's perspective on adaptive automation. Sylvain Hourlier, Thales Avionics

Tuesday 14 November

Session 3: Are we managing fatigue in aviation?

- **Keynote:** Is Fatigue Risk Management Science working? Douglas Mellor, FRMSc
- Pilot fatigue: an unmanageable condition, without extreme concessions. Andy Taylor, Coventry University
- A practical examination of Fatigue Risk Management. Sarah Booth, Clockwork Research

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Session 4: Where are the human performance limits in remote operations?

- **Keynote:** The future of remote towers. Per Ahl, SAAB
- The human factors and safety case for remote towers. Desmond Whitty, Irish Aviation Authority
- How real does reality have to be in remote towers? Jocelyn Clark, NATS

Session 5: Have maintenance human factors fallen off our agenda?

- **Keynote:** The Airbus A320 family fan cowl door safety modification: a human factors scenario analysis. Kyriakos Kourousis, University of Limerick
- Big 5 personality traits and safety in maintenance engineers. Paul Dickens, Core Aviation Psychology
- Individual latent error detection in UK naval aircraft maintenance. Justin Saward, Royal Navy
- Maintenance observation programme: gaining deeper insight. Andy Evans, Aerossurance

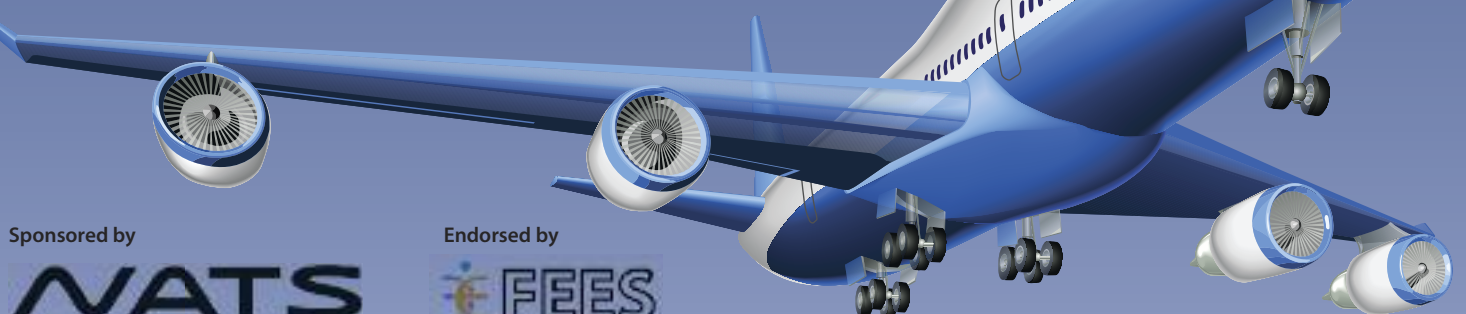


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Stephen Metcalfe MP,
Chairman, Parliamentary and
Scientific Committee

On the 13th March I was delighted to once again host STEM for Britain and welcome early career researchers from universities and research institutions throughout the country to Westminster.

This annual competition is an important date in the parliamentary calendar because it gives MPs an opportunity to speak to a wide range of the country's best young researchers.

These early career engineers, mathematicians and scientists are the architects of our future and STEM for Britain is politicians' best opportunity to meet them and understand their work.

The studies were displayed as a poster which was intended not only to reflect the importance of the research but also be intelligible to those with no scientific background. Entries were judged by eminent subject specialists from around the country.

But the event wouldn't have been possible without the help of all the major learned societies involved in its organisation, especially the Royal Academy of Engineering, the Royal Society of Chemistry, the Institute of Physics, the Royal Society of Biology, The Physiological Society and the Council for the Mathematical Sciences.

And I must also thank all the organisations which have generously supported the event including the Clay Mathematics Institute, Warwick Manufacturing Group, Research Councils UK, the Institute of Biomedical Science, the Heilbronn Institute for Mathematical Research and SCI.

Last, but by no means least, without our panels of expert judges from every discipline we would never have been able to decide who should win the Awards!

This publication showcases the amazing day that was had by all. I hope you enjoy the collection of memorable moments from STEM for Britain 2017 and hope to see you at the event in 2018!



The Journal of the Parliamentary and Scientific Committee.

The Parliamentary and Scientific Committee is an All-Party Parliamentary Group of members of both Houses of Parliament and British members of the European Parliament, representatives of scientific and technical institutions, industrial organisations and universities.



Science in Parliament has two main objectives:

1. to inform the scientific and industrial communities of activities within Parliament of a scientific nature and of the progress of relevant legislation;
2. to keep Members of Parliament abreast of scientific affairs.



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The support of a number of important organisations is vital for STEM for Britain...



"WMG is delighted to sponsor the STEM for Britain engineering awards for 2017. Because Britain needs an economy built on technical innovation, improved productivity and long-term Investment, it is crucial that we support innovative research which has the potential to change the way we live."

At WMG, we have focused on the practical applications of the highest quality scientific research for over 36 years, driving innovations in fields as diverse as battery technology and healthcare. In the future, the engineers presenting today can make a similar impact on our society."

Professor Lord Bhattacharyya, Chairman, WMG



"The inclusion of mathematics in STEM for Britain recognises the vitality and strength of the discipline in the UK and the huge part that all branches of mathematics play in underpinning science and technology."

Professor N M J Woodhouse, President, Clay Mathematics Institute



"As a Research Institute whose focus is on fundamental mathematics and its applications to UK national interests, and on supporting mathematical research across the country, HIMR is delighted to be associated with STEM for Britain and offers its warmest congratulations to all of the Award winners."

Professor Jon Keating FRS, Chair Heilbronn Institute for Mathematical Research



"Each year RCUK invests around £3 billion in research covering the full spectrum of disciplines and sectors. Their collective ambition is to ensure the UK remains the best place in the world to do research, innovate and grow business for the benefit of society and the economy."

"RCUK supports the training and career development of researchers across career stages – including around a quarter of all UK postgraduate students – and is delighted to support engagement between early career researchers and policy-makers through this prestigious competition."

Dr Mary Travers, Senior Policy Manager, Research Councils UK



"SCI's charitable objective is to bring together chemistry-related sciences and industry to promote applied science for the benefit of society. The current global challenges we face are significant and complex and require a multi-disciplinary, innovative approach. Supporting early-stage and early-career research scientists, engineers, and technologists is an essential part of that mission. SCI is proud to be part of STEM for Britain and to support the work of past-member, Dr Eric Wharton, who initiated SET for Britain."

Sharon Todd, Executive Director, SCI



"The Institute of Biomedical Science is proud to sponsor STEM for Britain which is an excellent opportunity for biological and biomedical scientists to showcase their research and raise awareness of their valuable work to politicians and the public."

Mr Ian Sturdgess, IBMS President



2017

PARLIAMENT SHOWCASES BRITAIN'S FUTURE

Scientists Engineers Technologists Mathematicians

On Monday 13th March, 210 early career researchers from universities and research institutions throughout the country came to Westminster to take part in STEM for Britain 2017, the annual poster competition and exhibition to encourage interaction with MPs and Parliament. During the course of the day these scientists, engineers, technologists and mathematicians had the opportunity to show their posters and explain their research to some 80 Parliamentarians from both Houses.

The competition was divided into five specialist sections: Biological and Biomedical Sciences; Chemistry, Physics, Engineering and Mathematical Sciences and Gold, Silver and Bronze winners in each category received certificates and cash prizes, with medals going to the Gold winners.

At the end of the day the winners of the five Gold medals competed for the Westminster medal in memory of Dr Eric Wharton, founder of STEM for Britain. Here, with the quality of the science already ready proven with a Gold medal, the judges had to decide which of the five posters best demonstrated the presenter's skill in communicating the scientific concept.

Judging panels for each category were formed of distinguished scientists, engineers and mathematicians from the Royal Academy of Engineering, the Royal Society of Chemistry, the Institute of Physics, the Royal Society of Biology, The Physiological Society and the Council for the Mathematical Sciences. The judges' initial task had been to select the 210 posters for the exhibition and final of the competition from nearly 400 high quality entries

The event is a two-way process designed to strengthen the dialogue between Parliament and the science, technology, engineering and mathematical communities.

STEM for Britain would not be possible without the help of all the major learned societies involved in organising the event, especially the Royal Academy of Engineering, the Royal Society of Chemistry, the Institute of Physics, the Royal Society of Biology, The Physiological Society and the Council for the Mathematical Sciences.

And also all the organisations which have generously supported the event including the Clay Mathematics Institute, Warwick Manufacturing Group, Research Councils UK, the Institute of Biomedical Science, the Heilbronn Institute for Mathematical Research and SCL.

However, the researchers who exhibited and displayed their work are the true 'engine room' of R&D. The success of the UK in the competitive knowledge economy of the 21st Century is going to depend crucially on their expertise.

Let's meet some of them...



PHYSICAL SCIENCES EXHIBITION - CHEMISTRY

The research topics were wide and varied – from fingerprinting techniques to molecular origami.

Royal Society of Chemistry chief executive, Robert Parker, was on-hand to present the prizes and he emphasised how chemical research improves our lives in many ways that we take for granted.



Dr Robert Parker



The gold medal winner in the chemistry category was Yvonne Choo, a third year PhD student at Newcastle University.

Originally from Malaysia, Yvonne's research is about a clingfilm-like polymer membrane for water splitting devices that will be vital for clean hydrogen production. She hopes that this will lead to a greener and more efficient source of hydrogen in future, which could in turn be used as a fuel for cars.



Chemistry winners: L to R: Mr Samuel Dalton (Bronze Award Winner); Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Miss Shuen Lann Yvonne Choo (Gold Award Winner); Dr Robert Parker, Chief Executive, Royal Society of Chemistry; Dr James Cooper (Silver Award Winner); Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee.

James Cooper from the University of Edinburgh took home silver for his work on molecular cages and the bronze award went to Sam Dalton of the University of Strathclyde, in association with GSK, for his poster on new drugs for treating inflammatory diseases.

PHYSICAL SCIENCES EXHIBITION - PHYSICS

Dr Mark Telling (chair of physics judges) remarked: "With topics ranging from asteroid formation to graphene origami, as well as highly engaging presentations from all competitors, deciding upon the medallist was no easy task. However, it is clear from the enthusiasm generated by events such as this, and the high-level research presented, that the future of UK physics-focussed research and R&D is in very capable hands."

Speaking before making the presentations, Professor Paul Hardaker, Chief Executive of the Institute of Physics, thanked the organisers of the competition for keeping science on the parliamentary agenda and told the participants: "I hope you don't underestimate the importance of what you do or the importance of talking about it and I think the best of it was on display today."

The silver award for physics was won by Matthew Aldous, a PhD student from the University of Southampton, who presented his work on developing a compact laser-cooling system for supercooling gas atoms to enable more rapid prototyping of quantum sensors.

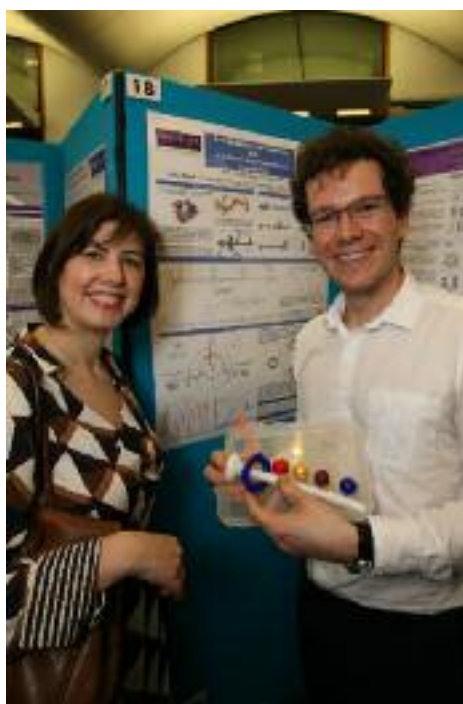
Katherine Kendrick, a PhD student at the University of Leeds, won the bronze award; her work involves using atomic force microscopy to pull apart protein molecules to investigate their strength and flexibility at a range of temperatures.



Professor Paul Hardaker, Chief Executive, Institute of Physics with Soraya Caixeiro, Gold Award Winner

Soraya Caixeiro a PhD student working on biolasers won the gold award for physics.

Biolasers, which are thinner than a strand of hair, can be implanted in the human body and are biocompatible and biodegradable yet can produce a high-intensity, single wavelength output for sensing biologically relevant compounds.



Lucy Powell MP has a lesson on 'making molecules' from exhibitor Charlie McTernan, University of Manchester



Physics winners: L to R: Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Ms Soraya Caixeiro (Gold Award Winner); Professor Paul Hardaker, Chief Executive, Institute of Physics; Ms Katherine Kendrick (Bronze Award Winner); Dr Matthew Aldous (Silver Award Winner); Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee.

STEM for Britain social media

One of the aims of the STEM for Britain awards is to showcase the excellent work that UK researchers are undertaking to a public audience and social media is an excellent way of achieving this.

Social media platforms are powerful, versatile tools that can engage the public in an easy digestible manner and allow for events such as the STEM for Britain awards ceremony to be publicised in real time around the world. One of the difficulties with promoting science to the public is the often complex nature of the work, because of this, one of the attributes the judges look at is the researcher's ability to convey their work to the layman. The STEM for Britain social media channels help publicise the fantastic work to a wider audience.

THE IMPORTANCE OF MPs IN SOCIAL MEDIA

The attendance of MPs at the event is a great highlight of the day, MPs get the chance to interact with STEM academics from their constituency and show their support for science in the UK. When we crunch the numbers from this year's twitter we can see some interesting trends, tweets involving MPs received more retweets, likes and replies, suggesting MPs attendance alone can have a positive effect on gaining public engagement with STEM. The average engagement (Engagement: the number of times a twitter user clicked on a name or link) was 50% higher for tweets involving MPs demonstrating the 'pulling power' of the MPs public profile. The attendance of MPs is clearly well received by the public and their presence can have a great influence on the visibility of the work done in their constituency.

Figure 1. Global twitter interactions

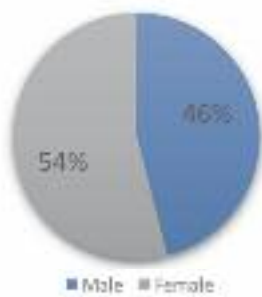
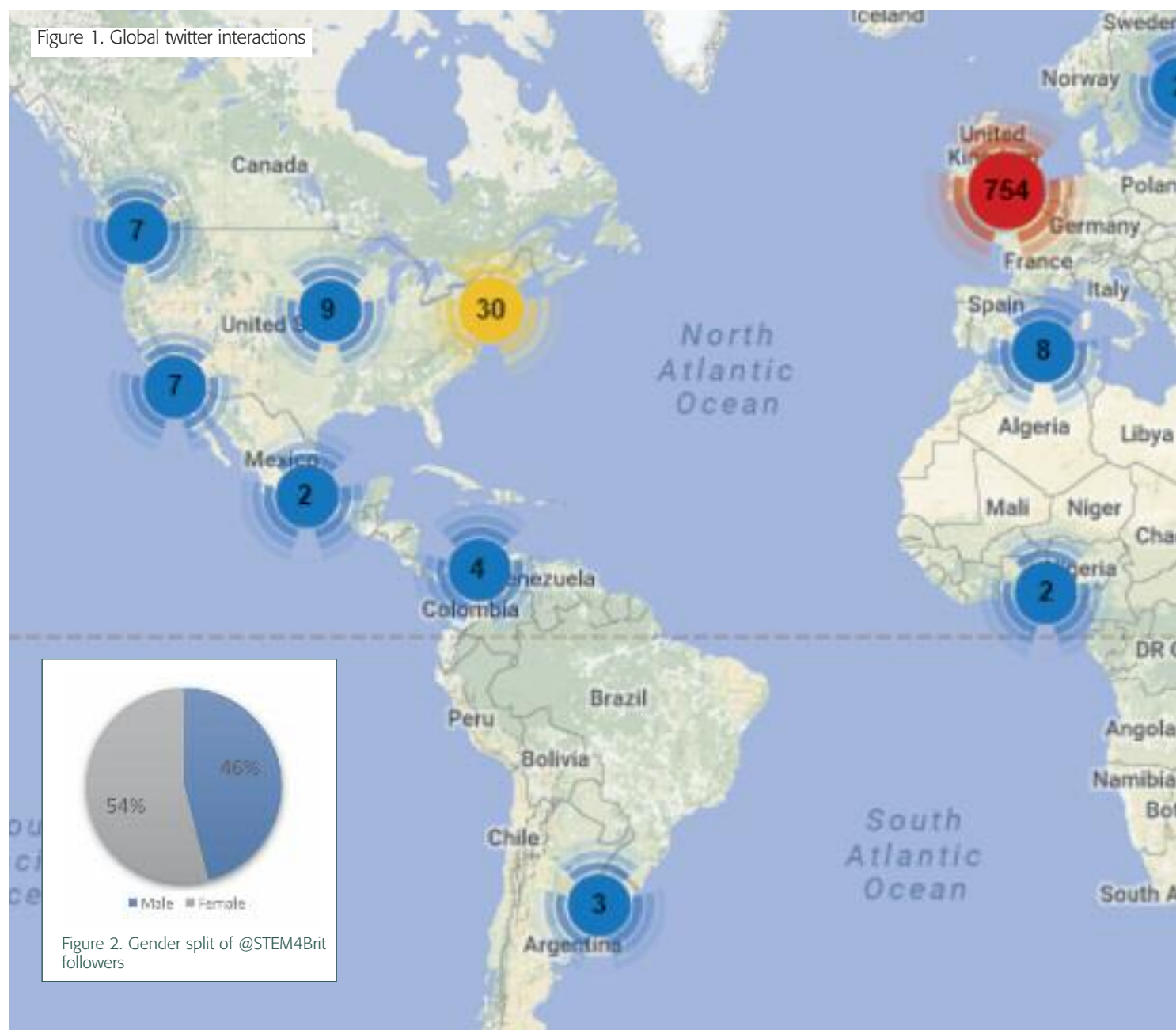


Figure 2. Gender split of @STEM4Brit followers

SMALL WORLD

While STEM for Britain focusses on early career researchers conducting their work within UK institutions, the researchers themselves are actually from a wide range of countries. Because of the international nature of the researchers, coverage of the event has reached many corners of the globe, not only through twitter but through local media too with stories reaching as far as print newspapers in China. Figure 1 shows the global twitter reach for the STEM for Britain awards for 2017.

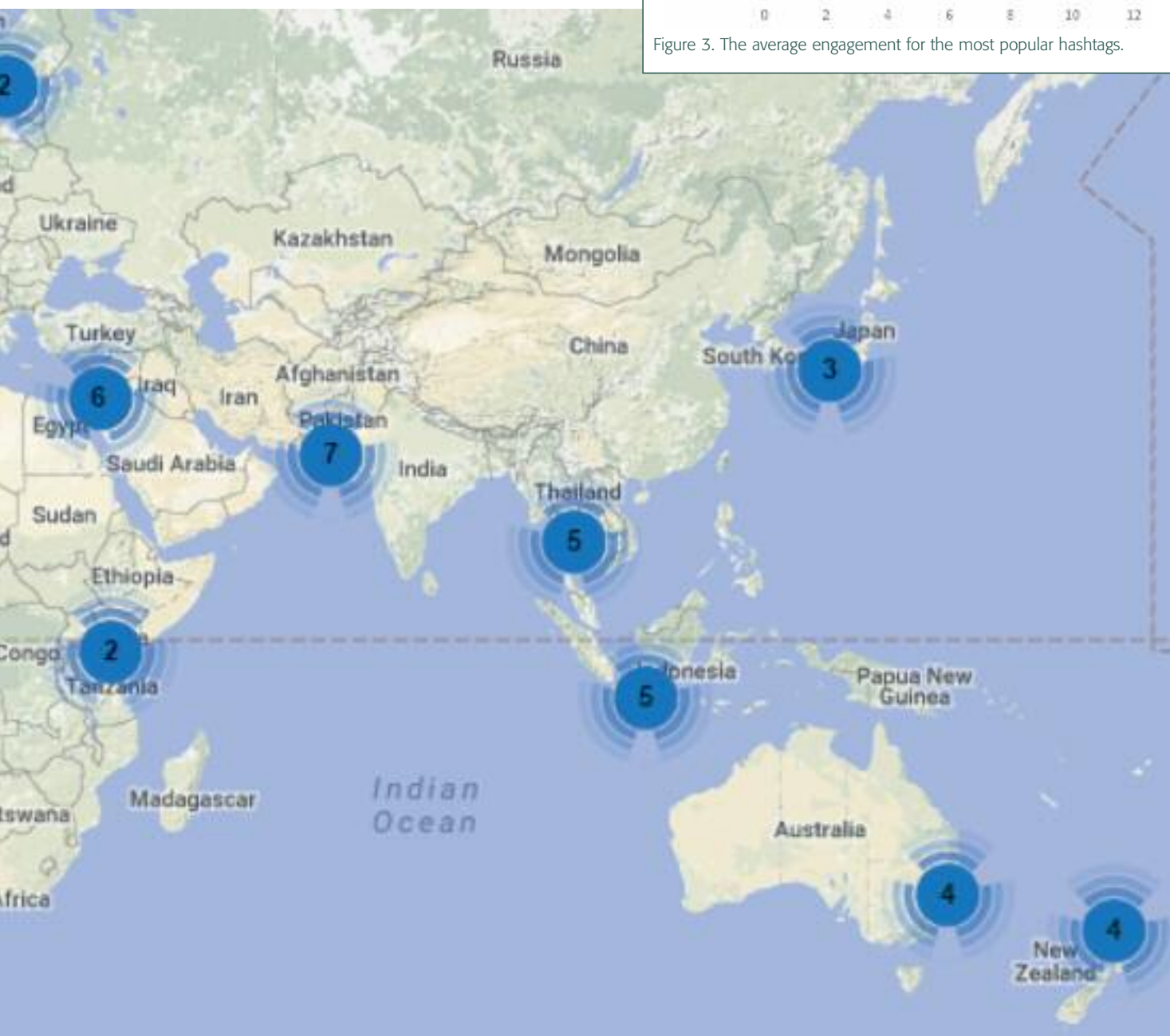
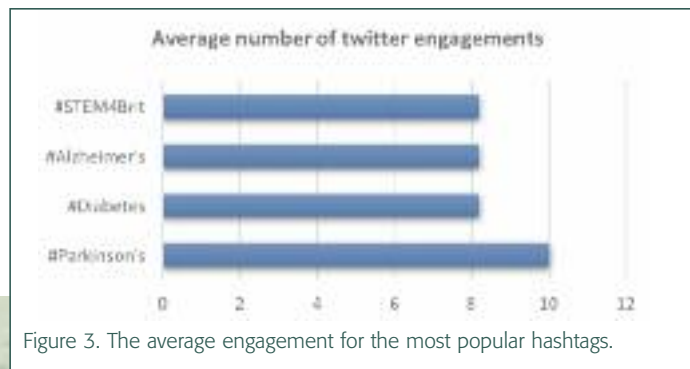
INCREASED AND DIVERSE ENGAGEMENT

The STEM for Britain official twitter (@STEM4Brit) currently has over 1200 followers who interact with the event and help spread the work of the early career researchers. The audience for @STEM4Brit is varied and has some interesting aspects. The gender split of the twitter audience is 54% female 46% male, with the followers interacting from every corner of the earth. The work that gains the most public attention often involves diseases that affect large

sections of people such as Alzheimer's or Diabetes, researchers can capture people's attention with interesting and striking titles such as 'power from poo'.

The STEM for Britain awards ceremony continues to showcase the extraordinary work that is happening in UK institutions and through modern social media, the public has never been closer to the forefront of STEM.

Charlie Owen, Azotic Technologies, STEM4Brit Social Media Consultant
charles.owen@azotictechnologies.com



MATHEMATICAL SCIENCES EXHIBITION

The judges agreed that three mathematicians led their field at STEM for Britain and they walked away with the gold, silver and bronze awards.

Dr James Grogan from the University of Oxford received the Gold Award for his research on combining state-of-the-art, high resolution computer modelling and imaging in cancer research; Laura Wadkin from Newcastle University received the Silver Award for her research on mathematically modelling stem cell colony development and Dr Bartosz Naskrecki from the University of Bristol received the Bronze award for his research on the Generalized Fermat Conjecture.

Professor Nick Woodhouse, President of the Clay Mathematics Institute and Professor Jon Keating FRS, Chair of the Heilbronn Institute for Mathematical Research addressed the audience and presented the excited winners with their awards.



Mathematical Sciences winners: Back: Professor Jon Keating, Chair, Heilbronn Institute for Mathematical Research (Bronze Supporter); Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Professor Nick Woodhouse, President, Clay Mathematics Institute (Gold & Silver Supporter); Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee; Front: Dr Bartosz Naskrecki (Bronze Award Winner); Dr James Grogan (Gold Award Winner); Miss Laura Wadkin (Silver Award Winner).



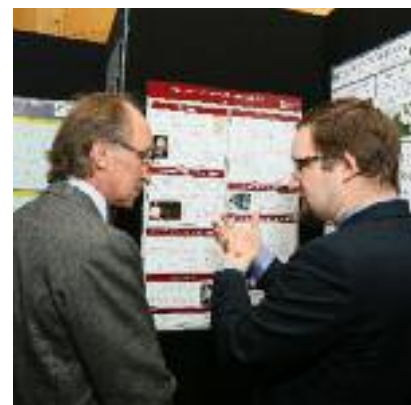
Posters on display!



Caroline Nokes MP meets her constituent Dr Rudabeh Meskarian



Chair of Mathematical Sciences judging panel, Professor Tim J Pedley, discusses 'The Problem of Measurement in Cell Biology' with exhibitor Dr Rosanna Smith, University of Southampton



Professor Nick Woodhouse chats with Dr Bartosz Naskrecki (Bronze Award Winner)

ENGINEERING EXHIBITION

The top 60 engineering researchers from various institutes across the UK were shortlisted for their work in a range of engineering disciplines and were chosen to exhibit. To explain the purpose and findings of their work, participants presented posters and engaged with the judges, all of whom were Royal Academy of Engineering Fellows.

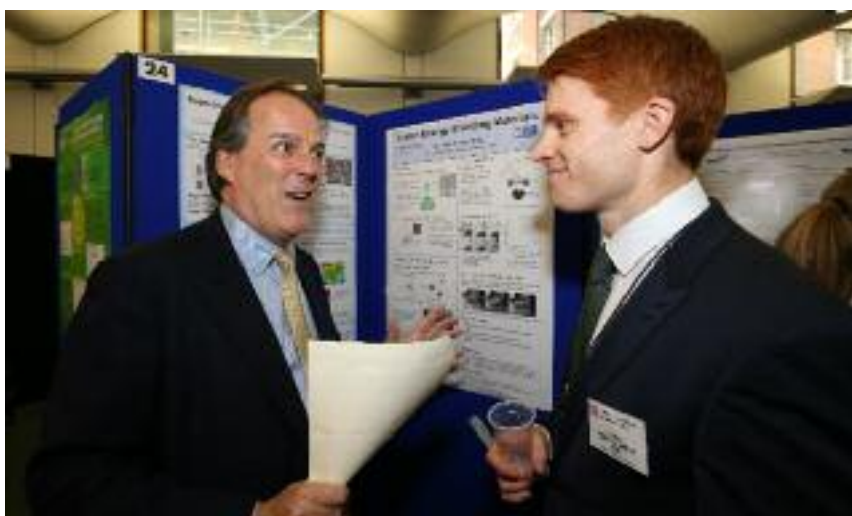
Miguel Xavier, a PhD student at the University of Southampton, received the Gold Award for engineering for his work on techniques for isolating stem cells from human bone marrow.

Luke Boldock from the University of Sheffield received the Silver Award for his studies into the impact of stent geometry on haemodynamics and cellular migration in vitro and Harriet Parnell from the University of Nottingham received the Bronze Award for her research into shedding light on cancer: how a mid-infrared transmitting glass could help diagnose early stage cancer.

Dr David Clark, Principal Fellow at Warwick Manufacturing Group (WMG) and Professor Steve McLaughlin, Chair of the Judging Panel shared their thoughts on the future of engineering before presenting the prizes to the three winners.



Engineering winners: Back: Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Professor Steve McLaughlin (Chair, Engineering Judging Panel), Dr David Clark, Principal Fellow, Warwick Manufacturing Group (Sponsor); Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee; Front: Mr Luke Boldock (Silver Award Winner); Mr Miguel Xavier (Gold Award Winner); Miss Harriet Parnell (Bronze Award Winner)



Mark Field MP shares his thoughts on 'Fusion Energy Shielding Materials' with exhibitor Dr Sam Humphry-Baker



Mr Siddhartha Khastgir discusses 'the safety of driverless cars' with Dr David Clark, Principal Fellow, WMG



Sir Peter Bottomley MP met with engineers Dr Eleonora D'Elia and Miss Sorcha Daly

BIOMEDICAL & BIOLOGICAL SCIENCES EXHIBITION

A wealth of diverse biological research gave the judges a hard job to reach their final decision but eventually Lauren McNeill, a PhD researcher at Manchester Metropolitan University was named as the Gold Award winner.

Lauren, originally from Bolton, presented her research on developing a cost-effective device for the rapid detection of new psychoactive substances to dozens of parliamentarians and a panel of expert judges.

Taking the Silver Award was Mrs Riya George from the School of Medicine at the University of Leicester. Riya looked into re-thinking relationships in healthcare and how to better teach and evaluate diversity education in healthcare institutions.

Miss Natalie Vaughan from the Department of Biology and Biochemistry at the University of Bath won the Bronze Award with her research on how cells divide and the implications for ageing and cancer.

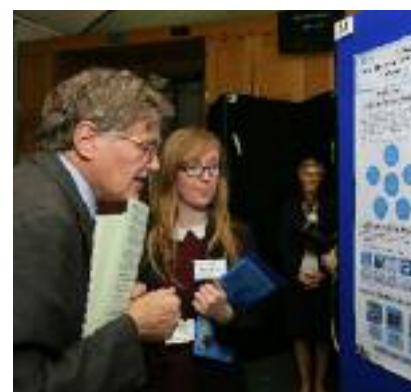
Addressing the assembled scientists and guests and presenting the awards were Professor David Eisner, President of The Physiological Society; Dr Mark Downs, Chief Executive of the Royal Society of Biology and Mr Ian Sturdge, President of the Institute of Biomedical Science.



Biological & Biomedical Sciences winners: Back: Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Dr Mark Downs, Chief Executive, Royal Society of Biology; Ian Sturdge, President, Institute of Biomedical Science (Sponsor); Professor David Eisner, President, The Physiological Society; Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee; Front: Miss Natalie Vaughan (Bronze Award Winner); Miss Lauren McNeill (Gold Award Winner); Mrs Riya George (Silver Award Winner)



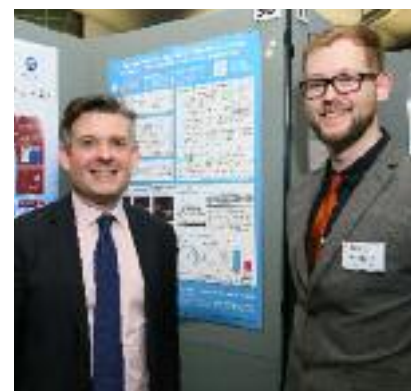
Ian Sturdge, President, Institute of Biomedical Science congratulates Gold Award winner Lauren McNeill



Professor John Coggins, Chair of the Biological and Biomedical judges studies the presentation by Natalie Vaughan, University of Sheffield/Anglian Water



Bernard Jenkin MP chats to Ana Matran-Fernandez, University of Essex



Jonathan Ashworth MP chats to Neal Rimmer, University of Leicester

THE WESTMINSTER MEDAL

The finalists...



Soraya Caixeiro
Gold – Physics



Lauren McNeill
Gold - Biology



James Grogan
Gold - Maths



Yvonne Choo
Gold - Chemistry



Miguel Xavier
Gold - Engineering

At the end of the day the winners of the five Gold medals competed for the Westminster medal in memory of Dr Eric Wharton, founder of STEM for Britain. Here, with the quality of the science already ready proven with a Gold medal, the judges had to decide which of the five posters best demonstrated the presenter's skill in communicating the scientific concept.

And the winner was...Lauren McNeill !!



L to R: Sharon Todd, Executive Director, Society of Chemical Industry (Westminster Medal Sponsor); Nick Bourne, SCI London Group Committee Member (Westminster Medal Sponsor); Sue Wharton, STEM for Britain; Miss Lauren McNeill (Westminster Medal Winner); Dr Stephen Benn, Vice President, Parliamentary & Scientific Committee; Stephen Metcalfe MP, Chair, Parliamentary & Scientific Committee

What did the winners of STEM for Britain have to say?



"I am ecstatic and completely surprised but I think the judges were drawn to my work because of its clear real-world applications.

I wanted to highlight the need for new research into a quick, portable and cost-effective detection method for mephedrone. This kind of device could be used for mandatory drug testing in prisons and A&E departments throughout the world by non-specialists. My research is still in the early stages but intriguing results offer an insight into its potential."

Lauren McNeill – Gold Award and winner of the Westminster Medal



"It's very exciting to win – I just can't take it in. It's an acknowledgement of all the hard work over the last two and a half years.

I'm a fan of science communication and I think it's important to do outreach. It's particularly important to talk to MPs because they are the decision makers."

Yvonne Choo – Gold Award



"It really means a lot to win. It gives me an extra level of confidence and pride that at some point, the work that I've presented has been considered to be intelligible to the layperson and that I can communicate it in a way that people think is worthy of winning, which of course I'm very proud to do."

James Cooper – Silver Award



"It's great to have the opportunity to present my research to such a wide audience; to explain to people what medicinal chemistry is and why it's interesting and why it's relevant.

"It's really nice to have my research recognised in this way and I'm really proud of it."

Sam Dalton – Bronze Award



"I am really surprised, especially after seeing all the great work that is displayed here tonight. I thought 'they have got me up here [on the podium] by mistake'. It is always nice to hear your work being recognised." Stressing the international dimension of science and scientists, Soraya said that she had been born in the UK but spent the years from the ages of eight to 18 in Portugal before returning to Britain. "I feel just as much British as I do Portuguese."

Soraya Caixeiro – Gold Award



"It's just fantastic to have the opportunity to talk to parliamentarians about the work that I do. It's really great to be around so many brilliant scientists who have worked really hard to be here today, to share my research with them and to see the research that they have brought to share."

Matthew Aldous – Silver Award



"I am very happy and very surprised. It's been good fun and I have spoken to representatives of my home and university MPs and am possibly going to meet one of them later on in Leeds."

Katherine Kendrick – Bronze Award



STEM for Britain Judges, without whom we would never have been able to decide who should win the Awards.

Professor Bashir Al-Hashimi FREng

Professor Malcolm Bennett

Dr Guy S Bewick

Professor David Blackburn FRSB

Dr Jennifer Brookes

Professor David Coates

Professor John Coggins

Professor Paul M Cullis BSc DPhil CChem FRSC

Dr Elizabeth Cunningham

Professor Helen Fielding

Professor C P Garner FREng

Professor Bruce Gilbert

Professor Phil Gilmartin

Dr. Sarah Hall

Dr Bryan Hanley

Dr Celia Knight

Dr Vincent Knight

Dr Peter J Machin BSc CChem FRSC

Professor Elizabeth Mansfield

Professor Elaine Martin OBE FREng

Professor Kevin McConway

Professor John McDermid OBE FREng

Prof Graham McGeown

Prof Stephen McLaughlin

Professor Kevin O'Dell

Professor Tim J Pedley FRS CMath FIMA

Professor Demetrios Papageorgiou

Dr Jeremy Pritchard

Professor M P Ryan FREng

Professor Klaus Suhling

Prof Constantinos Soutis

Dr Mark Telling

Professor Alyson Tobin

Professor Simon Van Heyningen

Dr David Watson FREng

Dr Heather A Williams MIPEM MInstP

Professor Stephen Williamson FREng

Professor Nick M J Woodhouse FIMA

STEM for Britain is very much a team effort and would not be possible without the help of all the major Learned Societies involved...



"I'm delighted to see all the superb engineering research on display at STEM for Britain this year. From medical technology to transport systems of the future, the talented engineers bringing their work to Parliament demonstrates just how varied the world of engineering is and the many ways in which it impacts our society."

Professor Dame Ann Dowling
OM DBE FREng FRS,
President of the Royal Academy
of Engineering



"It is wonderful to showcase the importance of the mathematical sciences to a wider audience. It is paramount to encourage early-career research scientists, engineers, technologists and mathematicians and the STEM for Britain event is a very effective way of doing this."

Sir Adrian Smith,
Chair of the Council for
the Mathematical Sciences



"Scientists and politicians both have major roles in addressing some of society's biggest challenges, from climate change to food security. STEM for Britain is a rare opportunity for politicians to meet some of our most promising early career scientists and understand their work."

"It is important that MPs make policy decisions informed by evidence, and a greater mutual understanding between MPs and scientists will improve this. The Government needs to ensure the UK continues to lead the world in biological research where we have enormous strength".

Dr Mark Downs,
Chief Executive of the
Royal Society of Biology



"STEM for Britain provides a great opportunity for some of our outstanding young scientists to present aspects of their research in Parliament, allowing Members of Parliament to find out first-hand about some of the ground breaking research taking place here in the UK."

"All the exhibitors should feel very pleased with what they have achieved and I hope that they will value sharing the excitement of their research with key politicians and policy makers."

Professor Roy Sambles,
President of the Institute of Physics



"I am proud of the physiology research in the UK underpinning our world-leading biomedical sector. This has been recognised in the forthcoming Industrial Strategy. STEM for Britain provides an excellent opportunity for the up-and-coming young members of the science community to show their successes to parliamentarians, who see the benefit of the science funding they provide. The Physiological Society is pleased at the continued success of this highlight of the parliamentary calendar."

Professor David Eisner,
President of The Physiological Society



"STEM research leads to the innovations that improve our lives and drive our economy. At the Royal Society of Chemistry, we're committed to maximising the impact of the chemical sciences, and that includes raising the profile of science with decision-makers."

STEM for Britain is a fantastic opportunity for politicians to hear first-hand from some of the UK's most talented young researchers about their work. We're proud to support this exciting event for the 9th year and to celebrate the achievements of all our finalists today."

Dr Robert Parker,
Chief Executive of the
Royal Society of Chemistry



2018

STEM for Britain 2018 will take place in the Houses of Parliament on Monday 12 March 2018 during British Science Week.

Applications are invited from early-career research scientists, engineers, technologists and mathematicians who wish to exhibit posters in one of the following five areas:

- Biological and Biomedical Science
- Chemistry
- Engineering
- Mathematical Sciences
- Physics

The closing date for applications is Monday 4 December.

A wide range of important scientific, engineering and mathematics institutions are lending their support to this event, including the Royal Society of Biology, The Physiological Society, the Royal Society of Chemistry, the Royal Academy of Engineering, the Council for the Mathematical Sciences, the Clay Mathematics Institute, the Heilbronn Institute and the Institute of Physics. This reflects the importance we all attach to the encouragement of researchers at this stage in their careers.

Prizes will be awarded for the posters presented in each discipline which best communicate high level science, engineering or mathematics to a lay audience. The Westminster Medal for the overall winner will be awarded in memory of the late Dr Eric Wharton, who did so much to establish SET for Britain as a regular event in the Parliamentary calendar. Full details of the competition and exhibition including the application form can be found on the STEM for Britain website at: www.stemforbritain.org.uk.

Research Councils UK

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Each year the Research Councils invest around £3 billion in research covering the full spectrum of academic disciplines from the medical and biological sciences to astronomy, physics, chemistry and engineering, social sciences, economics, environmental sciences and the arts and humanities.

Research Councils UK is the strategic partnerships of the seven Research Councils. It aims to:

- increase the collective visibility, leadership and influence of the Research Councils for the benefit of the UK;
- lead in shaping the overall portfolio of research funded by the Research Councils to maximise the excellence and impact of UK research, and help to ensure that the UK gets the best value for money from its investment;
- ensure joined-up operations between the Research Councils to achieve its goals and improve services to the communities it sponsors and works with.

Biotechnology and Biological Sciences Research Council (BBSRC)



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BBSRC invests in world-class bioscience research, innovation and training on behalf of the UK public. Our aim is to further scientific knowledge to promote economic growth, wealth and job creation and to improve quality of life in the UK and beyond. BBSRC research is helping society to meet major challenges, including food security, green energy and healthier lifespans and underpins important UK economic sectors, such as farming, food, industrial biotechnology and pharmaceuticals.

Economic and Social Research Council



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The ESRC is the UK's largest organisation for funding research on economic and social issues and is committed to supporting the very best research with wide-ranging impact. Social science contributes to greater knowledge and understanding of the many challenges our society faces today and by ensuring that ESRC-funded research makes the biggest possible impact, our research shapes public policies and makes business, voluntary bodies and other organisations more effective, as well as shaping wider society. We also develop and train the UK's future social scientists.



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EPSRC is the UK's main agency for funding research and training in engineering and physical sciences, investing around £800m a year in research and postgraduate training, to help the nation handle the next generation of technological change.

The areas covered range from information technology to structural engineering, and mathematics to materials science. This research forms the basis for future economic development in the UK and improvements for everyone's health, lifestyle and culture. EPSRC works alongside other Research Councils with responsibility for other areas of research.

Medical Research Council



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Over the past century, the MRC has been at the forefront of scientific discovery to improve human health. Founded in 1913 to tackle tuberculosis, the MRC now invests taxpayers' money in the highest quality medical research across every area of health. Thirty-one MRC-funded researchers have won Nobel prizes in a wide range of disciplines, and MRC scientists have been behind such diverse discoveries as vitamins, the structure of DNA and the link between smoking and cancer, as well as achievements such as pioneering the use of randomised controlled trials, the invention of MRI scanning, and the development of therapeutic antibodies. We also work closely with the UK's Health Departments, the NHS, medical research charities and industry to ensure our research achieves maximum impact as well as being of excellent scientific quality.

Natural Environment Research Council



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NERC is the UK's leading public funder of environmental science. We invest £330 million each year in cutting-edge research, postgraduate training and innovation in universities and research centres.

Our scientists study the physical, chemical and biological processes on which our planet and life itself depends – from pole to pole, from the deep Earth and oceans to the atmosphere and space.

We partner with business, government, the public and the wider research community to shape the environmental research and innovation agenda. Our science provides knowledge, skills and technology that deliver sustainable economic growth and public wellbeing.



Science & Technology Facilities Council

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The Science and Technology Facilities Council is one of Europe's largest multidisciplinary research organisations undertaking and supporting a broad range of research across the physical, life and computational sciences. We operate world class, large-scale research facilities in the UK and Europe and provide strategic advice to the UK Government on their development. We partner in two of the UK's Science and Innovation Campuses. We also manage international research projects in support of a broad cross-section of the UK research community, particularly in the fields of astronomy, nuclear physics and particle physics.

Association of the British Pharmaceutical Industry



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The Association of the British Pharmaceutical Industry (ABPI) represents innovative research-based biopharmaceutical companies, large, medium and small, leading an exciting new era of biosciences in the UK. Our industry, a major contributor to the economy of the UK, brings life-saving and life-enhancing medicines to patients. Our members are researching and developing over two-thirds of the current medicines pipeline, ensuring that the UK remains at the forefront of helping patients prevent and overcome diseases. Topics we focus on include:

- All aspects of the research and development of medicines including clinical research and licensing
- Stratified medicine
- Vaccines, biosimilars, small and large molecules, cell therapy and regenerative medicine



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AIRTO – Association of Innovation, Research & Technology Organisations – is the foremost membership body for the UK's innovation, research and technology sector, representing 80% of organisations in the sector.

AIRTO's members deliver vital innovation and knowledge transfer services which include applied and collaborative R&D, (frequently in conjunction with universities), consultancy, technology validation and testing, incubation of commercialisation opportunities and early stage financing. AIRTO members have a combined turnover of over £5.5bn from clients both at home and outside the UK, and employ over 47,000 scientists, technologists and engineers.

AMPS

The Association of
Management and
Professional Staff

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Website: www.amps-tradeunion.com

We are a Trades Union for Management and Professional Staff working in the pharmaceutical, chemical and allied industries.

We have produced a training programme funded by the EU on diversity and helping women managers remain in the workplace after a career break. This training programme is aimed at both men and women and is intended to address the shortfall in qualified personnel in the chemical and allied industries.

We are experts in performance based and field related issues and are affiliated to our counterparts in EU Professional Management Unions.



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AWE plays a crucial role in our nation's defence by providing and maintaining warheads for the UK's nuclear deterrent and delivers advice and guidance on a 24/7 basis to UK government in the area of national security.

We are a centre of scientific, engineering and technological excellence, with some of the most advanced research, design and production facilities in the world. AWE is contracted to the Ministry of Defence (MOD) through a Government-owned-contractor-operated (GOCO) arrangement. While our sites and facilities remain in government ownership, their management, day-to-day operations and maintenance of Britain's nuclear stockpile is contracted to a private company: AWE Management Limited (AWE ML). AWE ML is a consortium comprising three partners: Jacobs Engineering Group, the Lockheed Martin Corporation and Serco Group plc.



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The Biochemical Society works to promote the molecular biosciences; facilitating the sharing of expertise, supporting the advancement of biochemistry and molecular biology and raising awareness of their importance in addressing societal grand challenges. We achieve our mission by:

- bringing together molecular bioscientists;
- supporting the next generation of biochemists;
- promoting and sharing knowledge and
- promoting the importance of our discipline.



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British Antarctic Survey (BAS), an institute of NERC, delivers and enables world-leading interdisciplinary research in the Polar Regions. Its skilled science and support staff based in Cambridge, Antarctica and the Arctic, work together to deliver research that uses the Polar Regions to advance our understanding of Earth as a sustainable planet. Through its extensive logistic capability and know-how BAS facilitates access for the British and international science community to the UK polar research operation. Numerous national and international collaborations, combined with an excellent infrastructure help sustain a world leading position for the UK in Antarctic affairs. For more information visit www.bas.ac.uk @basnews



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The British Ecological Society is an independent, authoritative learned society, and the voice of the UK's ecological community. Working with our members we gather and communicate the best available ecological evidence to inform decision making. We offer a source of unbiased, objective ecological knowledge, and promote an evidence-informed approach to finding the right solutions to environmental questions.

British In Vitro Diagnostics Association (BIVDA)



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BIVDA is the UK industry association representing companies who manufacture and/or distribute the diagnostics tests and equipment to diagnose, monitor and manage disease largely through the NHS pathology services. Increasingly diagnostics are used outside the laboratory in community settings and also to identify those patients who would benefit from specific drug treatment particularly for cancer.



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The British Nutrition Foundation (BNF), a registered charity, delivers impartial, authoritative and evidence-based information on food and nutrition. Its core purpose is to make nutrition science accessible to all, working with an extensive network of contacts across academia, education and the food chain, and through BNF work programmes focussing on education in schools and nutrition science communication.



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The British Pharmacological Society is a charity with a mission to promote and advance the whole spectrum of pharmacology. It is the primary UK learned society concerned with drugs and the way they work, and leads the way in the research and application of pharmacology around the world.

Founded in 1931, the Society champions pharmacology in all its forms, across academia, industry, regulatory agencies and the health service. With over 3,500 members from over 60 countries worldwide, the Society is a friendly and collaborative community. Enquiries about the discovery, development and application of drugs are welcome.



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The British Society of Soil Science (BSSS) or "BS cubed" as it is fondly known was founded in 1947 by a number of eminent British soil scientists. It was formed with the aims: to advance the study of soil; to be open to membership from all those with an interest in the study and uses of soil; and to issue an annual publication.



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Ergonomics, also called Human Factors, sometimes abbreviated 'E/HF' is a science-based discipline about 'designing for people'. E/HF takes into account the physical and mental capabilities, aptitudes and abilities of people acting individually (a pilot, a surgeon or nurse, train driver) or collectively, with or without equipment (a theatre team, air traffic control) in the design of workplaces, equipment and ways of working to deliver the least harmful, safest, most efficient, most elegant possible outcomes'. E/HF uses science to improve the places in which we work, live and relax and the ways in which we interact with people, equipment and systems.



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The BSAC is an inter-professional organisation with over forty years of experience and achievement in antibiotic education, research and leadership. The Society has an active international membership and:

- Is dedicated to saving lives through the effective use and development of antibiotics, now and in the future.
- Communicates effectively about antibiotics and antibiotic usage via workshops, professional guidelines and its own high impact international journal, the Journal of Antimicrobial Chemotherapy.
- Is home to the UK-led global initiative Antibiotic Action
- Serves as secretariat to the All Party Parliamentary Group on Antibiotics



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Brunel University London is an international research active university with 3 leading research institutes:

Institute of Energy Futures: Led by Professor Savvas Tassou, the main themes of the Institute are *Advanced Engines and Biofuels, Energy Efficient and Sustainable Technologies, Smart Power Networks, and Resource Efficient Future Cities.*

Institute of Materials and Manufacturing: The main themes of research are *Design for Sustainable Manufacturing, Liquid Metal Engineering, Materials Characterisation and Processing, Micro-Nano Manufacturing, and Structural Integrity.* The Institute is led by Professor Luiz Wrobel.

Institute of Environment, Health and Societies: Professor Susan Jobling leads this pioneering research institute whose themes are *Health and Environment, Healthy Ageing, Health Economics Synthetic Biology, Biomedical Engineering and Healthcare Technologies, and Social Sciences and Health.*

Brunel University London offers a wide range of expertise and knowledge, and prides itself on having academic excellence at the core of its offer, and was ranked in the recent REF as 33rd in the UK for Research Power (average quality rating by number of submissions) and described by The Times Higher Education as one of the real winners of the REF 2014.



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CTPA is the UK trade association representing manufacturers of cosmetic products and suppliers to the cosmetic products industry. 'Cosmetic products' are legally defined and subject to stringent EU safety laws. CTPA is the authoritative public voice of a vibrant and responsible UK industry trusted to act for the consumer; ensuring the science behind cosmetics is fully understood.



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The BSI is one of the oldest, largest and most active immunology societies in the world. We have over 5,000 members who work in all areas of immunology, including research and clinical practice.

The BSI runs major scientific meetings, education programmes and events for all ages. We disseminate top quality scientific research through our journals and meetings and we are committed to bringing the wonders and achievements of immunology to as many audiences as possible.



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The Cavendish Laboratory houses the Department of Physics of the University of Cambridge.

The research programme covers the breadth of contemporary physics

Extreme Universe: Astrophysics, cosmology and high energy physics

Quantum Universe: Cold atoms, condensed matter theory, scientific computing, quantum matter and semiconductor physics

Materials Universe: Optoelectronics, nanophotonics, detector physics, thin film magnetism, surface physics and the Winton programme for the physics of sustainability

Biological Universe: Physics of medicine, biological systems and soft matter

The Laboratory has world-wide collaborations with other universities and industry



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**Science for Citizenship and Employability,
Science for Life, Science for Real**

We build grass-roots partnerships between school and the wider world of professional science and its applications

- for young people of all ages and abilities
- experiencing science as a creative, questioning, human activity
- bringing school science added meaning and notation, from primary to post-16
- locally, nationally, internationally (currently between Britain and Japan; also the Ukraine)

Clifton Scientific Trust Ltd is registered charity 1086933



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The Council for the Mathematical Sciences is an authoritative and objective body that works to develop, influence and respond to UK policy issues affecting mathematical sciences in higher education and research, and therefore the UK economy and society by:

- providing expert advice;
- engaging with government, funding agencies and other decision makers;
- raising public awareness; and
- facilitating communication between the mathematical sciences community and other stakeholders



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The Energy Institute (EI) is the chartered professional body for the energy sector, supporting over 22,000 individuals and 200 companies worldwide. The EI provides learning and networking opportunities, professional recognition and technical and scientific knowledge resources on energy in all its forms and applications.

The EI's purpose is to develop and disseminate knowledge, skills and good practice towards a safe, secure and sustainable energy system. It addresses the depth and breadth of the energy sector and informs policy by providing a platform for debate and scientifically-sound information.

A registered charity, the EI serves society with independence, professionalism and a wealth of expertise in all energy matters.



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EngineeringUK is an independent organisation that promotes the vital role of engineers, engineering and technology in our society. EngineeringUK partners business and industry, Government and the wider science and technology community: producing evidence on the state of engineering; sharing knowledge within engineering, and inspiring young people to choose a career in engineering, matching employers' demand for skills.



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Fera provides expert analytical and professional services to governments, agricultural companies, food retailers, manufacturers and farmers to facilitate safety, productivity and quality across the agrifood supply chain in a sustainable and environmentally compatible way.

Fera uses its world leading scientific expertise to provide robust evidence, rigorous analysis and professional advice to governments, international bodies and companies worldwide. Our food integrity, plant health, agri-tech and agri-informatics services ensure that our customers have access to leading edge science, technology and expertise.



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FirstGroup are the leading transport operator in the UK and North America and each day, every one of our 110,000 employees works hard to deliver vitally important services for our passengers. During the last year around 2.2 billion passengers relied on us to get to work, to school or college, to visit family and friends, and much more.



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GAMBICA Association is the UK trade association for instrumentation, control, automation and laboratory technology. The association seeks to promote the successful development of the industry and assist its member companies through a broad range of services, including technical policy and standards, commercial issues, market data and export services.



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The Geological Society is the national learned and professional body for Earth sciences, with 12,000 Fellows (members) worldwide. The Fellowship encompasses those working in industry, academia and government, with a wide range of perspectives and views on policy-relevant science, and the Society is a leading communicator of this science to government bodies and other non-technical audiences.



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Advancing knowledge and setting standards in biomedical science

With over 20,000 members in over 30 countries, the Institute of Biomedical Science is the leading professional body for biomedical scientists, support staff and students.

For over 100 years we have been dedicated to the promotion, development and delivery of excellence in biomedical science within all aspects of healthcare, and providing the highest standards of service to patients and the public. By supporting our members in their practice of biomedical science we set quality standards for the profession through: training, education, assessments, examinations and continuous professional development.



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IFST is the independent qualifying body for food professionals in Europe. Membership is drawn from all over the world from backgrounds including industry, universities, government, research and development and food law enforcement.

IFST's activities focus on disseminating knowledge relating to food science and technology and promoting its application. Another important element of our work is to promote and uphold standards amongst food professionals.



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IKE is the UK's professional body for innovators. It accredits and certifies innovation practices. We influence the inter-relationship between education, business, and government through research and collaborative networks. Our Innovation Manifesto highlights our commitment to support the development of innovative people and organisations. IKE runs think-tanks, conducts research, develops new business models and tools and supports organisations to benchmark their innovation capabilities.

Institute of Marine Engineering, Science and Technology (IMarEST)



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Established in London in 1889, the IMarEST is a leading international membership body and learned society for marine professionals, with over 15,000 members worldwide. The IMarEST has an extensive marine network of 50 international branches, affiliations with major marine societies around the world, representation on the key marine technical committees and non-governmental status at the International Maritime Organization (IMO) as well as other intergovernmental organisations.

Institute of Measurement and Control



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The Institute of Measurement and Control is a professional engineering institution and learned society dedicated to the science and application of measurement and control technology for the public benefit. The InstMC has a comprehensive range of membership grades for individuals engaged in both technical and non-technical occupations. Also, it is licensed by the Engineering Council to assess and register individuals as Chartered Engineers (CEng), Incorporated Engineers (IEng) and Engineering Technicians (EngTech).

The InstMC works to develop the knowledge and skills of individual engineers, fostering communication and advancing the science and practices within the industry.

IOP Institute of Physics

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The Institute of Physics is a leading scientific membership society working to advance physics for the benefit of all. We have a worldwide membership from enthusiastic amateurs to those at the top of their fields in academia, business, education and government. Our purpose is to gather, inspire, guide, represent and celebrate all who share a passion for physics. And, in our role as a charity, we're here to ensure that physics delivers on its exceptional potential to benefit society.

Alongside professional support for our members, we engage with policymakers and the public to increase awareness and understanding of the value that physics holds for all of us. Our subsidiary company, IOP Publishing, is a world leader in scientific communications, publishing journals, ebooks, magazines and websites globally.



Institute of Physics and Engineering in Medicine

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IPEM is a registered, incorporated charity for the advancement, in the public interest, of physics and engineering applied to medicine and biology. Its members are medical physicists, clinical and bio-engineers, and clinical technologists. It organises training and CPD for them, and provides opportunities for the dissemination of knowledge through publications and scientific meetings. IPEM is licensed by the Science Council to award CSci, RSci and RSciTech, and by the Engineering Council to award CEng, IEng and EngTech.



The Institution of Chemical Engineers

With over 44,000 members in 120 countries, IChemE is the global membership organisation for chemical engineers. A not for profit organisation, we serve the public interest by building and sustaining an active professional community and promoting the development, understanding and application of chemical engineering worldwide.

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Kuala Lumpur | London | Melbourne | Rugby | Singapore | Wellington

Institution of Civil Engineers



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Established in 1818 and with over 86,000 members in 167 countries worldwide, ICE is a leading source of expertise in infrastructure and engineering policy and is widely seen as the independent voice of infrastructure. ICE provides advice to all political parties and works with industry to ensure that civil engineering and construction remain major contributors to the UK economy.

Institution of Engineering Designers



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The only professional membership body solely for those working in engineering and technological product design. Engineering Council and Chartered Environmentalist registration for suitably qualified members. Membership includes experts on a wide range of engineering and product design disciplines, all of whom practise, manage or educate in design. **New for 2015: Chartership for Product Designers (CTPD).**



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The IET is a world leading professional organisation, sharing and advancing knowledge to promote science, engineering and technology across the world. Dating back to 1871, the IET has over 163,000 members in 127 countries with offices in Europe, North America, and Asia-Pacific.

Institution of MECHANICAL ENGINEERS

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The Institution provides politicians and civil servants with information, expertise and advice on a diverse range of subjects, focusing on manufacturing, energy, environment, transport and education policy. We regularly publish policy statements and host political briefings and policy events to establish a working relationship between the engineering profession and parliament.



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LGC is an international science-based company and market leader in the provision of analytical, forensic and diagnostic services and reference standards to customers in the public and private sectors.

Under the Government Chemist function, LGC fulfils specific statutory duties as the referee analyst and provides advice for Government and the wider analytical community on the implications of analytical chemistry for matters of policy, standards and regulation. LGC is also the UK's designated National Measurement Institute for chemical and biochemical analysis.

With headquarters in Teddington, South West London, LGC has 36 laboratories and centres across Europe and at sites in China, Brazil, India, South Africa and the US.



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As the world's oldest biological society, the Linnean Society of London is an essential forum and meeting point for those interested in natural history. The Society holds regular public events, publishes three peer-reviewed journals, promotes the study of the natural world with several educational initiatives and is home to a world famous library and collection of natural history specimens. The Society's Fellows have a considerable range of biological expertise that can be harnessed to inform and advise on scientific and public policy issues.

A Forum for Natural History



London School of Hygiene & Tropical
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The London School of Hygiene & Tropical Medicine is a world-leading centre for research and postgraduate education in public and global health, with over 4,000 students and more than 1,000 staff working in over 100 countries across the world. Our depth and breadth of expertise encompasses many disciplines, and we are one of the highest-rated research institutions in the UK.



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L'Oréal employs more than 3,800 researchers world-wide and dedicates over €850 million each year to research and innovation in the field of healthy skin and hair. The company supports women in science research through the L'Oréal UNESCO For Women In Science Programme and engages young people with science through the L'Oréal Young Scientist Centre at the Royal Institution. L'Oréal also collaborates with a vast number of institutions in the UK and globally.

Marine Biological Association



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Since 1884 the Marine Biological Association has been delivering its mission 'to promote scientific research into all aspects of life in the sea, including the environment on which it depends, and to disseminate to the public the knowledge gained.' The MBA represents its members in providing a clear independent voice to government on behalf of the marine biological community. It also has an extensive research programme and a long history as an expert provider of advice for the benefit of policy makers and wider society.



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The Met Office doesn't just forecast the weather on television. Our forecasts and warnings protect UK communities and infrastructure from severe weather and environmental hazards every day – they save lives and money. Our Climate Programme delivers evidence to underpin Government policy through the Met Office Hadley Centre. Our Mobile Meteorological Unit supports the Armed Forces around the world. We build capacity overseas in support of international development. All of this built on world-class environmental science.



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The Microbiology Society is the largest learned microbiological society in Europe with a worldwide membership based in universities, industry, hospitals, research institutes and schools. The Society publishes key academic journals, organises international scientific conferences and provides an international forum for communication among microbiologists. The Society promotes the understanding of microbiology to a diverse range of stakeholders, including policy-makers, students, teachers, journalists and the wider public, through a comprehensive framework of communication activities and resources.



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The National Physical Laboratory (NPL) is the United Kingdom's national measurement institute, an internationally respected and independent centre of excellence in research, development and knowledge transfer in measurement and materials science. For more than a century, NPL has developed and maintained the nation's primary measurement standards – the heart of an infrastructure designed to ensure accuracy, consistency and innovation in physical measurement.



Advancing the science of nature

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We challenge the way people think about the natural world – its past, present and future

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We study the diversity of life and the delicate balance of ecosystems to ensure the survival of our planet.

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We inspire people to engage with science to solve major societal challenges.



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The University of Northampton is an institution committed to science education through initial teacher training, a STEM Ambassador network which works within the community and teaching and research to doctoral level. We are an Ashoka U 'Changemaker Campus' status university recognising our commitment to social innovation and entrepreneurship.



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With 43,000 students and campuses in Nottingham, China and Malaysia, The University of Nottingham is 'the nearest Britain has to a truly global university'. With more than 97 per cent of research at the University recognised internationally according to the Research Excellence Framework 2014, the University is ranked in the top 1% of the world's universities by the QS World University Rankings.



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PHARMAQ is the only global pharmaceutical company with a primary focus on aquaculture. Our mission is to provide environmentally sound, safe and efficacious health products to the global aquaculture industry through targeted research and the commitment of dedicated people. We have a product portfolio that includes over 20 fish vaccines along with specialist feed additives, anaesthetics, antibiotics, sea lice treatments and biocide disinfectants. Through our sister company, PHARMAQ Analytik, we also offer a range of diagnostics services that can be used to help safeguard fish welfare and improve productivity.



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Physiology is the science of how molecules, cells and organs work in the body. Representing over 3500 life scientists, The Physiological Society supports scientific research through its grants schemes, conferences and its three open access journals.

The Society also supports the teaching of physiology in schools and universities, and works to promote an understanding of physiology amongst policy-makers and the general public.



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Prospect is an independent, thriving and forward-looking trade union with 117,000 members across the private and public sectors and a diverse range of occupations. We represent scientists, technologists and other professions in the civil service, research councils and private sector.

Prospect's collective voice champions the interests of the engineering and scientific community to key opinion-formers and policy makers. With negotiating rights with over 300 employers, we seek to secure a better life at work by putting members' pay, conditions and careers first.



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The Rainbow Seed Fund is a £24m, early-stage venture capital fund dedicated to kick-starting promising technology companies emerging from the UK science base. The Fund is backed by ten UK publicly-funded research organisations and the Department of Business, Innovation and Skills and holds investments in some of the UK's most innovative companies in areas as diverse as novel antibiotics, research into Alzheimer's disease, "green" chemicals and airport security. The Fund is managed by Midven, a specialist venture capital company. We are prepared to invest early and help build a proposition to attract additional investment and get to market.



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As the UK's national academy for engineering, we bring together the most successful and talented engineers for a shared purpose: to advance and promote excellence in engineering. We have four strategic challenges: drive faster and more balanced economic growth; foster better education and skills; lead the profession; and promote engineering at the heart of society.



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RBG Kew is a centre of global scientific expertise in plant and fungal diversity, conservation, and sustainable use, housed in two world-class gardens. Our scientific vision is to document and understand global plant and fungal diversity and its uses, bringing authoritative expertise to bear on the critical challenges facing humanity today.

Kew's strategic priorities for science are:

1. To document and conduct research into global plant and fungal diversity and its uses for humanity.
2. To curate and provide data-rich evidence from Kew's unrivalled collections as a global asset for scientific research.
3. To disseminate our scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management.

These priorities enable us to curate, use, enhance, explore and share Kew's global resource, providing robust data and a strong evidence base for our UK and global stakeholders. Kew is a non-departmental government body with exempt charitable status, partially funded by Defra.



The Royal Institution
Science Lives Here

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The Royal Institution (Ri) has been at the forefront of public engagement with science for over 200 years and our purpose is to encourage people to think further about the wonders of science. We run public events and the famous CHRISTMAS LECTURES®, a national programme of Masterclasses for young people in mathematics, engineering and computer science, educational activities at the L'Oréal Young Scientist Centre and policy discussions with science students. And through the Ri Channel we share the stories behind cutting-edge science with people around the world.



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The Royal Society is the academy of science in the UK and the Commonwealth comprising 1400 outstanding individuals representing the sciences, engineering and medicine. The Society has played a part in some of the most fundamental, significant and life-changing discoveries in scientific history and Royal Society scientists continue to make outstanding contributions to science across the wide breadth of research areas. Through its Fellowship and permanent staff, it seeks to ensure that its contribution to shaping the future of science in the UK and beyond has a deep and enduring impact, supporting excellence in science and encouraging the development and use of science for the benefit of humanity.



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The Royal Society of Biology is a single unified voice, representing a diverse membership of individuals, learned societies and other organisations. We are committed to ensuring that we provide Government and other policy makers – including funders of biological education and research – with a distinct point of access to authoritative, independent, and evidence-based opinion, representative of the widest range of bioscience disciplines. Our vision is of a world that understands the true value of biology and how it can contribute to improving life for all.



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The Royal Society of Chemistry is the world's leading chemistry community, advancing excellence in the chemical sciences. With over 50,000 members and a knowledge business that spans the globe, we are the UK's professional body for chemical scientists; a not-for-profit organisation with 170 years of history and an international vision of the future. We promote, support and celebrate chemistry. We work to shape the future of the chemical sciences – for the benefit of science and humanity.



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SfAM is a UK organization, serving microbiologists internationally. It works to advance, for the benefit of the public, the science of microbiology in its application to the environment, human and animal health, agriculture, and industry. With Wiley-Blackwell, SfAM publishes five internationally acclaimed journals. Value for money and a modern, innovative and progressive outlook are its core principles. A friendly society, SfAM values integrity, honesty, and respect, and seeks to promote excellence and professionalism and to inspire young microbiologists.

Society for Underwater Technology



Society for Underwater Technology
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The SUT is a multidisciplinary learned society that brings together individuals and organisations with a common interest in underwater technology, ocean science, and offshore/subsea engineering. The society was founded in 1966 and has members from over 40 countries, including engineers, scientists, other professionals and students working in these areas.

Society of Chemical Industry

SCI where science meets business

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Established by Royal Charter in 1881, SCI is a unique multi-disciplinary community. Set up by a prominent group of forward thinking scientists, inventors and entrepreneurs, SCI continues to be a multi-science and industry network based around chemistry and related sciences. Our charitable objective is to promote links between science and industry for the benefit of society. Our passion is invention and creation.

We deliver our charitable objective by:

- Supporting the commercial application of science into industry
- Tackling global challenges across Agrifood, Energy, Environment, Health and Materials

Society of Cosmetic Scientists



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Advancing the science of cosmetics is the primary objective of the SCS. Cosmetic science covers a wide range of disciplines from organic and physical chemistry to biology and photo-biology, dermatology, microbiology, physical sciences and psychology.

Members are scientists and the SCS helps them progress their careers and the science of cosmetics ethically and responsibly. Services include publications, educational courses and scientific meetings.



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The Society of Maritime Industries (SMI) is the voice of the UK's maritime engineering and business sector promoting and supporting companies which design, build, refit and modernise ships, and supply equipment and services for all types of commercial and naval ships, ports and terminals infrastructure, offshore oil and gas, maritime security and safety, marine science and technology, maritime autonomous systems and marine renewable energy.



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Understanding Animal Research is a not-for-profit organisation that explains why animals are used in medical, veterinary, environmental and other scientific research. We aim to achieve a broad understanding of the humane use of animals in medical, veterinary, scientific and environmental research in the UK. We work closely with policymakers to ensure regulation is effective and are a trusted source of information for the national and international media. We are funded by our members who include universities, professional societies, trade unions, industry and charities.



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Established in 1964, the University of Essex is ranked as one of the Top 20 universities in the Research Excellence Framework and is awarded Gold in the Teaching Excellence Framework. It is home to world-leading expertise in analytics and data science, with research peaks spanning the social sciences, sciences, and humanities. Pioneers of quantitative methods and artificial intelligence techniques, Essex is also in the UK top 10 for Knowledge Transfer Partnerships, and works with businesses to embed innovation into operations, through KTPs, knowledge exchange and contract research.

Universities Federation for Animal Welfare



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Registered in England Charity No: 207996

UFAW, the international animal welfare science society, is an independent scientific and educational charity. It works to improve animal lives by:

- supporting animal welfare research
- educating and raising awareness of welfare issues in the UK and overseas
- producing the quarterly scientific journal *Animal Welfare* and other high-quality publications on animal care and welfare
- providing advice to government departments and other concerned bodies.



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The Welding Institute is the leading institution providing engineering solutions and knowledge transfer in all aspects of manufacturing, fabrication and whole-life integrity management.

Industrial membership provides access to innovative problem-solving from one of the world's foremost independent research and technology organisations.

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SCIENCE DIARY

PARLIAMENTARY AND SCIENTIFIC COMMITTEE

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Tuesday 14 November 2017, 10:00am
Discussion Meeting
Data as a resource

Tuesday 21 November 2017, 12:30pm
Parliamentary and Scientific Committee
Annual Lunch

Monday 4 December 2017, 5:30pm
Discussion Meeting:
Science and Food Manufacturing

Monday 12 March 2018, 12-18:45pm
STEM for Britain

ROYAL SOCIETY OF BIOLOGY

6 December 2017 19:00-22:00 |
Christmas Parliamentary Reception (for science and engineering)
Churchill Room, Houses of Parliament
SW1A 0AA
https://www.rsb.org.uk/events?event_id=1906

25 April 2018 19:00-22:00 |
Royal Society of Biology Accreditation Award Ceremony
Terrace Pavilion, Houses of Parliament
SW1A 0AA
https://www.rsb.org.uk/events?event_id=1911

26 (TBC) June 2018 10:00-12:30 |
Parliamentary Links Day
The Attlee Suite, Portcullis House, Houses of Parliament, London SW1A 2LW

Please contact Karen Patel and Stephen Benn at events@rsb.org.uk for more details.

THE ROYAL SOCIETY

Details of all events can be found on the events calendar at events@royalsociety.org.
For scientific meetings queries:
scientific.meetings@royalsociety.org

THE ROYAL INSTITUTION

Details of all events and booking information can be found at www.rigb.org/whats-on.

PARLIAMENTARY OFFICE OF SCIENCE AND TECHNOLOGY

POST organises events that connect Parliamentarians to leading experts from the research community and other sectors including government, the third sector and business on a range of topics. Details can be found at www.parliament.uk/mps-lords-and-offices/offices/bicameral/post/post-events/



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