



20th April 2016

science4 your  
**Future>>**  
*showcasing exciting careers in science*



**#science4u2016**

The 13th Annual Schools Science Conference  
Presented by [science4u.info](http://science4u.info)  
in collaboration with University of Westminster

**Science for Your Future**

The 13th Annual Schools Science Conference | Presented by [science4u.info](http://science4u.info) in collaboration with University of Westminster | 20th April 2016



*Mandragora*  
(containing atropin)  
was described  
by **Theophrastus**;  
later given prior to  
surgery or cauterly  
**4th century BCE**

**Seleucus of Seleucia:**  
Discovery of tides being  
caused by the moon  
**150s BCE**

**Al-Kindi (Alkindus):**  
refutation of the theory  
of the transmutation  
of metals  
**9th C**

## Welcome!



We are delighted to see you at our 13th Annual Schools Science Conference – **Science for Your Future**. On behalf of the organising group I hope that you find this conference an exciting and informative day. Scientists and Healthcare Professionals from all over London have put together an exciting programme of interactive displays, talks and workshops about what they do. Each one of them is keen to share with you what they find fascinating about science and their profession. Make sure you ask them lots of questions. We want you to leave the conference with a better understanding about some of the many varied and interesting science based careers so that you can begin to plan for your own future and, hopefully, you might want to join us!

We are delighted this year that the **University of Westminster** has again graciously offered to host the **science4u** schools day. They have lent us the use of their facilities, many of their staff are participating in the programme and the secondary school students will experience what a university environment is like. For a number of years, The Royal College of Pathologists (RCPATH) hosted this event and while RCPATH has moved into temporary accommodation, we are grateful that the **University of Westminster** has partnered with us again. We are delighted that RCPATH remains involved and is running the workshop **Pathology for the Future**. We would also like to thank all our sponsors and supporters who enable us to provide this event.

The theme of the Conference, **Science for Your Future**, was chosen to highlight the exciting scientific developments that are changing all our futures. The results of the 100,000 genome project mean that in the future all babies may have their DNA sequenced at birth. Pluto has been imaged by a space probe; Mars trips are being planned. New treatments are being developed for cancer. Bacterial viruses may replace antibiotics. What will the future hold? How will you contribute to Science for the future?

Throughout the day, please refer to the programme paying particular reference to start times for each of the events. Sticking to the programme times will help the day run smoothly. There will be lots of things for you to collect as you go round the exhibits and a number of prizes given out throughout the day. Be aware that the equipment is there to let you try to use it and that not everything is for you to take away.

### To win a prize:

Remember to hand in your completed evaluation form (Pink form) before the Round-up & Prize Giving at 15:00 to enable you to enter the Prize Draw.

### After the event, see the conference website [science4u.info](http://science4u.info):

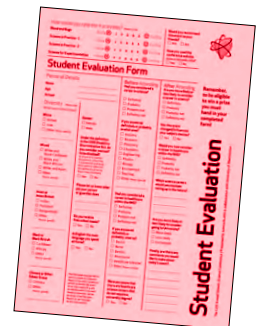
- Tour the **Virtual Laboratory** and learn more about science
- Take part in the **Battle of the Devices** workshop:  
Which medical device is the most innovative technology in healthcare today?
- Access the **Conference Quiz** to test yourself on how much you learnt at the event!
- Enter the **Reporter Competition**, read the reports and find out which reports won a prize
- See pictures taken at the conference

Wishing you an enjoyable and worthwhile day!

Best wishes

**Kimberly Gilmour**

Kimberly Gilmour  
Chairman of the Organising Committee





**Avicenna's**  
*The Canon of Medicine*  
was published  
1020s

**Robert Grosseteste:**  
Rudimentals of the  
scientific method  
(see also: Roger Bacon)  
1220–1235

**Ibn al-Nafis:**  
Pulmonary circulation  
and circulatory system  
1242

**Nicolaus Copernicus:**  
Heliocentric model  
of the Solar System  
was defined  
1543



## Jane Lewis

This year's conference theme of **Science for Your Future** is very much the mission of the **University of Westminster**.

For over 175 years the university has been engaging with its students from all over the world on the pioneering study of the science and technology that can make a better future for us all.

As Dean, overseeing all our science and technology and as a marine biologist using the latest molecular techniques to investigate the ecology of algal blooming – the potentially harmful accumulation of micro-organisms in sea or fresh water – I know how the rapidly advancing sciences are creating such exciting opportunities for you.

As a parent and teacher I also know how this makes for greater choice and complicated decisions. I hope today will help you – please enjoy it and keep in touch.

### Jane Lewis

**Professor Jane Lewis**  
Dean of Science and Technology and Pro-Vice-Chancellor  
The University of Westminster



## Vivienne Parry OBE

Writer & broadcaster  
**Keynote speaker**

Vivienne Parry is a science writer and broadcaster and has a part-time role as head of engagement at Genomics England which is delivering the flagship 100,000 Genomes Project. She has reported on some of the most exciting developments in medicine and science for the BBC and newspapers such as the Times and Guardian.

See my documentary on the history of cancer  
<http://vimeo.com/dependableproductions/theenemywithin>  
<http://www.vparry.co.uk/>

**Vivienne will be talking about some of the most exciting science she has covered in her career as a journalist for the BBC and also about the 100,000 Genomes Project which she calls the 'most exciting project I have ever been involved in'.**

# Science for Your Future

**Anton van Leeuwenhoek:**  
 Observes  
 Microorganisms  
 by Microscope  
 1675

**Ole Rømer:**  
 First measurement of  
 the speed of light  
 1676

**William Herschel**  
 Announces discovery of  
 Uranus, expanding the  
 known boundaries of the  
 solar system for the first  
 time in modern history  
 1781

# Programme

## Workshop

### Pathology for the Future

Presented by the Royal College of Pathologists



Did you know that pathologists perform nearly 900 million health tests each year in the UK? In this practical, interactive workshop you will learn from pathologists about the exciting new developments in pathology and how they are changing the way pathologists prevent, diagnose and treat disease.



The Royal College of Pathologists  
 Pathology: the science behind the cure

## Exhibits Exploring pathology & how the body works

### Science in Practice - 1 & 2

Sponsored by Society for Applied Microbiology



A hands-on interactive session where you meet scientists, try out some scientific equipment, undertake scientific assessments, answer questions for prizes and learn how science is applied to healthcare. AND don't forget to ask scientists what they do and why they love their jobs.





**Charles Darwin**  
and **Alfred Wallace:**  
Theory of evolution  
by natural selection  
**1859**

**Dmitri Mendeleev:**  
Periodic table  
**1869**

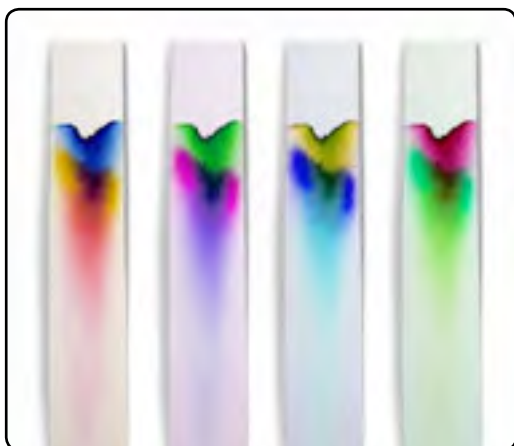
**Marie Curie:**  
Discovers polonium,  
radium, and coins the  
term radioactivity  
**1898**

**Albert Einstein:**  
Theory of special  
relativity  
**1905**

Interactive event

## Chemistry at Work

Sponsored by The Royal Society of Chemistry



### Why is Chemistry considered the basis of all science?

In this year, **Chemistry at Work**, as part of **Science for your Future**, we have a number of interactive stands showing how chemistry is fundamental to the understanding of nutrition, health, materials, biology and medicine.



## Workshop Young Scientists present their own work Science 4 Experimentation

The Association for Clinical Biochemistry & Laboratory Medicine



Prior to today's event we asked you to undertake a research project that you will present to the other schools in your group. All presentations will be competing for **The Association for Clinical Biochemistry & Laboratory Medicine Trophy for the Don Henderson Award**. The award will be presented at the end of the day.



**The Association for  
Clinical Biochemistry &  
Laboratory Medicine**

Produced a great project?  
Why not get recognition for  
your work by submitting  
it for a CREST Award?



Supported by

**ROYAL SOCIETY  
OF CHEMISTRY**

# Science for Your Future

**Alfred Bertheim:**  
Arsphenamine,  
the first modern  
chemotherapeutic agent  
1907

**Cecilia  
Payne-Gaposchkin:**  
Discovery of the  
composition of the Sun  
and that Hydrogen is  
the most abundant  
element in the Universe  
1925

**Georges Lemaître:**  
Theory of the Big Bang  
1927

## Programme Timetable

### Smooth running



Please refer to the programme times to help the day run smoothly

A member of the organising group will accompany you around the venue and help direct you to the appropriate areas

### Orange Group



10:00 **Launch & Science in Practice - 1**  
1.15 / 1.16 Level 1

+ **Chemistry at Work**  
Pavilion Level 1

11:00 **Pathology for the Future**  
2.14 / 2.15 Level 2

12:00 **Lunch**  
Lunch break - **The Refectory** Lower Ground

12:30 **Keynote speech**  
Large Lecture Theatre Level 2

13:15 **Science in Practice - 2**  
Ground floor space

14:15 **Science for Experimentation**  
Large Lecture Theatre Level 2

15:00 **Round-up & Prize Giving**  
Large Lecture Theatre Level 2

### Green Group



10:00 **Launch & Science for Experimentation**  
Large Lecture Theatre Level 2

11:00 **Science in Practice - 1**  
1.15 / 1.16 Level 1

+ **Chemistry at Work**  
Pavilion Level 1

12:00 **Lunch**  
Lunch break - **The Refectory** Lower Ground

12:30 **Keynote speech**  
Large Lecture Theatre Level 2

13:15 **Pathology for the Future**  
2.14 / 2.15 Level 2

14:15 **Science in Practice - 2**  
Ground floor space

15:00 **Round-up & Prize Giving**  
Large Lecture Theatre Level 2

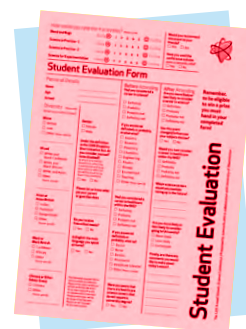
# Timetable

## Prizes

Feedback on the Conference is essential for us to improve future events and helps with funding.

As an incentive, we will put your completed evaluation form into a prize draw.

**Remember to hand in your completed evaluation form before the Round-up & Prize Giving at 15:00!**



Students' evaluation – pink form Teachers' evaluation – blue form

**Alexander Fleming:**  
Penicillin, the first  
beta-lactam antibiotic  
**1928**

**Otto Hahn, Lise Meitner  
and Fritz Strassmann:**  
Nuclear fission  
**1938**

**Oswald Avery**  
Proves that DNA is  
the genetic material  
of the chromosome  
**1943**

**Crick and Watson:**  
Helical structure  
of DNA, basis for  
molecular biology  
**1953**



## Blue Group



10:00 **Launch &  
Science in Practice - 2**  
Ground floor space

11:00 **Science for Experimentation**  
Large Lecture Theatre Level 2

11:50 **Keynote speech**  
Large Lecture Theatre Level 2

12:30 **Lunch**  
Lunch break - **The Refectory** Lower Ground1

13:00 **Science in Practice - 1**  
1.15 / 1.16 Level 1 &

+ **Chemistry at Work**  
Pavilion Level 1

14:15 **Pathology for the Future**  
2.14 / 2.15 Level 2

15:00 **Round-up & Prize Giving**  
Large Lecture Theatre Level 2

## Purple Group



10:00 **Launch &  
Pathology for the Future**  
2.14 / 2.15 Level 2

11:00 **Science in Practice - 2**  
Ground floor space

11:50 **Keynote speech**  
Large Lecture Theatre Level 2

12:30 **Lunch**  
Lunch break - **The Refectory** Lower Ground

13:00 **Science for Experimentation**  
Large Lecture Theatre Level 2

14:00 **Science in Practice - 1**  
1.15 / 1.16 Level 1

+ **Chemistry at Work**  
Pavilion Level 1

15:00 **Round-up & Prize Giving**  
Large Lecture Theatre Level 2

## Teachers' Workshop

11:00 **Orange  
Group**

11:00 **Green  
Group**

10:00 **Blue  
Group**

10:00 **Purple  
Group**

C2.11 Level 2



### Workshop Making Science Real Teachers' Workshop

Presented by Maria Rossini, British Science Association

Drawing from an EU-wide project, this teachers' session will highlight the best practices for 'making science real' in classrooms. In addition, participants will be offered the opportunity to get involved in piloting techniques and potentially participating in an international conference next November.

# Timetable

**Arno Penzias and Robert Woodrow Wilson:**  
 Detection of CMBR  
 providing experimental  
 evidence for the  
 Big Bang  
 1964

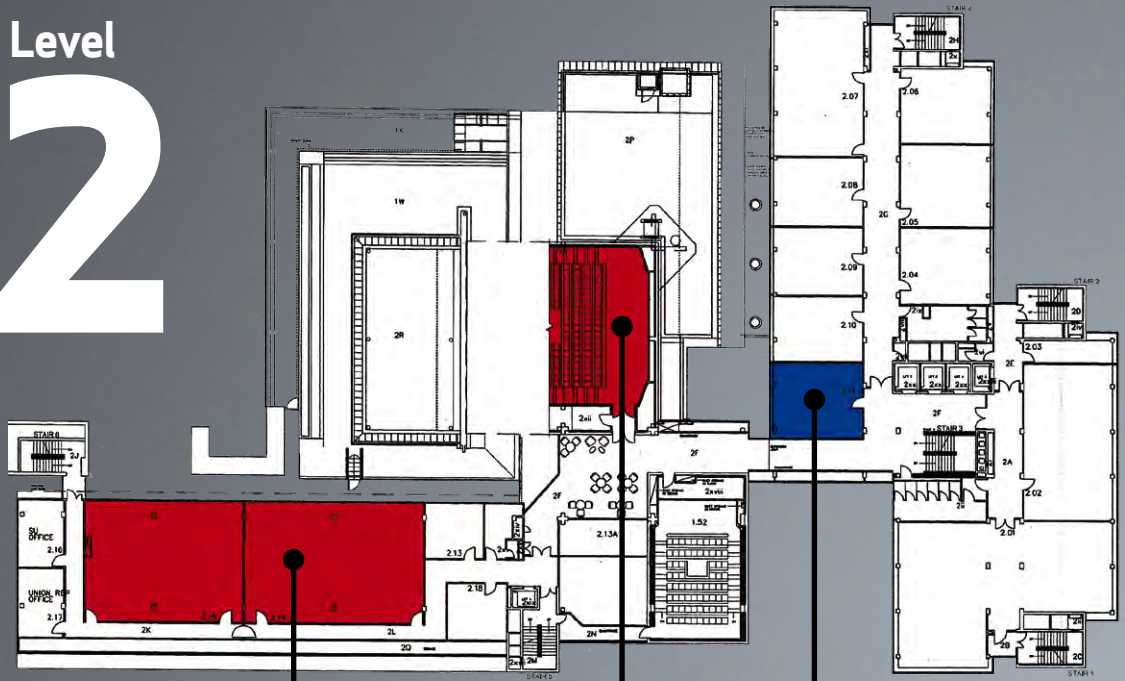
**Leonard Hayflick:**  
 normal cells divide only  
 a certain number of  
 times: the Hayflick limit  
 1965

**Roslin Institute:**  
 Dolly the sheep  
 was cloned  
 1997

# Floorplan

## Level

# 2



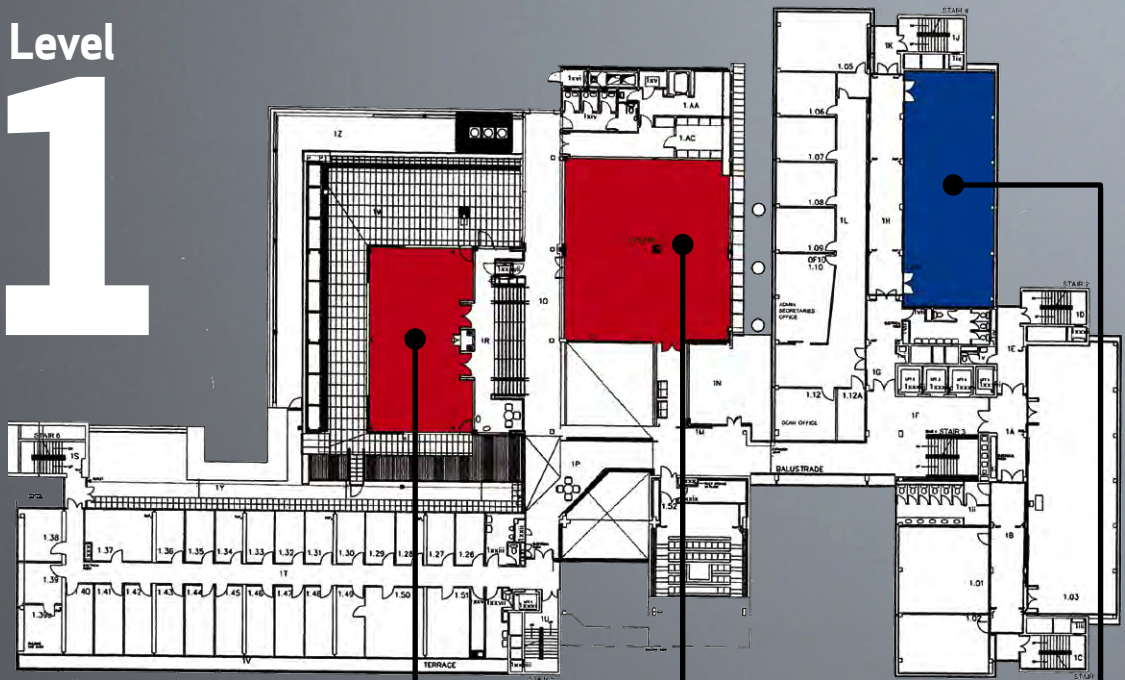
**Pathology for the Future**  
 2.14/2.15

**Keynote speech**  
**Large Lecture Theatre**

**Teachers' Workshop**  
 C2.11

## Level

# 1



**Chemistry at Work**  
**The Pavilion**

**Science in Practice - 1**  
 1.15/1.16

**Teachers'/Volunteers' Tea & Coffee**  
 1.04

# Floorplan





The first draft of the Human Genome Project is published  
**2001**

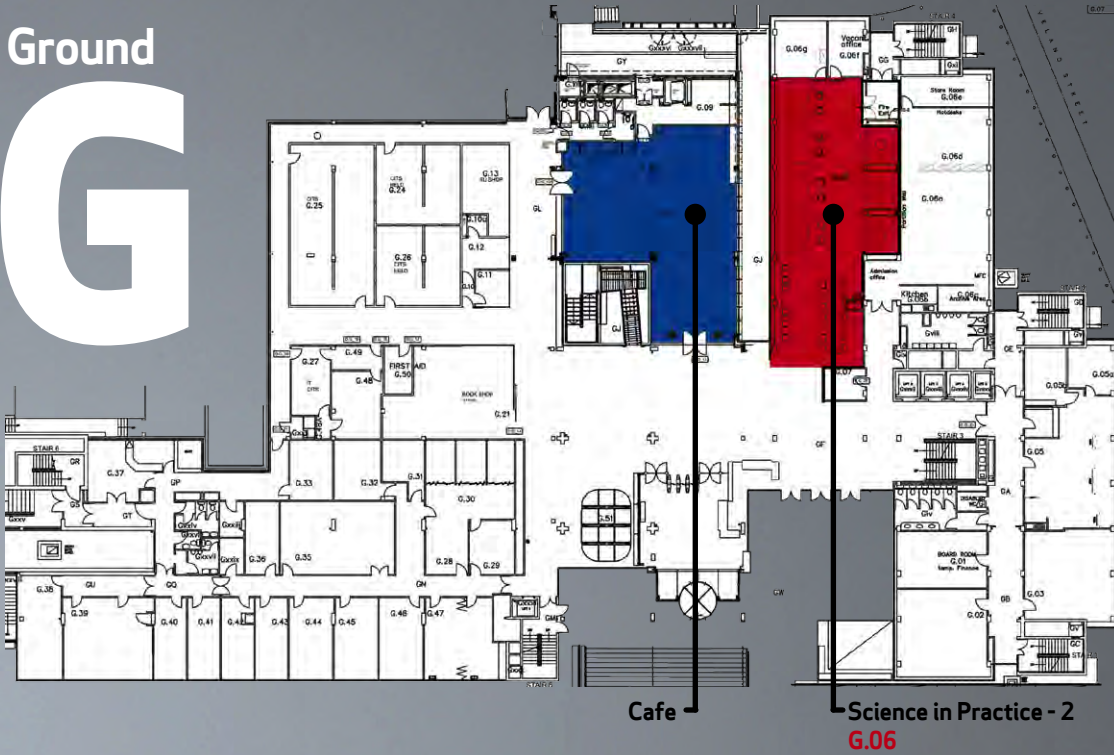
Higgs Boson is discovered at **CERN** – confirmed to 99.999% certainty  
**2012**

Traces of liquid water discovered on Mars  
**2015**

NASA's New Horizons spacecraft becomes the first to visit Pluto  
**2015**

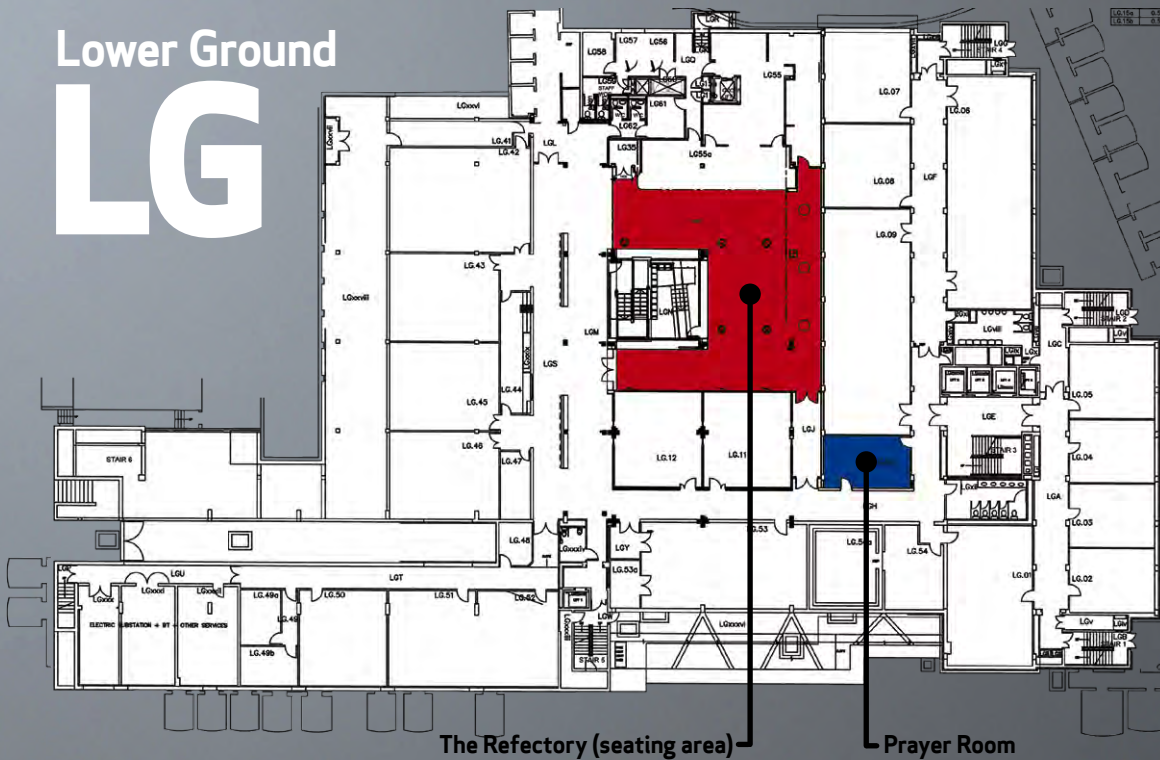
## Ground

# G



## Lower Ground

# LG



# Floorplan

Babies have their DNA sequenced at birth  
 ????

Mars colonised  
 ????

New treatments developed for cancer  
 ????

After the conference...

science4u.info

westminster.ac.uk

If you've enjoyed the conference, then visit the **science4u.info** website

View photographs of the event, see how much you learned today by trying the 2016 Quiz, tour the Virtual Laboratory, take part in *Battle of the Devices* and submit your Conference Report.

**Reporter Competition**

Simply write a report (500 to 1000 words) describing today's event.

Entries will be published on the website and the best report will win a prize!

The report should include what you found exciting and interesting and what might inspire you to continue to study science or to take up a healthcare profession.

**Closing date 6th May!**

**Battle of the Devices**

Each year, millions of patients find their lives are changed or saved by medical technology.

Our experts go head-to-head to try to convince you that their chosen medical device is the most innovative technology in healthcare today. Who deserves to win the **Battle of the Devices**? You decide.

**Virtual Laboratory**

If meeting and speaking with scientists has got you interested in a career in science then tour the Virtual Laboratory.

- Try your hand at diagnosis
- See a wide range of immunology tests
- Discover what it is like to be a scientist in a number of video interviews!



**UNIVERSITY OF WESTMINSTER**

**University of Westminster  
 Faculty of Science and Technology**

It may be early days for you to decide about a career but not for developing your interests.

Opportunities change fast, particularly in London where business drives and is driven by technology - only a small number of professionals have job titles as recognisable as doctor or lawyer. We can help you keep yourself informed about the many opportunities and possible career paths that there are, in the rapidly changing sciences.

Our central London site is dedicated to the teaching and research of Science and Technology where we offer a full range of professionally certified courses in:  
**Biomedical Sciences Biosciences  
 Business Information Systems  
 Complementary Medicine Computer and Network Engineering  
 Computer Science and Software Engineering Electronic Engineering  
 Multimedia and Games Computing  
 Nutrition Psychology**

We aim to find the best ways for you to become effective in your chosen area: being able to think, communicate, innovate and influence positively with opportunities to work creatively with your colleagues in our technologically advanced spaces or, if you chose, in a relevant external organisation.

Check out our website: [www.westminster.ac.uk](http://www.westminster.ac.uk), take the online virtual tour, come to an open day, and ask your teacher if you would like us to customise a visit for students in your school.





Bacterial viruses  
replace antibiotics  
????

Wounds healed  
by combining  
tissue engineering,  
bioengineering and  
nanotechnology  
????

Cities supported by  
sustainable technology  
????

Earth-like planets  
discovered  
????

# Acknowledgements

## Thanks to the following organisations and their staff for this year's event

- Clinical Trials and Statistics Unit - Institute of Cancer Research
- Faculty of Science and Technology, University of Westminster
- Genomics England
- Great Ormond Street Hospital for Children NHS Foundation Trust
- Guy's and St Thomas' NHS Foundation Trust
- iGEM Society, University of Westminster
- Imperial College Healthcare NHS Trust
- Imperial College London / Wellcome Trust Sanger Institute
- Institute of Biomedical Science
- Institute of Infection and Global Health, University of Liverpool
- King's College Hospital NHS Foundation Trust
- London Ambulance Service NHS Trust
- London Metropolitan University
- Malaria Reference & Diagnostic Parasitology Laboratory, London School of Hygiene & Tropical Medicine
- NHS Blood and Transplant
- Plymouth Hospitals NHS Trust
- Public Health England
- Public Health Wales, University Hospital of Wales
- Royal Microscopical Society
- School of Engineering & Materials Science, Queen Mary University of London
- St George's University Hospitals NHS Foundation Trust
- The Operational Research Society
- The Royal College of Pathologists
- University College London
- University College London Hospitals NHS Foundation Trust
- University Hospitals of Morecambe Bay NHS Foundation Trust
- University of Oxford
- University of Westminster
- Wellcome Trust Sanger Institute

Science for Your Future  
has been made possible thanks to  
the very generous support of our key sponsors



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**CA Redfern**  
Charitable Foundation

**NHS**  
Health Education England

**Philip King**  
Charitable Trust

**ESCMID** EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES

**Gold**

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**ROYAL SOCIETY OF CHEMISTRY**

**society for applied sfam**  
microbiology

**Bronze**

Thanks also to the following organisations for their generous support

The Association for Clinical Biochemistry & Laboratory Medicine

Institute of Food Science + Technology **ifst**

**MACS**  
Miltenyi Biotec

**PHILIPS**

Public Health England

The Royal College of Pathologists  
Pathology: the science behind the cure

**Supporters**

# Acknowledgements



## science4u.info

### Continuing Professional Development

This event is accredited with 6 CPD points for its members by the Institute of Biomedical Science



### Healthcare Science Ambassadors of the Year 2015

science4u.info won the NHS Chief Scientific Officer's award for Healthcare Science Ambassadors of the Year 2015

This recognizes both the work of the organising group and all our programme volunteers past and present without whose help and support these events would not take place.

### The Queen's Award for Voluntary Service

science4u.info has been nominated by programme volunteers and supporters of this project for a Queen's Award and was considered for 2015.

This recognizes both the work of the organising group and all our programme volunteers past and present without whose help and support these events would not take place.



The Queen's Award for Voluntary Service



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 showcasing exciting careers in science

## Organising Group 2016

**Don Henderson (Founder & Co-Chair)**

**Kimberly Gilmour (Chair)**  
 Great Ormond Street Hospital For Children NHS Foundation Trust

**Sue Alexander (Secretary)**  
 The Royal Marsden NHS Foundation Trust

**Manfred Almeida (Treasurer)**  
 Imperial College Healthcare NHS Trust

**Sarah Armstrong**  
 The Royal Marsden NHS Foundation Trust

**Mike Carter**  
 Public Health England

**Paul Hampson**  
 University of Westminster

**Patrick Lees**  
 University of Westminster

**Ayuen Lual**  
 Public Health England

**Amaka Nwagbara**  
 The Royal College of Pathologists

**Maria Rossini**  
 British Science Association

**Lucie Vass**  
 The Royal College of Pathologists

**Sharon Gage (Event Organiser)**  
 SRG Project Management

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