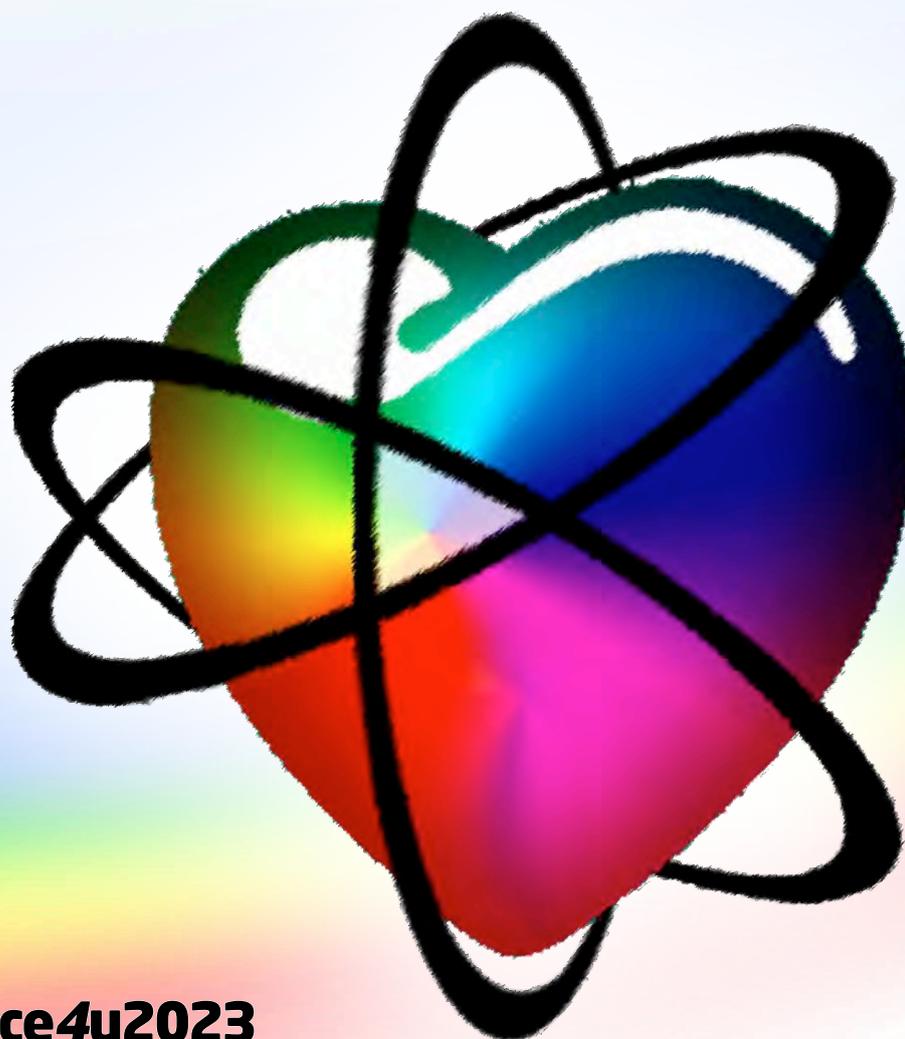


19th April 2023

science4  
**Celebration**  
*showcasing exciting careers in science*



**#science4u2023**

The 20th Annual Schools Science Conference  
Presented by science4u.info  
in collaboration with University of Westminster

**Science for Celebration**

The 20th Annual Schools Science Conference | Presented by science4u.info in collaboration with University of Westminster | 19th April 2023

## Welcome!

### We are delighted to see you at our 20th Annual Schools Science Conference **Science for Celebration**

On behalf of the organising group, we hope that you find this conference an exciting and informative day. Scientists and Healthcare Professionals from all over London and further afield 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 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 grateful to the **University of Westminster** who have again graciously offered to host the **science4u** school's 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. We are again thankful to **The Royal College of Pathologists** (RCPATH) for continuing to support this event and are delighted they are running one of their fabulous workshops. We would also like to thank all our programme volunteers, sponsors and supporters who enable us to provide this event. Without them this event would not go ahead.

The theme of our 20th **science4u** Schools Conference is **Science for Celebration**. It feels apt that the 20 year anniversary for this wonderful event is a celebration because this year has seen a number of clinical landmarks worthy of celebration. We have seen the return to normality (or nearly!) following the global pandemic and the success of the vaccination programme that has permitted this. This year has seen the rollout in the UK of the first population-wide newborn screening program using DNA, which has already saved babies' lives. Plus the first gene therapy given for T-cell acute lymphoblastic leukaemia, the expansion of artificial intelligence into clinical diagnostics, and an agreement to try two new drugs to combat antibiotic resistant microbes. We invite you to use your imagination about how scientists might make further vital breakthroughs in healthcare over the next few years.

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. Please ask before taking anything.

Did you know that there are over 150 careers in science, and scientists are a diverse group of people from all backgrounds and walks of life and encompass all ethnicities, ages, religions and come from numerous countries? Science covers the spectrum from Mathematics and Artificial Intelligence to Genetics and Gene Therapy. There is a career for everyone in science.

**Remember to hand in your completed evaluation form before the Keynote Speech for the chance to win a prize!**

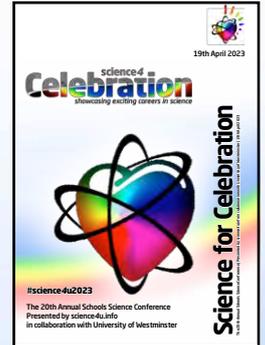
After the event, see the conference website [science4u.info](http://science4u.info):

- Tour the **Virtual Laboratory** and learn more about science
- Take part in the **Battle of the Devices** workshop:  
Decide which medical device is the most innovative technology in healthcare today?
- Access **The Big Quiz** to test yourself on how much you learnt at the event!
- See **pictures** taken at the conference

We hope that you find the day both worthwhile and enjoyable.

**Kimberly Gilmour & Stuart Adams**  
Chairs of the Organising Committee





Printed on 100% recycled paper using vegetable oil based ink

The **University of Westminster** is very excited to welcome you.

The world has transformed radically since 1838, when the **University of Westminster's** predecessor, the Polytechnic Institution, first started showcasing innovative technologies and educating our scientists. Many thousands have passed through the University on their way to careers that improve the world we live in, having benefited from a place where new things are constantly being discovered. The very essence of science is creativity, innovation and regeneration which are driven by the diversity of scientists, leading to new and exciting discoveries.

We hope that you will discover many exciting scientific insights and careers at the event and will be inspired to continue to learn science and the endless possibilities that it offers.

Please enjoy the day and keep in touch.

**Sarah Whitaker**

UK Student Recruitment and Outreach Manager  
University of Westminster

**UNIVERSITY OF  
WESTMINSTER** 

As the founder, I am delighted with the continuing success of the annual Schools Science Conference supported by the **science4u.info** website. We held the first conference in 2003 and this year will be the 20th event. The conferences are based around a theme. I am particularly pleased that the organisers are marking this 20th year anniversary with **Science for Celebration**.

I founded the Schools Science Conference and **science4u** to inform and stimulate young people to consider a career in health related science. While everyone knows about doctors and nurses, I felt that few considered or were aware of the whole raft of people involved in the provision of healthcare. I wanted to give this sector a voice and a platform to showcase what they do, why it is important and why so many of us have chosen to develop exciting and rewarding careers in healthcare science.

I eventually became the Consultant Clinical Scientist in charge of the immunology laboratory combining management with teaching, scientific research, as well as meeting and investigating patients. I have now retired and entered a different phase of life where I can indulge other passions, such as skiing and sailing and whilst I am doing that I would like to take the opportunity to wish you well and hope that you too go on to have an interesting career in healthcare science.

**Don Henderson** Founder, **science4u**

**Introduction**

## Programme

science4  
**Interaction**  
*hands-on interactive sessions*

**Interactive workshop**  
 Presented by The Royal College of Pathologists

### Give it a Shot!



Join **The Royal College of Pathologists** for an action-packed workshop all about vaccines, herd immunity and infectious diseases.

Led by pathologists and Clinical Scientists, **Give it a Shot!** offers students the chance to explore the consequences of choosing to vaccinate or not vaccinate, using the MMR vaccine as an example. The carousel of activities will include a hands-on wet practical and an interactive discussion about infectious diseases and vaccine hesitancy.

Links to Key Stage 4 science curriculum:  
**Health, disease and the development of medicines**



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

**Interactive exhibits**  
 Meet the Scientists and Healthcare Professionals

### Science in Practice



Hands-on interactive sessions 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.

See the **Big Quiz** on subsequent pages and ask these questions as you meet appropriate experts.



# Science for Celebration

Healthcare scientists are a diverse and specialised community within the NHS, using their knowledge and expertise to develop, design, and

deliver patient care. They carry out over 1 billion diagnostic and scientific investigations and interventions every year.

During the pandemic we have had to regenerate old equipment that was gathering dust in various store rooms and even in museums to use to look

after patients with COVID-19. We have had to re-purpose some drugs to help those with most severe symptoms. >>



## science 4 Experimentation

science project and presentation

### Competition

Young Scientists present their own work competing for the

## Don Henderson Award



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.



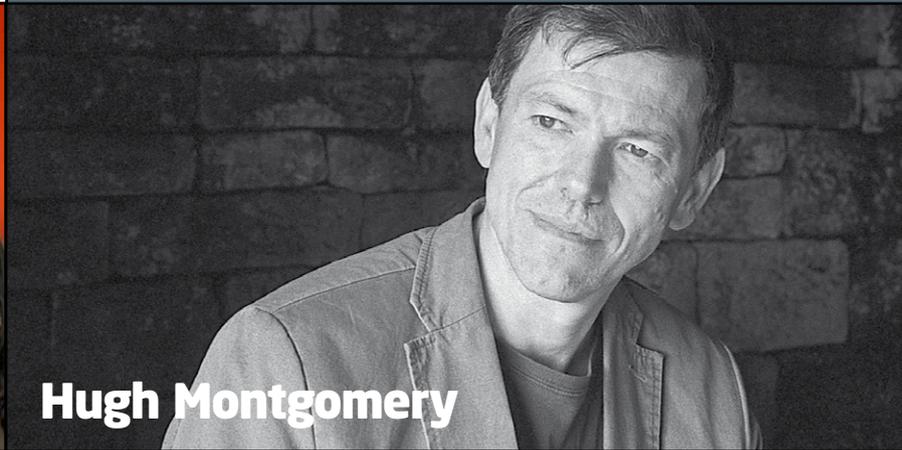
**The Association for Clinical Biochemistry & Laboratory Medicine**

Better Science, Better Testing, Better Care

## science 4 Inspiratation

keynote speech

## What does science say about Climate Change?



## Hugh Montgomery

**Twenty years ago, vested interests were running campaigns to say that human-induced climate change didn't exist. The warnings of scientists were drowned out. Twenty years later, we all know the truth: science and lived experience tells us that climate change is very real, and very dangerous. But what does science say about the next 20 years? And what must be done?**

Hugh is Professor of Intensive Care Medicine at **UCL** where he also directs the **Centre for Human Health & Performance**. Amongst other things, he discovered the first 'gene for human fitness', has published >550 scientific research articles, & has won >8 (inter)national awards.

He has also worked in the field of climate change and health for over 20 years. He chaired the two **Lancet Commissions on Human Health & Climate Change**, & now the 5-year, 32-country annual **Lancet Countdown on Health & Climate Change**. He's written & lectured extensively on the subject, and has briefed policymakers (inter)nationally. He was appointed London Leader by the **Greater London Authority**; has attended many of the international **COP** negotiations; leads the children's climate education **Project Genie**; & co-led the ITV documentary on **Floods and Climate Change** (2020). He is helping to lead action to decarbonise the health sector in the UK and beyond. He was awarded the OBE in 2022 in part for his work on climate change and health.

**Hugh Montgomery OBE FMedSci MBBS BSc FRCP MD FRSB FFICM FRI**  
Professor of Intensive Care Medicine, University College London

# 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

# Timetable

## Red Group



**10:10 Welcome & Introduction**  
 Large Lecture Theatre Level 2

**10:15 Science for Experimentation**  
 Large Lecture Theatre Level 2

**11:00 Science in Practice - A to D**  
 1.109 to 1.112 Level 1

**11:40 Lunch**  
 Lunch break - **The Refectory** Lower Ground

**12:10 Science in Practice - E & F**  
 1.15 / 1.16 & C1.18 (Pavilion) Level 1

**12:55 Give it a Shot!**  
 1.03 & 1.04 Level 1

**13:35 Evaluation**  
 Large Lecture Theatre Level 2

**13:45 Keynote Speech**  
 Large Lecture Theatre Level 2

**14:05 Round-up & Prize Giving**  
 Large Lecture Theatre Level 2

## Green Group



**10:50 Welcome & Introduction**  
 The Refectory Lower Ground

**10:55 Give it a Shot!**  
 1.03 & 1.04 Level 1

**11:40 Science in Practice - A to D**  
 1.109 to 1.112 Level 1

**12:20 Lunch**  
 Lunch break - **The Refectory** Lower Ground

**12:50 Science for Experimentation**  
 Large Lecture Theatre Level 2

**13:35 Science in Practice - E & F**  
 1.15 / 1.16 & C1.18 (Pavilion) Level 1

**14:15 Evaluation**  
 Large Lecture Theatre Level 2

**14:25 Keynote Speech**  
 Large Lecture Theatre Level 2

**14:45 Round-up & Prize Giving**  
 Large Lecture Theatre Level 2



# Science for Celebration

The NHS spent an awful lot of money also buying new equipment to carry out COVID-19 testing and now some of that equipment is being

regenerated for other diagnostic work across the NHS. There are over 56,000 people that make up the healthcare science

workforce in England. Healthcare scientists work in over 150 service areas across pathology and laboratory science, physiological

sciences, data science, bioinformatics, medical physics and clinical engineering. >>



## Blue Group



- 11:30 Welcome & Introduction**  
Large Lecture Theatre Level 2

---

- 11:35 Science for Experimentation**  
Large Lecture Theatre Level 2

---

- 12:15 Give it a Shot!**  
1.03 & 1.04 Level 1

---

- 12:55 Lunch**  
Lunch break - **The Refectory** Lower Ground

---

- 13:30 Science in Practice - A to D**  
1.109 to 1.112 Level 1

---

- 14:15 Science in Practice - E & F**  
1.15 / 1.16 & C1.18 (Pavilion) Level 1

---

- 14:55 Evaluation**  
Large Lecture Theatre Level 2

---

- 15:05 Keynote Speech**  
Large Lecture Theatre Level 2

---

- 15:25 Round-up & Prize Giving**  
Large Lecture Theatre Level 2

CPD Teachers' Workshop  
STEM Clubs London

## Embedding careers support in a STEM Club



Red & Green groups  
11:00-11:40  
Blue group  
12:15-12:50

Paula Bull of STEM Clubs London, provides a CPD Teachers' workshop.

Help your students understanding and knowledge of **STEM** careers and employability skills.

Integrate real world context to your **STEM Club** activities, support the school careers plan and engage with **STEM Ambassadors**

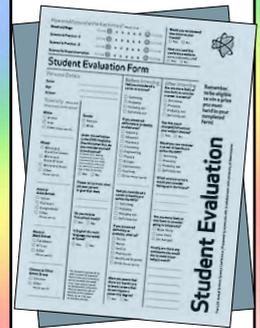
This workshop is for **STEM Club** leaders looking to add value to their club and support students understanding and knowledge of STEM careers and associated employability skills. The workshop will cover how a **STEM Club** leader can embed careers awareness, relate activities to real world context, engage with **STEM Ambassadors** and support employability skills. **STEM Club** leaders will learn how their club can be an asset to the school.

## Prizes

Remember to hand in your completed evaluation form before the Keynote Speech

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.

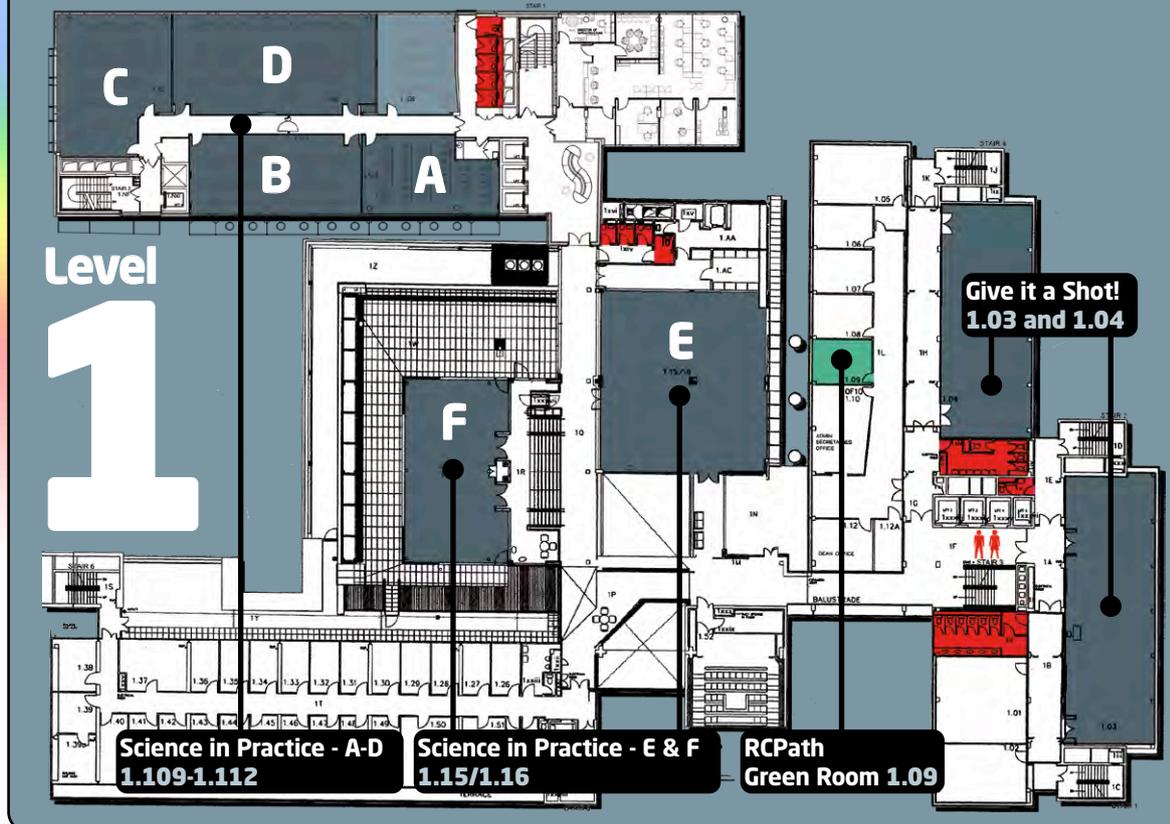
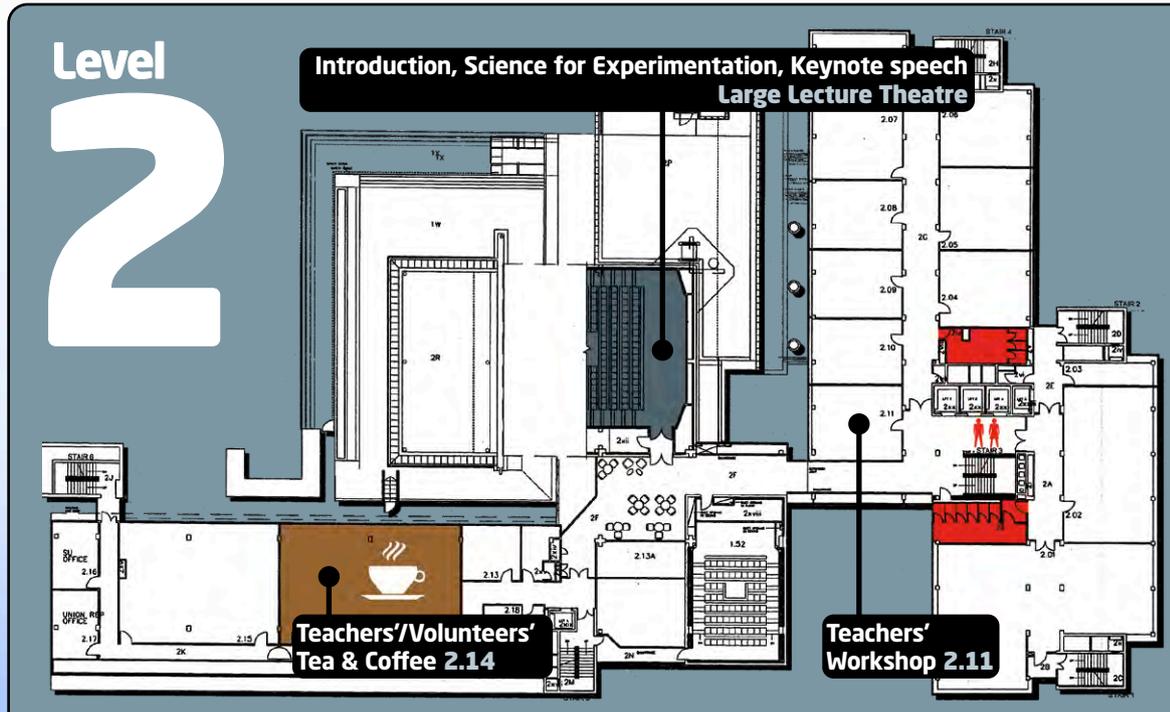


Students –  
Light grey form

Teachers –  
Dark grey form



# Floorplan



# Science for Celebration

The healthcare science workforce who deliver these services are a unique and specialised workforce.

Healthcare scientists are fundamental to clinical decision making and ensuring patients receive timely, high quality, cutting-edge care. >>



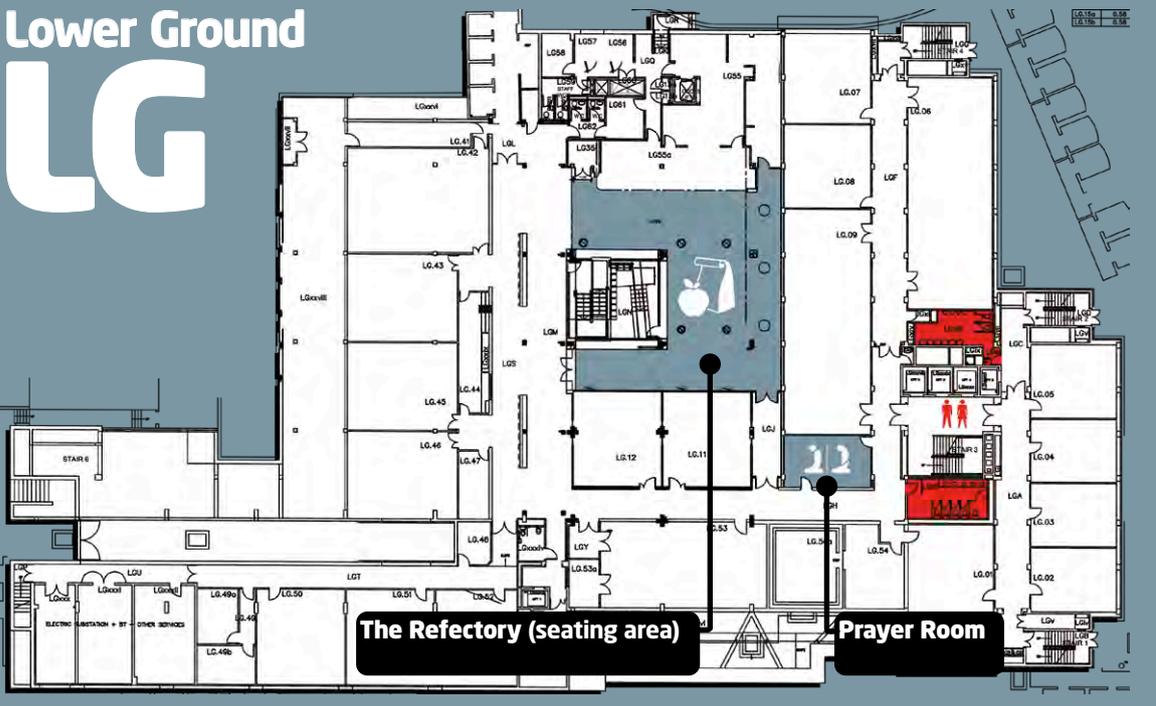
## Ground

# G



## Lower Ground

# LG



# Floorplan

## Acknowledgements & thanks

# Acknowledgements

science4u.info  
 showcasing exciting careers in science

### Organising Group 2023

**Don Henderson**  
 Founder

**Kimberly Gilmour**  
 Co-Chair

Great Ormond Street  
 Hospital for Children  
 NHS Foundation Trust

**Stuart Adams**  
 Co-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

**Fred Bonful**  
 University of  
 Westminster

**Penny Fletcher**  
 The Royal College  
 of Pathologists

**Chris Gallimore**  
 UKHSA

**Paul Hudson**  
 University of  
 Westminster

**Thadcha Retneswaran**  
 The Royal College  
 of Pathologists

**Sharon Gage**  
 Event Organiser

SRG Project Management



### The Queen's Award for Voluntary Service

**Don Henderson**

Founder of science4u and retired Consultant Clinical Scientist

As the founder, I am very pleased with the continuing success of the annual Schools Science Conference supported by the science4u.info website. I was also delighted to hear that we have attained a **The Queen's Award for Voluntary Service (QAVS)**.

**QAVS** is the highest achievement given to local volunteer groups across the UK to recognise the outstanding work undertaken in their local communities and is the equivalent of an MBE.

This achievement is not only in recognition of the work of science4u to inspire students to study science and showcase the many careers in healthcare science, but also the work and support of all the programme volunteers, the schools who attend, our collaboration with the **University of Westminster** and the sponsors.



# Science for Celebration

If you've received a diagnosis in the past few years, there's a very good chance that a Healthcare Scientist contributed to it in some way.

That's because approximately 80% of all diagnoses in the UK are reached with a contribution from

Healthcare Scientists and many therapeutic and rehabilitation interventions also rely on our work.



Science for Celebration is presented by [science4u.info](http://science4u.info) in collaboration with University of Westminster

**science4u is grateful to the following organisations and their staff for their kind participation and enthusiasm in creating content and presenting today's programme**

- Barts Health NHS Trust
- Great Ormond Street Hospital for Children NHS Foundation Trust
- Health Services Laboratories
- Imperial College Healthcare NHS Trust
- Institute of Biomedical Science
- King's College Hospital NHS Foundation Trust
- London Ambulance Service NHS Trust
- NHS Blood and Transplant
- NHS England - London
- North West London Pathology
- Queen Mary University of London
- South West London Pathology
- SRG Project Management
- St George's University of London
- STEM Ambassador Hub London
- STEM Clubs London
- Synnovis
- The Institute of Cancer Research
- The Royal Marsden NHS Foundation Trust
- UCL
- University of Westminster

### Key content creators



**Continuing Professional Development**  
This event is CPD credited with the **Institute of Biomedical Science** scheme - Members can obtain certificates via the IBMS website [www.ibms.org/home/](http://www.ibms.org/home/)

Science for Celebration was made possible thanks to the very generous support of our key sponsors

Funding

**C A Redfern**  
Charitable Foundation

Gold

**Great Ormond Street Hospital**  
Healthcare Scientist Education Working Group



WESTMINSTER  
ALMSHOUSES  
FOUNDATION

Silver

**Philip King**  
Charitable Trust

Thanks also to the following organisations for their generous support



Supporters



# After the conference ...

## science4u.info

### Visit the conference website

View photographs of the event, see how much you learned today by entering The Big Quiz, tour the Virtual Laboratory, and take part in **Battle of the Devices**.

#### 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
- Watch the videos to discover what it is like to be a scientist

#### Watch the 2022 Virtual Conference - Science for the World

All of the sessions from the 2022 Conference are available to view.

2020 saw the first global pandemic since the pandemic of the Spanish Flu in 1918 with less profound other pandemics in 1957 and 1968.

This has affected the entire world and changed society worldwide. Scientists of all kinds have been needed like never before in the modern era - from Respiratory Scientists through to Virologists, from Immunologists through to Clinical Perfusionists - they have all had a key role to play.

Big global questions have arisen, such as, has the world responded and dealt with this appropriately? Where are we with worldwide vaccine availability, healthcare, food supply maintenance, has the impact on the environment been considered enough and how could the world be better placed to deal with another pandemic?

## westminster.ac.uk

### UNIVERSITY OF WESTMINSTER<sup>Ⓜ</sup>

**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 but there are many more which you may not be aware of. 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, Medical Sciences, Pharmacology & Physiology, Nutrition and Psychology, Business Information Systems, Data Science & Analytics, Smart Computer Systems, Computer Science, Computer Network Security, Software Engineering and Computer Games Development**

At Westminster, students will become part of our vibrant research culture and will develop practical and professional skills under the guidance of staff who have an international reputation for their professional and research activities. The University has invested more than £30 million in equipment and has created state-of-the-art learning spaces and laboratories, meaning students will benefit from cutting edge and innovative teaching facilities.

Our courses are informed by employers, our research and collaborations with national and international institutions. Students will be prepared for a professional working life in a range of environments such as hospitals, research institutions, the scientific or medical civil services. For more information on our courses, please visit our web page at [www.westminster.ac.uk](http://www.westminster.ac.uk)