



# Royal Holloway Science Festival

## Discover Science Day

Saturday 27 May 2023

10am-4pm

A day of science exploration and discovery at Royal Holloway, University of London

[royalholloway.ac.uk/sciencefestival](http://royalholloway.ac.uk/sciencefestival)



ROYAL  
HOLLOWAY  
UNIVERSITY  
OF LONDON

# Principal's welcome



Welcome to Royal Holloway Science Festival. We have run our hugely popular annual Science Open Day for over 25 years, celebrating science and attracting large audiences each year.

We have a thriving science community here at Royal Holloway, with world-class pioneering research taking place, so this is a great opportunity for everyone to come along and discover some of the exciting things that we are up to.

In an evolving world, science is at the heart of our future, and it's vitally important that we continue to engage the next generation in these subjects and make it fun.

Through the range of activities at Royal Holloway Science Festival, we will be able to demonstrate the wide-ranging impact of science and explore the latest technological advances together.

We look forward to meeting you

Julie

**Professor Julie Sanders**  
**Vice-Chancellor and Principal**



For more details visit our website:  
[royalholloway.ac.uk/studying-here/schools-and-colleges](http://royalholloway.ac.uk/studying-here/schools-and-colleges)

Share your day #RHSF2023

 Follow us on Twitter @RHULScience

## Science at Royal Holloway

Royal Holloway is one of the UK's leading universities, with a distinguished history of internationally excellent research.

Royal Holloway Science Festival invites you to be inspired by the wonder of science and experience some of our world-changing research first hand.

Royal Holloway co-ordinates a broad range of outreach activities for local schools, and sixth form and FE colleges as well as the wider public, presenting a varied programme of talks, demonstrations, visits, and hands-on workshops. We also provide a point of contact and resource for anyone working in education to inspire the teaching of science.



We hope you enjoy today's event!



Our science departments have received Athena SWAN awards recognising best practice as a community dedicated to the principles of equality, diversity and inclusion for all.



# Today's programme

Discover science at today's special talks and shows			Location
	Listen to your heart and your head!	10.30-11am	S
	Big Bang Experience*	11-11.30am	S
	Magic of Numbers*	11.30-12.00pm	W
	Listen to your heart and your head!	1-1.30pm	S
	Big Bang Experience*	1.30-2pm	S
	Magic of Numbers*	2-2.30pm	W
Activities running all day			Location
	How steam railways work	Steaming throughout the day	BH
	Cryogenic demos	Drop in talks	T
	Wiggly Wild Show	Drop in activity	W
	Birds of Prey	Outdoor display	F

These events marked with a \* require free tickets to help us manage seating. Tickets are available on a first come first served basis, from the Windsor Building information point. Morning event tickets will be released at **10am** on the day and afternoon (events from 1pm) tickets will be released at **12noon**. Children under 12 must be accompanied by an adult.

## Science Festival Passport

A treasure trail for younger visitors

Hunt for a letter at each main venue to complete your science passport then find the hidden word. Bring your completed passport back to the Windsor Building information desk to collect a small prize.



Pick up your passport leaflet from today's information point. Good Luck!

# General information

## Windsor Building

### **W** Windsor Building

Our main information point today is located at the Windsor Building foyer for:

- Tickets and passport prizes
- Campus guides
- First Aid by Face 2 Face Medical
- Lost property
- Lost children meeting point

Toilets are located in each building.



## Interested in studying here?

Visit our stand at the Windsor Building foyer and pick up a Royal Holloway prospectus.

We would like to thank all our Science Festival partners, students and staff for their support

Look out for our university mascot Colossus the friendly polar bear!



## Refreshments

A wide range of food and drink will be available throughout the day:



- X** **Founder's Square 11am-4pm**  
The Van serving hot street food
  - C** **Café on the Square 9am-4pm**  
Starbucks coffee, cakes and sandwiches
  - B** **Boilerhouse Café 10am-4pm**  
artisan style coffee, cake bar, vegan and veggie
  - H** **The Hub 11.30am-2.30pm**  
Hubways, rotisserie, burgers, brunch and salad bars
  - S** **Union shop open all day**  
snacks, drinks, fruit etc
  - X** **Student's Union 11am-4pm**  
Hot food market with tastes from around the world
- Picnic areas by the Students' Union Building and at Founder's Square.  
See map for locations on page 10

Please note that professional filming and photography will be taking place throughout the day on Saturday 27 May. Footage and images will be used as part of Royal Holloway promotional materials including our website and social media channels. For children under 16, we endeavour to seek permission from parents or guardians wherever possible. Programme correct at time of publication 05/23.

# Highlights

Some of today's activities have limited spaces and require free tickets for entry. Performances last for 30 minutes and are suitable for all ages unless otherwise stated.

## The Life-Changing Magic of Numbers



Bobby Seagull, Maths champion, TV presenter and author on the world of maths and why we should all love it! (7 years and over)

**W Windsor Building Auditorium**  
Two performances, 11.30am and 2pm  
(please collect free tickets for entry)

## Big Bang Experience



Professor Stephen Gibson presents a thrilling show of Physics to reveal the wonders of the Hadron Collider and what happens when particles collide. (7 years and over)

**S Shilling Building Auditorium**  
Two performances, 11am and 1.30pm  
(please collect free tickets for entry)

## Listen to your heart and your head!

Dr Steve Alty and Dr Clive Cheong Took show how engineers help medical doctors make diagnoses and explore how electrical signals can help us better understand the inner workings of the human body. (7 years and over)

**S Shilling Building Lecture Theatre**  
Two performances, 10.30am and 1pm

Please note age ranges for talks are for guidance based on appropriateness of content. Free tickets are available from the information point at the Windsor Building.

## All day activities



### How Steam Railways work



Live steam engines presented by the Gauge 1 Model Railway Association Surrey

**BH Boilerhouse Theatre**

### Birds of Prey

Come and meet giants of the sky



**F Founder's Square**



### Wiggly Wild Show

Explore the world of minibeasts, bugs, reptiles and creepy crawlies! Get to meet a giant millipede or make friends with a bearded dragon.



**W Windsor Building 004**

# Discover Science



## Biological Sciences

- DNA extraction from strawberries
- VR Biology - study protein/drug interactions close up
- Discover amazing seeds and their dispersal and morphology
- Foldscopes - see nature from a different perspective
- Fun with fungi in everyday processes
- Busy Bees in a portable display hive, bumblebee hive and live colony
- Edible microbes using sweets to make mock bacterial agar plates
- **Scientific Scissors and DNA (BioChem Society)** - a hands-on activity aimed at informing and debating about the applications and ethics of genome editing.

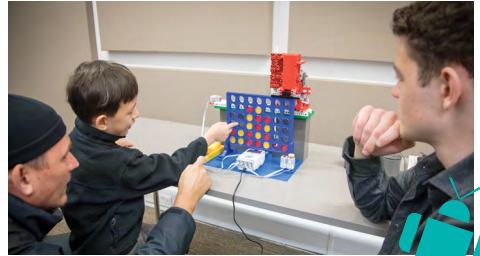
### **B** Bourne Building



Bird of Prey – Come and meet some giants of the sky located at Founder's Square. (map **F**)



Steam Trains – See live steam model railways and learn how steam locomotives work at the Boilerhouse (map **BH**)



## Computer Science

All day drop in activities demonstrated by students including projects developed and built as part of their Robotics project.

- **Lego NXT Balancing Robots Race**  
Become the ultimate champion of our Lego Balancing Robots Race! If you go too fast, you shall fall! If you go too slow, you will lose! Will you find the perfect balance?
- **Robotic Rubik's' Cube Solver**  
This universal Lego-based robot can grab, rotate and solve any Rubik's cube problem!
- **Emotional Pusheen Facial Recognition**  
Feeling happy? So does Pusheen, the cat! Feeling sad? Pusheen will console you! There are eight detectable emotions: can you trigger all of them? Developed by our PhD students.
- Simple cybersecurity for children

### **W** Windsor Building 102-103

- **Gauge One Model Railway Association presents *The Surrey Oval*** - a large scale live steam railway model railway.
- 3D printing - see how low-cost 3D printers can be used to make items for modellers
- The Babbage Difference Engine - Dr Piers Plummer presents a modern interpretation of a 200 year old mechanical automatic calculator.

### **BH** Boilerhouse Theatre





## Earth Sciences

- Explore the subsurface mystery – how geological core material helps us understand what lies beneath us
- Hold a piece of meteorite in your hands! Touch a piece of iron meteorite, see the moon up close, and learn about meteoritic studies, space exploration rovers, different solar system bodies, and the impact craters record on these.
- The Road to Net Zero: Can we reduce our methane emissions – learn about greenhouse gas with a greenhouse gas analyser
- Geological timeline - a display of our department's mineral and geologic samples
- Fossil hunt – collect stamps as you hunt

### **Q** Queen's Building

## Drone demo from our new Omnidrome facility

See a range of drones and discover what they can do.

Omnidrome is our new hub for world-leading research, innovation, education and knowledge exchange for air, land, and water-based drones, robotics and autonomous vehicles.

### **Q** Queen's Building



## Electronic Engineering

All day drop-in activities developed and demonstrated by our students in Electronic Engineering:

- Electronic Hot Potato (Shilling ground floor foyer)
- Count like a computer Programming fun (Shilling 1.06)
- Electronic Connect4 Remote control car Hot Wires Line Followers (Shilling Creative Thinking Room)

### **S** Shilling Building

## Talks

## Listen to your heart and your head!

Dr Steve Alty and Dr Clive Cheong Took show how engineers help medical doctors make diagnoses and explore how electrical signals can help us better understand the inner workings of the human body. (7 years and over)

### **S** Shilling Building Lecture Theatre 10.30am and 1pm



## Geography



- **River Thames Flood Prevention Scheme**  
Find out how a plan for the Thames will create economic, health and environmental benefits between Egham and Teddington.
- **Stones and Bones** - Hippos at Heathrow? Wolves in Windsor? See ancient mammal fossils and stone tools and learn how the UK climate has changed over 1000s of years.
- **Climate Time Capsules** - Create your own time-capsule of climate change and preserve it in our colourful lake sediment!
- **Water Quality** - Use simple tests on water samples from across our campus- will you pick the right one for drinking?
- **Geography Student Society Quiz** - Test your geography knowledge and discover the exciting opportunities that come from studying Geography at university.

### **Q** Queen's Building



Meet our new Health Studies department focusing on healthy people and environments.



## Mathematics



- Mathematical puzzles and games
- Mathematical magic
- Box making activity

### **Special guest:**

Cryptography machines by Jerry McCarthy - be wowed by cipher machines (FIALKA and NEMA) and hear all about their code breaking abilities

### **W** Windsor Building 104

## Health Studies



- Yoga demonstration with talk on cultural significance to India
- Pilates demonstration with talk on particular relevance for alleviation of back pain
- 'Sensory box' interactive activity
- Sounds of nature/urban environments and mood experiment
- Short talks on health-related subjects including alcohol misuse in teenagers; telemedicine in India; Ayurveda

### **W** Windsor Building 105





## Physics

- **Imagine, invent and inspire through Physics** - Get hands on with experiments and watch impressive demos at the Physics Lab!
- **Cryogenic demos** - Join the coolest demo on campus! Physics presents cryogenic shows with liquid nitrogen. Room T125

### Special guest:

Exhibits from the National Physical Laboratory.

### The wonder of optical technology demonstrations:

- miniature optical components
- Brownian motion, milk fat globules collide with water molecules
- an impressive display of colour holograms
- total internal reflection and refractive index.

### **T** Tolansky Building

## Talks

### Big Bang Experience

Discover the wonders of the Hadron Collider and what happens when particles collide. Presented by Professor Stephen Gibson

**S** Shilling Building Auditorium  
11am and 1.30pm



## Psychology

Experience a variety of topics in Psychology and some of the research we conduct:

- Emotion recognition, social media & mental anxiety
- The rubber hand illusion
- Can you guess the meaning of words in foreign languages?
- Explore our virtual art gallery
- Visual illusions: never trust your eyes

Guided tours of the MRI scanner

(sign up for 15 minute time slots from 1-3.30pm)

**W** Windsor Building 002-003

## College Collections Uncovered



Explore student experience and how parties, politics, perceptions, and people have changed across 170+ years of student life at Royal Holloway and Bedford New College.

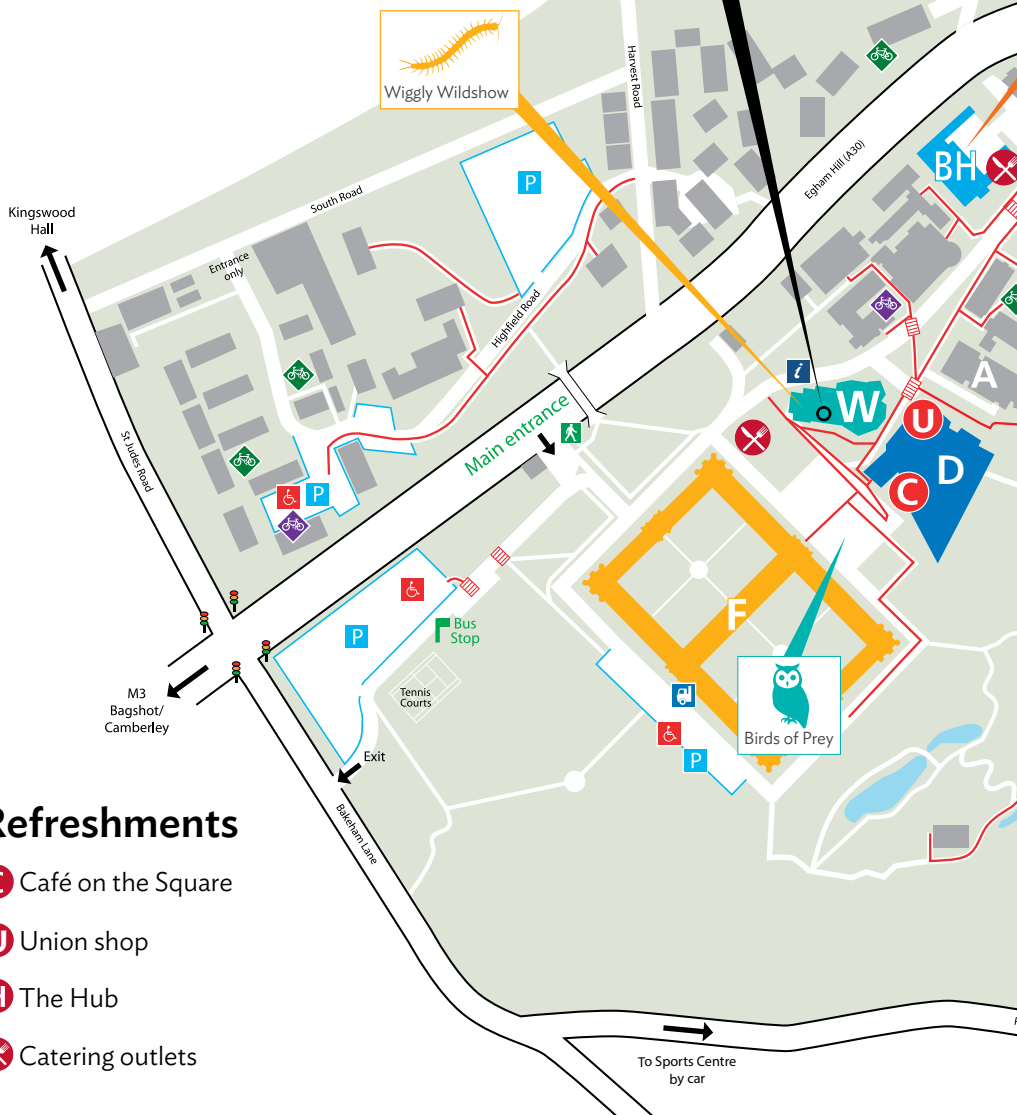
An exhibition placing the spotlight on our heritage, the issues we care about, and how they continue to shape who we are today.

**D** Exhibition Space,  
Davison Building

## Key

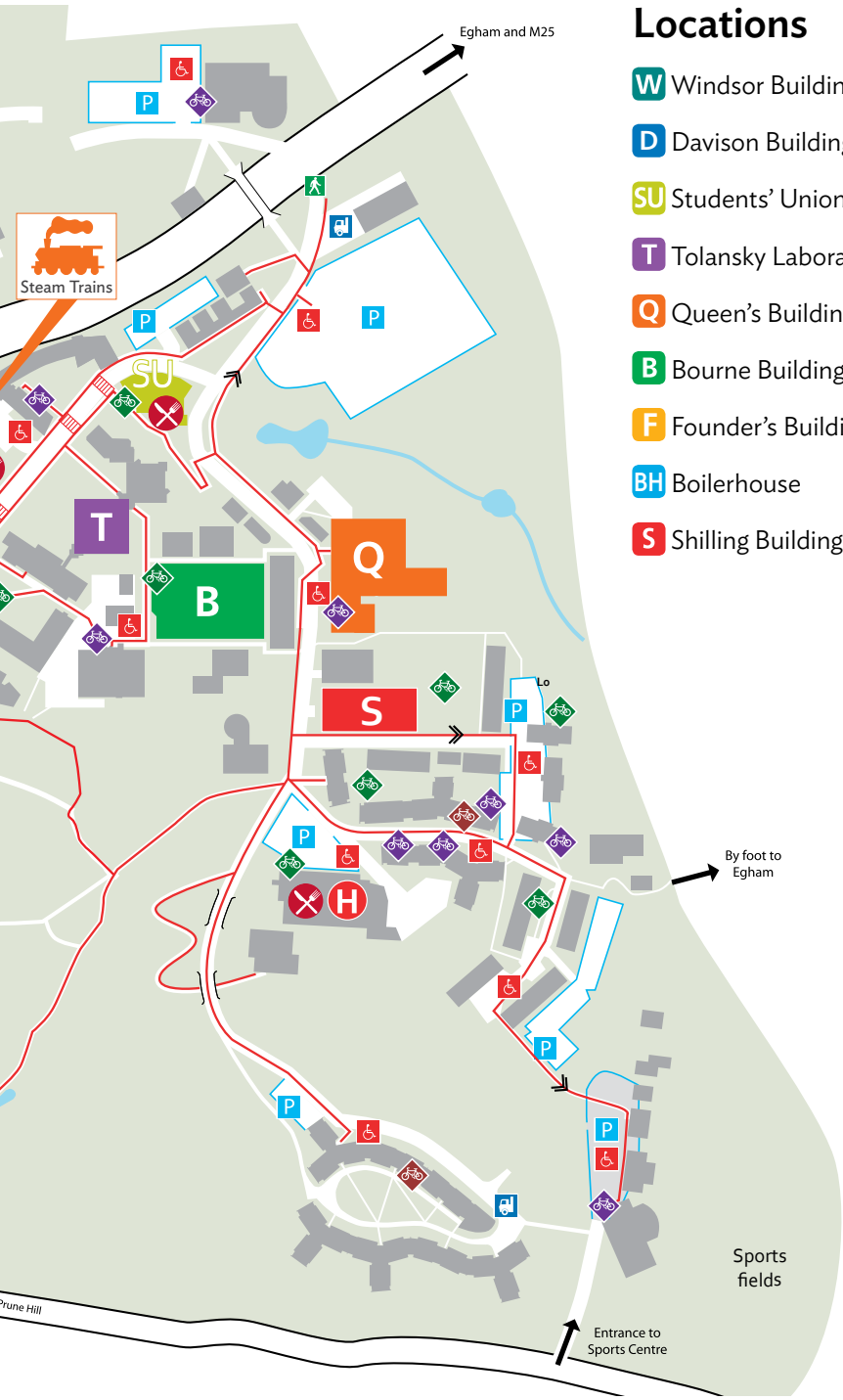
- |   |                          |   |                        |
|---|--------------------------|---|------------------------|
|  | Campus buildings         |  | Information            |
|  | Car parks                |  | Pedestrian access only |
|  | Accessible route         |  | Bike rack - internal   |
|  | Gradient direction       |  | Bike rack - covered    |
|  | Zebra crossing           |  | Bike rack - uncovered  |
|  | Accessible parking space |   |                        |

## Information and ticket point



## Refreshments

-  Café on the Square
-  Union shop
-  The Hub
-  Catering outlets



# Locations

- W** Windsor Building
- D** Davison Building
- SU** Students' Union
- T** Tolansky Laboratory
- Q** Queen's Building
- B** Bourne Building/Laboratories
- F** Founder's Building
- BH** Boilerhouse
- S** Shilling Building

# Open Days

Our Open Days are a great way to get a feel for life at Royal Holloway. Look around the campus, meet our students and teaching staff, and find out more about studying and living here.

Our next event is taking place on Saturday 17 June 2023.

Highlights include:

- Full programme of talks at each academic department
- Chance to chat individually with academics, students and support teams
- Campus tours led by our friendly and knowledgeable ambassadors
- Accommodation visits
- Drop-in sessions, activities and performances

**Find out more and register to attend at**  
**[opendays@royalholloway.ac.uk](mailto:opendays@royalholloway.ac.uk)**  
**[royalholloway.ac.uk/opendays](https://royalholloway.ac.uk/opendays)**



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