

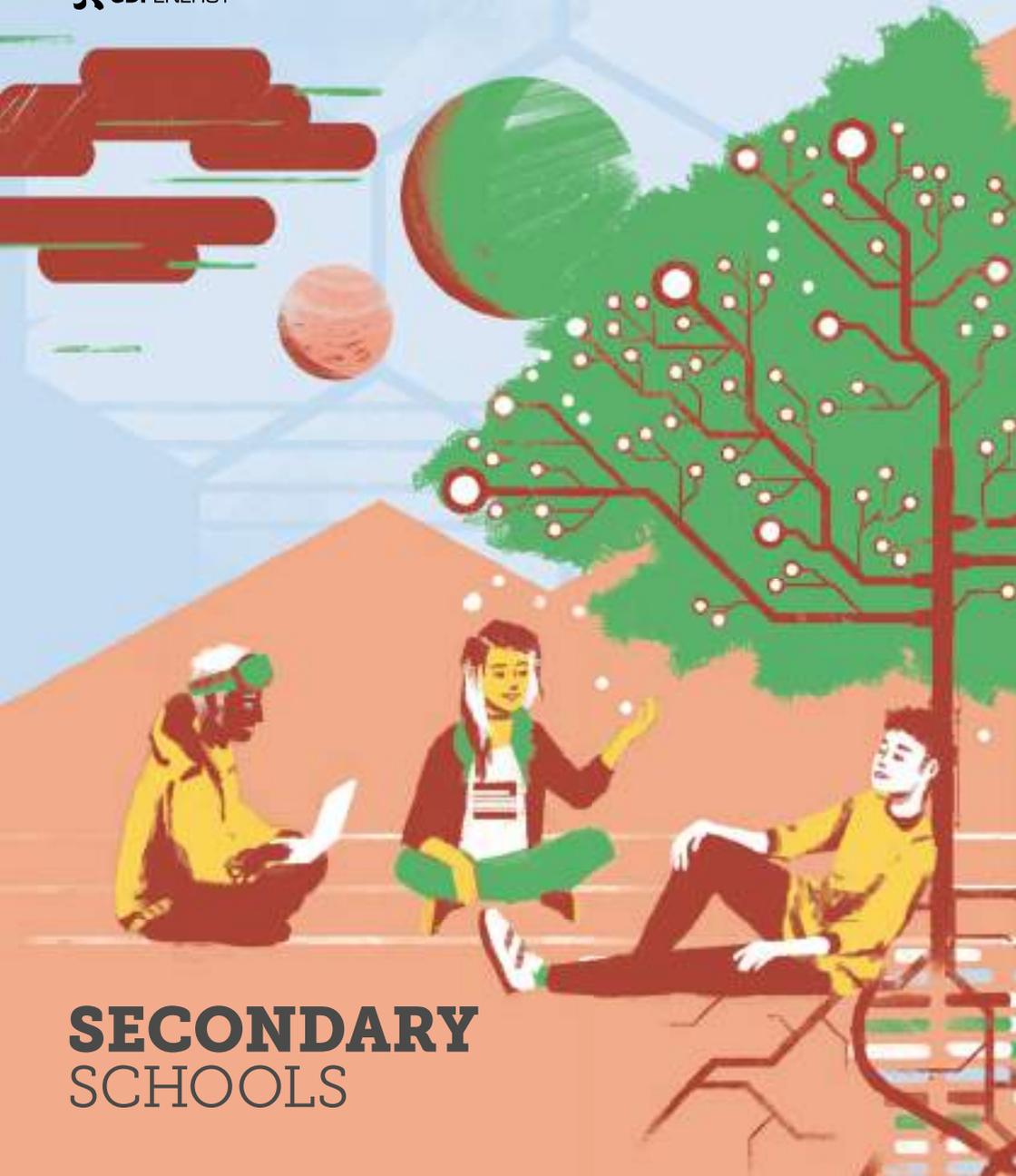
# CHELTENHAM

## Science Festival

5–10 June 2018

Book online:  
[cheltenhamfestivals.com/  
scienceforschools](http://cheltenhamfestivals.com/scienceforschools)

in association with



# SECONDARY SCHOOLS

# Planner

	10am	11am	12noon	1pm	2pm	3pm
<b>TUESDAY</b>						
The Arena		SS13 Our Wild World				
The Crucible			SS14 Smartphone Science			
The Pillar Room	DP01 Robot Farms		DP02 Robot Farms		DP03 Robot Farms	
The Cube	DP04 Humans vs. Horses		DP05 Humans vs. Horses		DP06 Humans vs. Horses	
ExperiTent	SW05 Folding Viruses	SW06 Folding Viruses		SW07 Folding Viruses	SW08 Folding Viruses	
GE Pavilion						
EDF Energy Zone						
Discover Zone						
MakerShack						
Cyber Zone						
<b>WEDNESDAY</b>						
The Arena	SS15 Exploring The Deep		SS16 Science vs. Magic			
The Pillar Room	SW32 Memory Games	SW33 Memory Games		SW34 Memory Games		
The Cube	DP07 The Cryptography Challenge		DP08 The Cryptography Challenge		DP09 The Cryptography Challenge	
ExperiTent	DP10 Criminal Chemistry		DP11 Criminal Chemistry		DP12 Criminal Chemistry	
GE Pavilion						
EDF Energy Zone						
Discover Zone						
MakerShack						
Cyber Zone						
<b>FRIDAY</b>						
The Crucible	SS12 KS4 Day: Creating Your Future					
GE Pavilion			SS12 KS4 Slot			
EDF Energy Zone			SS12 KS4 Slot			
Discover Zone				SS12 KS4 Slot		
MakerShack						
Cyber Zone			SS12 KS4 Slot			

# Welcome

A warm welcome to Science for Schools 2018. For secondary schools we have three action-packed days full of events, which promise to excite and inspire in equal measure.

Discover exciting new areas of science as we look at the material science of our phones, how cutting edge science is helping to solve criminal cases and how robotics is transforming farming. Enjoy live shows, hands-on workshops and our range of interactive zones including the Discover Zone, MakerShack and our brand new Cyber Zone.

Don't miss the line-up of amazing speakers we have for our KS4 Day, *Creating Your Future*.

Whether you are looking to bring a small number or a whole year group, there is something for everyone. Why not make a full day of it with our day packages?

We look forward to seeing you in June!

## Sharron Pearson

Education Manager

## Hana Ayoob

Science Festival Programme Manager

### Overview of prices

Event (50 minute science shows) £5.50 per pupil

Workshop £6.50 per pupil

KS3 Day Package £14 per pupil

KS4 Day Package £10 per pupil

A £5 booking fee will be added to the **total cost** of your booking

Discover Zone, MakerShack, GE Pavilion, EDF Energy Zone, Hartpury Science Hub, Cyber Zone, Science Trail: Free in conjunction with an event/workshop subject to availability.

You can also book a lunch space, subject to availability.

## A word from our In Association Partner



EDF Energy is delighted to be partnering with Cheltenham Science Festival, and to continue supporting the Science for Schools programme.

We are passionate about engaging young minds through science in this extensive programme and Cheltenham Festivals' ambitious year-round activities for schools. We hope inspiring as many children and young people as possible will lead to many brilliant future careers in STEM.

### Brian Cowell

Managing Director - Generation, EDF Energy

## Education Programme Partners



# Free Activities

For each paid activity you can book one of our dedicated interactive zones. Please note these are only available with a paid activity and are subject to availability.



## MakerShack

*One-hour slots available every day.*

Drop into our large maker space to explore curious materials such as 3D printed ceramics and thermoplastics with makers, engineers and craftspeople. Discover traditional and futuristic technology and put your newfound knowledge to the test as you make your very own creations.

BACK BY  
POPULAR  
DEMAND



## Cyber Zone

*One-hour slots available every day.*

Step into the world of cyber security in our interactive Cyber Zone. Crack puzzles, tackle fun challenges and help defend the web with technologists and cyber experts. Get hands-on with exciting technology, and put your new skills to the test as you challenge yourself to learn more about cyber security and some of the amazing careers on offer.

NEW  
FOR  
2018!

## GE Pavilion

*One-hour slots available every day.*

Transport yourself to GE's digital pavilion and connect with a world of science, technology, engineering and maths. Experience hands-on practical activities and meet engineers working to build, move, power and cure the world. Find out how GE brings hundreds of thousands of employees in 170 countries together. Discover how GE's diversity of ideas and connectivity are solving some of the world's biggest challenges.

 UNIVERSITY OF  
GLOUCESTERSHIRE  
at Cheltenham and Gloucester

 Cyber  
Security  
Challenge UK





## Discover Zone

All ages

*One-hour slots available every day.*

Discover how our world works, get hands-on with the latest science and find out more about STEM careers in our enormous interactive space. Our Discover Zone is packed with cutting edge research and technology, with enthusiastic scientists and engineers on hand to answer all your questions.



**Also save time for...**

## Science Trail

*Take part at a time which suits your group.*

Collect your quiz sheet and follow this year's Science Trail around Imperial Gardens. It's the perfect activity to engage pupils in the world of STEM whilst exploring all that the site has to offer.

## EDF Energy Zone

All ages

*One-hour slots available on Tuesday and Wednesday.  
Drop in at a time that suits you on Friday.*

If you could create a robot to improve your daily routine, what would it do? Work in groups to build a robot, try your hand at coding, create your own smart gadgets using LittleBits electronic kits and bring STEM roles to life through virtual reality.



## Hartpury Science Hub

*Drop in at a time which suits your group.*

Drop in to the Hartpury Science Hub to find out more about sport and exercise, equine performance, animal welfare and agriculture. Take part in exciting experiments and other intriguing activities as you explore pioneering research with the University Centre Hartpury team.



**HARTPURY**  
UNIVERSITY CENTRE

# KS4 Science Day

FRIDAY 8 JUNE 2018



## Creating Your Future: Hidden STEM Careers

SS12

### The Crucible

£10 per pupil per day

10am–12pm	STEM Showcase hosted by Greg Foot
12–1pm	Lunch and time to visit our interactive partner spaces
1–2pm	KS4-only Discover Zone

Careers within science, technology, engineering and maths are constantly increasing in number and variety. Today's teenagers could be the future lead researchers and inventors in cybertech, genomics, smart materials and more. They could develop entire fields that we currently don't have a name for!

In this morning of intriguing talks and fascinating demonstrations, successful YouTuber and Blue Peter Science Guy **Greg Foot** introduces you to a stellar line up of individuals working in a range of STEM fields:

- Anatomist and broadcaster **Alice Roberts** explores the wonderful world of bioscience
- Cyber security experts **FC** and **Jessica Barker** share how they're striving to remain one step ahead of criminal hackers
- Food adventurer **Stefan Gates** gets stuck into the science of the stuff we eat and drink everyday
- Mathematician **Aoife Hunt** tells us about exciting new technologies used to keep us safe at crowded events

More speakers will be confirmed closer to the event. Let us know if there's a topic you would like us to showcase!

Round off your day by visiting some of our partner zones over lunch and enjoy a dedicated KS4 slot in our Discover Zone.

# KS4 Science Day



# KS3 Events – YRS 7–9

TUESDAY 5 JUNE 2018

KS3

SS13

## Our Wild World

### The Arena

10.30–11.30am

£5.50 per pupil

What does it take to do science in the most extreme environments on earth? Join **Huw James** and his team of adventure scientists to explore volcanos, glaciers, jungles, oceans and more through stunning visuals and exciting experiments. Find out more about our dynamic planet and the living things which inhabit it, what it's like to do field research and what we can all do to protect our world.

[anturus.org](http://anturus.org) / [@anturus](https://twitter.com/anturus)



# KS3 Events – YRS 7–9

TUESDAY 5 JUNE 2018



**KS3**

## Workshop: Folding Viruses

**ExperiTent**

SW05 10–11am

SW06 11.15am–12.15pm

SW07 12.45–1.45pm

SW08 2–3pm

**£6.50** per pupil

Our bodies are made up of intricate structures and mini machines, composed of a variety of tiny materials. Find out how the folding of these structures helps our bodies to work with scientist-turned-artist **Lizzie Burns**. Be inspired by the beauty of the bugs we interact with all the time, as you create your own origami virus to take home.

[sciencetolife.org](http://sciencetolife.org)



**KS2**

SS14

## Smartphone Science

**The Crucible**

12–1pm

**£5.50** per pupil

How do different touchscreens work? How can a phone tell who you are from your face, fingerprints or voice? And which part of a smartphone could save you from a volcano? Get ready to unlock the chemistry, physics and engineering of handheld computers with material scientist **Jamie Gallagher** through exciting demonstrations and large-scale audience participation.

[jamiebgall.co.uk](http://jamiebgall.co.uk) / [@JamieBGall](https://twitter.com/JamieBGall)

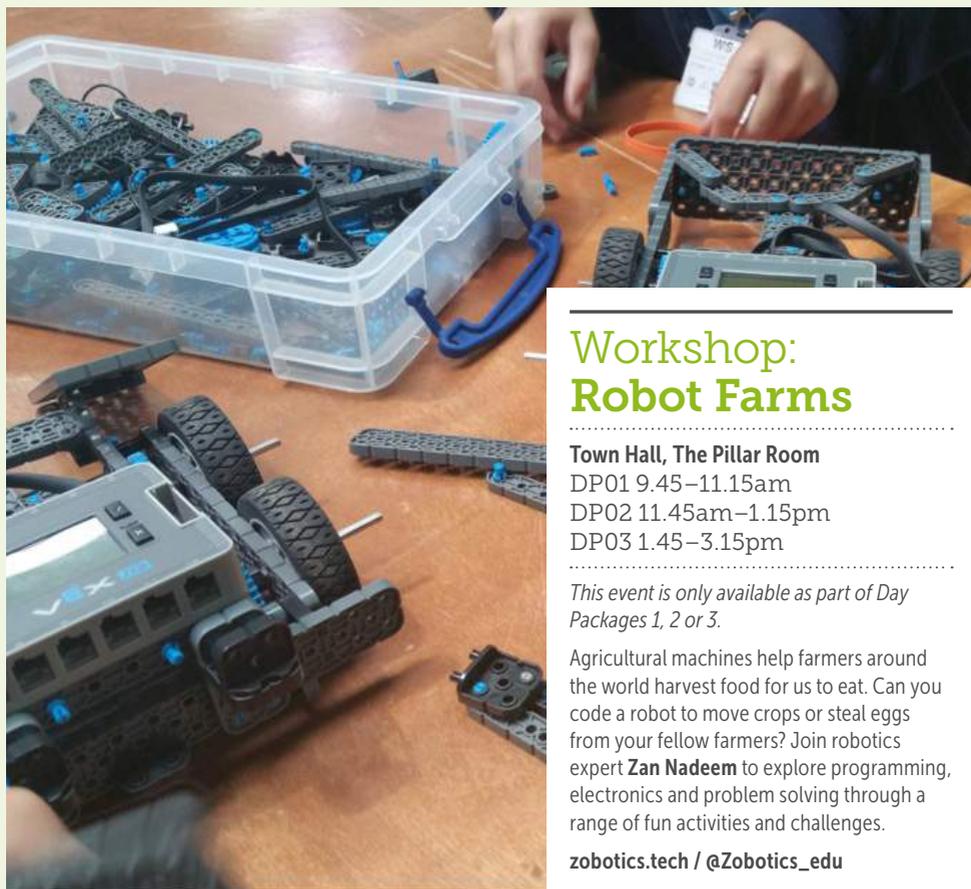
# KS3 Day Packages – YRS 7–9

TUESDAY 5 JUNE 2018

**£14** per pupil

If you are looking for a full visit in one easy booking then a Day Package is for you. Each package can accommodate 30 to 35 pupils and comprises an event, an extended workshop and a guaranteed session in the Discover Zone.

DP01	Package 1	9.45–11.15am 12noon–1pm 2–3pm	Robot Farms Smartphone Science Discover Zone
DP02	Package 2	10.30–11.30am 11.45–1.15pm 2–3pm	Our Wild World Robot Farms Discover Zone
DP03	Package 3	10–11am 12noon–1pm 1.45–3.15pm	Discover Zone Smartphone Science Robot Farms



## Workshop: Robot Farms

**Town Hall, The Pillar Room**

DP01 9.45–11.15am

DP02 11.45am–1.15pm

DP03 1.45–3.15pm

*This event is only available as part of Day Packages 1, 2 or 3.*

Agricultural machines help farmers around the world harvest food for us to eat. Can you code a robot to move crops or steal eggs from your fellow farmers? Join robotics expert **Zan Nadeem** to explore programming, electronics and problem solving through a range of fun activities and challenges.

**robotics.tech / @Robotics\_edu**

# KS3 Day Packages – YRS 7–9

TUESDAY 5 JUNE 2018

**£14** per pupil

If you are looking for a full visit in one easy booking then a Day Package is for you. Each package can accommodate 30 to 35 pupils and comprises an event, an extended workshop and a guaranteed session in the Discover Zone.

DP04	Package 4	9.45–11.15am 12noon–1pm 2–3pm	Humans vs. Horses Smartphone Science Discover Zone
DP05	Package 5	10.30–11.30am 11.45–1.15pm 2–3pm	Our Wild World Humans vs. Horses Discover Zone
DP06	Package 6	10–11am 12noon–1pm 1.45–3.15pm	Discover Zone Smartphone Science Humans vs. Horses



## Workshop: Humans vs. Horses

### The Cube

DP04 9.45–11.15am

DP05 11.45am–1.15pm

DP06 1.45–3.15pm

*This event is only available as part of Day Packages 4, 5, or 6.*

Whether you're a human or a racehorse, you'll need to train for success if you're going to win the race. Join researchers from **University Centre Hartpury** to find out how the cardiorespiratory system operates through a dissection of the heart and lungs and discover the limit of endurance in both horses and humans.

[hartpury.ac.uk](http://hartpury.ac.uk) / @Hartpury

# KS3 Events – YRS 7–9

WEDNESDAY 6 JUNE 2018



**KS3**

SS15

## Exploring The Deep

**The Arena**

10–11am

**£5.50** per pupil

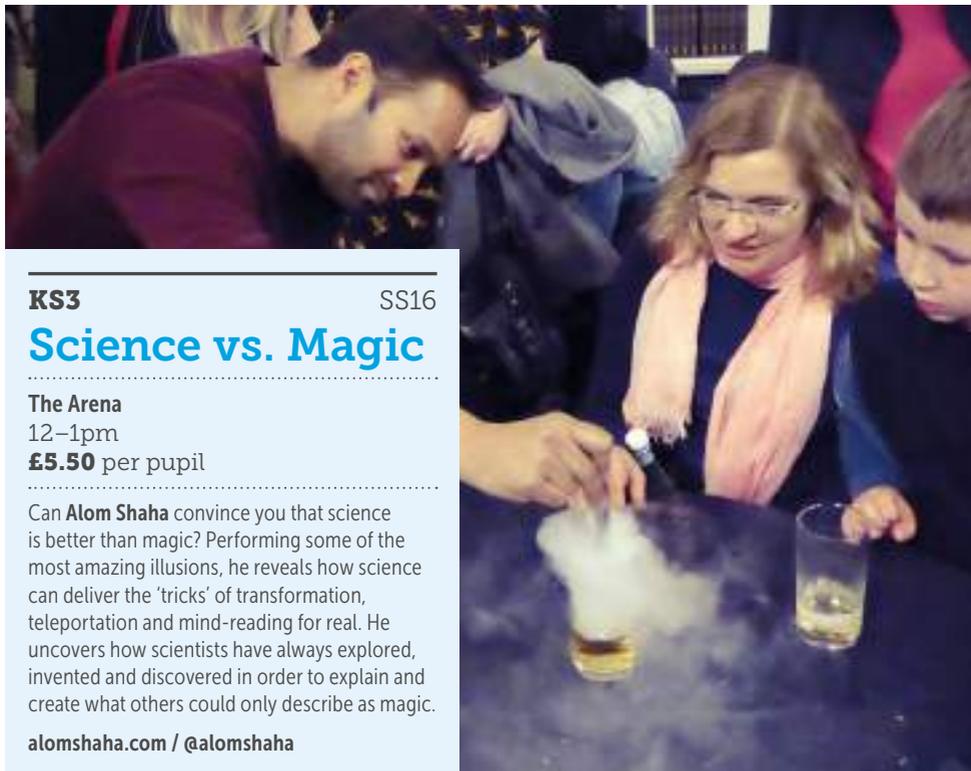
From blue whales to basking sharks, giant clams to plankton, the oceans are home to a bustling and diverse web of life. Embark on a journey to explore the wonders of the deep with marine biologist **Helen Scales**. Find out why healthy oceans matter to all of us and why there's never been a more exciting and important time to make new underwater discoveries.

[helenscales.com](http://helenscales.com) / [@helenscales](https://twitter.com/helenscales)

Don't miss our  
**FREE** activities  
at the Festival on  
pages 4-5!

# KS3 Events – YRS 7–9

WEDNESDAY 6 JUNE 2018



**KS3**

SS16

## Science vs. Magic

**The Arena**

12–1pm

**£5.50** per pupil

Can **Alom Shaha** convince you that science is better than magic? Performing some of the most amazing illusions, he reveals how science can deliver the 'tricks' of transformation, teleportation and mind-reading for real. He uncovers how scientists have always explored, invented and discovered in order to explain and create what others could only describe as magic.

[alomshaha.com](http://alomshaha.com) / [@alomshaha](https://twitter.com/alomshaha)



## Workshop: Memory Games

**Town Hall, The Pillar Room**

SW32 10–11am

SW33 11.30am–12.30pm

SW34 1.15–2.15pm

**£6.50** per pupil

Uncover the mysteries of your mind with **Ginny Smith**. Find out what happens in the brain when we learn and remember things, and whether you can really trust your memory. Explore psychology and neuroscience research through quizzes and games to make the most of your memory. You might even make your pesky revision a bit easier!

[ginnysmithscience.com](http://ginnysmithscience.com) / [@GinnyFBSmith](https://twitter.com/GinnyFBSmith)

# KS3 Day Packages – YRS 7–9

WEDNESDAY 6 JUNE 2018

**£14** per pupil

If you are looking for a full visit in one easy booking then a Day Package is for you. Each package can accommodate 30 to 35 pupils and comprises an event, an extended workshop and a guaranteed session in the Discover Zone.

DP07	Package 7	9.45–11.15am 12noon–1pm 2–3pm	The Cryptography Challenge Science vs. Magic Discover Zone
DP08	Package 8	10–11am 11.45–1.15pm 2–3pm	Exploring the Deep The Cryptography Challenge Discover Zone
DP09	Package 9	10–11am 12noon–1pm 1.45–3.15pm	Discover Zone Science vs. Magic The Cryptography Challenge



Bob Lord

## Workshop: The Cryptography Challenge

### The Cube

DP07 9.45–11.15am

DP08 11.45am–1.15pm

DP09 1.45–3.15pm

*This event is only available as part of Day Packages 7, 8 or 9.*

Get ready to crack important codes and send your decoded messages back to base! Delve into the ancient science and art of cryptography with mathematician **Charlotte Webb**. Put your mathematical skills, problem solving abilities and teamwork to the test as you race against opposing teams and the clock to break ancient and modern codes.

**@WebbMaths**

# KS3 Day Packages – YRS 7–9

WEDNESDAY 6 JUNE 2018

**£14** per pupil

If you are looking for a full visit in one easy booking then a Day Package is for you. Each package can accommodate 30 to 35 pupils and comprises an event, an extended workshop and a guaranteed session in the Discover Zone.

DP10	Package 10	9.45–11.15am 12noon–1pm 2–3pm	Criminal Chemistry Science vs. Magic Discover Zone
DP11	Package 11	10–11am 11.45–1.15pm 2–3pm	Exploring the Deep Criminal Chemistry Discover Zone
DP12	Package 12	10–11am 12noon–1pm 1.45–3.15pm	Discover Zone Science vs. Magic Criminal Chemistry

## Workshop: Criminal Chemistry

### ExperiTent

DP10 9.45–11.15am

DP11 11.45am–1.15pm

DP12 1.45–3.15pm

*This event is only available as part of Day Packages 10, 11 or 12.*

The Bear-Eye Diamond has been stolen from a safe in the Duchess of Goldthorn's bedroom and someone's missing! Can you help forensic scientists from the **University of Wolverhampton** to solve the case? Try your hand at infra-red analysis, thin-layer chromatography, blood pattern analysis and other forensic techniques in the race to identify the thief and kidnapper.



# FAQs

## How do I book tickets?

It's simple! Once you've decided which activities you want to book just go to [cheltenhamfestivals.com/scienceforschools](http://cheltenhamfestivals.com/scienceforschools) and fill in and submit the booking form.

**Booking opens 8am on Thursday 1 February 2018. Please be aware there will be a £5 administrative booking fee applied to each booking.**

## Is there a bookable lunch space?

We understand the challenge of finding a sheltered spot for pupils to have snacks or lunch if the weather is bad and we are able to offer a covered picnic area. The space has a maximum limit so please make sure you request a reservation on your booking form if you know you are having lunch on-site, and we will accommodate as many groups as we can.

## What happens next?

1. Once received, we will review your booking form. If any of your choices are not available, we will be in touch to discuss alternative options. You will receive a formal booking confirmation via email once everything is booked.
2. Tuesday 8 May is the deadline for notifying us of changes to your numbers as a result of fluctuations in class size. We will do our best to accommodate such changes, but please understand that we may be unable to do so.
3. After this date an invoice will be sent to your school finance office. It is important that this invoice is paid promptly.
4. You will also receive the following documents at this point – please bring them with you:
  - A ticket document
  - A site map and venue list
  - An information document with important details about your visit

It is helpful for every accompanying adult in your party to have a copy of these documents with them.

## Getting to the Festival

For full details about arriving, parking, getting to venues and more, please refer to the FAQs at [cheltenhamfestivals.com/education/planning-your-visit](http://cheltenhamfestivals.com/education/planning-your-visit) where you will also find our cancellation policy and advice for preparing a risk assessment.

### Science for Schools contacts

If you would like to contact a member of the Education Team, email us at:  
[education@cheltenhamfestivals.com](mailto:education@cheltenhamfestivals.com)

*Or give us a call:*

Sarron Pearson 01242 537 250

Philippa Claridge 01242 537 267

Rose Wood 01242 537 268