

CHELTENHAM

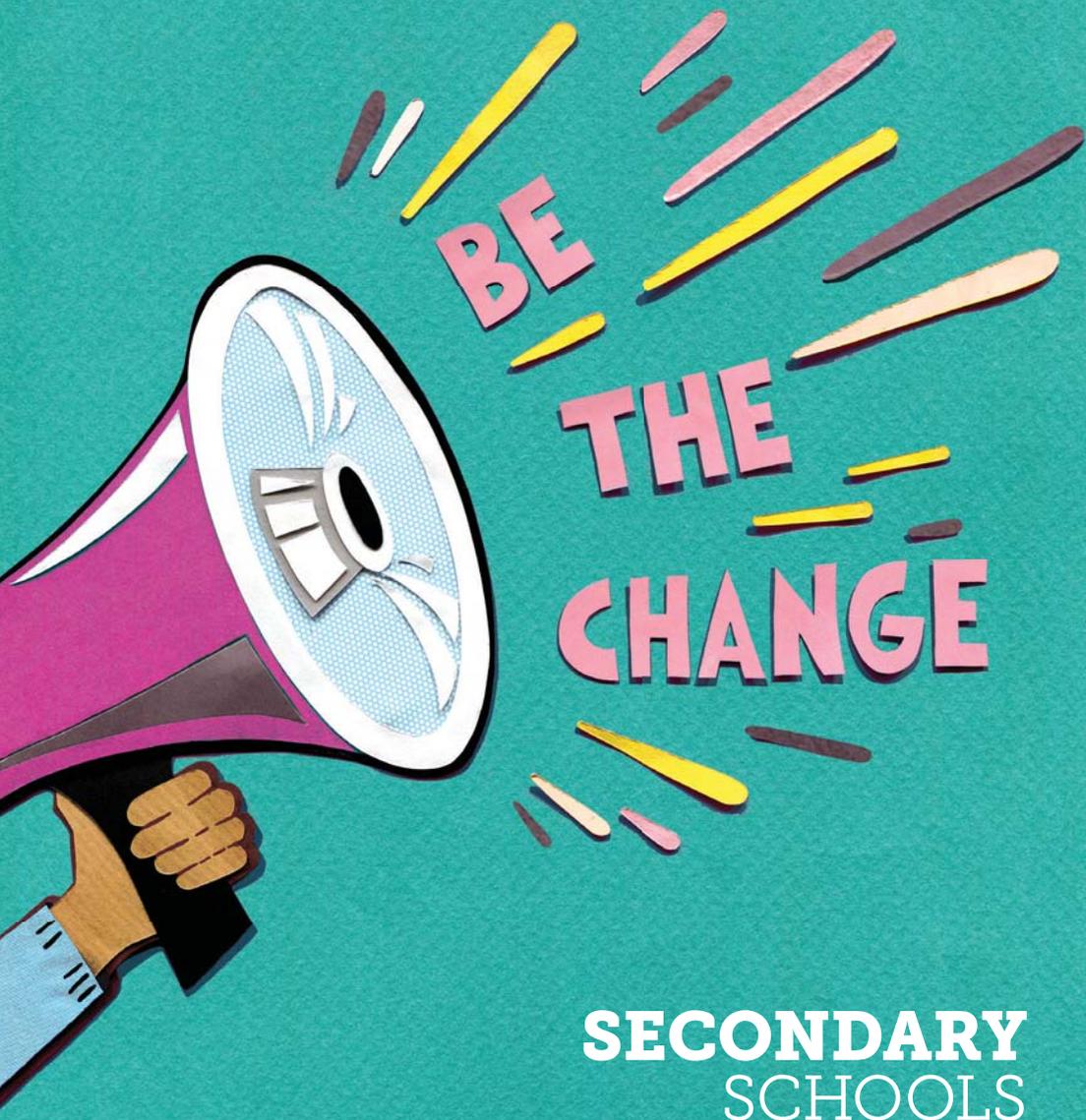
**Science**  
Festival

in association with



2-7 June 2020

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



**SECONDARY**  
SCHOOLS

# Planner

	10am	11am	12pm	1pm	2pm	3pm
<b>TUESDAY</b>						
Town Hall, Main Stage		SS13 The XX Factor				
The Crucible			SS14 Making Waves			
Town Hall, Pillar Room	DP01 A Beginner's Guide To Brain Surgery		DP02 A Beginner's Guide To Brain Surgery		DP03 A Beginner's Guide To Brain Surgery	
The Cube	DP04 How To Think Like A Scientist		DP05 How To Think Like A Scientist		DP06 How To Think Like A Scientist	
Artemis	SW05 Saving Humpty Dumpty		SW06 Saving Humpty Dumpty		SW07 Saving Humpty Dumpty	SW08 Saving Humpty Dumpty
GE Pavilion	GE01	GE02	GE03	GE04	GE05	
EDF Energy Zone	EDF01	EDF02		EDF03	EDF04	
Discover Zone	DZ01	DZ02	DZ03	DZ04	DZ05	
MakerShack	MS01	MS02	MS03	MS04	MS05	
Cyber Zone	CZ01	CZ02	CZ03	CZ04	CZ05	
<b>WEDNESDAY</b>						
Town Hall, Main Stage	SS15 How To Fly A Plane		SS16 The Future Of Food			
Town Hall, Pillar Room	SW28 Mathematical Magic	SW29 Mathematical Magic		SW30 Mathematical Magic	SW31 Mathematical Magic	
The Cube	DP07 The Great Immune Escape		DP08 The Great Immune Escape		DP09 The Great Immune Escape	
Artemis	DP10 Amazing Animal Anatomy		DP11 Amazing Animal Anatomy		DP12 Amazing Animal Anatomy	
PAC		SS17 Secrets, Lies And Spies		SS18 Secrets, Lies And Spies		
PAC, Dance Studio	DP13 Back To Bletchley	DP14 Back To Bletchley		DP15 Back To Bletchley	DP16 Back To Bletchley	
GE Pavilion	GE06	GE07	GE08	GE09	GE10	
EDF Energy Zone	EDF05	EDF06		EDF07	EDF08	
Discover Zone	DZ06	DZ07	DZ08	DZ09	DZ10	
MakerShack	MS06	MS07	MS08	MS09	MS10	
Cyber Zone	CZ06	CZ07	CZ08	CZ09	CZ10	
<b>FRIDAY</b>						
The Crucible	DP17 Creating Your Future: Hidden STEM Careers					
GE Pavilion	GE16		DP17 KS4 Slot	GE19	GE20	
EDF Energy Zone	EDF13		DP17 KS4 Slot	EDF15	EDF16	
Discover Zone	DZ16	DZ17	DZ18	DP17 KS4 Slot	DZ20	
Cyber Zone	CZ16		DP17 KS4 Slot	CZ19	CZ20	
	10am	11am	12pm	1pm	2pm	3pm

■ KS3 Show ■ KS3 Workshop ■ KS3 Day Package Workshop ■ KS4 Day Package □ Free Bookable Activity

'I have had the best day ever!' Pupil

## Welcome

A warm welcome to Science for Schools 2020. We have planned three action-packed days for secondary schools, which promise to excite and inspire in equal measure.

Discover exciting new areas of science as we explore what it means to be a scientist, celebrate the magic of maths, peek into the future of food, energy and medicine, join a time-travelling adventure back to Bletchley Park and so much more. Enjoy spectacular shows, get hands-on in our class-size workshops and explore our interactive zones including the Discover Zone, MakerShack and Cyber Zone.

Join us for our amazing KS4 day to spark your pupils' imagination and show them where STEM can lead.

Whether you are bringing a few pupils 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!

**Elsbeth Kenny**  
Education Manager

**Sam Humble**  
Schools and Family Programme Manager

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

**Matt Sykes**  
Managing Director - Generation, EDF Energy

### Education Programme Partners



### Be The Change



Cheltenham Science Festival's theme in 2020 is 'Be The Change'. Look out for this badge for related events.

## Free Bookable Activities

'A really great opportunity to meet inspiring people involved in science. It is fantastic for children to talk directly to scientists who love what they are doing.' **Teacher**

For each paid event\* you can book a session in one of our dedicated interactive zones. Please note these are only available in conjunction with a paid event and are subject to availability.

### Discover Zone

One-hour slots available every day.

Brilliant science and hands-on fun wait for you in our Discover Zone. How does the world work? What are the big developments that will change the planet? Step into this world of interactive science to find out about the latest cutting-edge research and technology, test your skills and learn more about STEM careers, with scientists and engineers on hand to answer any of your questions.



NEW AND IMPROVED

### EDF Energy Zone

For groups of up to 35 pupils.

One-hour slots available every day.

Explore renewable, low carbon and nuclear energy with practical activities. Join the EDF team for an electric adventure as you find out more about electric vehicles. Discover how you can make a difference and tell us how you are going to 'be the change'.



### GE Pavilion

For groups of up to 35 pupils.

One-hour slots available every day.

From aeroplanes and wind turbines to MRI machines – how is technology changing the world? Join GE experts for an exciting journey through engineering and science, with interactive exhibits, activities and challenges. Can you solve the puzzle with the clues you collect along the way?



## Free Bookable Activities



### MakerShack

One-hour slots available every day.

Join our celebration of materials and making! Get stuck in and code a robot, try out a virtual reality headset, squidge curious stuff and make new materials. Investigate traditional and futuristic technology with makers, crafters, scientists and engineers and use your imagination and crafting skills to invent your own creations.



### Cyber Zone

One-hour slots available every day.

Grab your chance to get up close with incredible technology in our interactive Cyber Zone. From cyber security to cracking puzzles, leave no stone unturned on your quest to learn more about everything digital. Tackle fun challenges and join cyber experts and technologists to learn more about some of the amazing careers on offer.

## Free Drop-in Activities

DROP IN AT A TIME WHICH SUITS YOUR GROUP

### Hartpury Science Hub

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



### The Chatterbox

Pop into The Chatterbox tent to learn more about the wonderful world in which we live and join in with interactive activities for all ages.



### The Woodland Trust

Learn more about how woods and trees benefit the environment around us with some hands-on activities and fun from the people behind Nature Detectives, and look out for the Listening Tree on site!



### The United Nations Sustainable Development Goals



**Apollo**

Every day at 2pm. More details and schedule on [cheltenhamfestivals.com](http://cheltenhamfestivals.com) in March.

Find out more about the UN's Sustainable Development Goals and join the discussion hosted by Greg Foot around how the world is aiming for peace and prosperity for people and planet, now and into the future.

### Science Trail

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

\*Except SS17 and SS18 Secrets, Lies And Spies



**YRS 7-9**  
 SW05 **10-11am**  
 SW06 **11.15am-12.15pm**  
 SW07 **12.45-1.45pm**  
 SW08 **2-3pm**

## Workshop: Saving Humpty Dumpty

**Artemis**  
**£6.50** per pupil *For groups of 30-35 pupils.*

Become a materials scientist for an hour by creating and testing a crash helmet... for an egg! Dive head-first into the world of crash helmet design with the **Henry Royce Institute** as you learn the science behind the materials and engineering of protective headgear, and work in a team to create your own device to keep your egg intact.

[royce.ac.uk/outreach](http://royce.ac.uk/outreach) / @royceinstitute

HENRY  
 ROYCE  
 INSTITUTE



**YRS 7-9** SS13  
**10.30-11.30am**  
**The XX Factor**



**Town Hall, Main Stage**  
**£5.50** per pupil

Over the centuries, there have been hundreds of scientists, mathematicians and engineers who didn't make it into the front pages of the history books despite their incredible achievements. In a fun, interactive show, **Science Made Simple** will introduce you to six of these mostly unheard of STEM pioneers. From sparks, light and gravity to musical moments and a crazy paper chain, discover their ground-breaking work, meet the modern-day scientists they inspired and vote for your stand-out science superstar.

[sciencemadesimple.co.uk](http://sciencemadesimple.co.uk) / @scimadesimple



**YRS 7-9** SS14  
**12-1pm**  
**Making Waves**

**The Crucible**  
**£5.50** per pupil

Demos and dancing collide in this interactive, high-energy show. Through song, comedy, games and the occasional explosion, science troubadour **Jonny Berliner** from SciTunes explains how energy is conserved, stored and transferred. An audible science feast, this is physics as you've never seen or heard before.

[scitunes.org](http://scitunes.org) / @scitunesuk

£14 per pupil

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

**DP01** Package 1  
9.45–11.15am A Beginner's Guide To Brain Surgery  
12–1pm Making Waves  
2–3pm Discover Zone

**DP02** Package 2  
10.30–11.30am The XX Factor  
11.45am–1.15pm A Beginner's Guide To Brain Surgery  
2–3pm Discover Zone

**DP03** Package 3  
10–11am Discover Zone  
12–1pm Making Waves  
1.45–3.15pm A Beginner's Guide To Brain Surgery

**YRS 7–9**

DP01 **9.45–11.15am**  
DP02 **11.45am–1.15pm**  
DP03 **1.45–3.15pm**

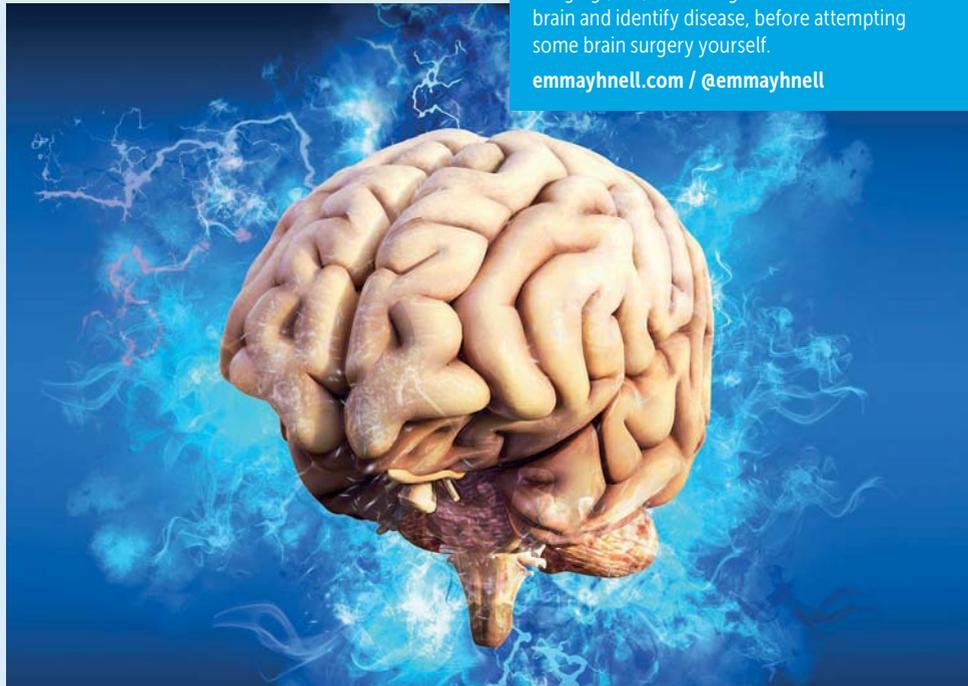
## Workshop: A Beginner's Guide To Brain Surgery

Town Hall, Pillar Room

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

The brain is one of the most fascinating organs of the human body. It helps us think, learn and create our most cherished memories, and yet there is still so much to discover about how the brain functions and why diseases of the brain happen. Join neuroscientist and UK FameLab alumna **Emma Yhnell** on a journey through this incredible part of our body by using Magnetic Resonance Imaging (MRI) to investigate the structures of the brain and identify disease, before attempting some brain surgery yourself.

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



£14 per pupil

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

**DP04** Package 4  
9.45–11.15am How To Think Like A Scientist  
12–1pm Making Waves  
2–3pm Discover Zone

**DP05** Package 5  
10.30–11.30am The XX Factor  
11.45am–1.15pm How To Think Like A Scientist  
2–3pm Discover Zone

**DP06** Package 6  
10–11am Discover Zone  
12–1pm Making Waves  
1.45–3.15pm How To Think Like A Scientist

**YRS 7–9**

DP04 **9.45–11.15am**  
DP05 **11.45am–1.15pm**  
DP06 **1.45–3.15pm**

## Workshop: How To Think Like A Scientist

The Cube

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

Does learning science teach us how to think like a scientist? And is there just one single way that scientists think? Delve into the very nature of science with **Martin Coath**, and challenge yourself to come up with your own scientific questions. Learn how scientific results can help us answer our biggest questions and whether there are any questions that even science cannot answer.

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



**YRS 7-9**  
 SW28 **10-11am**  
 SW29 **11.15am-12.15pm**  
 SW30 **12.45-1.45pm**  
 SW31 **2-3pm**

**Workshop:  
 Mathematical  
 Magic**

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**Town Hall, Pillar Room**  
**£6.50** per pupil *For groups of 30-35 pupils.*

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Magic tricks might seem impossible, but they're often just a case of following a set of steps – just like a maths problem. As you delve into the world of mathematical magic with **Zoe Griffiths**, you will have the chance to develop and apply your mathematical thinking skills to reverse-engineer magic tricks.

[think-maths.co.uk](http://think-maths.co.uk) / [@ZoeLGriffiths](https://twitter.com/ZoeLGriffiths)



**YRS 7-9** SS15  
**10-11am**

**How To Fly A  
 Plane**

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**Town Hall, Main Stage**  
**£5.50** per pupil

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As a teenager, **Sarah Cosgriff** survived an aircraft accident which sparked a search for knowledge on how it actually happened. Now a scientist, Sarah explains some of the forces and engineering principles involved in aeroplane flight. Through humorous storytelling and hands-on demonstrations, she'll give you an insight into successfully flying a plane.

[@Sarah\\_Cosgriff](https://twitter.com/Sarah_Cosgriff)

**YRS 7-9** SS16  
**12-1pm**

**The Future  
 Of Food**

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**Town Hall, Main Stage**  
**£5.50** per pupil

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How will we feed the ten billion people potentially crowding our planet by 2050? Fresh from filming a new BBC TV series exploring exactly this, join YouTuber and BBC Radio 4 presenter **Greg Foot** to discover a menu of drought-tolerant rice, longer-lasting bananas, and lab-grown burgers.

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

£14 per pupil

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

**DP07** Package 7  
9.45–11.15am The Great Immune Escape

12–1pm The Future Of Food  
2–3pm Discover Zone

**DP08** Package 8  
10–11am How To Fly A Plane  
11.45am–1.15pm The Great Immune Escape  
2–3pm Discover Zone

**DP09** Package 9  
10–11am Discover Zone  
12–1pm The Future Of Food  
1.45–3.15pm The Great Immune Escape

**YRS 7–9**

**DP07 9.45–11.15am**

**DP08 11.45am–1.15pm**

**DP09 1.45–3.15pm**

## Workshop: The Great Immune Escape

**The Cube**

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

Combine science with adventure as you travel to the centre of the body's immune response with **Hannah Baer** and UK FameLab alumna **Hannah Bialic**. As viruses and bacteria, work in teams to solve puzzles and evade our human natural defences so you and your microbial friends can grow and multiply. Keep your eyes open throughout the journey and collect keys to unlock the full picture of the body's complex and amazing immune system.

@boldlygoing2 / @hun95

£14 per pupil

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

**DP10** Package 10  
9.45–11.15am Amazing Animal Anatomy

12–1pm The Future Of Food  
2–3pm Discover Zone

**DP11** Package 11  
10–11am How To Fly A Plane  
11.45am–1.15pm Amazing Animal Anatomy  
2–3pm Discover Zone

**DP12** Package 12  
10–11am Discover Zone  
12–1pm The Future Of Food  
1.45–3.15pm Amazing Animal Anatomy

**YRS 7–9**

**DP10 9.45–11.15am**

**DP11 11.45am–1.15pm**

**DP12 1.45–3.15pm**

## Workshop: Amazing Animal Anatomy

**Artemis**

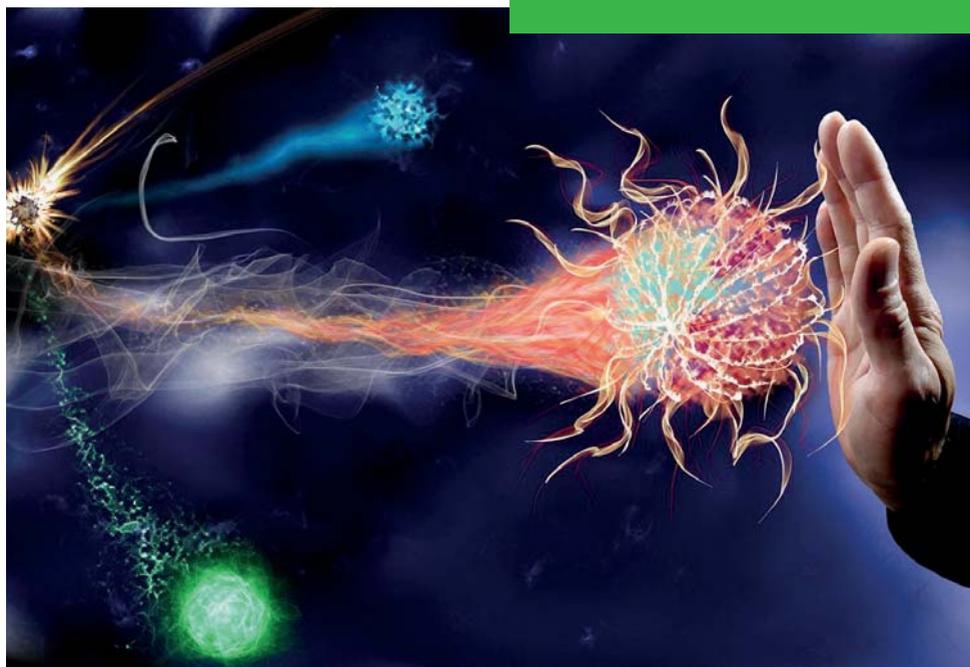
*This event is only available as part of Day Packages 10, 11 or 12.*

Join scientists from Hartpury to investigate how animals are put together. Explore what makes you different from other animals as you probe into the major organs, find out how they function and discover how species have anatomically adapted and evolved. How does your body compare?

hartpury.ac.uk / @Hartpury



**HARTPURY**  
UNIVERSITY  
AND COLLEGE



£14 per pupil

If you are looking for a full day visit in one easy booking then a Day Package is for you. This package accommodates 30 to 35 pupils and comprises an extended show, a workshop and a guaranteed session in the Cyber Zone.

**DP13** Package 13

10–11am Back To Bletchley  
11am–12pm Cyber Zone  
1–2.30pm Secrets, Lies And Spies

**DP14** Package 14

10–11am Cyber Zone  
11.15am–12.15pm Back To Bletchley  
1–2.30pm Secrets, Lies And Spies

**DP15** Package 15

10.30am–12pm Secrets, Lies And Spies  
12.45–1.45pm Back To Bletchley  
2–3pm Cyber Zone

**DP16** Package 16

10.30am–12pm Secrets, Lies And Spies  
12–1pm Cyber Zone  
2–3pm Back To Bletchley

**YRS 7–9**

DP13 **10–11am**  
DP14 **11.15am–12.15pm**  
DP15 **12.45–1.45pm**  
DP16 **2–3pm**

## Workshop: Back To Bletchley

Cheltenham Ladies' College, Parabola Arts Centre, Dance Studio

*This event is only available as part of Day Packages 13, 14, 15 or 16.*

Join the **Lockheed Martin** team as they go back in time to 1940's Bletchley Park. As part of the elite team, develop crucial skills in cryptography, steganography, computing, reverse engineering and fact finding. Just like the WWII code breakers, work on a set of interactive challenges, analyse the information provided and play your part to protect the United Kingdom.

[lockheedmartin.com](http://lockheedmartin.com) / @LockheedMartin



*'I hadn't even thought about cyber stuff as being part of STEM and am now thinking about finding out more about careers in this area.'* Pupil

**YRS 7–9**

SS17 **10.30am–12pm**  
SS18 **1–2.30pm**

## Secrets, Lies And Spies

Cheltenham Ladies' College, Parabola Arts Centre

£3 per pupil *If purchased outside of the KS3 Day Package, this event does not include a session in our interactive zones.*

Based on a true story, **Jenny Wren Productions** presents a new play about the Second World War's most legendary female code breakers.

At the height of the war, double cross agents have planted false intelligence to mislead the German forces. But do the Germans believe the information? The D-Day invasion will be too risky if British Intelligence can't decipher their encoded messages. Inside Bletchley Park, Dilly Knox recruits a small team of women to win the race against time and give British troops an advantage. Will trained statistician Margaret Rock and new recruit Mavis Batey be able to help break the enemy's toughest code?

100% OF ATTENDEES RATED THIS EVENT AS GOOD OR EXCELLENT IN 2018

# KS4 Day Package

**KS4**

## Creating Your Future: Hidden STEM Careers

DP17



The Crucible £8 per pupil

10–11.40am STEM Showcase hosted by Greg Foot  
11.40am–1pm Visit our interactive partner spaces over lunch  
1–2pm KS4-only Discover Zone

Careers within science, technology, engineering and maths are constantly increasing in number and variety. Today's teenagers are the future experts and inventors in cybertech, genomics, smart materials and entire fields that don't exist yet.

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. These leading inspirational scientists include, among others:

- **Ronx Ikharia**, emergency doctor and presenter for CBBC's *Operation Ouch*
- **Dallas Campbell**, presenter of television shows including *The Gadget Show* and *Stargazing Live*
- **Jessica Barker**, cyber security expert
- **Stefan Gates**, professional 'gastronaut' and television presenter

Enjoy visiting our partner zones over lunch, and round off your day with a dedicated KS4 session in the Discover Zone. Come along and spark your imagination with where STEM can take you!



Ronx Ikharia



Dallas Campbell



Stefan Gates



Jessica Barker

# How To Book

## How do I book tickets?

Go to [cheltenhamfestivals.com/scienceforschools](http://cheltenhamfestivals.com/scienceforschools) and complete the booking form.

**Booking opens at 8am on Tuesday 4 February 2020.**

Please be aware there will be a £5 booking fee applied to each order.

## Is there a bookable lunch space?

We are able to offer a 30 minute lunch slot in the covered picnic area in the Festival Village for a limited number of pupils. Please request a reservation on your booking form and we will accommodate as many groups as we can.

## What happens next?

1. We will review your booking form and will be in touch to discuss alternative options if any of your choices are unavailable.
2. You will receive a formal booking confirmation via email.
3. Please notify us of changes to your numbers as a result of fluctuations in class size by **Tuesday 21 April** and we will do our best to accommodate these changes.
4. Your school finance office will receive an invoice by **Friday 8 May. It is important that this invoice is paid before you attend the Festival.**
5. You will receive a ticket document, a site map and an information document with important details about your visit. Please ensure that every accompanying adult has a copy of these documents when attending.

## How do we get to the Festival?

For full details about arriving, parking, getting to venues and more, go to [cheltenhamfestivals.com/planning-your-visit](http://cheltenhamfestivals.com/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, call or email us at:  
[education@cheltenhamfestivals.com](mailto:education@cheltenhamfestivals.com)

Rose Wood 01242 537 268

Elsbeth Kenny 01242 537 250

### Prices

Show £5.50 per pupil

Workshop £6.50 per pupil

KS3 Day Package £14 per pupil

KS4 Day Package £8 per pupil

*A £5 booking fee will be added to the **total cost** of your order. Tickets for teachers and other adults accompanying school groups are **free**.*

The following zones are free in conjunction with a show/workshop, subject to availability: Discover Zone, MakerShack, Cyber Zone, EDF Energy Zone, GE Pavilion.

*'Very well organised and plenty of smiling faces to guide us during the day.'*

**Teacher**



Supported using public funding by  
**ARTS COUNCIL  
ENGLAND**

Charity No. 251765  
Illustration by Vicky Scott