

CHELTONHAM Science Festival

in association with



4–9 June 2019

Book online:

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



SECONDARY SCHOOLS

Planner

	10am	11am	12noon	1pm	2pm	3pm
TUESDAY						
Town Hall, Main Stage		SS39 Invisible Worlds				
The Crucible			SS40 Periodic Success			
Town Hall, Pillar Room	DP01 Paper Folding And Problem Solving		DP02 Paper Folding And Problem Solving		DP03 Paper Folding And Problem Solving	
The Cube	DP04 Humans Vs. Horses		DP05 Humans Vs. Horses		DP06 Humans Vs. Horses	
Apollo	SW10 Cells, Viruses And Victories	SW11 Cells, Viruses And Victories	SW12 Cells, Viruses And Victories	SW13 Cells, Viruses And Victories		
GE Pavilion						
EDF Energy Zone						
Discover Zone						
MakerShack						
WEDNESDAY						
Town Hall, Main Stage	SS41 Brain Hacker		SS42 Ridiculously Rapid Reactions			
Town Hall, Pillar Room	SW43 Illuminating Communication	SW44 Illuminating Communication	SW45 Illuminating Communication			
The Cube	DP07 BioMedia Blitz	DP08 BioMedia Blitz	DP09 BioMedia Blitz			
Apollo	DP10 Digital Detectives	DP11 Digital Detectives	DP12 Digital Detectives			
GE Pavilion						
EDF Energy Zone						
Discover Zone						
MakerShack						
FRIDAY						
The Crucible	SS46 KS4 Day: Creating Your Future					
GE Pavilion			SS46 KS4 Slot			
EDF Energy Zone			SS46 KS4 Slot			
Discover Zone				SS46 KS4 Slot		
MakerShack						
Cyber Zone			SS46 KS4 Slot			
	10am	11am	12noon	1pm	2pm	3pm

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

Welcome

A warm welcome to Science for Schools 2019. 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 the microbial world around us, celebrate the secrets of the periodic table, delve into the human brain and so much more. Enjoy spectacular shows, hands-on workshops and our range of interactive zones, including the Discover Zone, MakerShack, and Cyber Zone - back by popular demand.

Join us for our amazing KS4 day to spark your pupils' imagination and show them where following 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!

Elspeth Kenny

Education Manager

Lizzy Goodger

Schools and Family Programme Manager

Overview of prices

Show	£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 order.

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

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 through 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 Bookable Activities

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

MakerShack

One-hour slots available every day.

Enter our jamboree of making to explore curious materials, code a robot, make your own brick and burn the calories of a chocolate bar. Investigate traditional and futuristic technology with creators and engineers. Use your imagination and newfound knowledge to invent your own creations.



BACK BY
POPULAR
DEMAND



EDF Energy Zone

One-hour slots available every day.

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.



Discover Zone

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 your questions.

 **SAFRAN**

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.



Free Drop-in Activities

Drop in at a time which suits your group.



BACK BY
POPULAR DEMAND

Cyber Zone

Transport yourself to our digital world in our interactive **Cyber Zone**. Crack puzzles, tackle fun challenges and join cyber experts and technologists to help defend the web. 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.



Hartpury Science Hub

Drop into the Hartpury Science Hub to find out more about 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 University and Hartpury College teams.



HARTPURY
UNIVERSITY
AND COLLEGE

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!



WOODLAND
TRUST

The Chatterbox

Come along and discover the real you. Join in with lots of creative activities to help us discover how we are made from the inside out.

DIOCESE OF
GLOUCESTER

Also save time for...

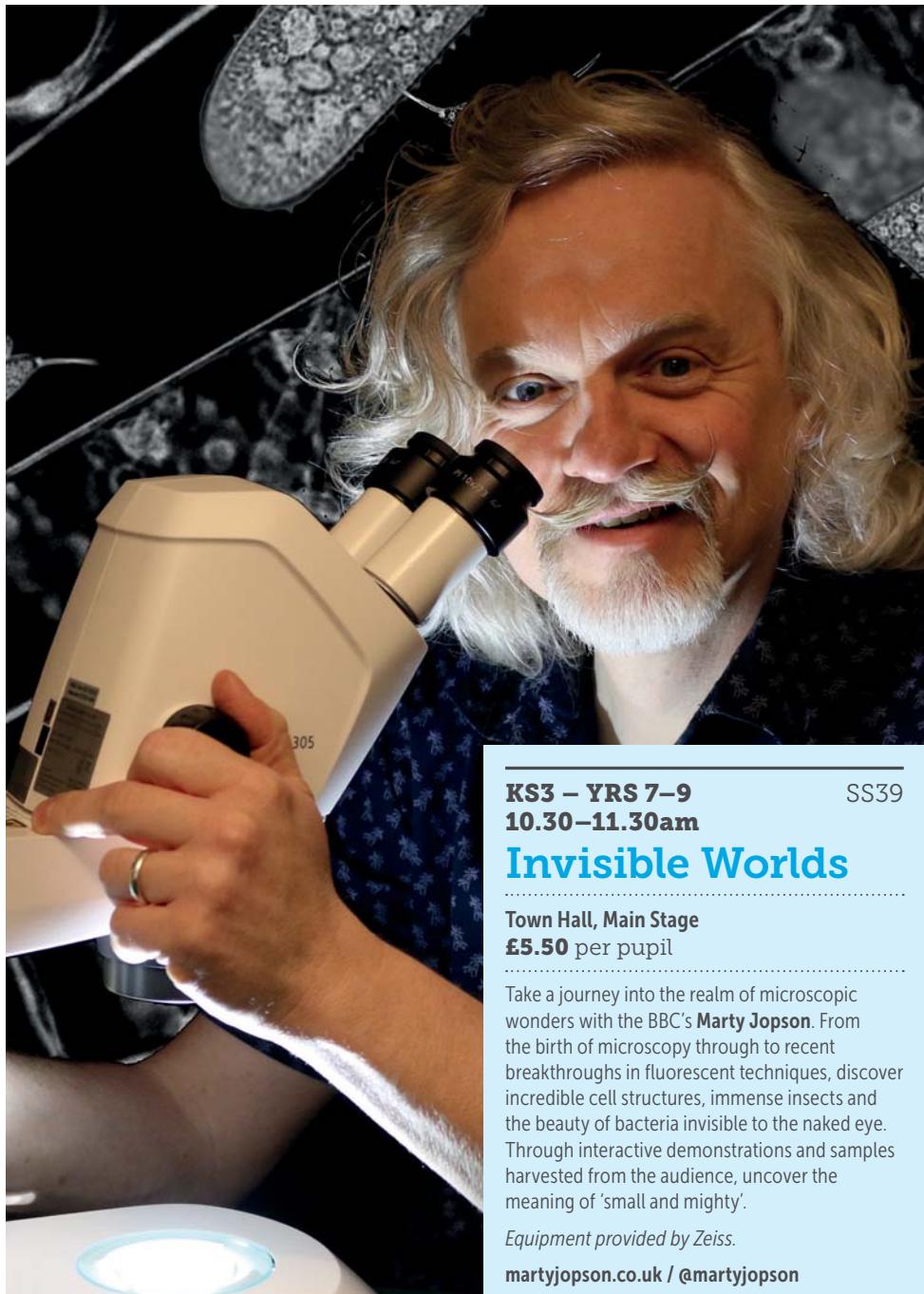
Science Trail

Take part at a time which suits your group.

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.

KS3 Events

TUESDAY 4 JUNE 2019



KS3 – YRS 7–9 SS39
10.30–11.30am

Invisible Worlds

Town Hall, Main Stage
£5.50 per pupil

Take a journey into the realm of microscopic wonders with the BBC's **Marty Jopson**. From the birth of microscopy through to recent breakthroughs in fluorescent techniques, discover incredible cell structures, immense insects and the beauty of bacteria invisible to the naked eye. Through interactive demonstrations and samples harvested from the audience, uncover the meaning of 'small and mighty'.

Equipment provided by Zeiss.

martyjopson.co.uk / @martyjopson

KS3 Events

TUESDAY 4 JUNE 2019



KS3 – YRS 7–9
SW10 **10–11am**
SW11 **11.15am–12.15pm**
SW12 **12.45–1.45pm**
SW13 **2–3pm**

Workshop: Cells, Viruses And Victories

Apollo
£6.50 per pupil

Discover the microscopic world of micro-organisms with scientist and artist **Lizzie Burns** and UK FameLabber **Hannah Bialic**. Uncover the surprising beauty of viruses and bacteria, and learn how our bodies and medicines battle and defend us from invasion. Build up your own 'Bayeux tapestry' depiction of conquests over microscopic invaders, ask questions, get creative and take your collage back to school.

sciencetolife.org

KS3 – YRS 7–9
12–1pm

SS40

Periodic Success

The Crucible
£5.50 per pupil

Hidden in the periodic table live tales of romance, murder, greed and wonder. Which element will make you reek of garlic? Why do we love gold? And what is the disgusting secret of antimony? Join materials scientist **Jamie Gallagher** on an interactive and explosive tour of the elements as we celebrate the 150th birthday of the Periodic Table.

jamiebgall.co.uk / @JamieBGall



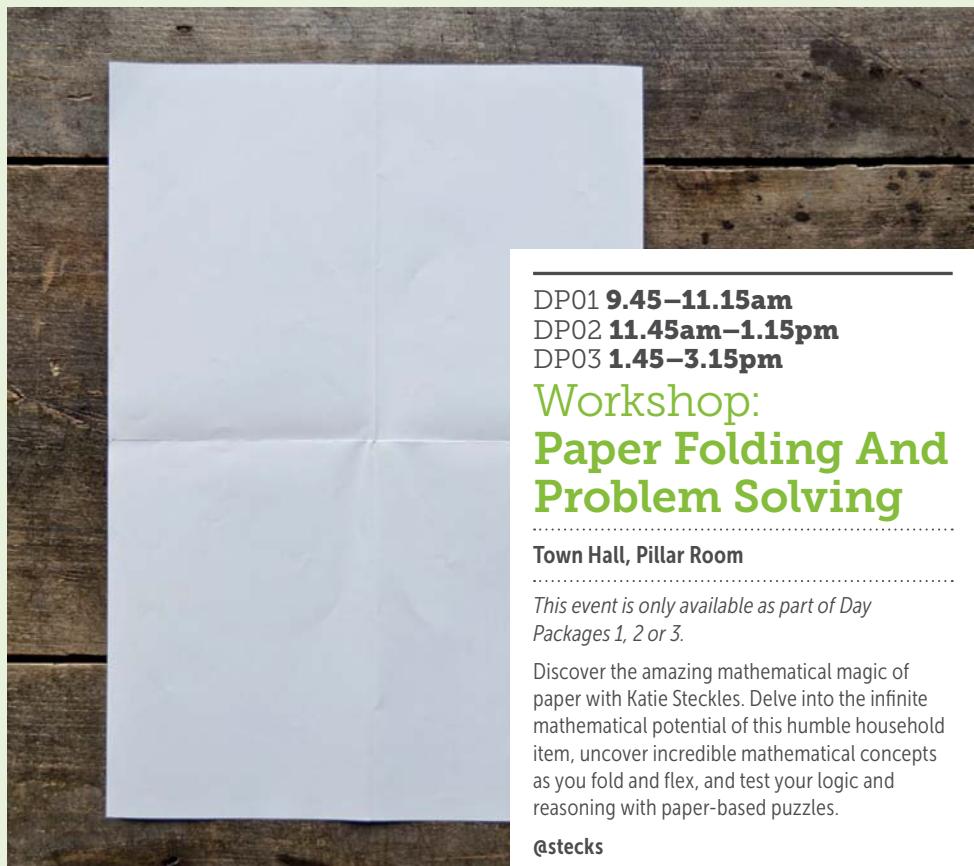
KS3 Day Packages

TUESDAY 4 JUNE 2019

£14 per pupil

If you are looking for a full day visit in one easy booking then a Day Package is for you. Each package can accommodate 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 12–1pm 2–3pm	Paper Folding And Problem Solving Periodic Success Discover Zone
DP02	Package 2	10.30–11.30am 11.45–1.15pm 2–3pm	Invisible Worlds Paper Folding And Problem Solving Discover Zone
DP03	Package 3	10–11am 12–1pm 1.45–3.15pm	Discover Zone Periodic Success Paper Folding And Problem Solving



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

Workshop: **Paper Folding And Problem Solving**

Town Hall, Pillar Room

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

Discover the amazing mathematical magic of paper with Katie Steckles. Delve into the infinite mathematical potential of this humble household item, uncover incredible mathematical concepts as you fold and flex, and test your logic and reasoning with paper-based puzzles.

@stecks

KS3 Day Packages

TUESDAY 4 JUNE 2019

£14 per pupil

If you are looking for a full day visit in one easy booking then a Day Package is for you. Each package can accommodate 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 12–1pm 2–3pm	Humans Vs. Horses Periodic Success Discover Zone
DP05	Package 5	10.30–11.30am 11.45–1.15pm 2–3pm	Invisible Worlds Humans Vs. Horses Discover Zone
DP06	Package 6	10–11am 12–1pm 1.45–3.15pm	Discover Zone Periodic Success Humans Vs. Horses



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

Workshop: Humans Vs. Horses

The Cube

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

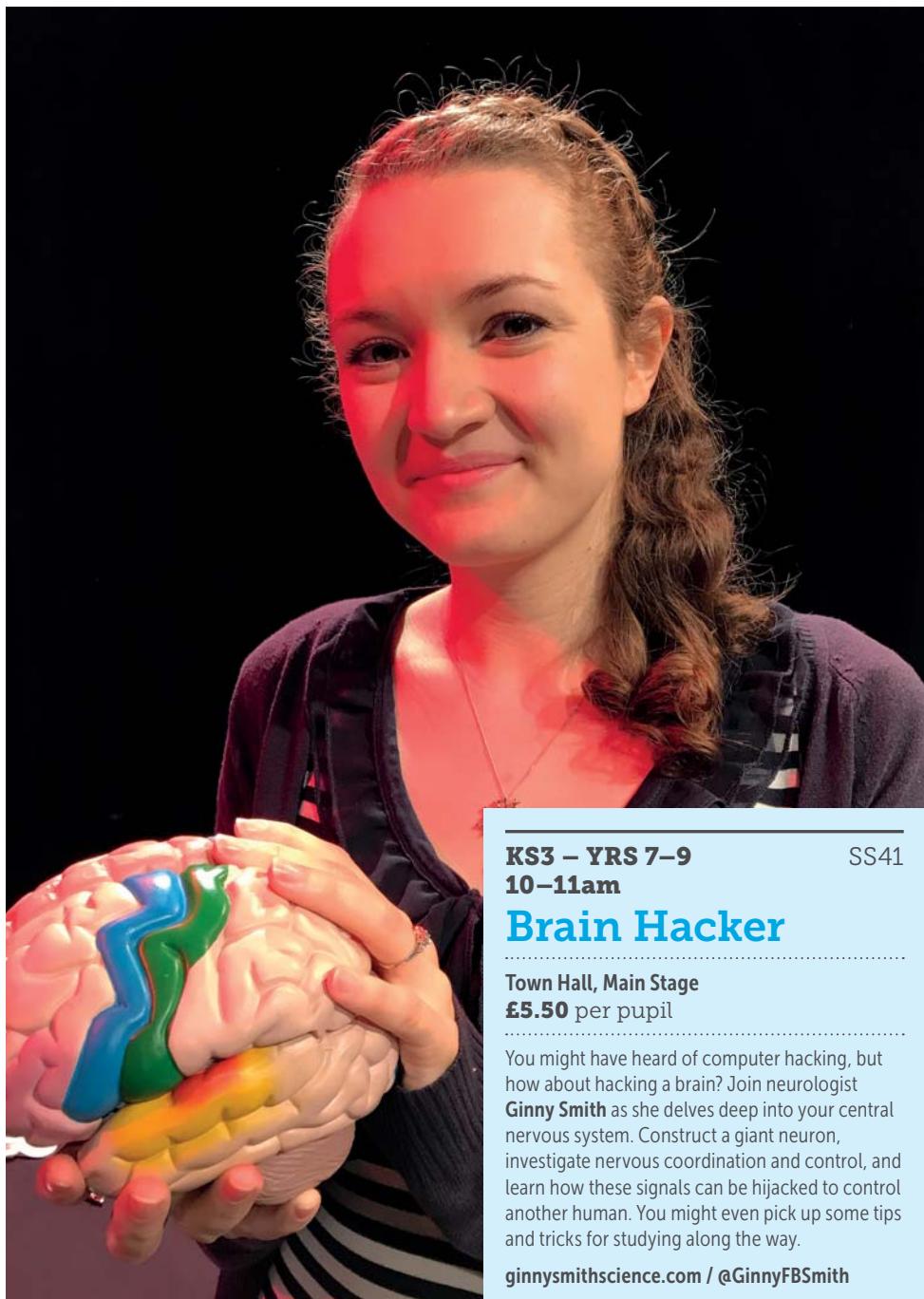
In this hands-on dissection of animal hearts and lungs, join researchers from **Hartpury** as you delve into the complexities of the cardiorespiratory system. Explore the vital relationship between these organs in finer detail, investigate the importance of training for success and test the limits of endurance for both humans and horses.

hartpury.ac.uk / @Hartpury



KS3 Events

WEDNESDAY 5 JUNE 2018

A photograph of a young woman with brown hair tied back, wearing a dark purple zip-up hoodie over a striped shirt. She is smiling and holding a large, realistic model of a human brain. The brain model is white with colored tracts: blue, green, yellow, and red, representing different neural pathways. The background is dark.

**KS3 – YRS 7–9
10–11am**

Brain Hacker

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

SS41

You might have heard of computer hacking, but how about hacking a brain? Join neurologist **Ginny Smith** as she delves deep into your central nervous system. Construct a giant neuron, investigate nervous coordination and control, and learn how these signals can be hijacked to control another human. You might even pick up some tips and tricks for studying along the way.

ginnysmithscience.com / @GinnyFBSmith

KS3 Events

WEDNESDAY 5 JUNE 2018

**KS3 – YRS 7–9
12–1pm**

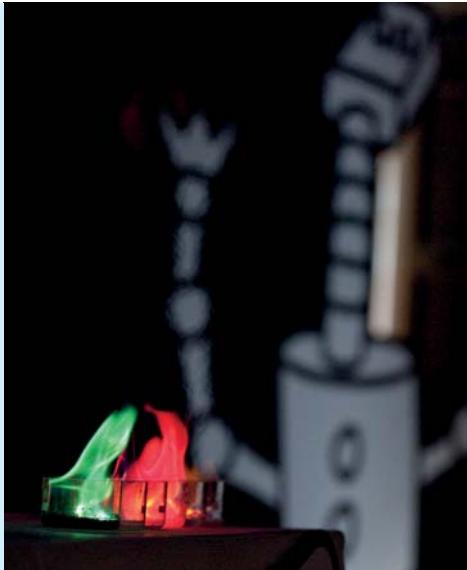
SS42

Ridiculously Rapid Reactions

Town Hall, Main Stage
£5.50 per pupil

From farming techniques and transportation, to our own human cells, chemical reactions keep our world in motion. But often they're too slow and we need to speed things up. We need catalysts! Join **Nate Adams** and **Nicola Gally** as your guides through the curious world of catalysis. Explore their chemistry, physics and biology with some really ridiculous and rapid reactions to demonstrate these marvellous materials.

drnateadams.com / @nateadams / @nic_89



**SW43 10–11am
SW44 11.30am–12.30pm
SW45 1.15–2.15pm**
**Workshop:
Illuminating
Communication**

Town Hall, Pillar Room
£6.50 per pupil

How has communication using light changed the world? And where is this extraordinary technology heading? From fire beacons to fibre-optic communication, **Rachel Oliver** is here to shed some light on these developments. Explore refraction, reflection and transmission through illuminating demonstrations and practical activities, and be enlightened about the future of global communication.

royce.ac.uk / @royceinstitute

H E N R Y . . .
R O Y C E . . .
I N S T I T U T E

KS3 Day Packages

WEDNESDAY 5 JUNE 2019

£14 per pupil

If you are looking for a full day visit in one easy booking then a Day Package is for you. Each package can accommodate 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 12–1pm 2–3pm	BioMedia Blitz Ridiculously Rapid Reactions Discover Zone
DP08	Package 8	10–11am 11.45–1.15pm 2–3pm	Brain Hacker BioMedia Blitz Discover Zone
DP09	Package 9	10–11am 12–1pm 1.45–3.15pm	Discover Zone Ridiculously Rapid Reactions BioMedia Blitz

DP07 9.45–11.15am
DP08 11.45am–1.15pm
DP09 1.45–3.15pm

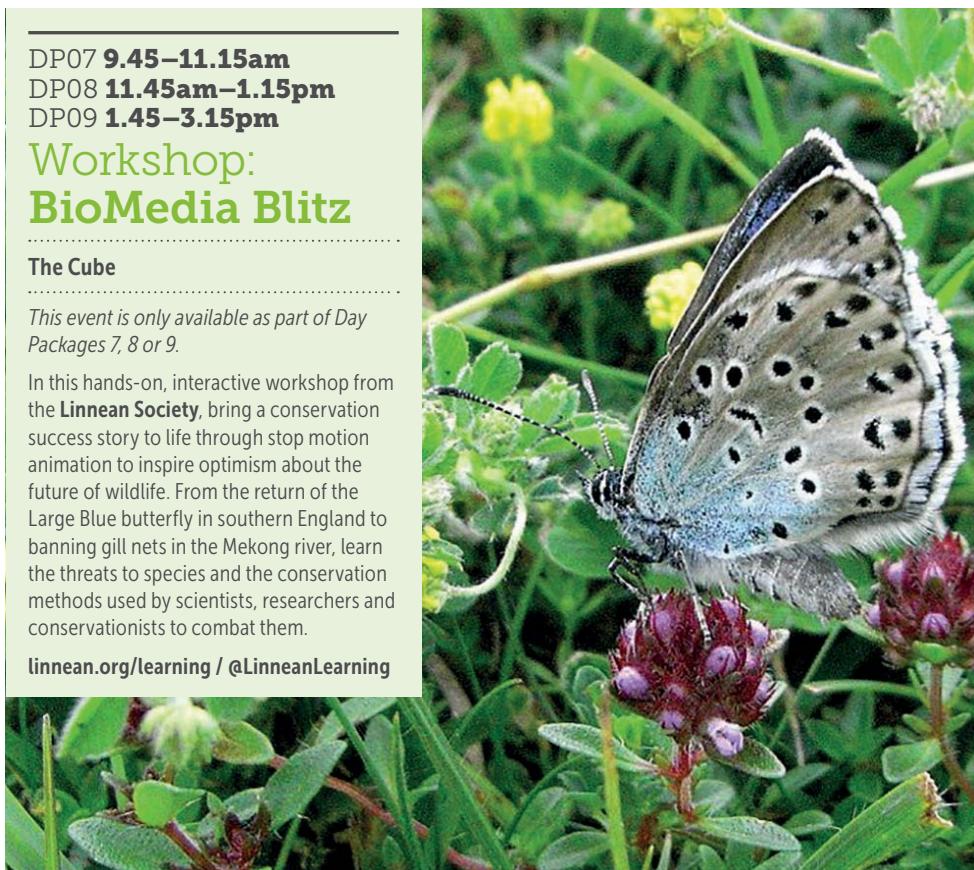
Workshop: BioMedia Blitz

The Cube

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

In this hands-on, interactive workshop from the **Linnean Society**, bring a conservation success story to life through stop motion animation to inspire optimism about the future of wildlife. From the return of the Large Blue butterfly in southern England to banning gill nets in the Mekong river, learn the threats to species and the conservation methods used by scientists, researchers and conservationists to combat them.

linnean.org/learning / @LinneanLearning



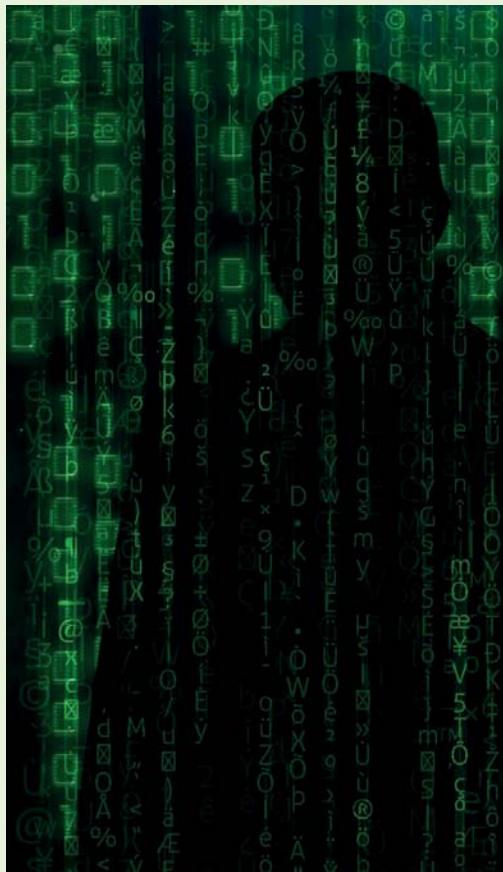
KS3 Day Packages

WEDNESDAY 5 JUNE 2019

£14 per pupil

If you are looking for a full day visit in one easy booking then a Day Package is for you. Each package can accommodate 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 12–1pm 2–3pm	Digital Detectives Ridiculously Rapid Reactions Discover Zone
DP11	Package 11	10–11am 11.45–1.15pm 2–3pm	Brain Hacker Digital Detectives Discover Zone
DP12	Package 12	10–11am 12–1pm 1.45–3.15pm	Discover Zone Ridiculously Rapid Reactions Digital Detectives



**DP10 9.45–11.15am
DP11 11.45am–1.15pm
DP12 1.45–3.15pm**

Workshop: **Digital Detectives**

Apollo

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

Even for a master coder, it's hard to hide information online. Just like in the real world, when someone moves through cyber space they leave a trail of information breadcrumbs for others to find and use. But what if the person of interest is up to no good? Will you be able to stop them? Go digital in this interactive workshop and use all the clues and tools available to predict their next move.

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

LOCKHEED MARTIN 

KS4 Day Package

FRIDAY 7 JUNE 2019



Creating Your Future: Hidden STEM Careers

SS46

The Crucible

£10 per pupil

10am–12pm

STEM Showcase hosted by Greg Foot

12–1pm

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 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. These leading inspirational scientists include:

- Geneticist and broadcaster **Adam Rutherford** on exploring the subject of superhumans
- Astronomer and winner of this year's Kavli prize **Ewine van Dishoeck** on studying molecules in space to investigate the origins of planetary systems
- Presenter of shows such as *The Gadget Show* and *Stargazing Live* **Dallas Campbell** on science writing and communication

More speakers will be confirmed closer to the event.

Enjoy visiting some of our partner zones over lunch, and round off your day with a dedicated KS4 slot in our ever-popular Discover Zone. Come along and spark your imagination with where STEM can take you!

Specialist VI Workshop



Adam Rutherford



Ewine van Dishoeck



Dallas Campbell



Ages 11–16

SS47 10am–12pm

SS48 12.45–2.45pm

Tactile Collider

New College Worcester

Free ticket required*

Tactile Collider is a first-of-its-kind, fully immersive workshop designed to make science accessible to people with visual impairments. Created to deepen our understanding of the Universe using specially developed tactile objects and fascinating soundscapes, participants can lose themselves in a world of science. Experience the sights, sounds and feeling of particle accelerator physics, meet real life researchers and immerse yourself in cutting edge science.

Funded by the Science and Technology Facilities Council, Tactile Collider has made physics fun and accessible for people of all ages, backgrounds, visual abilities and levels of knowledge.

[@TactileCollider](http://tactilecollider.uk)



*There are very limited spaces available. £2 booking fee per order applies. Please contact the Education Team for more details.

FAQs

How do I book tickets?

Go to cheltenhamfestivals.com/scienceforschools and complete the booking form.

Booking opens 8am on Tuesday 5 February 2019.

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 covered picnic area 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 30 April**, and we will do our best to accommodate these changes.
4. Your school finance office will receive an invoice by **Friday 10 May. It is important that this invoice is paid before you attend the festival.**
5. You will receive your ticket document, a site map, and detailed information 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/education/planning-your-visit where you will also find our cancellation policy and advice for preparing a risk assessment.

Find out more about our year-round STEM outreach programmes

FameLab Academy

The science communication competition that inspires Year 9 pupils to get into STEM.

cheltenhamfestivals.com/famelabacademy

Sponsored by EDF Energy

The Gloucestershire Schools Christmas Lecture

A spectacular STEM show for Years 8 and 9 to inspire and engage inquisitive young minds.

cheltenhamfestivals.com/gloslecture

Supported by The Honourable Company of Gloucestershire

Science for Schools contacts

If you would like to contact a member of the Education Team, call or email us at:
education@cheltenhamfestivals.com

Elspeth Kenny 01242 537 250

Rose Wood 01242 537 268

