

EDINBURGH INTERNATIONAL



EDINBURGH INTERNATIONAL

SCIENCE FESTIVAL

SUMMERHALL PROGRAMME

4-19 APRIL 2015



INVESTMENT MANAGERS



SUMMERHALL

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BOOKING HOTLINE: 0844 557 2686

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 SUMMERHALL

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WELCOME TO THE IDEAS FACTORY!

CLOCK IN, CATCH UP WITH FRIENDS AND FIND OUT WHAT'S ON THE PRODUCTION LINE.

Summerhall is the central hub of Edinburgh International Science Festival's *Ideas Factory* – during the day the stages and spaces will come alive with activities and shows for children, while evenings are packed with entertaining events for adults and teenagers. Visit our pop-up science bookstore from Blackwell's in the Courtyard Chalet, and mingle with scientists and artists in The Royal Dick Bar.

This brochure is arranged by programme strand and event type. To view day-by-day guides visit our new website where you can filter and view our full programme by date, event type, subject matter, age range, venue and much more.



PRODUCTION LINE

Art at Summerhall	P. 4–9
Family Shows	P. 10–17
Workshops	P. 14–17
Discussions	P. 20–29
GastroFest	P. 30–31
Special Events	P. 32–35



ONLINE BOOKING: SCIENCEFESTIVAL.CO.UK
BOOKING HOTLINE: 0844 557 2686

EDINBURGH INTERNATIONAL SCIENCE FESTIVAL 4–19 APRIL

In 2015, we're celebrating the role of the Science Festival as a hub for information, innovation and inspiration. Join us over two weeks as we transform the halls, galleries, theatres and gardens of Edinburgh into *The Ideas Factory*.

BLACKWELL'S POP-UP BOOKSHOP OPENING TIMES

4 April and 6–17 April 11.30am–8pm
5 April and 18–19 April 10am–5pm

VENUE SPONSOR

Baillie Gifford is delighted to support the Science Festival's hub, Summerhall. Headquartered in Edinburgh, Baillie Gifford has a significant global presence, managing investments on behalf of pension funds, financial institutions, charities and retail investors. The firm is proud to play an active role in its community by supporting a diverse variety of projects across festivals and the arts, education and social inclusion.

bailliegifford.com



HOW THE LIGHT GETS IN

'There is a crack in everything. That's how the light gets in'
Leonard Cohen

Co-curated by the Science Festival, Summerhall and ASCUS Art & Science, *How the Light Gets In* brings together a selection of works by international artists intrigued by light in all its forms and facets with those aiming to shine a light on the workings of our brain, mind and consciousness. Celebrating the UN International Year of Light and the Science Festival's *Brainwaves* strand, the exhibitions explore the beauty, form and function of light and its role as a metaphor for knowledge and enlightenment.

With Oliver Jennings', Sarah Jones' and producer Benjamin Burtenshaw's explorations of the life cycle of plants through technology, Tim Collins and Reiko Goto's group exhibition's enquiries into cultural ecology and collaboration, Fraser Ross' experiments in creating artificial organisms, Silas Parry's questioning of new lifeforms, Keith Lemley's observations into the unseen and Juileta Aguinaco's exploration of light within elemental forces, the first floor galleries explore the role of light in the natural world. In the Upper Church Galleries, computer-art pioneer William Latham blends organic imagery and computer animation, using software modelled upon the processes of evolution, while Andrew Carnie's time-based works in the Basement Galleries link our light and brain themes through slowly unfolding narratives.

ASCUS take over the Lower Church Galleries with a group show resulting from art-science collaborations and residencies, including work from the University of Strathclyde's Chamberlain Lab, the University of Edinburgh's Centre for Immunity, Infection and Evolution and London-based Art Neuro.

Julia Malle's neon and scientific glassblowing works link the exhibitions, illuminating and guiding visitors through the sprawling corridors of Summerhall.

Saturday 4 April – Friday 22 May 11am–6pm

See sciencefestival.co.uk for further details and full artist biographies.

HOW THE LIGHT GETS IN: PREVIEW/ART LAUNCH

ALL AGES

Join curators and artists for the launch of the Science Festival Visual Arts Programme and explore the wonders of light and the workings of the brain.

Friday 3 April 7pm–9pm | drop-in | Free

In association with Summerhall and ASCUS



SUMMERHALL



ascus
art & science

this page:

Line of flight II, Julia Malle

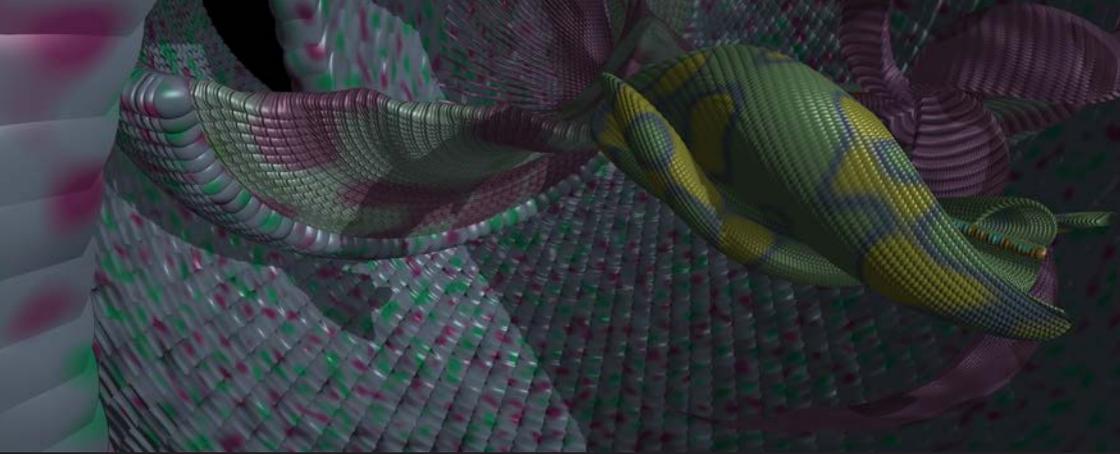
facing page:

Inside the Mutation Flowing Pieces, William Latham

Human Mutator 2 Reflector image in time, William Latham

SLICE 02, image courtesy Andrew Carnie and GV Art Gallery London

Magic Forest, 2002, image courtesy Andrew Carnie and GV Art Gallery London

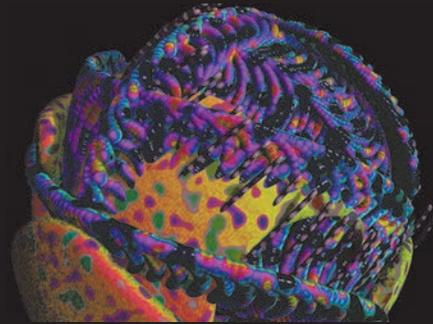


MAGIC FOREST AND SLICE

Andrew Carnie

Andrew Carnie's practice involves interaction with scientists, regarding themes based around neurology. He will exhibit two works; *Slice*, a slide-dissolve work that explores the body as a theatre of action, and *Magic Forest*, a dream-like journey through a sea of developing neurones. The *Magic Forest* was dependent on research by the Spanish anatomist Santiago Ramon Y Cahal and on the contemporary work of Dr Richard Wingate of the MRC Centre for Developmental Neurobiology, Kings College, London. The work was made for the exhibition *Head On*, a show at the Science Museum, London on neurology and the brain in collaboration with Wellcome Trust.

Basement Galleries 1 and 2



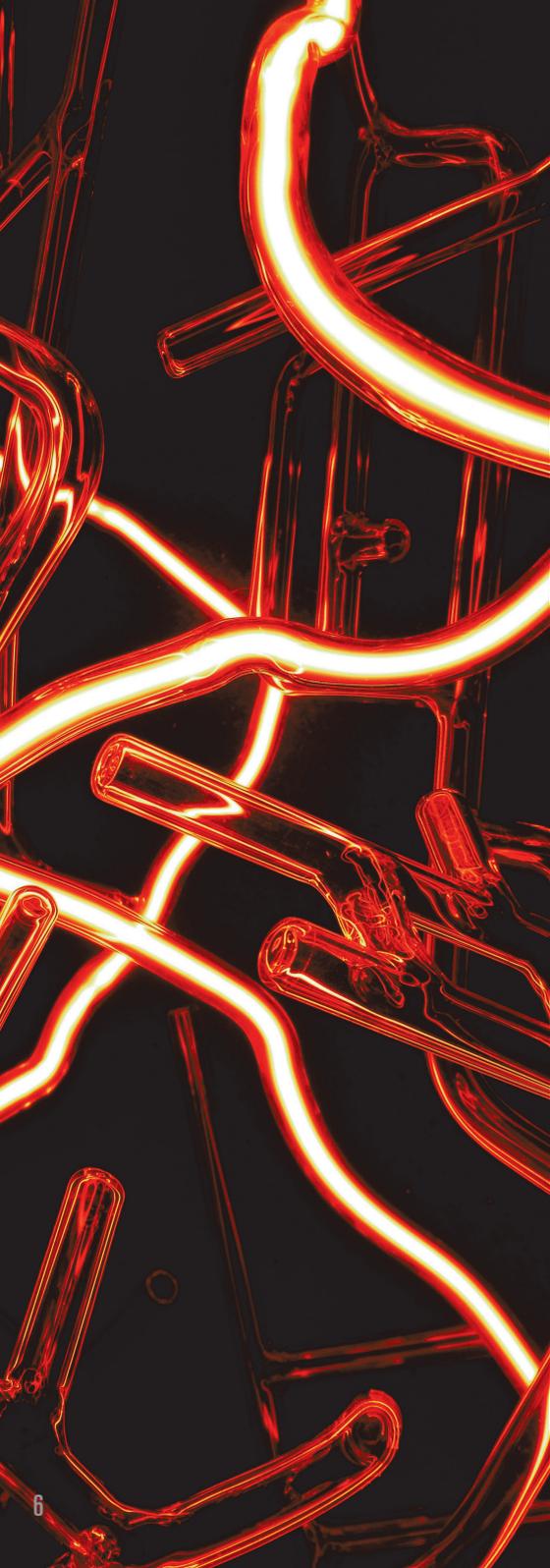
MUTATOR 1+2

William Latham

William Latham was one of the first pioneering UK computer artists and rapidly gained international reputation in the 80s. His work blends organic imagery and computer animation, using software modelled upon the processes of evolution to generate three-dimensional creations that resemble fantastical 'other-worldly' forms such as ancient sea shells, contorted animal horns or organic alien spaceships. The work, produced in collaboration with mathematician Stephen Todd, blurs the barriers between art and science. His new large-scale *Mutator 2* interactive projections show the endless evolution of organic forms steered by the viewer picking and breeding the forms they like. Accompanying the projections are large digitally printed translucent mutation curtains. With the projections complemented by early hand drawings, etchings and prints from the 1980s, large computer-generated Cibachrome prints and video art from his time at IBM.

Mutator 1+2 is Latham's first major exhibition in Europe in over 20 years, and was initiated in Brighton at The Phoenix in 2013 (sponsored by Arts Council England). It then toured to iMAL Gallery in Brussels and Centre Space in Dundee.

Upper Church Galleries



PARALLEL PERSPECTIVES

ASCUS Art & Science's *Parallel Perspectives* comprises three group shows, created from direct collaboration between artists and scientists. The exhibition explores a diverse range of scientific themes relating to neuroscience and disease, from Huntington's disease to malaria and dementia. Bringing together work from ASCUS micro-residencies with the University of Strathclyde's Chamberlain Lab and the University of Edinburgh's Centre for Immunity, Infection and Evolution ascus.org.uk. London-based Art Neuro will also exhibit artworks which have arisen from collaborations between artists and neuroscientists artneuro.co.uk.

Lower Church Galleries

ART TRAIL: LIGHT LINES

Julia Malle

In the work of UK-based sculptor and scientific glassblower Julia Malle, light and glass come together to form map-like structures that stand independently, removed from their original context, highlighting the material qualities of light against glass surfaces and surrounding space. Her approach is to reformulate what already exists, to change the status of the material and elevate it to different levels of perception for the audience. Borrowing from her knowledge of scientific glassblowing and combining those techniques with light she creates a new language for both materials.

Malle's neon and scientific glassblowing works link the exhibitions, illuminating and guiding visitors through the sprawling corridors of Summerhall. One permanent artwork in the foyer welcoming visitors will be commissioned by Edinburgh International Science Festival and Summerhall, signifying their ongoing relationship.

Corridors

left:

Rhizome (detail), Julia Malle

top:

Circuit (detail), Mark Doyle



SYLVA CALEDONIA

Tim Collins & Reiko Goto, with Sara Ocklind,
The Black Wood of Rannoch

Gerry Loose and Morven Gregor,
Adnamurchan, The Sunart Oakwood

Chris Fremantle, seminar series

How do we perceive woodlands? This is the central question for Loose and Gregor. Having lived in and travelled through the Sunart Oakwoods for a number of years, the work here in *Sylva Caledonia* presents some reflections on that experience: the building of a relationship and the development of a dwelt, pragmatic and empirical understanding of the interconnected lives in and of the oak wood.

Can cultural ecology be recovered when it has been lost over a period of three hundred years or more? This is the question that emerged as Collins & Goto immersed themselves in the Blackwood of Rannoch. For *Sylva Caledonia* they work with Sara Ocklind to present sculpture, video and a map that explores the gap between the gallery and the forest but also the relationship between the past, present and future.

During the exhibition of *Sylva Caledonia* Chris Fremantle will be working on a seminar series that explores specific questions about the cultures, values and perceptions of ancient woodland in Scotland. Seminar presenters include artists, poets, forestry scientists, ecologists and land managers.

For more information on the seminar series see sciencefestival.co.uk

Phenotype Genotype



UNDER THE CITLATEPETL

Julieta Aguinaco

In the current industrialised way of existing, many *Homo sapiens* live a life no longer as intimately synced to the circadian clock of Earth. The technologies we have inherited from our *Homo habilis* ancestors have slowly but steadily developed. Today 'artificial' production of light, heat, food etc. has brought, among other things, an accelerated existence. The urban and indoor routine of city humans may seem detached; as a parallel reality happening at another speed or dimension. But we are fully attached, furthermore enclosed in, bigger clocks and stronger things that we will probably never master. Like planetary rotation. Like volcanoes.

Corner Gallery

SOMETHING AND NOTHING

Keith Lemley

US-based artist Keith Lemley creates a space for dialogue between nature and the machine by filling the gallery with artificial light through seemingly organic forms; with neon tubes mimicking the natural variations found in the centre of logs. By combining the everyday occurrence of perceiving light with an unusual delivery method, *Something and Nothing* calls attention to 'the phenomenology of sight, the physiology of perception, and the experience of being a living body in space.'

Meadows Suite 4



top:

Dawn, Midday, Dusk, Night, Julieta Aguinaco

left:

Sylva Caledonia

right:

Something and Nothing, Keith Lemley

POSSIBILITY OF ANOTHER PLACE

Silas Parry, Summerhall Residency Artist

1000 metres under the sea, on the black murk of the sea floor, something is discovered. It's 1986, and this organism is unlike anything the researchers have ever seen. They find 18 of them, floating in the darkness.

They haven't found anything like them before or since. These creatures don't fit into any categories we understand. They are animals. But they are asymmetrical, sexless, and entirely new. It takes 28 years before the scientists even tell us they've found anything.

What does it mean when we're confronted by something alive that we've never seen before, that we can't understand? Something on the borders of animal and other, the fringes of our reality, edging into myth and fantasy?

How many more creatures are out there, waiting for us? In the depth of oceans, the far reaches of the planet, or in space?

Meadows Suite 3



right:

Blooming Senses-2, Fraser Ross

below:

Possibility of Another Place, Silas Parry



BLOOMING FLORA

Fraser Ross

This is an expedition involving the artificial study of plant life. Each organism performs a shape change through human interaction. The inbuilt nervous system of each organism has a specific organ, dedicated to each sense; the mechanisms and capabilities are reflected in different organisms. The collection of organisms are the continuation of Fraser Ross' research and development of new skin materials linked with shape-morphing technologies, using plant resins and other natural materials to experiment with organic form and movement.

Materials: Flexinol, glass, wood, resin, latex, copper, electronic components, sensors.

Meadows Suite 2

BIO-SYMPHONY

Oliver Jennings and Sarah Jones, curated by Ben Burtenshaw

Bio-symphony is an interdisciplinary project focused on the lifecycle of a plant. Artists Oliver Jennings and Sarah Jones have worked with live readings, taken from a plant in the space, to create improvised responses through video and language. Jennings' video work is developed out of research into the use of such readings, and includes documentation of other spiritual and scientific approaches to its analysis; as well as documentation of a 'sound garden' exhibited at the 2014 RHS Chelsea Flower Show. Jones' contribution foresees an encounter in the alliance of plant life and technology that we are inherently already familiar with, but have hardly seen. Taking place through a poem that is continuously reconfigured in accordance with the plant, the intention of the reexhibition is to explore how the plants subtle responses to its environment are relevant to us outside of science on a more emotive spectrum.

Meadows Suite 1



above:

Bio-symphony, Oliver Jennings and Sarah Jones

right:

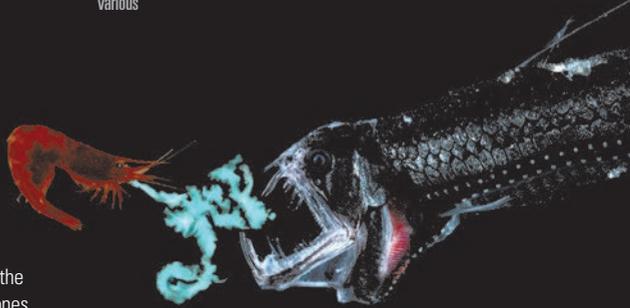
Widder - Acanthephyra BL spew defense,

Sonke Johnsen

LIVING LIGHTS

Fireflies use periodic flashing to attract mates, dinoflagellates cause the seas to sparkle and anglerfish use bioluminescence lures to attract prey. The emission of light is used by many organisms for a variety of reasons. The *Living Lights* photography exhibition explores some of these things – and how understanding these mesmerising displays can bring real world benefits in diverse areas of science and medicine – in a wonderful display of some of the greatest light shows on earth.

Various



ART TALKS PROGRAMME: TALKING ARTSCIENCE

To coincide with the launch of *How The Light Gets In*, the Science Festival Visual Arts Programme at Summerhall, ASCUS presents an afternoon of fascinating talks and discussion at the interface of art and science.

Artist William Latham – whose *Mutator 1+2* occupy Summerhall's Upper Church Galleries – will be in conversation with curator Bronac Ferran, guiding us through Latham's interactive video works, drawings and prints that explore and embody evolutionary processes, physical and virtual space. After a short break, the *Art of Artscience* symposium will bring other Science Festival exhibiting artists and scientists together to introduce their work and share their experiences of collaboration. Showcasing a number of works from *How The Light Gets In* it will be followed by an open discussion, giving an opportunity for the artists, scientists and the audience to collectively explore what it means to work across the disciplines of art and science.

Saturday 4 April | 2pm | 3.5 hours | Free (ticket required) | Anatomy Lecture Theatre

Artsience, n., 1. the theory and practice of integrating art(s) and science(s), 2. knowledge of relations between the arts and sciences
Artsicient, adj., exhibiting or practicing artsience



WHAT ON EARTH: A JOURNEY THROUGH LIFE ON OUR PLANET

AGES 5+

John Gordon-Reid will whizz you on a fast-moving journey covering the entire story of life on our planet using a giant timeline and his incredible coat of many pockets. Why did the dinosaurs prosper? Where did our oxygen come from? What are the White Cliffs of Dover? And is the *Ice Age* movie a true story? All this and much more will be answered when the pockets are picked...

Saturday 4 April | 12.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Red Lecture Theatre

Presented by What on Earth Publishing

ABOUTIMEYOUSAURUS: MEET THE NEWEST DINOSAURS

AGES 5+

We are currently in the middle of a golden age of dinosaur discovery. Just last year about 50 new species were found, including a weird long-snouted tyrannosaur, discovered in China by a team including Dr Stephen Brusatte from The University of Edinburgh. Join him as he introduces some of the most amazing new dinosaur discoveries and talks about his adventures digging up dinosaurs across the globe.

Saturday 4 April | 1.30pm | 30 mins | £5, family ticket £16 (4 tickets)

Dissection Room

ISAAC, THE APPLE AND A BUMP OF THE HEAD

AGES 3+

Not so long ago, a young man sat under a tree when 'OUCH!', an apple landed on his head! Join storyteller Mara Menzies for an exciting exploration into the wonderful world of Sir Isaac Newton, who discovered the phenomenon of gravity. Come and try your hand at some fascinating gravity and anti-gravity experiments.

Saturday 4 April | 10.30am and 12.30pm | 1 hour

£5, accompanying adults free (ticket required) | Yellow Room

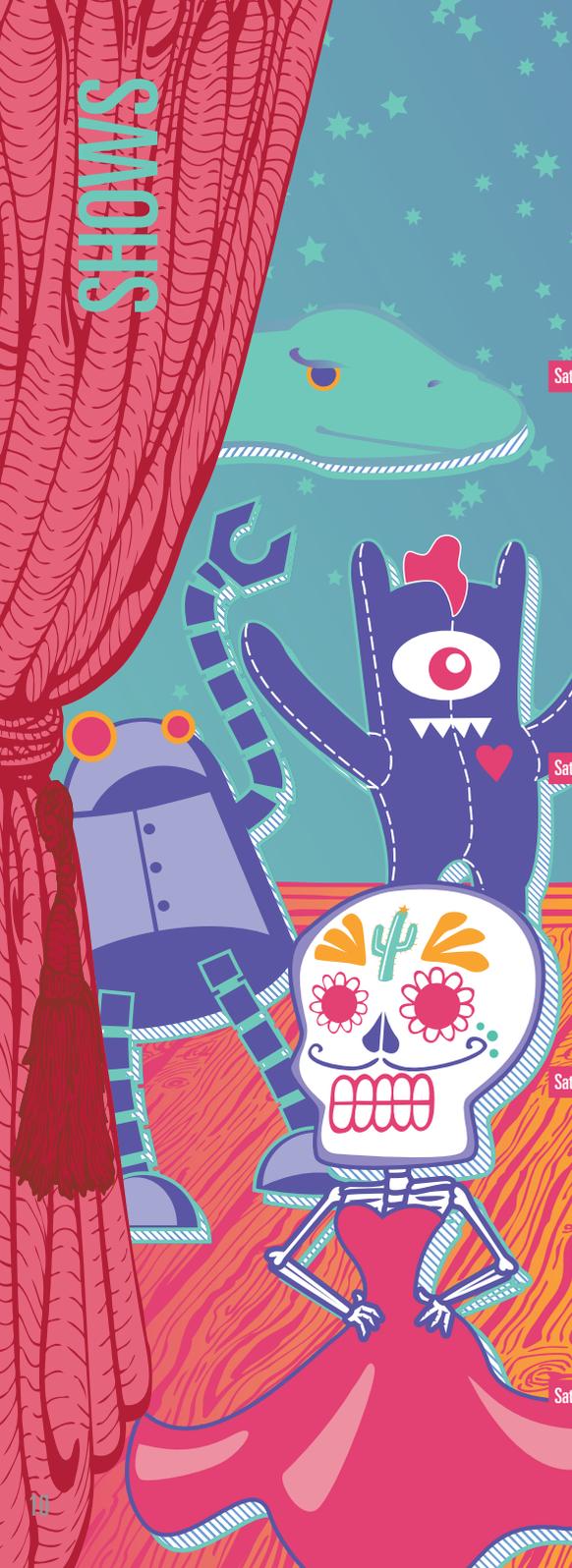
HOW TO BUILD A DINOSAUR!

AGES 8+

Dinosaurs ruled the Earth for over 170 million years, but some of their skeletons defy our understanding of engineering principles, with their vast necks and giant bodies. Join Prof Phil Manning and Dr Victoria Egerton as they build a complete skeleton of Gorgosaurus, from the ground up, in under an hour!

Saturday 4, Monday 6 and Tuesday 7 April | 2.30pm (also at 12.30pm on Mon 6—Tue 7)

1 hour | £5, family ticket £16 (4 tickets) | Dissection Room





JOHN HINTON'S ENSONGLOPEDIA OF SCIENCE

AGES 5+

Expect a trip into the atomic nucleus and up to the moons of Jupiter. Expect iridescent beetles, stridulating psyllids and hermaphrodite water lilies. Expect the unexpected. And expect it to rhyme. **John Hinton** has performed his musical comedies about Einstein and Darwin all over the world and has written songs for the Natural History Museum and Cambridge University Botanic Garden.

Monday 6 April | 12.30pm | 45 mins | £5, family ticket £16 (4 tickets) | Main Hall

Presented by Tangram Theatre Company

THE ORIGIN OF SPECIES...

AGES 8+

Calling all monkeys! This Edinburgh Fringe sell-out and international smash hit is a show for young and old alike, telling the incredible story of how Charles Darwin came to discover the secrets of evolution and why it took him over 20 years before he plucked up the courage to publish his remarkable idea. It's packed with big theories, terrible puns, brilliant physical comedy and six cracking original songs.

Monday 6, Tuesday 7 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

Presented by Tangram Theatre Company

MURDEROUS MATHS WITH KJARTAN POSKITT

AGES 8+

Author of the *Murderous Maths* books **Kjartan Poskitt** brings the weird and fascinating world of maths to life in his extraordinary show full of jokes, puzzles, tales and much much more. Learning has never been so much fun!

Monday 6 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets) | Main Hall

Presented by Scholastic Publishing

THE MARIE CURIE PROJECT

AGES 8+

A chance to see a work-in-progress extract of Tangram Theatre's brand new musical comedy, telling the incredible story of Marie Curie, and offer your feedback ahead of its Edinburgh Fringe premiere in August 2015.

Tuesday 7 April | 12.30pm | 1 hour | £3 | Main Hall

Presented by Tangram Theatre Company



COMETS

AGES 5+

Comets have been studied by scientists and philosophers for millennia. They may have brought life to Earth, but almost certainly wiped out the dinosaurs and nearly destroyed it. They shattered the crystal sphere theory of the universe and beautifully confirmed Newton's theory of gravity. Find out more with **Dr Kathryn Harkup**.

Thursday 9 and Friday 10 April | 12.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

POISONS

AGES 12+

Explore the potted history of classic poisons, poisoners and their victims with **Dr Kathryn Harkup**. You'll discover how poisonous chemicals do their deadly work inside the body, how victims can be treated and how, in the right circumstances, a poison can be medically beneficial. Expect mad monks, lethal umbrellas and deadly wallpaper!

Thursday 9 and Friday 10 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

SYNAESTHETIC DRONE ORCHESTRA

ALL AGES

Enjoy a 20-minute ambient music piece, which plays with space, colour and sonic texture from *The Synaesthetic Drone Orchestra*, a project by sound artist **Ed Devane**. The concert includes performances by participants in the project's workshops, playing the instruments they created.

Thursday 9 April | 7pm | 30 mins | Free (ticket required) | Basement Gallery 3

EUREKA! ANCIENT GREECE AND ITS BRILLIANT SCIENTIFIC DISCOVERIES

AGES 3+

Carolyne Latham and her friendly little dog invite you to travel in time and discover the stories behind the science of Ancient Greece. The whole family will enjoy this gentle introduction to the wonders of the ancient world through interactive storytelling with soft hand puppets.

Saturday 11 and Sunday 12 April | 10.30am | 1 hour

£5, accompanying adults free (ticket required) | Yellow Room

Presented by Puppet Anima

DR BOOK

ALL AGES

Stuck for something to read? Looking for new and exciting authors to explore? Then visit Edinburgh City Libraries' very own *Dr Book* where our book doctors will dispense advice and suggestions to cure all your reading ailments.

Saturday 11 April | 11am–1pm and 2pm–4pm | drop-in | Free | Cafe

Presented by Edinburgh City Libraries

WILD ABOUT SCOTLAND BUS

ALL AGES

Hop on board the *Wild About Scotland Bus* to marvel at the wonders of native Scottish wildlife. Packed full of interactive materials, our experts will take you into the watery world of the beaver, the wild existence of the highland tiger (the Scottish wildcat) and the wee lives of minibeasts.

Sunday 12 April | 10am–4pm | drop-in | Free | Courtyard

METEORITES, ROCKETS AND VOMIT BALLS IN SPACE

AGES 5+

Is there life on Mars? What's it like in Earth orbit? Why can't we simply build a ladder into space? Space expert Marcus Chown will be answering these questions and more, not to mention explaining why we could all be Martians!

Sunday 12 April | 12.15pm | 30 mins | £5, family ticket £16 (4 tickets)

Red Lecture Theatre

SCIENCE OF STAR WARS

AGES 8+

Probe the frontier between *Star Wars*' movie magic and cutting-edge science as you join author Mark Brake and TV science presenter Jon Chase to discover how 'a galaxy far, far away' anticipates real life here on Earth.

Sunday 12 and Monday 13 April | 12.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room (Sun) Main Hall (Mon)

Presented by iScience

HOW TO BE A SPACE EXPLORER

ALL AGES

Want to be an astronaut? Author **Mark Brake** and TV presenter **Jon Chase** present a lively, rap-ridden show that will tell you all you need to know about space travel.

Sunday 12 April and Monday 13 April | 2.30pm | 1 hour

£5, family ticket £16 (4 tickets) | Dissection Room (Sun) Main Hall (Mon)

Presented by iScience

DR DEATH AND THE MEDI-EVIL MEDICINE SHOW

AGES 7+

A historically, scientifically accurate pantomime for children and other childish people. Join the time-travelling 'Dr Death', **Simon Watt**, to see if he can 'cure' you.

Monday 13 and Tuesday 14 April | 12.30pm | 1 hour

£5, family ticket £16 (4 tickets) | Dissection Room

Presented by Ready, Steady, Science



THE UGLY ANIMAL ROADSHOW

ALL AGES

Join biologist and presenter **Simon Watt** for a performance that celebrates and explores the incredible biology of the animal kingdom's most monstrous species, featuring videos, demonstrations and lots and lots of audience participation.

Monday 13 and Tuesday 14 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

Presented by Ready, Steady, Science

ZAP, CRACKLE AND POP

AGES 7+

Take a sparky journey through the story of electricity with the BBC *One Show's* resident scientist, **Dr Marty Jopson**. This show will put the awesome into electricity, explaining everything from the difference between current and voltage to what you should do in a thunderstorm.

Wednesday 15 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

RECORD BREAKING SCIENCE

AGES 7+

Join the BBC *One Show's* **Dr Marty Jopson** as he delves into the science behind his recent Guinness World Record attempts, including why science means one of his records can never be beaten. Breaking world records has never been so scientific!

Wednesday 15 April | 5.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

SING AND DANCE IN TIME AND SPACE WITH MR BOOM

AGES 3+

Join **Mr Boom**, the children's one-man band, on an amazing musical adventure through time and space.

Thursday 16–Friday 17 April | 12.30pm | 1 hour

£5, accompanying adults free (ticket required) | Dissection Room

ENTER THE MING RODULATOR

AGES 5+

Enter the dome of noise, junk, booming bass, raw analogue circuitry and audio anarchy. Leave your harmonic preconceptions at the door and take hold of a screwdriver for an interactive experience with some bizarre handmade instruments.

Thursday 17–Sunday 19 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Courtyard

Presented by Noisy Toys

HORRIBLE SCIENCE WITH TONY DE SAULLES

AGES 5+

Join *Horrible Science* illustrator **Tony De Saulles** as he shares some drawing tips that will help you bring horrible science to life. Discover how to make your pictures look smelly and draw things that are exploding, cut in half, or even dead. You'll leave with a headful of horrible ideas!

Thursday 16 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

Presented by Scholastic Publishing

A BEGINNER'S GUIDE TO THE HUMAN BRAIN

AGES 8+

Of all the extraordinary organs of the body, the brain is the most amazing. Find out some of the incredible things your brain can do, and how you can fool it with **Gill Arbutnott**.

Friday 17 April | 2.30pm | 1 hour | £5, family ticket £16 (4 tickets)

Dissection Room

Presented by Bloomsbury Children's Books

WORKSHOPS



REALLY SMALL SCIENCE'S WORLD OF NANO!

AGES 7+

Get hands-on with nanosized objects and materials and discover how they are crucial to our everyday lives. You'll explore biological molecules, use nanodirt to 'de-orange' a famous Scottish fizzy juice, play with nanosludge and discover the glow-in-the-dark properties of nanoglowtech.

Saturday 4 April | 10.30am, 12pm, 2pm | 1 hour | £5 | Basement Gallery 4

Presented by Really Small Science

PAPER CIRCUITS

AGES 8+

Learn the basics of electronics as you build circuits using only paper, scissors and copper tape. You'll also have the opportunity to use your new skills to create a great-looking light-up card with LEDs.

Saturday 4 April | 11am | 90 mins | £10 | Hacklab

Presented by Edinburgh Hacklab

WHAT ON EARTH: WHEN AND WHERE?

AGES 5+

Let John Gordon-Reid launch you on a journey of discovery and intrigue with a beautifully illustrated giant timeline of natural science. You'll explore the 4.6 billion year-old story of life on this planet through hands-on workshop activities and with the help of the What on Earth? Coat of Many Pockets.

Saturday 4 April | 3.30pm | 1 hour | £5 | Basement Gallery 3

Presented by What on Earth Publishing

VIDEO GAME DESIGN WITH KODU

AGES 8+

Create and play your own video game in this ComputerXplorers workshop. You'll use a graphical programming environment to programme and build games on a PC, using an Xbox controller to help you design your game quickly.

Monday 6, Tuesday 7 April | 10.30am | 2 hours | £15 | Basement Gallery 4

Presented by ComputerXplorers

APP DEVELOPER WORKSHOP

AGES 8+

Discover the essentials of designing and programming a mobile app for iPhone or Android as you learn how to become an app developer and create and use your very own smartphone app.

Monday 6 April and Tuesday 7 April | 2pm | 2 hours | £15 | Basement Gallery 4

Presented by ComputerXplorers

SOLDER ON!

AGES 14+

Soldering is easy and we'll show you how. Get stuck in and learn the basics then you'll get your very own kit to solder and take home.

Monday 6 and Wednesday 15 April | 7pm | 90 mins | £15 | Hacklab

Presented by Edinburgh Hacklab

TIK-TAK-GLOW

AGES 10+

Build a simple percussion instrument with two heads, two beaters and an electronic circuit with an LED that lights up every beat. Part of the *Synaesthetic Drone Orchestra* project by sound artist Ed Devane.

Tuesday 7–Thursday 9 April | 10am, 10.45am, 11.30am | 30 mins | £5

Basement Gallery 3

INCANDESCENT BAGPIPES

AGES 12+

Make bagpipes with three drone notes using silver and gold-coloured plastic sheets and embedded LEDs that match colour to pitch. Part of the *Synaesthetic Drone Orchestra* project by sound artist Ed Devane.

Tuesday 7–Thursday 9 April | 12.30pm | 2 hours | £20 | Basement Gallery 3



DRONE WHEEL LUTE

AGES 14+

Make a two-stringed electric instrument with magnetic coil pickups and a hand-cranked wheel. Part of the *Synaesthetic Drone Orchestra* project by sound artist Ed Devane.

Tuesday 7–Thursday 9 April | 3.30pm | 3 hours | £40 | Basement Gallery 3

CODE CLUB WORKSHOP

AGES 8+

Join Code Club Scotland coordinators Martin Evans and Lorna Gibson for a full-on-fun, hands-on coding workshop as you learn how computer programming works using a fun card game and code your own game using Scratch.

Wednesday 8–Friday 10 April | 10.30am and 2pm | 90 mins | £10

Basement Gallery 4

Presented by Code Club Scotland

EXTREME SOLDERING: SURFACE MOUNT COMPONENTS

AGES 14+

Build skills in surface mount soldering as you learn the tricks and techniques that will help you solder on. Including your very own kit to build and take home.

Wednesday 8 and Monday 13 April | 7pm | 90 mins | £15 | Hacklab

Presented by Edinburgh Hacklab

LIGHT DRAWING

ALL AGES

Join Dr Kathryn Harkup to learn how to paint, sketch and doodle with light to create beautiful images, using long exposure photography and a bit of science along the way.

Thursday 9 and Friday 10 April | 10.30am | 1 hour | £10 | Main Hall

Supported by



IndigoVision

GADGET FACTORY

AGES 8+

Step into the *Gadget Factory* to investigate and explore how everyday gadgets work. Then pick your kit from the wide range of gadgets on offer and use your skills to assemble your very own working electronic toy. A ticket for this event on Sunday 19 April also includes entry to the *Edinburgh Mini Maker Faire*.

Saturday 11–Monday 13, Saturday 18 and Sunday 19 April

10.30am, 11.30am, 12.30pm | 45 mins | £7 | Basement Gallery 4

Supported by

SIEMENS

LIGHT, LASERS AND ILLUSIONS

AGES 5+

Join Tom Ward from Tech Camp for some incredible illusions and build your own ultraviolet torch to explore the secret world of invisible light at home!

Tuesday 14 and Wednesday 15 April | 10.30am and 11.30am | 45 mins | £10

Basement Gallery 4

SMART INVENTIONS

AGES 8+

Join Tom Ward for the newest workshop from Tech Camp that lets you play with five of the latest 'smart materials' and challenges you to come up with an idea for a new invention in 60 minutes flat!

Tuesday 14 and Wednesday 15 April | 12.30pm | 1 hour | £10

Basement Gallery 3

WORKSHOPS

ROBOT BRAIN SURGERY

AGES 10+

Get out your scalpel and soldering iron and learn the skills to give your favourite toy a brain transplant! This unique workshop from Tech Camp includes a mechanical insect toy that you'll convert into your own intelligent, programmable robot to take home.

Tuesday 14 and Wednesday 15 April | 4pm and 6pm | 90 mins | £30

Basement Gallery 4

COMPUTER SCAVENGERS

AGES 8+

Leave your harmonic preconceptions at the door and take hold of a screwdriver to ruthlessly butcher innocent computers to make musical instruments with their innards. A ticket for this event on Sunday 19 April also includes entry to the *Edinburgh Mini Maker Faire*.

Thursday 16 – Sunday 19 April | 10.30am | 1 hour | £10 | Courtyard

Presented by Noisy Toys

MUSIC IS MATHS

AGES 5+

Try out some cross-rhythm activities and explore how mathematical patterns cause the musical effects we are familiar with. A ticket for this event on Sunday 19 April also includes entry to the *Edinburgh Mini Maker Faire*.

Thursday 16 – Sunday 19 April | 12.30pm | 1 hour | £10 | Courtyard

Presented by Noisy Toys



LASER CUT YOUR JEWELLERY FROM SCRAP

AGES 12+

This is your chance to get creative with waste materials, using laser cutters to turn someone else's leftover scraps into jewellery to take home.

Friday 17 and Saturday 18 April | 10.30am | 2 hours | £20

Basement Gallery 4 (Fri) Basement Gallery 1 (Sat)

Presented by MAKLab

TECH TEARDOWN WORKSHOP

AGES 8+

Everyone wants the latest smartphone or music player and the old models often end up as landfill. In this workshop you'll strip down broken electronics, learn how their parts can be reused and create your own exploded artwork to take home.

Friday 17, Saturday 18 April | 2pm | 2 hours | £20 |

Basement Gallery 4 (Fri) Basement Gallery 1 (Sat)

Presented by MAKLab



DIY MOUSE TAXIDERMY

AGES 14+

Learn the process and techniques behind basic taxidermy as you skin, prepare, preserve, mount and position a mouse. Your little mouse is yours to take home for your mantelpiece. **Please note:** the mice used are ethically sourced and bred for reptile feed. Please do not bring any dead animals with you. There will be minimal blood and gore, no dangerous chemicals are used and all animals are disease-free.

Saturday 18 April | 2pm | 4 hours | £60 | Histology Lab

Presented by Of Corpse Taxidermy

MAKE A MOBOT: VIRGIN MEDIA SWITCHED ON FUTURES

ALL AGES

An action-packed introduction to computer programming as you design and code your own digital MoBot.

Please note: tickets for *Make a Mobot* on Sunday 19 April are valid for entry to this workshop only and do not include entry to *Edinburgh Mini Maker Faire* and the rest of the Summerhall building.

Friday 17–Sunday 19 April | 10.30am, 1pm and 3pm | 90 mins

Free (ticket required) | Basement Gallery 3

Supported by



Edinburgh Mini Maker Faire®



EDINBURGH MINI MAKER FAIRE

ALL AGES

The *Edinburgh Mini Maker Faire* is back for its third year at Summerhall, showcasing the diversity of human creativity and bringing together all sorts makers under one big roof. There will be gadgets, hardware, software, knitwear and food and the whole family will love interacting with robotic puppets, 3D printers, models, motorised skateboards, science experiments and even virtual Minecraft worlds. The Faire is a chance to discover hidden creative gems made by enthusiasts, artists and geeks in Scotland and further afield. Some makers will also be sharing their skills in a programme of in-depth workshops featuring everything from electronics to screen printing.

Sunday 19 April | 10am–5pm | drop-in | £5/under 3's free | Whole Venue

Supported by



Edinburgh Mini Maker Faire is independently organised and operated under licence from Maker Media Inc.

Make:
makezine.com

DISCUSSIONS

FORECASTING TOMORROW'S WEATHER

AGES 14+

The weather affects us all and we've all moaned if a forecast is wrong. **Helen Roberts** from the Met Office teams up with **Mark Higgins** from EUMETSAT (operator of Europe's weather satellites) to explain how data is gathered and fed into supercomputers to make the weather forecasts.

Saturday 4 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

Presented by EUMETSAT and the Met Office.

Energy and Environment events are supported by E-ON

LIGHT FANTASTIC

ALL AGES

Join us on our opening weekend for an illuminating social event taking in art history, magic lanterns and optogenetics as we look at the uses and meanings of light across the spectrum of culture with **Dr Sophie Coulombeau**, **Prof Matthew Nolan** and **Dr Frances Fowle**, senior curator at the National Gallery of Scotland.

Saturday 4 April | 8pm | 2 hours | £10/£8/#SciPals students £5

Dissection Room

A VERY SHORT INTRODUCTION TO...GENES

AGES 14+

If you're curious about what genes are and how genetics can be put to use, this is a very short introduction.

Jonathan Slack, Emeritus Professor at the University of Bath, explores the discovery, nature, and role of genes in both evolution and development.

Monday 6 April | 1pm | 1 hour | £5/#SciPals students £2.50

Red Lecture Theatre

Presented by Oxford University Press

ROBOTIC RIGHT AND WRONG

AGES 14+

Prof Noel Sharkey is the chair of the Committee for Robot Arms Control, an NGO that is seeking an international treaty to prohibit the development and use of autonomous robot weapons: weapons that once launched can select human targets and kill them without human intervention. Here he will talk about the ethical dimension of the rapid development and deployment of robot weapons.

Monday 6 April | 5.30pm | 1 hour | £8/£6/#SciPals students £4 | Main Hall

Presented by the British Computer Society



ALL IN THE MIND?

AGES 14+

Psychosomatic phenomena, experiences that affect both body and mind, are a source of intrigue. Stigmata and Stendhal syndrome, phantom pains, paralysis-by-painting and the placebo effect are all on the menu in this experimental evening featuring contributions by experts including **Dr Chris Burton** from the University of Aberdeen.

Monday 6 April | 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

A VERY SHORT INTRODUCTION TO... FORENSIC PSYCHOLOGY

AGES 14+

The minds of serial killers are topics that fill both the news and fiction and are aspects of the rapidly developing area of scientific psychology broadly known as forensic psychology. This *Very Short Introduction...* with psychologist **Dr David Canter** discusses how forensic psychology is relevant to the legal and criminal process.

Tuesday 7 April | 1pm | 1 hour | £5/#SciPals students £2.50 | Red Lecture Theatre

Presented by Oxford University Press

THE INTERNET IS NOT THE ANSWER

AGES 14+

The worldwide web is now a quarter of a century old and there can be no doubt it has transformed the world. But according to entrepreneur, writer and *Techcrunch* host **Andrew Keen**, this disruption has also been a terrible failure. Is the unregulated digital world making us poorer rather than wealthier? Join Andrew in conversation with **John Naughton**, technology columnist of *The Observer* and Vice President of Wolfson College, Cambridge.

Tuesday 7 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

In association with Atlantic Books

BAD SCIENCE BOOKS? JURASSIC PARK

AGES 14+

Join science fiction author **Alastair Reynolds** and paleontologist **Dr Stephen Brusatte** in a discussion about relationship between science fact and science fiction, hosted by **Sasha de Buyl** from Scottish Book Trust. Using *Jurassic Park*, we'll explore whether accurate science is bad fiction and exciting stories are bad science.

Tuesday 7 April | 5.30pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Scottish Book Trust

THE ONE AND ONLY?

AGES 14+

Join **Prof Frederick Toates**, science communicator and broadcaster **Jules Howard**, award-winning comedian **Rosie Wilby** and author **Zoe Cormier** for a discussion of the merits and pitfalls of monogamous relationships versus alternative configurations.

Tuesday 7 April | 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

In association with Bloomsbury Publishing, Cambridge University Press and Profile Books

THE BLACK MIRROR: FRAGMENTS OF AN OBITUARY FOR LIFE

AGES 14+

Raymond Tallis invites you to look back on your life from a posthumous standpoint. This humanist celebration of the mystery of everyday life from the imaginary viewpoint of death will illustrate how '*Locem demonstrat umbra*' or '*darkness shows forth the light*'.

Tuesday 7 April | 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Atlantic Books

A VERY SHORT INTRODUCTION TO... PARTICLE PHYSICS

AGES 14+

Prof Frank Close, Professor of Physics at Oxford University, takes us on a journey into the atom to examine known particles such as quarks, electrons, and the ghostly neutrino. He will share how discoveries in particle physics have actually been made, and discuss how our picture of the world has been radically revised in the light of these developments.

Wednesday 8 April | 1pm | 1 hour | £5/#SciPals students £2.50

Red Lecture Theatre

Presented by Oxford University Press

WILL YOU RECOGNISE THE FOOD ON YOUR PLATE IN 2050?

AGES 14+

What will our food look like in the future? Will changes be gradual, or will we be eating insect burgers and synthetic meat within the next ten years? Join The Nutrition Society, the largest nutrition group in Europe, and a panel of experts including **Prof Andrew Salter**, Professor of Nutritional Biochemistry from Nottingham University and **Dr Dean A Sewell**, Senior Lecturer, School of Life Sciences at Heriot-Watt University to discuss the future of food.

Wednesday 8 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by The Nutrition Society

SUGAR IN THE DOCK

AGES 14+

Like it or lump it, sugar plays a large part in our modern diets but what can we do to fight our addiction? BBC Scotland Health Correspondent **Eleanor Bradford** will lead a discussion featuring nutrition expert **Prof Geraldine McNeill** of the University of Aberdeen, **Pete Ritchie** of sustainable food group **Nourish Scotland** and **Naveed Sattar**, Professor of Metabolic Medicine at the University of Glasgow, examining the role of sugar in our lives.

Wednesday 8 April | 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

A VERY SHORT INTRODUCTION TO... GLOBAL CATASTROPHES

AGES 14+

Life on Earth will come to an end. It's just a matter of when. In this *Very Short Introduction...*, academic, science writer and broadcaster **Bill McGuire** explores the many potential catastrophes facing our planet and our species and looks at both the probability of these events happening and our chances of survival.

Thursday 9 April | 1pm | 1 hour | £5/#SciPals students £2.50

Red Lecture Theatre

Presented by Oxford University Press

FEAR AND RESILIENCE

AGES 14+

Learn how the brain copes in a crisis and helps motivate us and push us to the limits of our mental and physical abilities. Militants in Lebanon held special envoy **Terry Waite** hostage for almost five years. Join him and **Sir Colin Blakemore**, Emeritus Professor of Neuroscience at Oxford University in an event hosted by **Dr Mary Baker**, President of the Year of the Brain and chaired by **Prof Richard Morris**, Director of the Centre for Cognitive and Neural Systems at The University of Edinburgh.

Thursday 9 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by the European Brain Council

SOCIAL MEDIA: SPYING? SENTIMENT? SOURCE OF DATA?

AGES 14+

Social media is an amazing resource telling stories and spreading news, and research is only just starting to work out how to use the data it generates. Join Drs **David Emele**, **Paul Gault**, **Jennifer Holden** and **Chengwua Lin** from the University of Aberdeen for discussions and the chance to explore social media data analysis tools.

Thursday 9 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

Presented by Digital Economy Research at the University of Aberdeen

LESSONS FROM THE CREMATORIUM

AGES 14+

Most people want to avoid thinking about death, but **Caitlin Doughty**, a twenty-something with a degree in medieval history and a flair for the macabre, took a job at a crematorium, turning morbid curiosity into her life's work. Join her as she shares her bizarre encounters and unforgettable scenes in the world of the dead.

Thursday 9 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Canongate Books

THE LIVING BRAIN

AGES 18+

How does your brain change throughout your lifetime? How do scientists study the ageing brain? Should we focus on ageing or living? Comedian **Susan Morrison** will be joined by **Dr Susie Shenkin**, **Dr Stuart Ritchie** and filmmaker **Anne Milne** to tackle these questions. There will also be an exclusive screening of the short film *The Living Brain*.

Thursday 9 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by The University of Edinburgh

SLEEPING ON IT: SHORT STORIES FROM THE NEW SCIENCE OF SLEEP

AGES 14+

Recent studies show that, as well as being restorative, sleep is an incredibly dynamic period of activity for the brain. Join **Ra Page** and **Dr Penelope Lewis** from The University of Manchester as they discuss their new book, *Spindles*, with award-winning writer **Sara Maitland** and **Prof Russell Foster**, Director of the Sleep and Circadian Neuroscience Institute.

Thursday 9 April 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Comma Press

A VERY SHORT INTRODUCTION TO... HUMAN ANATOMY

AGES 14+

With strange vocabulary and an apparent mass of facts, human anatomy can at first appear confusing. In this *Very Short Introduction...* **Leslie Klenerman**, Emeritus Professor of Orthopaedic Surgery at the University of Liverpool, provides a clear, concise, and accessible introduction to the structure, function, and main systems of the human body.

Friday 10 April 1pm | 1 hour | £5/#SciPals students £2.50 | Red Lecture Theatre

Presented by Oxford University Press

BRUNO PONTECORVO: PHYSICIST AND ATOMIC SPY

AGES 14+

Join **Tam Dalyell** (MP for West Lothian 1962–2005 and columnist for *New Scientist* 1967–2005) in conversation with acclaimed physicist **Prof Frank Close** of the University of Oxford as they explore the life of Bruno Pontecorvo, a brilliant atomic physicist who defected from the West to the Soviet Union at the height of the Cold War.

Friday 10 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

GENDER AND THE BRAIN

AGES 14+

Is there such a thing as a 'male' or 'female' brain? The BBC Radio Scotland series *Brainwaves* explores the science behind our everyday experiences. With the help of Edinburgh University cell physiologist **Prof Richard Ribchester**, behavioural neuroscientist **Dr Gillian Brown**, **Prof Polly Arnold** and **Prof Simon Baron-Cohen** of the University of Cambridge, presenter **Pennie Latin** explores a question that has fascinated us for centuries.

Friday 10 April 5.30pm | 90 mins | Free (ticket required) | Main Hall

This event will be recorded for broadcast on BBC Radio Scotland.

In association with



THE EDGE OF THE SKY

AGES 14+

The Edge of the Sky. All You Need to Know About the All-There-Is is a science book unlike any other: it explains the entire universe using only the most common 1,000 words in the English language. Astrophysicist and author **Dr Roberto Trotta** takes you on a journey through the great discoveries and amazing mysteries of our cosmos.

Friday 10 April 5.30pm | 1 hour | £8/£6/#SciPals students £4

Red Lecture Theatre

Presented by Perseus Books

NEUROETHICS ON TRIAL

AGES 14+

At the dawn of the 19th century, anatomist **Franz Gall** declared that the new science of phrenology, predicting personality from the shape of a person's skull, would revolutionise our understanding of human behaviour and criminal responsibility. 200 years later, whether this should be admissible in a court of law has become a crucial debate. Join our courtroom of experts, including **Prof Simon Baron-Cohen**, **Prof Uri Hasson** of Princeton University, legal ethics specialist **Dr John Danaher** and neuroscientist **Prof James Fallon** as we put neuroethics on trial.

Friday 10 April 8pm | 90 mins | £10/£8/#SciPals students £5 | Dissection Room

DISCUSSIONS

REACHING OUT WITH ROSETTA

AGES 14+

For thousands of years comets have captivated us. Join astronomers **Prof Hugh Jones**, **Prof Monica Grady**, science fiction writer **Ken MacLeod**, and writer and broadcaster **Marcus Chown** to find out about their history, how we understand them and watch a cool comet-making demonstration from the Royal Observatory Edinburgh.

Saturday 11 April | 3pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Supported by the Geological Society of London and the Royal Astronomical Society

WHAT ABOUT THE BEES?

AGES 14+

We rely on bees to pollinate the plants and trees that produce our food but they are struggling. Join **Prof Adam Hart** for a discussion with Ecological Entomologist **Dr Helen Roy** from the NERC Centre for Ecology and Hydrology, **Warren Bader** of Plan Bee Ltd and **Gill Perkins** from The Bumblebee Conservation Trust. Make your own seed-bombs and sample some delicious honey treats.

Saturday 11 April | 5.30pm | 90 mins

£12/£10 (includes samples and seed bombs) | Dissection Room
Energy and Environment events are supported by E-ON

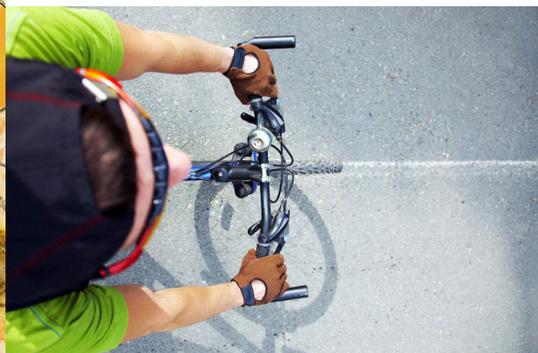
THINKING OUTSIDE THE BRAIN

AGES 14+

More and more, you're being told that everything you think and do is in the brain. Now the brain is a wonderful thing, but it's not the whole thing. Your brain is just part of a larger process of thinking, which involves not only the connections in your brain, but also the connections between our brains. **Dr Peter Lamont** of The University of Edinburgh attempts to uncover the 'real' location of our minds.

Saturday 11 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre



FATES, FATS AND FACTS: WHAT REALLY DRIVES FOOD CHOICE

AGES 14+

With the global obesity 'pandemic' costing societies dearly, are we culpable for what is on our plates? Join prominent academics for discussion, experimentation and investigation into food choice. We'll be busting some common myths about obesity, mortality, health and weight loss in an interactive evening featuring **Prof Gareth Leng**, **Dr Margaret Yufera Leitch** and behavioural economist **Prof Bradley Love**.

Saturday 11 April 8pm | 2 hours | £8/£6/#SciPals students £4 | Main Hall

Supported by
DIABETES SCOTLAND
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In association with Random House Books

CYCLING SCIENCE

AGES 14+

Journalist and author **Max Glaskin** presents an evening of science hacks for cyclists. He will be joined by **Prof Andrea Sella**, one of the UK's top science communicators and a cycling fanatic and Scottish cyclist **Ashleigh Fraser** as they discuss topics from Max's book *Cycling Science: How Rider and Machine Work Together*.

Sunday 12 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

INVISIBLE

AGES 18+

The concept of invisibility has inspired us for centuries: from Plato and Shakespeare, to James Clerk Maxwell and the magicians of the Victorian music hall. This territory takes us from medieval grimoires to cutting-edge nanotechnology and from beliefs about ghosts to the dawn of nuclear physics and the discovery of dark energy. Join author **Philip Ball** to discover new worlds, some real, some fantasy, and some whose existence is yet to be proved.

Sunday 12 April 5.30pm | 1 hour | £8/£6/#SciPals students £4 | Main Hall

Presented by Random House Books

CAN ROBOTS EVOLVE?

AGES 14+

As robots become more embedded in everyday life they are also cooperating and adapting to each other, similar to the swarming behaviour seen in ants, birds and fish. **Prof Jon Timmis**, Director of the York Robotics Laboratory, will explain, with interactive demonstrations, how biology is now influencing robotics research. Hosted by **Prof Alan Winfield** of the Bristol Robotics Lab.

Sunday 12 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by Edinburgh Napier University

MAPPING THE MACHINE

AGES 14+

Understanding the human brain is one of the greatest challenges and mysteries of the 21st century. The Human Brain Project (HBP), funded by the European Commission, is applying biology and computer science to build a computer-based copy of the human brain. Join us for a discussion with neurobiologist **Prof Seth Grant** of The University of Edinburgh, computational sub-project leader **Prof Steve Furber** of Manchester University and **Prof Barbara Sahakian** of Cambridge University.

Sunday 12 April 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

DID LIFE ORIGINATE IN THE QUANTUM MULTIVERSE?

AGES 14+

The origin of life is one of the biggest problems in the whole of science. Join author and broadcaster **Prof Jim Al-Khalili** and his University of Surrey colleague **Prof John Joe McFadden** co-authors of *Life on the Edge: The Coming of Age of Quantum Biology* as they propose the idea that the life may be quantum mechanical.

Monday 13 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

Presented by Transworld Publishers



CATCHING THE RAINBOW: PLANTS, PEOPLE AND SOLAR CELLS IN SCOTLAND

AGES 14+

The Schools of Chemistry and Biological Sciences at The University of Edinburgh combine to present an intriguing comparison of how humans are replicating some of the processes that plants use to interact with the sun and what the rise in solar energy in Scotland means for our society. **Dr Neil Robertson** will describe how the latest solar panel technologies mirror plant-life behaviours and you'll be able to investigate a range of hands-on activities related to solar power and plant sciences.

Monday 13 April 5.30pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by The University of Edinburgh

ON THE SPECTRUM

AGES 14+

Join us for a fascinating investigation into the everyday yet marvellous nature of colour. Chaired by *Bright Earth* author Philip Ball, engineer Guy Howlett, synaesthesia expert Jennifer Mankin and author of *The Brilliant History of Color in Art* Victoria Finlay take a journey from the ultramarine mines of Afghanistan to the UK laboratory that has created a material so black we can't see it.

Monday 13 April 8pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

BECAUSE YOU KNOW... IT'S ALL ABOUT THAT BRAIN

AGES 14+

Between 2013 and 2014, 5,000 young people in Scotland became homeless. But what are the causes and effects of conflict and what role does the brain play? The Cyrenians' pioneering Scottish Centre for Conflict Resolution (SCCR) collaborates with professionals in the fields of health, psychology and conflict resolution to reduce youth homelessness. Join SCCR conflict resolution advisor Abbey Krause in discussion with medical advisor Dr Sara Watkin to examine the physical and emotional impact of conflict and how it connects to the brain. Hosted by Ewan Aitken of the Cyrenians.

Monday 13 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

ENLIGHTENMENT: MOLECULES, BRAINS, LIGHT AND ART

AGES 14+

Discover the recent revolution that has taken place in the world of biological microscopy. In 2014, the Nobel Prize in Chemistry was awarded to three researchers who created new techniques that allow scientists to see inside living cells. Prof Rory Duncan and Dr Paul Dalgarno from Heriot-Watt University will show how an unusual alliance between marine biologists, some fluorescent undersea creatures, physics, chemistry, engineering and mathematics allows neurobiologists to see inside working nerve cells.

Monday 13 April 8pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Heriot-Watt University

A VERY SHORT INTRODUCTION TO...HORMONES

AGES 14+

Hormones play an integral part in the balance and workings of the body. While many people are broadly aware of their existence, there are many misconceptions about the endocrine system. In this *Very Short Introduction*... physiologist **Martin Luck** explains what hormones are, what they do, where they come from, and how they work.

Tuesday 14 April 1pm | 1 hour | £5/#SciPals students £2.50

Red Lecture Theatre

Presented by Oxford University Press

ROALD DAHL AND THE BIG FRIENDLY NEUROSCIENTIST

AGES 14+

Most people know Roald Dahl as a famous writer of children's books and adult short stories, but few are aware of his fascination with medicine, especially neuroscience. As a junior doctor **Prof Tom Solomon** looked after Roald during his last illness, and spent hours discussing medicine with him. Tom is now Professor of Neurology and Director of the Institute of Infection and Global Health at the University of Liverpool, join him to learn about Roald's extraordinary medical encounters and try some fun neuroscience experiments!

Tuesday 14 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

ENGINEERING THE NEW ENLIGHTENMENT

AGES 14+

Taking inspiration from the UN International Year of Light 2015, we will be exploring how light engineering is opening up unknown and far-reaching possibilities. Our inspiring demonstrations and presentations include **Dr Jonathan Leach** from Heriot-Watt University, who can take images that show light travelling through air and has made a camera that can see around corners, and **Prof Michael Wharmby** of Diamond Light Source, the UK's national synchrotron science facility, who will explore the emergence and evolution of these highly complex machines.

Tuesday 14 April 8pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

Supported by



THE INTELLIGENT WEB

AGES 14+

As we use the web, we leave a personal trail and search engines now look deep into the data on the web for the word you are looking for. **Dr Gautam Shroff**, Chief Scientist for TCS Research based in Delhi, India and **Prof David Roberston** from the School of Informatics at The University of Edinburgh take us on a journey through the computer science of search and the increasingly sophisticated algorithms that operate on the web.

Tuesday 14 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

In association with Oxford University Press

DE-EXTINCTIONS: BACK TO THE FUTURE

AGES 14+

We've all heard of extinctions, but de-extinction science is about bringing the extinct back in to existence, and scientists are now developing technologies to make this possible. Join CEO of Cyrenians **Ewan Aitken** with **Errol Fuller**, author of *The Passenger Pigeon*, de-extinction scientist **Dr Mike McGrew** of the Roslin Institute and comedian and author of *Bring Back The King* **Dr Helen Pilcher** for a discussion about the moral, ethical and environmental implications.

Tuesday 14 April 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

In association with Princeton University Press.

Energy and Environment events are supported by E-ON

A VERY SHORT INTRODUCTION TO... CHILD PSYCHOLOGY

AGES 14+

This *Very Short Introduction*... provides an up-to-date, authoritative and accessible guide to modern child psychology, from birth to early adolescence. Beginning with infancy, **Usha Goswami**, Professor of Cognitive Developmental Neuroscience at the University of Cambridge, considers the process of attachment and 'bonding', showing how secure attachments enable the development of self-understanding.

Wednesday 15 April 1pm | 1 hour | £5/#SciPals students £2.50

Red Lecture Theatre

Presented by Oxford University Press

A SENSE OF WONDER

AGES 14+

2015 marks the 150th anniversary of the publication of one of the greatest scientific papers of all time, in which James Clerk Maxwell described his transformative theory of electromagnetism. This 40-minute film celebrates his life told through the journey of poet and writer **Rab Wilson** and featuring conversations with contemporary scientists, music, poetry and songs. After the screening Wilson will be joined by **Dr Aiden Robson** for a conversation and Q&A session about film, Maxwell, physics and poetry.

Wednesday 15 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Main Hall

Supported by the James Clerk Maxwell Foundation

ENERGY FUTURES: THE PUBLIC DEBATE

AGES 14+

Energy resources, their use and abuse now and in the future, are at the very centre stage of global debate. To protect our planet and resources, society as a whole needs to engage, advise and be adequately informed to do so. Join a panel that includes **Prof Mercedes Maroto-Valer**, Professor of Sustainable Energy Engineering, Heriot-Watt University and **Dr Gareth Davies**, Director of Aquatera for a lively debate on our Energy Futures. Chaired by **Prof Dorrik Stow**, Head of Institute, School of Energy, Geoscience, Infrastructure & Society, Heriot-Watt University.

Wednesday 15 April 5.30pm | 75 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

Presented by Heriot-Watt University.

Energy and Environment events are supported by E-ON

SCOTTISH INDEPENDENCE: BIG DATA AND BIG CONVERSATIONS

AGES 14+

The independence debate was a huge event in Scottish history. It got the nation thinking and talking. Explore the debate with representatives from both the yes and no campaigns as (mis?)represented by social media and uncovered using big data analytics. Data scientist **Dr Daniel Winterstein** analyses the myriad conversations from across Twitter to reveal patterns about our country and community and explores how a big important debate plays out in the modern world where everyone has a voice.

Wednesday 15 April 5.30pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by SoDash

ME AND GRANNY ARE LEARNING SPANISH: IS IT EVER TOO LATE TO LEARN A SECOND LANGUAGE?

AGES 14+

What happens when we learn a language and does speaking two affect how our brains develop and age? Prof Antonella Sorace and Dr Thomas Bak will take you on the journey of a language-learner's brain, from infancy to old age, sharing what language-learning can do for us. They will be joined by zoologist and lifelong monolingual Prof Aubrey Manning alongside Louise Glen from Education Scotland to discuss language policy and a national shortage of language skills.

Wednesday 15 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

Presented by Bilingualism Matters and the Centre for Cognitive Ageing and Cognitive Epidemiology, The University of Edinburgh

SPEAKING OUR MINDS

AGES 14+

Is language arbitrary, or innate? Is there a universal grammar, or does each community of speakers just make it up as they go along? Professor of Linguistics Vyvyan Evans and evolutionary anthropologist Thom Scott-Phillips, join natural language processing expert Diarmuid Ó Séaghdha and primatologist Klaus Zuberbuehler battle attempt to unravel what comes first, the word or the thought..

Wednesday 15 April 8pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

In association with Cambridge University Press and Palgrave Macmillan

THE SCIENCE OF STORYTELLING

AGES 14+

Science sparks stories, and brings a fresh inspiration to writers who love science. Explore this relationship with three of Scotland's most talented new writers from the Scottish Book Trust New Writers Awards programme: Lucy Ribchester (Simon & Schuster), 2014 Manchester Fiction Prize winner Martin MacInnes, and Poet&Geek founder Bridget Khursheed. Hosted by Siân Bevan.

Wednesday 15 April 8pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Scottish Book Trust

A VERY SHORT INTRODUCTION TO... THE ANIMAL KINGDOM

AGES 14+

DNA analysis and the study of evolution and development has greatly enhanced our understanding of the animal world. In this *Very Short Introduction...* Prof Peter Holland, Linacre Professor of Zoology at The University of Oxford, presents a modern tour of the animal kingdom.

Thursday 16 April 1pm | 1 hour | £5/#SciPals students £2.50 | Red Lecture Theatre

Presented by Oxford University Press

JOCELYN BELL BURNELL IN CONVERSATION

AGES 14+

Prof Jocelyn Bell Burnell is one of the most influential scientists in the UK. But getting there was not easy and, as a woman, her journey has been fraught with resistance. Join her as she discusses her incredible career and her thoughts on the future of science and its place in society with Andrew Cohen, Head of Science at the BBC.

Thursday 16 April 5.30pm | 1 hour | £8/£6/#SciPals students £4 | Dissection Room

Presented by the Royal Society and the Royal Society of Edinburgh

BIG SOLUTIONS IN BIG DATA

AGES 14+

Some might say we're drowning in data but capturing 'big data' offers a host of opportunities for understanding our behaviour. There are complex challenges in analysing, storing, and visualising this information, and social and ethical considerations around our privacy. Join Prof Vonu Thakuria from Glasgow University, with Dr Pippa Wells of CERN and David Richardson and Prof Sarah Cunningham-Burley from The University of Edinburgh for a discussion about big data.

Thursday 16 April 5.30pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

GEOMETRY: A SECRET WEAPON IN THE FIGHT AGAINST VIRUSES

AGES 14+

Viruses are responsible for a wide range of devastating illnesses, yet therapy options are still limited. Prof Reidun Twarock and her team at the University of York have developed mathematical tools to study the geometric constraints of virus particles, and are working to develop new anti-viral strategies. Join her to find out how geometry can help us understand how viruses form and evolve and why the discovery of an Achilles' heel in virus formation could unlock a new perspective in their prevention.

Thursday 16 April 5.30pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

Presented by the International Centre for Mathematical Sciences

STRANGER THAN FICTION: ILLUMINATING SCIENTIFIC LIVES

AGES 14+

What sparks first lit the curiosity of the great scientists? And which great scientist's life and work first fired your curiosity? Here we explore scientific biography, asking whether it is necessary to know more about scientists than their scientific achievements. Do the rest of their lives matter? Join Scotland's only non-fiction writing group for an illuminating conversation about why scientists become scientists and why biographers write about them.

Thursday 16 April | 5.30pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by Stranger Than Fiction

THE STORY OF THE SHACKLETON EPIC

AGES 14+

In March 2013, scientist and explorer **Tim Jarvis** returned from Antarctica where he led a team of six men to successfully retrace legendary leader Sir Ernest Shackleton's 1916 Southern Ocean voyage of survival and the crossing of South Georgia. Here he will give insight into the intricacies of this larger-than-life expedition, the *Shackleton Epic*, and this account of extraordinary adventure with observations about the Antarctic environment and stories of his other history-making polar expeditions.

Thursday 16 April | 8pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

BRAIN, MIND, AND CONSCIOUSNESS... BUT WHAT ABOUT THE SOUL?

AGES 14+

A panel from The University of Edinburgh will discuss perspectives on the existence (or non-existence!) of an immaterial soul, one of the toughest questions in scientific and religious discussion, engaging in open and honest conversation with the audience. The panel features **Dr Michael Fuller**, Teaching Fellow in the School of Divinity, **Dr Mark Harris**, Lecturer in Science and Religion, **Sarah Lane**, PhD candidate in Science and Religion and **Dr David Ward**, Lecturer in philosophy of the mind and cognitive science.

Thursday 16 April | 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by The University of Edinburgh

A VERY SHORT INTRODUCTION TO... CORAL REEFS

AGES 14+

For centuries, coral reefs have been regarded with awe. Their scale is enormous and their ecological value is high, supporting both marine and human life. Today, the vibrancy and diversity of these fascinating ecosystems are under threat from over exploitation. In this *Very Short Introduction*... Prof Charles Sheppard from The University of Warwick shares what coral reefs are and the biological lessons we can learn from them.

Friday 17 April | 1pm | 1 hour | £5/#SciPals students £2.50 | Red Lecture Theatre

Presented by Oxford University Press



EXTREME

AGES 14+

From Icarus to Evel Knievel, humanity has always been fascinated by those who live on the edge. Join behavioural scientist Dr Paul Martin, psychologist and author Emma Barrett and world explorer Tim Jarvis for tales of cave-dwelling scientists, polar perils, starvation, solitude and resilience as we examine the astonishing limits of human endurance.

Friday 17 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4 | Main Hall

In association with Oxford University Press

GENES, RACE AND RACISM

AGES 14+

Human genetics has done more than any other field, academic or otherwise, to demonstrate that the idea of racial superiority or inferiority has no scientific value. Join Professor of Evolutionary Genetics Prof Mark Thomas and science writer and broadcaster Dr Adam Rutherford as they explore the history and future of this contentious scientific field.

Friday 17 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

SHOULD YOU TRUST WHAT YOU HEAR ABOUT SCIENCE? AN ENLIGHTENMENT DEBATE: HUME VS REID

AGES 14+

One of the famous scholarly disagreements of the Scottish Enlightenment was between Thomas Reid and David Hume on the trustworthiness of what others tell us.? Dr Alistair Isaac and Dr Alasdair Richmond, both philosophers at The University of Edinburgh, will playfully enact an Enlightenment debate between Reid and Hume, introduced and moderated by Dr Matthew Chrisman.

Friday 17 April | 5.30pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by The University of Edinburgh

ALEX THROUGH THE LOOKING GLASS

AGES 14+

Bestselling author and Edinburgh local Alex Bellos takes us on a journey of mathematical discovery with his signature wit and limitless enthusiasm as he narrates a series of eye-opening encounters with lively personalities all over the world. You'll find out the results of his global survey to find the world's favourite number and hear engaging stories that introduce some complex mathematical concepts.

Friday 17 April | 8pm | 1 hour | £8/£6/#SciPals students £4 | Red Lecture Theatre

Presented by Bloomsbury Publishing

THE GREAT APE DEBATE

AGES 14+

In 2014 a US court case argued that a privately held chimpanzee named Tommy should be granted legal personhood. Join Dr Lewis Dean, Dr Catherine Hobaiter and Dr Ben Sachs from The University of St Andrews; Dr Clare Cunningham of Abertay University and Dr Suilin Lavelle from The University of Edinburgh for a controversial discussion of what we owe our closest evolutionary cousins.

Friday 17 April | 8pm | 90 mins | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

Presented by the Scottish Primate Research Group

GASTROFEST



SCIMART

ALL AGES

A farmers' market with a scientific twist, *SciMart* brings together food producers, researchers and chefs to reveal the fascinating science behind some of our favourite foodstuffs. With demonstrations from award-winning Edinburgh chef **Paul Wedgwood**, talks and tasty treats, *SciMart* brings you a packed menu and food for thought. New for this year is a mini-restaurant of food surprises for our younger visitors... Go to sciencefestival.co.uk for up-to-date listings of stallholders and full details of the talks programme.

Sunday 5 April | 11am–4pm | drop-in | £5/#SciPals students £2.50/under 12s free

Whole Venue

Supported by



NOSE TO TAIL: THE NOT SO OFFAL TRUTH

AGES 14+

Could a trotter ever be a treat? Is offal really awful? How tender is a heart? Join us for an experimental edible journey to actively connect with the food chain as we investigate the possibilities and benefits of whole animal eating.

Monday 6 April | 8pm | 90 mins | £12/£10 (includes tasters) | Dissection Room



MAD HATTER'S TEA PARTY

AGES 14+

We invite you to take a trip down the rabbit hole and join us for a unique and enlightening tea party hosted by the father of molecular gastronomy **Hervé This**.

Wednesday 8 April | 1.30pm | 90 mins | £15 (includes tea and cake)

Dissection Room

GastroFest is supported by:





SENSORY EXPERIMENTATION

AGES 18+

Join us for an experimental exploration of the surprising links between our senses and our taste buds. Through a series of experiments and tricksome tasters we will delve in to sensuous flavours, smells and textures to intrigue and excite your palette. Dinner will never be the same again!

Thursday 9 April | 8pm | 90 mins | £20 (includes tasters) | Dissection Room

In association with Oxford Publishing Partnership

LATELAB: GASTROLAB: MOLECULAR MASTERY

AGES 18+

Prof Andrea Sella and Zoe Burgess and Max Venning from London's Drink Factory demonstrate how the art of cocktail-making has become a science and show you how to experiment at home.

Saturday 11 April | 3pm | 90 mins | £25 (includes cocktails) | Dissection Room

Supported by Marks & Clerk

GIN-OMICS FOR GENERATION GIN

AGES 18+

Discover a mouth-watering journey into the science of gin. You'll be comparing gin styles, exploring the chemistry of botanicals, taking taste tests, conducting science experiments and tasting delicious Scottish craft gins including Pickering's, Strathearn, Makar, Caorunn and The Botanist with cocktails and molecular paired canapés

Sunday 12 April | 8pm | 2 hours | £25 (includes gin) | Dissection Room



GIVE IN TO FERMENTATION

AGES 18+

Fermentation is a magical process that can make food more flavoursome and digestible, increase storage life, turn waste into tasty products and even reduce flatulence! Celebrate fermentation though a series of beer and fermented food pairings interspersed with short presentations from a host of experts.

Wednesday 15 April | 8pm | 90 mins | £20 (includes tasting platters and drinks)

Dissection Room
Supported by



BREWDOG

SPECIAL EVENTS

DINO DAY

ALL AGES

Join us for a day of prehistoric fun family activities. Play with robotic dinosaurs, discover dino fossils, meet Velma the Velociraptor and dig up the newest species of dinosaur yourself. There'll also be the chance to try some dinosaur dressing-up, as well as face painting, colouring-in and, as it's Easter, a dino egg hunt!

Saturday 4 April | 10am–4pm | drop-in | talks £5, activities Free | Whole Venue



REINDEER SAFARI

AGES 14+

Experience the city as a reindeer. Hear about the reindeer's way of life then walk, quietly and collectively as a herd would, through Edinburgh. This award-winning environmental art piece from Finnish live arts collective Other Spaces allows the sense to sharpen as the group experiences the borderline between nature and human culture.

Saturday 4 April | 11am–4.30pm | 5.5 hours | £10 | Old Lab

Energy and Environment events are supported by E-ON

INTO THE IMPOSSIBLE

AGES 14+

Physicist and member of the Magic Circle Kevin McMahon presents a performance packed with realisations of magic and fantasy inspired by science fiction and science fact, exploring the next generation of scientific discovery.

Saturday 4 April | 8pm | 1 hour | £10/£8/#SciPals students £5 | Main Hall

Presented by Edinburgh International Magic Festival

LATELAB: ENCOUNTERS

AGES 18+

Explore the *Ginsberg* online tool in this salon-style evening of cerebral stimulation and debate how to feel happier and sleep better. *LateLab* is a collaboration between Edinburgh International Science Festival and New Media Scotland.

Monday 6 April | 8pm | 2 hours | £10/£8/#SciPals students £5 | Main Hall

Supported by Marks & Clerk. In association with Canongate Books



UNEXPECTED ENERGY

AGES 14+

We know we need a diverse energy supply, but should we be adding something a bit wackier into the mix? Join us for an interactive evening that celebrates energy from unusual sources.

Tuesday 7 April 8pm | 90 mins | £8/£6/#SciPals students £4 | Dissection Room

Energy and Environment events are supported by



MINERVA SCIENTIFICA

AGES 14+

Immerse yourself in a music-theatre programme reflecting stories of British women scientists told through the music of the British women composers. This musical adventure from electric voice theatre will include thought-provoking talks from prominent women in science.

Wednesday 8 April 5.30pm | 90 mins | £10/£8 | Red Lecture Theatre

Presented by electric voice theatre

LETHAL LASSIES

AGES 14+

Society has always been outraged and fascinated by the figure of the murderess. *Previously...* festival director and comedian **Susan Morrison** hosts a killer evening of insights into the psychology of femme fatales, joined by crime writer and Bloody Scotland co-founder **Lin Anderson**, and Dr **Kathryn Harkup**.

Wednesday 8 April 8pm | 90 mins | £10/£8/#SciPals students £5

Dissection Room

In association with the Women's Fund for Scotland

BREWS, BLUES AND A PIANO-BAR-BIKE!

AGES 18+

A musical and scientific journey, by piano-bar-bike, through the history of brewing, with Barney's Beer brewer **Andrew Barnett** and pianist **Will Pickvance**. Brewing science, during a science festival, in a working brewery... yes, there will be beer!

Wednesday 8–Saturday 11 April 8pm | 50 mins | £15 | Summerhall Brewery

LATELAB: PECHA KUCHA

AGES 18+

PechaKucha Night is a presentation format that is based on a simple idea: 20 images x 20 seconds. Start the clock... *LateLab* is a collaboration between Edinburgh International Science Festival and New Media Scotland.

Thursday 9 April 8pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

Supported by Marks & Clerk

THE SCIENCE OF GAME OF THRONES

AGES 14+

A new series of dazzling skullduggery, bloodshed and frozen-zombie-warrior-creatures begins! Join award-winning comedian **Helen Keen** and explosive science communicator **Ian Simmons** for an evening of Ice and Fire (though if we're honest about it, mostly Fire).

Friday 10 April 8pm | 1 hour | £8/£6/#SciPals students £4 | Main Hall

LATELAB: DIALOGUES

AGES 18+

Edinburgh-based composer, performer, and software developer **Michael Edwards** presents 'hyperboles', a series of pieces that allow flautist **Anne La Berge** to tweak the algorithmic parameters that are used to generate the work's score. *LateLab* is a collaboration between Edinburgh International Science Festival and New Media Scotland.

Friday 10 April 8pm | 2 hours | Free (ticket required) | Old Lab

Supported by Marks & Clerk

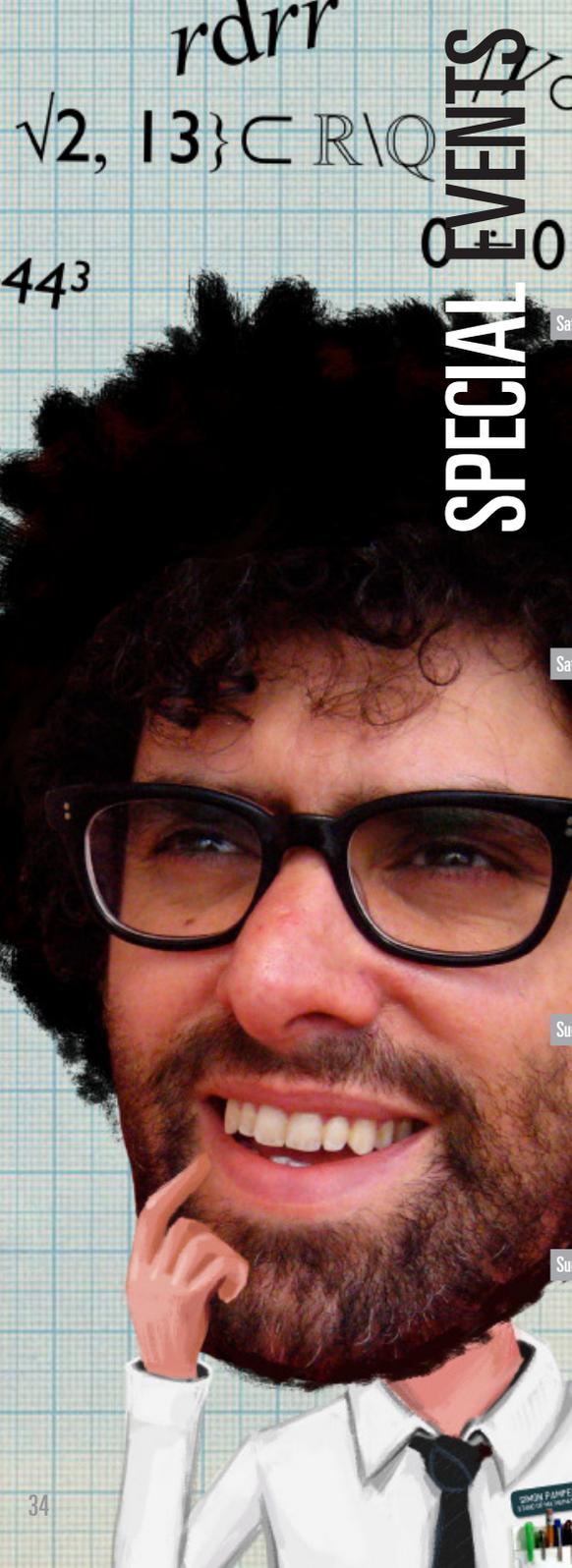
MUSIC ON THE BRAIN

AGES 14+

Are we fundamentally wired for sound? Prof **Trevor Cox** of the University of Salford is joined by eminent science writer **Philip Ball**, psychology of music expert **Dr Katie Overy**, pianist **Will Pickvance** and sound designer **Peregrine Andrews** for a sonic odyssey in psychoacoustics. Hosted by **Helen Arney**.

Saturday 11 April 8pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room



SPECIAL EVENTS

THE SAVANT GARDE: MATHEMATICAL FEATS BY THE NERDY ELITE

AGES 14+

Enter the mind of the mathematical savant with stand-up Mathematician and Australian Numeracy Ambassador Simon Pampena. Join him on a comedy adventure with some of the hardest maths problems of all time and the people who solved them.

Saturday 11 April 8pm | 1 hour | £8/£6/#SciPals students £4

Red Lecture Theatre

ADA ADA ADA

AGES 18+

Ada Lovelace, born in 1815, is often attributed as the world's first computer programmer. She was able to glimpse a future in which machines would become partners of the human imagination and helped sow the seeds for a digital age. Discover her story in this witty, engaging, thought-provoking and fun interactive storytelling performance.

Saturday 11 April 8pm | 1 hour | £8/£6/#SciPals students £4

Anatomy Lecture Theatre

SPACE DAY

ALL AGES

Blast-off into outer space with intergalactic activities for the whole family. Space scientist **Marcus Chown** will talk about the wonders of the universe and answer your questions about the cosmos and there will be out-of-this-world demonstrations from the Royal Observatory Edinburgh. Look out for our 'rocket in your pocket' space science busking around Summerhall as well as face painting, space suit dressing-up and a planetarium.

Sunday 12 April 10am-4pm | drop-in | talks £5, activities Free | Whole Venue

BOARD GAMES WITH A SCIENCE-Y TWIST!

AGES 14+

Enjoy an afternoon of science-inspired board games that will give you the chance to tackle climate change, cure diseases or prevent lab explosions. Children are very welcome but must be accompanied by an adult.

Sunday 12 April 2-5pm | drop-in | Free | Café

Presented by State of Play

LAB NOTES

AGES 14+

A natural selection of statistically significant comedy songs from geek songstress **Helen Arney**, science troubadour **Jonny Berliner** and actual cosmologist **Andrew Pontzen**. These songs are outliers you don't want to dismiss.

Sunday 12 April 8pm | 1 hour | £8/£6/#SciPals students £4

Red Lecture Theatre

HIGHLIGHT ARCTIC

AGES 14+

Highlight Arts present an evening of films, slides, stories and discussion on the landscape, ecology and culture of the High North, at a time when the Arctic region is experiencing enormous and rapid transition. Join award-winning author **Gavin Francis**, geographic-architects **Lateral North** and the Highlight Arctic team to uncover some of the unique peoples and artworks shaping and defining this fascinating region today.

Tuesday 14 April 8pm | 90 mins | £8/£6/#SciPals students £4

Red Lecture Theatre

Presented by Highlight Arts.



BORN TO DANCE

AGES 14+

Join Dr **Peter Lovatt** and Dr **Emily Cross** for an energetic exploration of the relationships between movement, cognition and memory: be prepared to polish up your dancing shoes!

Thursday 16 April 8pm | 90 mins | £8/£6/#SciPals students £4

Dissection Room

SEX BY NUMBERS: THE STATISTICS OF SEXUAL BEHAVIOUR

AGES 14+

The latest Natsal survey of British sexual behaviour suggests that we are becoming more experimental in our sex lives. But given sex (mainly) goes on behind closed doors, collecting reliable statistics of sexual behaviour presents a considerable challenge. **David Spiegelhalter** will discuss his forthcoming book, *Sex by Numbers*, which accompanies the major Wellcome Collection exhibition *The Institute of Sexology*.

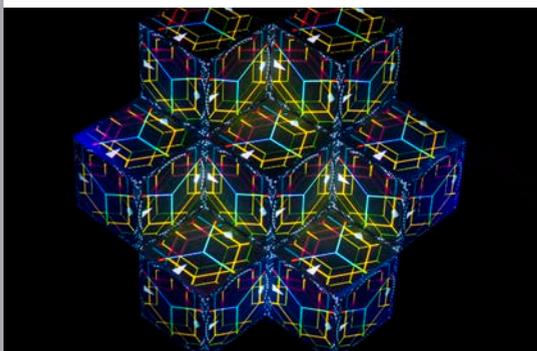
Thursday 16 April 8pm | 1 hour | £8/£6/#SciPals students £4 | Main Hall

BRAINWAVES CEILIDH

AGES 18+

Following last year's sell-out *Science Ceilidh*, join us to celebrate the British Neuroscience Association's *Brainwaves* mini festival with all your favourite dances rejigged with a twist of neuroscience. Curious feet and minds are very welcome!

Friday 17 April 8pm | 2 hours | £10/£8/#SciPals students £5 | Main Hall



FULL SPECTRUM

AGES 18+

Join us as we collaborate with **Astrojazz** and **Adventures in Light** to create a very special audio-visual experience at our first ever club night. Expect experiments with light, sound and structure on a large scale and enjoy a top class line up of DJs and live acts purveying cutting edge electronic music.

Line-up:

CRAZY P SOUND SYSTEM

DAVIE MILLER (FiniTribe - DJ Set)

SOUND: CHAPEL PERILOUS TETRASONICS ft. YOKO

PWN0 (LIVE)

VISUAL INSTALL: ADVENTURES IN LIGHT

Friday 17 April 10pm | 5 hours | £10/£8 | Dissection Room

EDINBURGH INTERNATIONAL
science
 festival

FIRST FLOOR VENUES AND SPACES

Main Hall
 Phenotype Genotype Gallery
 Corner Gallery
 Meadows Galleries

The Dissection Room
 Histology Room
 Upper Church Galleries

GROUND FLOOR VENUES AND SPACES

Box Office
 Corridors
 Courtyard
 The Royal Dick
 Hacklab
 Barney's Brewery
 Library Gallery
 The Cafe
 Yellow Room (Children's Activity Area)
 Anatomy Lecture Theatre
 Old Lab
 Lower Church Galleries

BASEMENT VENUES AND SPACES:

Basement Gallery
 Red Lecture Theatre

ACCESS INFORMATION

There are 5 steps at main entrance to building, step free access is through the side entrance on Summerhall Square. Outside the hours of 10am and 6pm, there is an entry intercom that can be used to connect to the reception team. The building is B-listed and is over one hundred years old and not all of the spaces within the venue are fully accessible. There is lift access to some of the First Floor and Basement spaces.

**SUMMERHALL
 EVENT AND
 GALLERY SPACES**

ART AT SUMMERHALL

- A
- B *Sylva Caledonia*
- C *Under the Citlatepetl* | Juileta Aguinaco
- D *Bio-symphony* | Oliver Jennings and Sarah Jones
Blooming Flora | Fraser Ross
Possibility of Another Place | Silas Parry,
Something and Nothing | Keith Lemley
- E
- F
- G *Mutator 1+2* | William Latham

Art Trail: Light Lines | Julia Malle

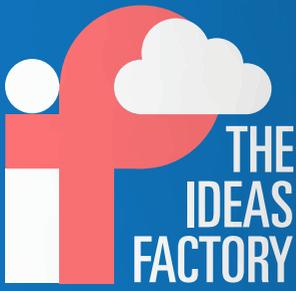
- H
- I
- J
- K
- L
- M
- N *Parallel Perspectives*

O *Magic Forest and Slice* | Andrew Carnie

P



SUMMERHALL





Welcome to *The Ideas Factory*! We're celebrating the role of the Science Festival as a hub for information, ideas and innovation and production runs from 4–19 April. Join us over these two weeks as we transform the halls, galleries, theatres and gardens of Edinburgh into *The Ideas Factory*.

WHAT'S ON AT THE SCIENCE FESTIVAL?

FOR FAMILIES

During the school holidays, the Science Festival provides exciting, engaging and educational activities the whole family can enjoy. Our flagship venue at City Art centre is including brand new *Carnival of the Mind*. The programme at the National Museum of Scotland includes free daytime pop-up activities in the Grand Gallery and workshops in the Learning Centre from The University of Edinburgh. Don't miss our partner events at the Royal Botanic Garden Edinburgh and other venues around the city.

FOR ADULTS

AGES 14+

Science Festival events is our programme of discussions, debates, workshops, screenings and nights out – all with a scientific twist. Look out for events with **Peter Higgs**, **Mary Midgley**, **James Lovelock** and *New Scientist* at the Queen's Hall, while Edinburgh International Conference Centre hosts the British Neuroscience Association's biennial Festival of Neuroscience including keynote talks from **Prof David Nutt** and **Dr Adrian Owen**. For those looking to sci-party, head down to *Science Festival Lates* at City Art Centre or our out-of-this-world space party *The Big Bang Bash* at National Museum of Scotland.

BROWSE OUR EVENTS ONLINE

Visit our new website sciencefestival.co.uk where you can filter and view our programme in your own way. You can search by date, event type, subject matter, age range, venue and much more. Find us on Facebook or Twitter @EdSciFest for festival information and exclusive ticket offers.

The Edinburgh International Science Festival is produced annually by the Edinburgh International Science Foundation, an educational charity whose mission is to inspire, encourage and challenge people of all ages and backgrounds to explore and understand the world around them. We couldn't achieve this without the support of our funding partners, who allow us to engage with more than a quarter of a million people every year.

TRUSTS & FOUNDATIONS

The Aberbrothock Skea Trust
 Astor of Hever Trust
 Barcapel Foundation
 The Binks Trust
 Craighish Trust
 Cruden Foundation
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 The Equitable Charitable Trust
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 Royal Society of Chemistry
 Tay Charitable Trust

WITH THANKS

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 Vento Ludens

BROADCAST PARTNER



LIFESTYLE PARTNER



MEDIA PARTNER



HOW TO BOOK

ONLINE

sciencefestival.co.uk

PHONE

0844 557 2686

10.30am–5.30pm (Monday–Friday)

11am–5pm (Saturday) | Saturday 4–Sunday

19 April | 8.30am–6pm (Monday–Saturday)

11am–4pm (Sunday)

IN PERSON

Edinburgh Festival Fringe Shop,

180 High Street, EH1 1QS

10.30am–5.30pm (Monday–Friday)

11am–5pm (Saturday)

During the Festival there will be a Science Festival Box Office in Summerhall open around performances from 10am–8pm. If tickets for your event are available, they can be purchased from the venue at least 30 minutes prior to the start

CONCESSIONS

Available for pensioners, the unemployed, disabled persons and their personal assistants, and students unless otherwise stated. Proof of status may be required.

GROUP DISCOUNTS

We welcome groups to the Science Festival and discounts are available depending on the event and party size. Please call the Box Office on 0844 557 2686 to discuss your needs.

REFUNDS

All Science Festival tickets are non-refundable, except in the case of cancellation.

#SCIPALS

Students! Are you sci-curious? Let's be #SciPals! Half price student tickets are available for most Science Festival events – enjoy a lunchtime talk for just £2.50 or an evening out for as little as £4.

Sign up to our students mailing list sciencefestival.co.uk/students or follow @edscifest for special offers, news and jobs.

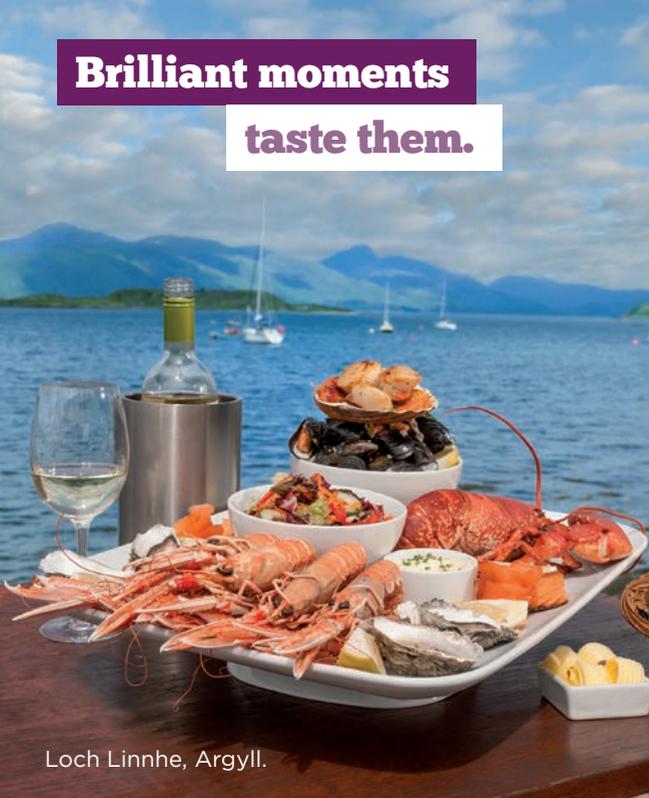
SCI-FIVE!

Not valid on every event, see individual entries for price information. Advance booking is recommended as half price tickets are subject to availability.

#SciPals is supported by

SIEMENS

**Brilliant moments
taste them.**



Loch Linnhe, Argyll.

Look out for our **Taste Our Best** logo across Scotland's businesses, proudly displayed as a guarantee of the finest quality Scottish food and drink on offer.



From our restaurants, B&B's and hotels, to visitor attractions, pubs and take-aways, you can sample our famous fare made with the freshest local produce.

To find out more go to visitscotland.com/tasteourbest



EDINBURGH INTERNATIONAL SCIENCE FESTIVAL AT SUMMERHALL

VENUE INFORMATION

SUMMERHALL

Summerhall Place, Edinburgh, EH9 1QH
0131 560 1581

The former Royal (Dick) School of Veterinary Studies in Edinburgh is now a creative hub for the arts with studio and workshop spaces. Summerhall is open to the public all year round and hosts events in many of Edinburgh's major festivals. But it's far more than Edinburgh's newest and biggest arts venue. Visitors will find theatre and gallery spaces, libraries and small museums, educational and research programmes, studios and workshops.

LOCATION

Summerhall is notably located at the east end of the Meadows Park, in close proximity to George Square, The Festival Theatre and just a 15 minute walk from The Royal Mile and Waverley Train Station.

Bus: Lothian Bus Routes 3, 5, 7, 8, 29, 31, 47, 49 (to/from South Clerk Street) and 42, 67 (to/from our front entrance).

Bicycle: Summerhall has bike rails located within the courtyard.



SUMMERHALL CAFE

The Summerhall café serves hearty homemade hot and cold food all day as well as great coffee, tea and a variety of cold drinks. There is also a children's menu and play area to keep your little ones happy.

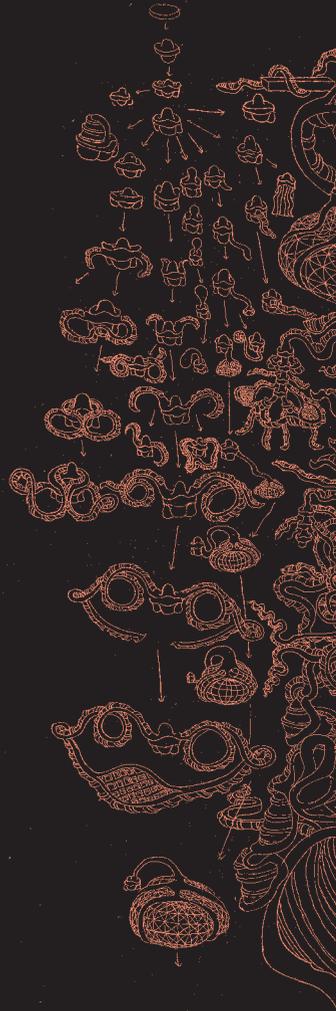
Open every day 9am-5pm (10am-6pm on weekends)

THE ROYAL DICK BAR

The Royal Dick was once the Small Animal Hospital of the Dick Vet School. Now creatively transformed into a completely unique destination bar/café.

Behind the bar is a great selection of spirits and wines and exclusive beers from resident craft brewer Barney's Beer including the special Science Festival 2015 brew.

Open everyday noon until late. Food served until 10pm.



SUMMERHALL



Cover Image *Oriental Etching*
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