



EDINBURGH INTERNATIONAL

science  
Festival

# EDINBURGH INTERNATIONAL SCIENCE FESTIVAL

30 March – 15 April 2012  
Programme

Online booking: [www.sciencefestival.co.uk](http://www.sciencefestival.co.uk)

Booking hotline: 0844 557 2686

# WITH SPECIAL THANKS TO ALL OUR PARTNERS

The Edinburgh International Science Festival is produced annually by the Edinburgh 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.

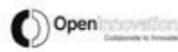
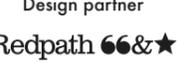
## PRINCIPAL FUNDING PARTNERS

		
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## FUNDING PARTNERS

## MAJOR VENUE AND PROGRAMME PARTNERS

			
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## TRUSTS AND FOUNDATIONS

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|----------------------|----------------------------|--------------------------------|-----------------------|
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| Barcapel Foundation  | Hugh Fraser Foundation     | Knowing Sport Fund             | MacRobert Trust       |
| Binks Trust          | Institute of Physics       | James Clerk Maxwell Foundation | Robertson Trust       |

# Welcome to the 2012 Science Festival – an exciting programme of events for all ages.

On these pages, you'll find details of everything we have on offer during our two-week celebration of all things science across Edinburgh. Whether you're looking for activities you can enjoy with children, a thought-provoking discussion or a fun night out with friends, we've got something to suit everyone.

You can read the brochure from start to finish or simply turn to the section you're most interested in. Check out some of our festival themes and highlights overleaf. We hope to see you soon!



## HOW TO BOOK

### ONLINE

[www.sciencefestival.co.uk](http://www.sciencefestival.co.uk)

### BY PHONE

0844 557 2686  
(10am-6pm Monday-Saturday)

### IN PERSON

Edinburgh Festival Fringe Shop  
180 High Street, Edinburgh  
7 February - 15 April  
(10.30am-5.30pm Monday-Friday,  
11am-5.30pm Saturday)

If available, tickets can be purchased from the venue 30 minutes prior to the event.

A handling charge of £1.50 per transaction will apply.

### OTHER BOOKING INFORMATION

**Concessions** For pensioners, the unemployed, disabled persons and their carers, and students, unless otherwise stated.

**Group discounts** We welcome groups to the Science Festival and discounts are available. Please call the Box Office on 0131 553 0322 to discuss your needs.

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

## DON'T MISS... EARLY BIRD OFFERS

Book early for great deals at the City Art Centre and on Science Festival Events.

## HOW TO USE THIS BROCHURE

### SCIENCE FESTIVAL FAMILIES

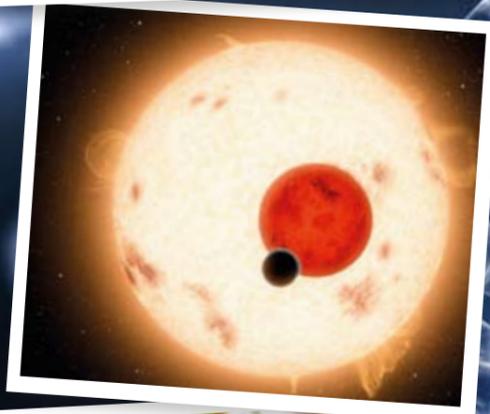
Science Festival Families is our programme of days out and events suitable for families. Listings are arranged by venue. To make it easier to organise your visit, we have included a festival date planner. Most events carry a minimum age recommendation to ensure the best possible experience for all our visitors. We ask parents to bear this in mind when choosing activities for their children.

### SCIENCE FESTIVAL EVENTS

Science Festival Events is our programme of discussions, debates, screenings, workshops and nights out with a scientific twist. Listings are arranged in date order and, unless otherwise stated, are suitable for ages 14+. Where alcohol is served, tickets will be restricted to those aged 18+ and proof of age will be required.

# SCIENCE FESTIVAL THEMES

We have hundreds of events happening all over Edinburgh! Here are some of our themes for 2012...



## MOVEMENT, MOTION, SPORT & DANCE



In a year that sees Olympic fever hit the UK, we're celebrating the science of human movement and performance in relation to sport, technology and dance. We'll be exploring everything from fitness and power to the science and aesthetics of movement through a series of workshops, performances and interactive exhibits.

<b>For families:</b>	
Jordan Styker: Cyber Terror	p11
InMotion	p17
Make a Move	p17
Power from the People	p17
<b>Events:</b>	
The Dancing Brain	p27
Where Nature Meets Nano	p29
Designer Athletes: Fair Play or Foul?	p30
What Makes a Winner?	p36

## SCIENCE & THE ARTS



We're bringing science and scientists out of their labs (and into some of Edinburgh's best-loved venues), combining them with authors and artists, philosophers and politicians, and seeing what evolves. There's no shortage of laughs with our comedy offerings, plus dance, poetry, spoken word, film and photography/visual art... In fact, all sorts of unexpected pairings, offerings and experiences that narrow the gap between science and the arts.

<b>For families:</b>	
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Move It (Scottish Ballet)	p17
<b>Events:</b>	
Ball and Other Funny Stories	p30
Bright Club: Bodies	p31
The Maths Olympics	p37
Humour Me	p37
Festival of the Spoken Nerd	p38
Rocket Lolly	p41

## EARTH & ENVIRONMENT



From climate change to the vagaries of the weather, issues of earth and environment are never far from the headlines or from our minds. Our events around this subject will not only take a timely and fresh look at some of the most important and topical issues in climate change, energy, waste, water and food, they'll also be celebrating the positive aspects of our environment and the technologies we use to explore it.

<b>For families:</b>	
City Art Centre	p6-9
Cosy Cosy Game Show	p7
How Big Can We Go,	
How Small Can We Go?	p11
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<b>Events:</b>	
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On Extinction	p30
Edinburgh Medal Address:	
The Case for Young People and Nature	p35
Fixing the Planet	p38
Biofuels: An Ethical Solution?	p40

## FOOD FOR THOUGHT



Eat, drink and learn as scientists, psychologists, chefs, sommeliers and mixologists dissect the science behind your favourite food and drink. Where does it come from and is it sustainable? What does it taste like and what makes it taste that way? How can science help create the perfect cocktail? What happens to your senses when you dine in the dark?

<b>For families:</b>	
Science on a Plate	p13
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<b>Events:</b>	
Calories and Corsets	p28
The Forager's Breakfast	p33
Aphrodisiac Cocktails and Canapes	p34
Whisky Wisdom	p35
Sensory Dining	p36

## TECHNOLOGY & INNOVATION



We've curated an innovative programme that celebrates ideas and embraces discovery, innovation and creativity. The Edinburgh Enlightenment Exchange (E<sup>2</sup>) champions this approach with a day-long TED-style showcase by the best and brightest creative minds, while LateLab gives adults a chance to get stuck in (who said hands-on science was just for kids?). Add robots, animation and gaming, and there's plenty to interest enquiring minds.

<b>For families:</b>	
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<b>Events:</b>	
Edinburgh E <sup>2</sup>	p26
Let's be Friends: Robot Companions	p26
LateLab	p28
The Thinking Robot	p38
Future Human	p39

# CITY ART CENTRE

6 floors  
**oozing**  
 with  
 exciting  
**circuits,**  
 scary skeletons,  
 racing  
**ROBOTS**  
 & manic  
**monsters**



## SPEND THE DAY AT THE CITY ART CENTRE

Open daily from Saturday 31 March to Saturday 14 April (not 1 or 8 April) between 9.30am and 4.30pm

During the Science Festival, we transform Edinburgh's City Art Centre into a science playground packed full of workshops, shows and interactive events. A **Day Pass** allows you access to explore as many events as you like. Some popular events can be booked in advance but most can be visited on the day.

Activities and workshops are listed by age group but many can be enjoyed by the whole family. See page 9 for **Day Pass** prices and advance booking information. Please allow 4-5 hours for your visit.

Have a cleaner, greener festival – see page 9 for details.

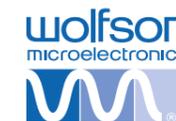


### HOW TO BOOK **PRE-BOOKING ADVISED**

A **Day Pass** gets you in to the City Art Centre to explore as many events as you like. Pre-booking your **Day Pass** is strongly advised to avoid queues and disappointment.

### VENUE SPONSOR

Wolfson Microelectronics is passionate about science and technology, and is thrilled to continue its support of the Science Festival at the City Art Centre. Edinburgh-based Wolfson develops ground-breaking HD audio solutions and ultra low-power audio products for some of the world's highest profile consumer electronics products, with customers including Samsung, Microsoft, RIM and LG. [www.wolfsonmicro.com](http://www.wolfsonmicro.com)



### EVENTS FOR YOUNGER CHILDREN AND ALL AGES

#### IMAGINATION GARDEN

AGES 3+ **PRE-BOOKING ADVISED**



Visit our secret garden and create your own creature. Explore and discover this new and fascinating world.

10am-4pm (half hourly) • 20 minutes

#### STORYTIME TENT

AGES 3+ **PRE-BOOKING ADVISED**

Enter a world where the music takes you on a journey. Feel the vibrations as you step into the story and discover amazing things.

10am-4pm (half hourly) • 20 minutes

#### NINA AND THE NEURONS

AGES 3+



Inspired by experiments from the new CBeebies show, *Nina and the Neurons: Brilliant Bodies*. Prepare to have fun while you find out more about the science that is all around us.

NB Nina will not be present at the workshops.

Presented by:



#### WORLD OF BUBBLES

ALL AGES



Step into our wonderful world of bubble magic and prepare to be amazed! Meet our bubbleologists and marvel at their jaw-dropping bubble mastery. Find out how to make a round bubble square, and disappear into your own bubble. Bubbles have never been so much fun!

#### SCIENCE MINI CINEMA

ALL AGES

A series of short films and documentaries from around the world. Sit down, relax and enjoy.

Supported by:



#### THE CHAIN REACTOR

ALL AGES



This machine is quite simply a bit bonkers. You'll gasp in awe at this elaborate procession of bizarre knock-on effects.

10am-4pm (hourly) • 10 minutes

### EVENTS FOR AGES 5+

#### COSY COSY GAMESHOW

AGES 5+

A game show for parents and children in which we challenge you to work out how to stop heat leaking from model houses. Play the game against the clock and try to beat those around you by saving the most energy – and money!

Supported by:



#### RAMPAGING CHARIOTS RACE

AGES 5+

Race a powerful robot round a challenging obstacle course, and then pitch your skills against your opponent in our Robot Football Champions League.

10am-4pm (hourly) • Racing area

Presented and supported by:



#### SPLAT-TASTIC

AGES 5+ **PRE-BOOKING ADVISED**

Make and test your very own slime! Learn about polymers using a variety of exciting ingredients and then choose what you will make – bouncy putty ball or gooey slime. You can even choose what colour it will be! Test its viscosity and stickiness under the extreme conditions of our 'Splat-o-Meter'.

10am-4pm (hourly) • 45 minutes

#### JUNGLE SAFARI

AGES 5+ **PRE-BOOKING ADVISED**



Let us take you on an incredible and memorable journey through the deepest, darkest region of the jungle to learn about the world of animal sounds and noises! Put on your safari gear and join our research scientists to learn about some of the amazing ways animals communicate.

10am-4pm (half-hourly) • 40 minutes

Supported by:



**SHADOWGRAMS PHOTOLAB**

AGES 5+

Create and develop your own beautiful picture to take home by arranging unusual objects on a glass plate and exposing the pattern on to a piece of photographic paper in the dark room. Chemistry has never been so cool.

**EVENTS FOR AGES 7+**

**UNWRAPPING THE MUMMY**

AGES 7+ **PRE-BOOKING ADVISED**



We need an archaeologist – can you help? An Egyptian mummy has been discovered and we need you to enter the ceremonial chamber, unwrap its bandages and find out how the mummy died.

10am-4pm (half-hourly) • 45 minutes

**VISUAL-EYES**

AGES 7+

Explore your eyes – inside and out. Peek inside our giant eye to see how eyes really work. Dissect eyeballs and work with lenses to uncover the secrets of vision. Experience what it's like to have vision problems by wearing our simulator goggles, and discover how you can check the health of your eyes by looking inside them with new high-tech cameras.

Supported by:



**MADLAB AND MADBOT ROBOT**

AGES 7+

Learn the secrets of soldering, then make your very own working electronic gadget. Lots of classic and favourite MadLab kits to choose from, as well as some surprise new kits. Calling all expert MadLabbers – come and build a robot that can find its way around a maze without bumping into the walls.

Just drop in • 45-75 minutes (MADBOT 2+ hours)

Kits cost from £3, MADBOT £24

Circuit boards supplied by Zot Engineering

Supported by:



**MINI SCIENTISTS**

AGES 7+ **PRE-BOOKING ADVISED**

Transform into a scientist as you step into the Medical Research Council lab, and put on a white coat and safety specs to try our activities. You can build your own healthy cell, make a test-tube baby and examine its DNA, create a virus and figure out what disease it causes, help to send signals between cells – or even make a DNA bracelet to match your eye and hair colour. You'll get to meet some real-life medical research scientists too!

10am-4pm (every 45 minutes) • 30 minutes

Presented and supported by:



**DIG UP A DINOSAUR**

AGES 7+ **PRE-BOOKING ADVISED**

Millions of years ago, dinosaurs ruled the Earth. Help us dig for bones and use your skills to brush away the sand to see what you can find. One of our most popular events!

10am-4pm (every 45 minutes) • 40 minutes

**EVENTS FOR AGES 8+**

**MANIC MONSTER HUNT**

AGES 8+

Get your hands on the world's best video technology used in surveillance operations, control the equipment and hunt for monsters hiding around the building. Watch where you step, though – you are being watched.

Supported by:



**ADVENTURE-BOTS AND THE TEMPLE GODS**

AGES 8+ **PRE-BOOKING ADVISED**

Using a specially designed version of LEGO MINTORMS NXT technology, build and program robots, outsmart temple gods, battle deadly snakes and search for hidden treasure. Take part in a robotics adventure like no other.

10am-4pm (hourly) • 45 minutes

Supported by:



**ER**

AGES 8+ **PRE-BOOKING ADVISED**

Emergency, emergency – there's been an accident! Here's your chance to scrub up and save some lives at the ER surgery. Nurse!

10am-4pm (hourly) • 40 minutes

Supported by:



**RAMPAGING CHARIOTS WORKSHOP**

AGES 8+ **PRE-BOOKING ADVISED**



Race a powerful robot round a challenging obstacle course. Once you've seen what a robot is capable of, why not build your own in our special workshop where you will learn how to construct, design and build a Rampaging Chariot from scratch? Once driven, never forgotten!

10am-3pm (hourly) • 45 minutes

Presented and supported by:



**THE BLOOD BAR**

AGES 8+

Prepare to be grossed out at the Blood Bar as you make your own blood-curdling scabs, mix up a gooey blood clot and even touch a real heart. Explore the science of blood and see how we can diagnose disease with some cutting edge technology. Take a closer look at the heart, lungs and oxygen in *Don't Hold Your Breath*, and find out what really happens when we get cuts and bruises in the Scab Lab.

10am-4pm (half-hourly)

**PONGY POTIONS**

**PRE-BOOKING ADVISED**

AGES 8+

Cook up the stinkiest smells imaginable and design your own sweet-smelling perfume. (But please leave your natural stinks at home!) The science of scent is full of surprises – smells can change your emotions, make you feel sick and even make someone fall in love with you.

10am-4pm (hourly) • 45 minutes

**ART ON SHOW**

ALL AGES

View the works of artists and designers inspired by science. Look out for *Robot Visions* by Richard Firth and *Catalytic Clothing: Red Planet Dress*, a dress by Helen Storey, Tony Ryan and Trish Belford that purifies the air. Not forgetting an exhibition by art-science collaborative ASCUS that will change the way you look at maps and data forever.

**HAVE A CLEANER, GREENER FESTIVAL**

Please use public transport to visit us at the City Art Centre if you can. Show us your bus or train ticket (or your bike) when you arrive and you'll get a free Science Festival cotton bag or science goodie. Most Science Festival venues can be reached by bus. See page 44 for bus route details.



**OPENING HOURS**

Saturday 31 March – Saturday 14 April  
9.30am – 4.30pm (not 1 or 8 April)  
Allow 4-5 hours

**DAY PASSES**

Adult	£6.90	Child aged 3-6	£6.50
Adult concession	£5.50	Child under 3	FREE
Child aged 7+	£8.90		

**FACILITIES**

Packed lunch area, secure buggy park, cloakroom, café and shop.

**EARLY BIRD BOOKING**

City Art Centre Weekends Book before 24 March and get £1 off all children's day passes on Saturday 31 March, Saturday 7 and Saturday 14 April (children must be accompanied by an adult). Some events have limited capacity but you can reserve up to three in advance with the purchase of a Day Pass. Use the grid below to plan your day.

		START TIMES													
		10.00	10.30	11.00	11.30	12.00	12.30	1.00	1.30	2.00	2.30	3.00	3.30	4.00	4.30
AGES 3+	IMAGINATION GARDEN (20mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	STORYTIME TENT (20mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
AGES 5+	SPLAT-TASTIC (45mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	JUNGLE SAFARI (40mins)		■	■	■	■	■	■	■	■	■	■	■	■	■
AGES 7+	UNWRAPPING THE MUMMY (45mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	MINI SCIENTISTS (30mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	DIG UP A DINOSAUR (40 mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
AGES 8+	ADVENTURE-BOTS (45mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	ER (40 mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	RAMPAGING CHARIOTS (45mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	PONGY POTIONS (45 mins)	■	■	■	■	■	■	■	■	■	■	■	■	■	■

**GIFT AID SCHEME**

The Edinburgh Science Foundation, which runs the Edinburgh International Science Festival, is an educational charity and all ticket prices for City Art Centre events include a 10% donation. This allows us to reclaim the tax you pay to visit through the Gift Aid Scheme – every pound you pay is worth £1.25 to us. These donations help make the Science Festival accessible to those on lower incomes. If you are not a UK taxpayer or do not wish to make a charitable donation, the admission prices for the City Art Centre are as follows: adults (£6.27), adult concessions (£5.00), child aged 7+ (£8.09), child aged 3-6 (£5.90).

*giftaid it*

# SCOTTISH STORYTELLING CENTRE



packed with **tall tales, science stories and fabulous yarns**



## LEND ME YOUR EAR...

Monday 2 April to Monday 9 April

Following the success of last year's collaboration with the Scottish Storytelling Centre, we are pleased to announce another great line-up at this fantastic venue for 2012. Purpose-built for entertaining and engaging young minds through

the spoken word, the Storytelling Centre will host a range of fun events from Monday 2 to Monday 9 April, including visits from some well-known children's writers and science-inspired storytelling sessions.

### OOPS! ANOTHER BRIGHT IDEA

AGES 7+

What do crashing and flying, the shocking truth of light bulbs, and sharp teeth and animal intelligence have in common? Come on a journey of scientific discovery and invention with storyteller **Linda Bandelier** and discover how mishaps become bright ideas.

Monday 2 April • 10.30am (1 hour) • £4

### PLANET BASHER

AGES 7+

Take a trip through the solar system and beyond with best-selling illustrator **Simon Basher** and science expert **Dan Green** – the team that creates the Basher Science books. Peek behind the scenes of the 'Basher Lab' to see how they create their crazy characters, and then help bring a special Science Festival character to life in this interactive show.

Monday 2 April • 1pm (1 hour) • £4

Presented by Macmillan Children's Books

### LOON ON THE MOON

AGES 5+

Meet the Loon, who lives on the Moon, as he sets off on a fantastic intergalactic adventure – meeting all sorts of weird and wonderful creatures along the way! Join author **Chae Strathie** in a fast-paced hour of imaginative, interactive fun. *The Loon on the Moon* has been shortlisted for the Scottish Children's Book of the Year for younger readers.

Monday 2 April • 3pm (1 hour) • £4

Presented by Scholastic Children's Books

### FROM TREES TO GALAXIES: WONDER TALES FROM SCIENCE

AGES 5+

The universe is an amazing place, so come and explore its mysteries through story! Storyteller **Alette J Willis** has worked with local scientists to develop original stories for children. In this session, she mixes these scientific wonder tales with ancient creation myths.

Tuesday 3 April • 10.30am (1 hour) • £4

### Z-REX

AGES 9+

A super-intelligent dinosaur is on the loose. He is a powerful, merciless killer – and is after one boy from Edinburgh, 13-year-old Adam Adlar. Z-Rex is an exciting, thrilling adventure story for older children who enjoy sci-fi page-turners. Join author **Steve Cole** and learn more about this fantastic book.

Tuesday 3 April • 1pm (1 hour) • £4

Presented by Random House

### ASTROSAURS

AGES 9+

On the incredible spaceship DSS Sauropod, Captain Teggs, Gypsy, Arx and Iggy fight evil, right wrongs... and eat lots of grass! Author **Steve Cole** talks about these fun characters and the big space adventures they face in his acclaimed *Astrosaurus* series.

Tuesday 3 April • 3pm (1 hour) • £4

Presented by Random House

### WHICH CAME FIRST...

AGES 7+

Join storyteller **Amanda Edmiston** as she explores the use of plants and the roles they have in fairy stories and legends. But what did come first? Was it the science or the stories? If the weather suits, there may be a garden adventure as well!

Wednesday 4 April • 10.30am (1 hour) • £4

### HOW BIG CAN WE GO, HOW SMALL CAN WE GO?

AGES 6+



What would the world look like if you were the size of a bug? With our human eyes we can see objects that are as small as millimetres and as large as kilometres, but how do we see things smaller and larger than that? Join engineer **Jamie Gallagher** to explore the hidden worlds all around us, swim with single celled organisms and float in space with giant stars.

Wednesday 4 April • 1pm (1 hour) • £4

### DIABOLICAL BADDIES, ECCENTRIC PROFESSORS & BOY-EATING MONSTERS

AGES 5+

**John Fardell's** picture books and adventure novels are full of amazing inventions, extraordinary creatures and reality-stretching scientific ideas. Join this award-winning author-illustrator as he shows us the scribbly processes behind his work and gets us to join in with the creation of a new invention and monster drawings.

Wednesday 4 April • 3pm (1 hour) • £4

### EUREKA! ANCIENT GREECE & ITS BRILLIANT SCIENTIFIC DISCOVERIES

AGES 3+

A celebration of science from ancient Greece. Storyteller and puppeteer **Carolyn Latham** and her friendly little dog invite everyone to go back in time to discover the stories behind the science.

Thursday 5 April • 10.30am (1 hour) • £4

### TAFF IN THE WAAF & BLETCHLEY PARK

AGES 6+

**Mick Manning's** mother worked as a listener for Bletchley Park, centre of the Allies' code-breaking efforts in WW2. With live drawing and readings from their fascinating book, Mick and **Brita Granström** will bring the exploits of Taff and Bletchley Park to wonderful life. *Taff in the WAAF* won the 2011 English Association Award.

Thursday 5 April • 1pm (1 hour) • £4

Presented by Frances Lincoln Publishers

### JORDAN STRYKER: CYBER TERROR

AGES 11+



Discover the true scientific facts behind **Malcolm Rose's** bionic action hero, Jordan Stryker, and the technology and real-life threats that inspire the series. You can even shake hands with a working bionic hand, courtesy of Touch Bionics.

Friday 6 April • 1pm (1 hour) • £4

Presented by Usborne Publishing

### SHEARWATER: SEABIRDS, STORIES, SONGS & SCIENCE!

AGES 8+

Follow the extraordinary lifecycle of the manx shearwater with biologist-storyteller **Malcolm Green** and musician **Tim Dalling**, and explore the relationship between people and seabirds.

Friday 6 April • 2pm (90 minutes) • £4

### MAC-A-STORY: CHAMPION OF CHAMPIONS!

AGES 5+

Join **Mac-a-Story** for a mythological Olympics, featuring high-energy stories, songs and drama about the gods and heroes who have inspired sporting triumph through the ages. Learn how the body enables these sporting achievements.

Monday 9 April • 10.30am (1 hour) • £4

# ROYAL BOTANIC GARDEN EDINBURGH



Royal Botanic Garden Edinburgh

## Ten days of **cooking, tasting,** and **scientific discovery**



### COME DINE WITH US...

Open daily from Saturday 31 March to Monday 9 April between 10am and 5pm

This spring, the Royal Botanic Garden Edinburgh is having adventures with food. Head down for ten days of hands-on interactive 'Science on your Plate' activities, live cooking demos with Scotland's top chefs and leading scientists, messy food fun for children, exclusive dining experiences for adults and some very special chocolaty Easter Sunday treats.

Check our website and twitter @ScienceonaPlate for the latest news and updates. Book in advance or pay on the door.

Presented by Royal Botanic Garden Edinburgh in partnership with five of Scotland's leading agricultural and nutritional research institutes. Funded by the Scottish Government and supported by the People's Postcode Lottery.

#### SCOTTISH SCIENCE ON A PLATE EXHIBITION



Do you know where the food on your plate comes from? Or who was involved in producing it? By browsing our market stalls and viewing Carlo D'Alessandro's exceptional portraits, you can find out more about Scotland's food science, RBGE's Edible Gardening Project and allotment gardening.

Tuesday 2 February – Sunday 15 April inclusive • 10am-6pm daily • Ground Floor, John Hope Gateway • Free – just drop in

Supported by Scottish Allotments and Gardens Society

#### JUNIOR CHEF CHALLENGE

AGES 5+



These hands-on activities for children will help them learn about healthy eating and stimulate an interest in how food reaches their plate. Our programme of drop-in food events for children and families will wake up tired taste buds and encourage participants to be a little more adventurous and try something different.

Saturday 31 March – Monday 9 April

#### STIRRIN' STUFF CHILD-FRIENDLY COOKING

ALL AGES

Children can get messy in these fun, hands-on cooking sessions.

Saturday 31 March and Sunday 1 April 11.15am, 12.15pm, 1.30pm, 3pm (40 minutes) • £3 per child



Have a cleaner, greener festival.

#### THE APPLE SHOW

AGE 8+

An inspiring theatre show exploring the links between people, food and the environment.

Monday 2 April • 12noon and 2pm (1 hour) • £3 per child

Presented by Eco Drama (ecodrama.co.uk)

#### COW TO CARTON

Find out where milk comes from and the route it takes from the farm to the fridge. Milk Mable the cow and take part in butter-making sessions. With the Royal Highland Education Trust.

Tuesday 3 April • 11.15am, 12.15pm, 1.30pm, 3pm (40 minutes) • Tickets £1 per child

#### ANATOMY OF YOUR DINNER

Dissect a dinner plate to find out where your fruit and veg comes from, and where on the plant they grow. With the University of Edinburgh.

Wednesday 4 April – Saturday 7 April 11.15am, 12.15pm, 1.30pm, 3pm (40 minutes) • Tickets £1 per child

#### CHOCOLATE TREE WORKSHOP

Discover how chocolate is made from the chocolate tree, and make your own Easter goodies to take away, including chocolate nests and eggs with soldiers. The chocolatiers will reveal some of their secrets in this messy but fun Easter celebration.

Sunday 8 April • 11.15am, 12.15pm, 1.30pm, 3pm (40 minutes) • Tickets £5

#### GLASS HOUSE TEA-TIME ADVENTURE

ALL AGES

Delight in a tea-party, treasure hunt, tropical treats and magic tricks, and discover who gets the cake and who gets the crumbs on a journey around the world. Follow the Easter rabbit and enter the Looking Glass-houses for an afternoon tea-time adventure.

Sunday 8 April • 1.30pm-4pm • Palm House, Royal Botanic Garden • Tickets £4.50 (concessions £3.50, children £1)

#### BUG BUSTERS

ALL AGES

Uncover the amazing world of our immune system and have fun learning how our super cell heroes seek out and defend against invading nasties. Join us and discover what powers these bug-busters have and how vaccines can help in the fight against disease. With The Moredun Research Institute in collaboration with the British Society for Immunology.

Saturday 14 April – Sunday 15 April Free (no ticket required)

**REAL-LIFE SCIENCE KITCHEN**

AGES 8+

These interactive cooking demonstrations bring together top chefs and leading scientists from Scotland's research institutes. While chefs prepare innovative dishes, the audience will be able to quiz our experts about the food on the menu.

**Saturday 31 March – Monday 9 April**  
11am, 12.30pm, 2pm, 3.30pm  
(45 minutes) • £3

**HEALTHY HAPPY MEAT**

Scotland's reputation for high-quality meat relies on high standards for the welfare, health and diet of our livestock. Meet some of the experts who use science to help farmers maintain meat quality, and catch up with top chefs, who will demonstrate how to prepare prime Scottish meat so that taste and nutritional value are preserved. With the Scottish Agricultural College and Rowett Institute of Nutrition and Health.

**Saturday 31 March – Sunday 1 April**  
11am, 12.30pm, 2pm, 3.30pm  
(45 minutes) • £3

**SUPERFOODS: SCIENCE OR MYTH**



Scottish oats and potatoes remain as popular as ever, and the quality of our soft-fruit is world famous. Some of our natural delicacies have even been termed 'superfoods' but is this science or just hype? Top chefs will be on hand to transform traditional ingredients into delicious meals! With the James Hutton Institute and Rowett Institute of Nutrition and Health.

**Monday 2 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**MADE IN SCOTLAND**

Meet the food engineers and plant doctors who not only create novel varieties of crops but also battle the bugs and beasts that want to devour them before they ever make it to our tables. Discover how the humble Scottish-grown staples of potatoes and cereals contribute to the nutritional value of our diet.

**Tuesday 3 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**FRESH FISH FROM THE FARM**



More and more of the fish and shellfish we buy comes from fish farms. How does the quality of farmed fish vary? How do marine scientists ensure the quality of Scottish farmed fish is top class? And how should we be handling it and cooking it in the kitchen to make the most of its sea-fresh flavour and nutritional value? With Marine Science Scotland.

**Wednesday 4 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**SUSTAINABLE SEA FISH**



Britain has one of the longest coastlines in Europe and a rich fishing heritage. How can we ensure our vital commercial sea fisheries keep on supplying us with delicious fish? How does marine science help us decide what we can catch and still enjoy our fish supper in the future? Scientists and chefs help us balance choice, taste and sustainability. With Marine Scotland Science and Seafood Scotland.

**Thursday 5 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**MALAYSIAN SPICE KITCHEN**



Spices are at the heart of Malaysian food, with the ginger family taking a leading role. Join chef **Norman Musa** and ethnobotanist **James Wong** on an exploration of the uses and science of gingers. Taste delicious Malaysian food and find out if the health claims made about ginger species are true.

**Friday 6 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

Supported by Tourism Malaysia

**EATING ON THE WILD SIDE**

The seaweed-gathering season is in full swing and the first green shoots are ready for picking, so it's time to sample the 'taste of spring' with **Miles Irving**, author of *The Forager Handbook*, and River Cottage's **John Wright**. They will share their experiences of eating on the wild side by cooking up some wild treats and discussing the health and sustainability of nature's larder.

**Saturday 7 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**FOOD OF THE GODS**



Devilish or divine, the food of the gods is celebrated everywhere on Easter Day. Chocolatier **Nadia Ellingham** will take you through the whole delicious process of chocolate making and tasting. Find out the truth about chocolate and health, explore the science of chocolate and discover if you are a 'super taster'.

**Sunday 8 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

**FROM PLOT TO PLATE**



Food doesn't get any fresher or better than the veg straight out of your own garden. Learn how easy it is to start your own vegetable patch from the Edible Gardening Project team, while chef **Neil Forbes** showcases delicious recipes you can create with your own home-grown produce.

**Monday 9 April • 11am, 12.30pm, 2pm, 3.30pm** (45 minutes) • £3

Supported by the People's Postcode Lottery

**DON'T MISS...**  
Adult events at the Botanics, including a foraging breakfast and an aphrodisiac evening. Pages 33 & 34.

**ST ANDREW SQUARE**

**INVISIBLE WORLDS**

ALL AGES

From the majesty of nature to the intricate workings of the human body, continued advances in science and technology enable us to see and understand our world like never before. Using a variety of cutting-edge imaging techniques, scientists and artists will capture your attention and stimulate your imagination, revealing sights usually invisible to the naked eye.

*Invisible Worlds* will take you on a unique and intriguing journey through the wonderful (but often unfamiliar) realms of the very big and the incredibly small, the near and the far. It will reveal some of the complexity and beauty of nature – in fields as varied as biomedical imaging and astronomy – with a selection of striking images that straddle the borders between science and art. Look closely, you may never see the world in quite the same way again!

WITH IMAGES FROM:

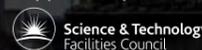
- The National Maritime Museum, Astronomy Photographer of the Year (2009–2011)
- The Royal Photographic Society, International Images of Science Exhibition 2011
- Nikon Small World Photomicrography Competition 2011
- NASA, Incredible Photos from Space

**Tuesday 7 February – Sunday 15 April**  
8am–6pm • Free (no ticket required)  
St Andrew Square

Lead supporter:



Supported by:



With thanks to:

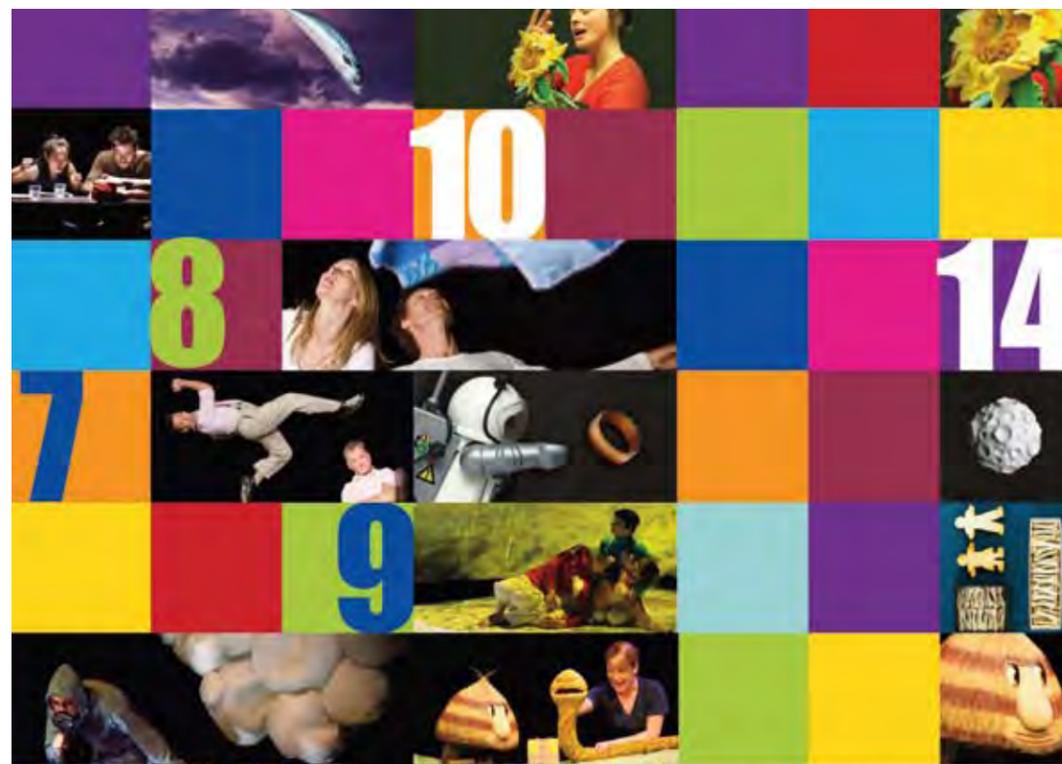


**CATALYTIC CLOTHING: FIELD OF JEANS AND KILTS**

*Catalytic Clothing* by artist/designer **Professor Helen Storey MBE** and scientist **Professor Tony Ryan OBE** is an exploration of how clothing can be used as a surface to purify air. For the first time, a small field of bespoke denim kilts, kindly produced in Edinburgh by 21st Century Kilts, will be catalysed and 'planted' with denim jeans in St Andrew Square to demonstrate this compelling idea which has global significance for the air we breathe and the reduction of harmful pollutants.

**Wednesday 4 April • St Andrew Square**  
Free (no ticket required)

[www.catalytic-clothing.org](http://www.catalytic-clothing.org)



**FOR SCHOOLS AND FOR FAMILIES - ALL AGES AND STAGES AT VENUES ACROSS EDINBURGH AND BEYOND**

**MONDAY 7-14 MAY 2012**

**SIGN UP TO OUR MAILING LIST FOR MORE INFORMATION AND TO RECEIVE A FESTIVAL BROCHURE BY VISITING [WWW.IMAGINATE.ORG.UK](http://WWW.IMAGINATE.ORG.UK) OR BY TELEPHONE ON 0131 225 8050**

The Festival is produced by **Imagine** promoting and developing performing arts for children and young people across Scotland. Imagine is a company limited by guarantee. Company No. SC10855. Charity No. SC016437.



# NATIONAL MUSEUMS SCOTLAND



THE UNIVERSITY of EDINBURGH



packed with **hands-on science,** sporting **chances** and the **opportunity** to **bust a move**

## GET MOVING...

Open daily from Friday 30 March to Sunday 15 April, between 10am and 5pm

This spring, the Edinburgh International Science Festival returns to the National Museum of Scotland and the National Museum of Flight to bring science to life with a series of engaging and entertaining workshops, talks, exhibitions and demonstrations.

The varied programme takes place throughout the Museum and includes *InMotion*, a bumper celebration of the science of human movement and performance in relation to sport, technology

and dance. There's also hands-on science fun for families with staff and students from the University of Edinburgh – or why not join us after-hours for a series of evening events in the newly refurbished auditorium, featuring lively debate and discussion from international guests, world thinkers and award-winning writers? (Pages 25-41)

To find our events, ask a member of staff or visit our Box Office and Information Centre on Level 1.

## INMOTION

In a year that sees Olympic fever hit the UK, *InMotion* is a series of activities from the Edinburgh International Science Festival to celebrate the science of human movement and performance in relation to sport, technology and dance.

This bumper showcase takes pride of place in the Grand Gallery of the National Museum of Scotland, and explores everything from fitness and power to the science and aesthetics of movement through a series of workshops, performances and interactive exhibits.

Visit the different *InMotion* zones throughout the Grand Gallery. Workshops are in the Museum Learning Centre.

### HIGHLIGHTS:

#### HUMAN LIMITS

Explore and compare the strength and power of your muscles against that of elite athletes. Investigate human endurance with the ice tub test and NVA's *Speed of Light* project.

#### HOW DO YOU DANCE?

Take part in our dance experiment to help scientists learn how our hormonal and genetic makeup shapes the way we dance and how this determines who we 'fancy'!

### LIVE DANCE

Drop by the dance floor to watch performances from our partners, Scottish Ballet and Dance Base. Visit our website for up-to-date performance times on Friday 6 and Saturday 7 April.

Entrance to *InMotion* and the National Museum of Scotland is free but access to the workshops listed below is charged and bookable through the Science Festival box office.

*InMotion* was developed with support from the Scottish Government's Edinburgh Festivals Expo Fund.



The Scottish Government

Also supported by:



#### Creative partners:

- Dance Base
- Napier University
- NVA
- Scottish Ballet
- Touchbionics
- University of Edinburgh, School of Informatics
- University of Hertfordshire

### WORKSHOPS

#### MAKE A MOVE

AGES 7+



Discover how scientists developing artificial limbs are making use of some of the most exciting new robotic technologies around. Use mechanical hands to explore the anatomy of limbs, find out how they are controlled and discover how machines attempt to mimic human movement. This engaging workshop combines human biology with a mixture of technologies to reveal a fast moving, futuristic area of science.

Friday 30 March – Sunday 15 April  
10.45am, 11.45am, 12.45pm, 2.30pm, 3.30pm (45 minutes) • £3.50

### POWER FROM THE PEOPLE

AGES 7+



In August 2012, NVA's *Speed of Light* will transform Arthur's Seat in Edinburgh with a series of night-time events as part of the Edinburgh International Festival. Walkers and runners will activate equipment partially designed to harvest energy, animating the hillside with light. In this workshop, we'll explore some of the challenges this project presents and investigate the technology needed by the NVA creative team in their attempt to generate enough energy to create this incredible piece of public art.

Friday 30 March – Sunday 15 April  
10.45am, 11.45am, 12.45pm, 2.30pm, 3.30pm (45 minutes) • £3.50

### MOVE IT



Join Scottish Ballet for a fun creative dance workshop. With no experience necessary, this is a great chance to come along, get moving and explore some of your own ideas in a friendly environment with live musical accompaniment. Please wear comfortable clothing, and ballet shoes or bare feet.

Friday 6 April • 4-6 years: 10.30am and 11.30am (45 minutes) • 7-9 years: 2pm and 3.15pm (1 hour) • £5

### FIND OUT MORE...

#### NVA's Speed of Light

[www.speedoflight2012.org.uk](http://www.speedoflight2012.org.uk)

**ACTIVITIES AND WORKSHOPS**

Unless otherwise stated, all activities are free and suitable for the whole family – just drop in.

**LAB RATS SCIENCE CHALLENGE TRAIL**

AGES 4+

There's lots of science to discover in the museum for those Lab Rats clever enough to sniff it out. Follow your whiskers and try to complete all the challenges. Pick up your copy in the Museum from the Info Zone on Level 3 or the Science Festival info centre on Level 1.

Thursday 29 March – Sunday 15 April

**LAB RATS!**

AGES 4+

We put mini scientists through their paces in our special laboratory with some simple experiments. It's messy, museum-y and fun! Why not pick up our Lab Rats science challenge trail too?

Monday 2 April – Friday 6 April, Monday 9 April – Friday 13 April • 11am, 12noon, 2pm, 3pm (25 minutes) • Free (sign up on the day) • Learning Centre, Level 4

**BAFTA GAME DESIGNERS WORKSHOP**

AGES 11+

In this free workshop, video games professionals will reveal how popular games were made, and will help the participants to design a game of their own. The workshop is in support of the BAFTA Young Game Designers competition, where entrants can win some amazing prizes, including work experience with a games studio, and a working prototype of their game developed with games professionals. [www.bafta.org/ygd](http://www.bafta.org/ygd)

Sunday 1 April • 1pm (90 minutes) Free (ticket required) • Learning Centre, Level 4

Presented by BAFTA

**ENIGMA MACHINE**

AGES 12+

The 100th anniversary of the birth of Alan Turing, so-called father of modern computing, is on 23 June this year, so it seems only fitting that the Science Festival commemorates it. Best known for his contribution to breaking German codes at Bletchley Park during World War Two, Turing's name is synonymous with the Enigma machine. See one for yourself and hear the fascinating story of the man and the machine.

Saturday 7 April • 1pm (1 hour) • Free (ticket required) • Learning Centre, Auditorium, Level 1

**FAMILY EVENTS FROM THE UNIVERSITY OF EDINBURGH**

Discover science with real scientists from The University of Edinburgh. For free family-friendly, hands-on activities, drop into the Learning Centre, Level 2 (1-15 April) and Level 4 (6-10 April). Details of ticketed events are shown below.

**CSI AT THE MUSEUM**

There has been a crime at the Museum! Use chemistry and maths to solve it.

Sunday 1 April – Thursday 5 April • Drop In

**OUR EARTH**

Explore some of the forces that shaped our Earth, and how we can protect it.

Sunday 1 April – Thursday 5 April • Drop In

**POP-UP ENGINEERING**

Make pop-ups – ingenious engineering mechanisms where flat cardboard shapes spring into exciting 3D models.

Sunday 1 April – Thursday 5 April • Drop In

**HIGGS OR NO HIGGS?**

That's the big question for particle physics in 2012.

Sunday 1 April – Tuesday 10 April • Drop In

**SCI-FUN**

A wide range of hands-on science exhibits for a wide range of people!

Friday 6 April – Tuesday 10 April • Drop In

**MICROWORLD**

Find out how biologists use microscopes to make discoveries, and have a go yourself!

Friday 6 April – Tuesday 10 April • Drop In

**HUMAN AND ANIMAL MEDICINE**



Discover what Med and Vet scientists are doing to keep people and animals healthy.

Wednesday 11 – Sunday 15 April • Drop In

**WORKSHOPS**

**LIFE THROUGH A LENS**

AGES 8+

Travel back through time to meet the first scientists, get hands-on with microscopes and make your own scientific discoveries.

Friday 13 April – Sunday 15 April 11.30am and 2pm (90 minutes) • £3 Learning Centre, Level 4

**SHOWS**

**THE CHEMISTRY SHOW**

ALL AGES

Paul Murray returns with exciting experiments and some laughs. You might even learn something!

Sunday 1 April – Thursday 5 April • 11am (45 minutes) • Free (tickets required) Auditorium, Level 1

**THE SENSES SHOW**

AGES 8+

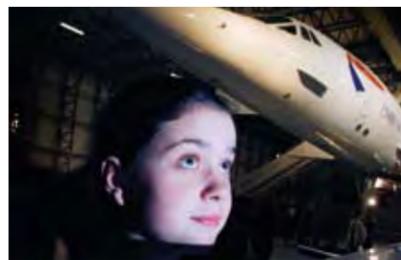
Discover with the SCI-FUN team how our brain interacts with our senses and how things are not always as they seem.

Friday 6 April, Monday 9 April, Tuesday 10 April (2pm) • Saturday 7 April (11am) • 45 minutes • Free (tickets required) • Auditorium, Level 1

**NATIONAL MUSEUM OF FLIGHT (EAST LOTHIAN)**

**FLYING START**

AGES 3+



What holds an aeroplane in the air and what makes it come back down to earth? Discover the answers at our interactive science show, and have a go at building your own small glider.

Saturday 31 March – Sunday 15 April 12noon-4pm • Free with admission

**LOOKING FOR DR BUNHEAD?**

See page 20.

**AROUND TOWN**

**Big** days out,  
**little** surprises  
**and special events**  
for everyone



**SOMETHING FOR EVERYONE**

The Edinburgh International Science Festival is the ideal way to keep idle minds entertained this Easter. With a vast and varied selection of events on offer,

there's sure to be a number of scientific distractions to appeal to all members of the family. These events are categorised alphabetically by venue.

**AROUND EDINBURGH  
STREET SCIENCE**



With mind-boggling experiments and dazzling science demos, our bikes take street performance to a whole new level. We don't just make balloon animals, we dip them in liquid nitrogen! Find out about all the latest developments in Scottish science and witness explosions, weirdness and plenty of mess.

Look out for our Street Science team on 24, 25 and 31 March and 1, 7 and 8 April at locations across the city. You'll find us in the city centre, South Queensferry, Stockbridge and Leith. Visit [www.sciencefestival.co.uk](http://www.sciencefestival.co.uk) or follow us on Twitter @EdSciFest for real-time Street Science updates.

Supported by: **EDINBURGH**  
THE CITY OF EDINBURGH COUNCIL

Supported by City of Edinburgh Council – Building Stronger Town Centres and supporting Economic Development throughout Edinburgh.

**IOP Institute of Physics**

**EDINBURGH ZOO**

**GOING NATIVE**

Take part in a host of interactive activities, crafts and games to learn more about Scottish native species, including beavers and water voles. It's a chance to discover more about Edinburgh Zoo's work in the field with these and other wonderful Scottish animals.

**Saturday 31 March – Thursday 5 April  
11am-3pm (drop in) • Education Centre  
Entry free with zoo admission**

**BIRD SURVEY BREAKFAST AT THE ZOO**

**AGES 12+**

A rare opportunity to walk around the zoo and not only view the amazing animal collection in the quiet of the morning but also to look in detail at the many native birds that can be seen in the 82 acres of beautiful gardens. After the tour, enjoy a relaxing breakfast in the Mansion House. All under 16s must be accompanied by a paying adult.

**Wednesday 4 April • 7am (2 hours) • £10**

NB Walk includes hills.

**LIVING LINKS TO HUMAN  
EVOLUTION**

**ALL AGES**

Look over the shoulders of university researchers as they study our closest living relatives. Chat to the researchers about their work and take part in a host of related activities, from computer games to trying your hand at the problems set for chimpanzees.

**Saturday 31 March – Thursday 5 April  
Primate Research Centre • Entry free  
with zoo admission**

NB Zoo opening times are 9am-6pm (last entry 5pm).

**GEORGE SQUARE THEATRE**

**DR BUNHEAD'S BIGGER  
BANG THEORY**

**AGES 7+**



In the beginning was the word, and the word was BANG! TV's most extreme scientist, **Dr Bunhead**, investigates the science of bangs, burps and whooshy bits. Audience volunteers help launch rockets, blow up Barbie and detonate Sponge Bob Rectangle Pants.

**Saturday 7 April – Sunday 8 April,  
3pm (1 hour) • Monday 9 April,  
11.30am (1 hour) • £5.50 child,  
£4.50 adult, £18 family ticket**

Presented by The University of Edinburgh

**NATIONAL PORTRAIT  
GALLERY**

**PORTRAIT DETECTIVES:  
SCIENCE SPECIAL**

**AGES 3+**

Portrait detectives Raeburn and Rothko need your help to investigate our amazing Pioneers of Science gallery – featuring portraits of Alexander Fleming and John Logie Baird, and even Dolly the sheep's death mask! Pick up a kit, follow clues and solve some slippery science mysteries.

**Sunday 8 April • 2pm • Free (no ticket  
required)**

**SUPER SCIENCE CITY**

**ALL AGES**

Join **Mac-a-Story** for some storytelling, songs and fun celebrating the Enlightenment! Hear tales of characters who were around at the dawn of the modern scientific age and pit your wits against them in 'The Great Scientific Truth or Bleepers Quiz'.

**Thursday 12 April • 11am and 2pm  
(45 minutes) • Free (no ticket required)**

Supported by Edinburgh World Heritage

**OCEAN TERMINAL**

**THE FUTURE'S BRIGHT**



Join us to make a simple wind turbine and test it in the wind tunnel to see how fast it turns. Jump on the energy bike to see how much energy it takes to walk, cycle or drive to school. Or try out one of a number of fun activities that show how easy it is to have a cleaner, greener lifestyle.

**Saturday 31 March – Sunday 15 April  
(11am-5pm) • Free (no ticket required)**

NB Allow around 30 minutes to do all the activities.

Supported by: **natural  
scotland**  
SCOTTISH GOVERNMENT

**OUR DYNAMIC EARTH**

**IN THE FOOTSTEPS OF GIANTS**

**AGES 8+**

Walk in the footsteps of Edinburgh's own time lord, James Hutton, and find out how one man's vision combined with the rocks of Salisbury Crags to change forever our understanding of how the world works. The programme includes a walking tour of Salisbury Crags, plus a showing of the film, *Rock Opera*, which explores the story of James Hutton.

**Sunday 1 April, Tuesday 3 April, Thursday  
5 April – Saturday 7 April • 2pm (2 hours  
30 minutes) • £10 adults, £8 concession,  
£4 children**

**BEST OF SCOTTISH SCIENCE**

**ALL AGES**

Meet the minds behind seven of Scotland's most exciting scientific advances, selected for the Royal Society's prestigious annual summer science exhibition in London. From invisibility cloaks to obesity, stem cells and the birth of a new ocean, try out the interactive exhibits and question the scientists about your discoveries.

**Sunday 1 April (12noon-5pm), Monday  
2 April – Wednesday 4 April (10am-5pm)  
Free with admission to Our Dynamic Earth**

**SOLAR SYSTEM ROCKS**

**ALL AGES**

Explore the solar system by visiting this exciting hands-on workshop. Meteorites are rocks from space and are our 'peek-holes' into the origin and history of the solar system. You will be able to hunt for real meteorites in a desert and learn how to tell a meteorite from a 'meteorwrong'. You'll also be able to explore a simulated Martian landscape by using a remote-controlled rover and discover the challenges of being a space mission controller.

**Wednesday 4 April – Friday 6 April  
(10am-5.30pm) • Drop in • Free with  
admission to Our Dynamic Earth**

**SNOWBALL EARTH: THE BIG FREEZE**

**AGES 8+**

Imagine a frozen, icy world like 'Hoth' in Star Wars and you could be looking at the Earth 640 million years ago. Examine the evidence for this 'Snowball Earth'. Handle rocks that have helped unravel this intriguing puzzle, or pick up fascinating fossils that reveal how life survived in the big freeze.

**Saturday 31 March – Wednesday 11 April  
11am, 1.30pm, 3pm (30 minutes) • Free  
with admission to Our Dynamic Earth,  
or £2 for just the event**

**ROYAL COLLEGE OF  
PHYSICIANS**

**EDINBURGH: THE MEDICAL CITY**

**AGES 12+**

In this illustrated presentation in the historic Royal College of Physicians, **Professor David Purdie** and Sibbald Librarian **Iain Milne** will use unique evidence from the college's spectacular collection to answer the question: How did a small, northern city become a major centre for international medical science?

**Wednesday 11 April • 6pm (1 hour)  
£8 adults, £6 child/concession**

**ROYAL OBSERVATORY  
EDINBURGH**

**TELESCOPES IN SPACE**

**AGES 8+**

Scientists and engineers at the Royal Observatory Edinburgh don't just make things for telescopes on the ground, they also design and make things that go into space. Come along to this fun afternoon, make and launch a rocket, and make your own space telescope model. All children must be accompanied by an adult.

**Tuesday 3 April, Tuesday 10 April  
2.30pm (90 minutes) • £5 (£4 for  
accompanying adults)**

**STARLAB PLANETARIUM**

**AGES 7+**

Come and marvel at the night sky in our planetarium. All children must be accompanied by an adult.

**Thursday 5 April, Thursday 12 April  
3pm (1 hour) • £5 (£4 for accompanying  
adults)**

**SCOTTISH SEABIRD CENTRE**

**PROFESSOR EGGHEAD'S AQUA  
ADVENTURES**

**AGES 4+**

We have travelled the world with Tommy the Tern, battled the elements to save Puffin Planet and now it is time to dive deep under the sea in Professor Egghead's Aqua-Adventures. Take a closer look at what weird, wonderful and downright dangerous things live beneath the waves!

**Saturday 31 March – Sunday 15 April  
2pm (45 minutes) • Free with admission**

**SURGEONS' HALL MUSEUM**

**ANATOMY DRAWING DAY**

**AGES 8+**

The study of topographic anatomy and anatomy in dissection is seen as a core activity for artists. This unique course will allow you to study the mechanics of the body with a life model, and also to view the skeletal and muscular structures in dissection through the pathology collections of the Surgeons' Hall Museum.

**Monday 2 April • 9.45am (6 hours,  
15 minutes) • £13**



**Remember  
to recycle this  
brochure!**

**IDENTIFYING HUMAN FACES**

**AGES 12+**

Biological anthropology is the science of human faces which includes reproducing the facial appearance of a missing person. Join **Caroline Wilkinson** to learn about the facial reconstruction techniques used to identify the living and the dead.

**Wednesday 4 April • 1pm (3 hours)  
Free (ticket required)**

**SCOTTISH MEDICINE:  
AN ILLUSTRATED HISTORY**

**AGES 12+**

Meet the leading Scottish medical historians who authored the dramatic story of Scottish medicine and its development from pre-history. These talks will discuss aspects of Scottish medicine, such as the early efforts of holy men and folk healers, and the great achievements of figures including the Monros, Robert Liston and James Syme.

**Tuesday 10 April – Saturday 14 April  
12.30pm (40 minutes) • £5 for entry  
to all five talks (£3 concessions)**

**USHER HALL/THE MOUND**

**BANG GOES THE THEORY LIVE**

**ALL AGES**



In the past two years, nearly a quarter of a million people have put science and technology to the test at BBC One's *Bang Goes the Theory LIVE*. Bang is back in 2012 and promises to be bigger and better than ever! Join the team for a brand new, action-packed show as they test, stretch and explode science live on stage. Then it's your chance to get experimenting in the *Bang Goes the Theory* Interactive Area. Pick up some science tricks to impress your friends, and get hands-on with our interactive exhibits. Check out [bbc.co.uk/bang](http://bbc.co.uk/bang) for more details, exclusive videos and science demos you can try at home.

**Friday 13 April – Sunday 15 April  
Live science shows: 11.30am, 4pm • Free  
(ticket required) • Usher Hall**

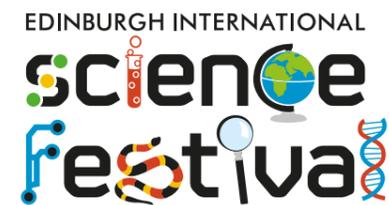
**Interactive Arena: 10.30am-5.30pm  
Drop In • Free (no ticket required)  
The Mound Precinct**



# AT A GLANCE

	MARCH	MARCH	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	APRIL	
	FRI 30	SAT 31	SUN 1	MON 2	TUE 3	WED 4	THU 5	FRI 6	SAT 7	SUN 8	MON 9	TUE 10	WED 11	THU 12	FRI 13	SAT 14	SUN 15
CITY ART CENTRE (9.30am-4.30pm) p6-9				EVENTS THROUGHOUT THE SCIENCE FESTIVAL								EVENTS THROUGHOUT THE SCIENCE FESTIVAL					
SCOTTISH STORYTELLING CENTRE p10-11				EVENTS THROUGHOUT THE SCIENCE FESTIVAL													
BOTANICS (10am-5pm) p12-14		EVENTS THROUGHOUT THE SCIENCE FESTIVAL															
ST ANDREW SQUARE p15	INVISIBLE WORLDS																
						CATALYTIC CLOTHING											
NATIONAL MUSEUM OF SCOTLAND (10am-5pm) p16-18	EVENTS THROUGHOUT THE SCIENCE FESTIVAL																
NATIONAL MUSEUM OF FLIGHT p18		FLYING START															
EDINBURGH ZOO p20		EVENTS THROUGHOUT THE SCIENCE FESTIVAL															
GEORGE SQUARE THEATRE p20									DR BUNHEAD								
NATIONAL PORTRAIT GALLERY p20										PORTRAIT DETECTIVES					SCIENCE CITY		
OCEAN TERMINAL p20	EVENTS THROUGHOUT THE SCIENCE FESTIVAL																
OUR DYNAMIC EARTH p20-21		SNOWBALL EARTH															
			FOOTSTEPS OF GIANTS		FOOTSTEPS OF GIANTS	FOOTSTEPS OF GIANTS											
		BEST OF SCOTTISH SCIENCE															
ROYAL COLLEGE OF PHYSICIANS p21															MEDICAL CITY		
ROYAL OBSERVATORY EDINBURGH p21					TELESCOPES IN SPACE		STAR LAB					TELESCOPES IN SPACE		STARLAB			
SCOTTISH SEABIRD CENTRE p21		PROFESSOR EGGHEAD															
SURGEONS' HALL MUSEUM p21												SCOTTISH MEDICINE: AN ILLUSTRATED HISTORY					
				ANATOMY DRAWING		HUMAN FACES											
USHER HALL/THE MOUND p21																BANG GOES THE THEORY	





## ADD SCIENCE TO YOUR (SOCIAL) LIFE...

2012 sees us deliver a vibrant programme that celebrates ideas and embraces discovery, innovation and creativity in all walks of life. We're bringing science and scientists out of their labs, combining them with everyone from authors and artists to philosophers and politicians, and mixing them up to create all sorts of new and unexpected experiences.

We're delighted to be presenting events in the newly refurbished auditorium at the National Museum of Scotland. Enter the building after-hours via Lothian Street, grab a drink in our café or browse the bookshop. For a night out with a difference, don't miss our programmes at Ghillie Dhu (2-5, 15 April), the Jam House (9-12 April) and our *Future Human* film series at Filmhouse (13-15 April).

If you're curious about the world we live in and our place in it, you'll find fascinating, enlightening and entertaining events of all sorts. Bring along some friends, make a night of it and make science a part of your (social) life.

The Science Festival Events programme is designed for visitors aged 14+. Other age recommendations may apply and tickets for events where alcohol is served will only be available to those aged 18 and over. Proof of age may be required.

### EARLY BIRD OFFERS

Book before Saturday 24 March and take advantage of our early bird offer (must be booked by phone or in person).

### SCIENCE FESTIVAL EVENTS

Buy 4 tickets to events in our Science Festival Events programme and receive a 5th ticket free (cheapest ticket free, only valid for five separate events).

### DERREN BROWN



Officially the Science Festival ends on 15 April but we've extended our programme to present an exclusive event featuring **Derren Brown** in conversation with Richard Wiseman. There is limited capacity so don't miss out. See page 41 for details.

**THROUGHOUT THE FESTIVAL**  
**INVISIBLE WORLDS**

ALL AGES



From the majesty of nature to the intricate workings of the human body, continued advances in science and technology enable us to see and understand our world like never before. Using a variety of cutting-edge imaging techniques, scientists and artists will capture your attention and stimulate your imagination, revealing sights usually invisible to the naked eye.

*Invisible Worlds* will take you on a unique and intriguing journey through the wonderful (but often unfamiliar) realms of the very big and the incredibly small, the near and the far. It will reveal some of the complexity and beauty of nature – in fields as varied as biomedical imaging and astronomy – with a selection of striking images that straddle the borders between science and art. Look closely, you may never see the world in quite the same way again!

WITH IMAGES FROM:

- The National Maritime Museum, Astronomy Photographer of the Year (2009–2011)
- The Royal Photographic Society, International Images of Science Exhibition 2011
- Nikon Small World Photomicrography Competition 2011
- NASA, Incredible Photos from Space

**Tuesday 7 February – Sunday 15 April**  
**8am–6pm • Free (no ticket required)**  
**St Andrew Square**

Image credit: *Culture Plates*, Norm Barker (2009). International Images Science Exhibition 2011, The Royal Photographic Society. Department of Pathology, Johns Hopkins University, Baltimore, Maryland, USA.

Lead supporter:



Supported by:



With thanks to:



**IT'S LIFE JIMMY, BUT NOT AS WE KNOW IT: SCIENCE FICTION IN SCOTLAND**



From pop icons such as Dr Who and Judge Dredd, to political extrapolations and universe-jumping space operas, Scottish writers have been producing science fiction in its many forms for the past 30 years. But the keyboards of Iain Banks, Steven Moffat, Ken MacLeod and others were not the first to explore this territory. What your appetite for discovery with the National Library of Scotland's selection of science fiction treasures, and journey into the past, present and future of this little explored space of Scottish writing.

**Wednesday 28 March – Sunday 15 April**  
**10am–8pm (10am–5pm Saturdays, 2pm–5pm Sundays) • Free (no ticket required) • National Library of Scotland**

Presented by The National Library of Scotland

**SUNDAY 25 MARCH**  
**SCIENCE FESTIVAL CHURCH SERVICE**

The Lord Provost of Edinburgh and the Minister of St Giles' Cathedral invite you to the annual church service celebrating the opening of the Edinburgh International Science Festival.

**11.30am • Free (no ticket required)**  
**St Giles' Cathedral**

**FRIDAY 30 MARCH**  
**WALKING WITH SCIENTISTS**

A tour around the University district featuring stories from the lives of those scientists who lived and worked in this most beautiful and inspiring of European capital cities; Hutton and geology, Hume and philosophy, Maxwell and electromagnetism and the medical exploits of Conan Doyle, Darwin, Knox, Simpson and Lister.

**Friday 30 March, Thursday 5 April – Friday 6 April, Thursday 12 April – Friday 13 April • 12.45pm (2 hours)**  
**£10 • Café Lucia at the Festival Theatre**

Presented by Rebus Tours

**SATURDAY 31 MARCH**  
**EDINBURGH E<sup>2</sup>**



Scotland was home to the Enlightenment, but its role as a centre for ideas and creativity is not simply a historical one. The Edinburgh Enlightenment Exchange – aka Edinburgh E<sup>2</sup> – brings together some of the country's most creative individuals from the sciences, arts, creative industries, business and social enterprise for a day-long showcase. We're bringing scientists together with artists, musicians, authors and other creative innovators to share their ideas, inspiration and passion, and to see what new ideas evolve from this meeting of minds. Join BBC *Material World*'s **Quentin Cooper** as we celebrate Scotland's creative present and (re)imagine our future. See our website for full line-up.

**9am–5pm • Full day £35, Half day £20 (includes refreshments) • National Museum of Scotland Auditorium**

Supported by:



**SATURDAY SHOWCASE:**  
**BEHIND THE SCENES WITH FASCINATING MUMMIES**

AGES 16+

Explore the stories and secrets uncovered by our conservation team as they prepared our Egyptian collections for the *Fascinating Mummies* exhibition. A thrilling insight to the science behind the scenes at our museum.

**1.30pm–4pm • £10/£8 (refreshments included) • National Museum of Scotland**

**SUNDAY 1 APRIL**

**LET'S BE FRIENDS: ROBOT COMPANIONS**

The press likes to scare us with wild tales of robots taking over the world. But in real life, researchers are trying to produce robots that fit comfortably into our lives: at home, at work, at play. Join Heriot Watt University's **Professor Ruth Aylett** to hear about new work on human-robot interaction, see videos and a real robot, and put your questions to the experts.

**1pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Presented by Heriot Watt University

**MYSTERIES OF THE HUMAN GENOME**

**Dr Colin Semple**, Head of Bioinformatics at the Medical Research Council Human Genetics Unit, knows that your genome is an amazing thing. It directed your journey from a fertilised egg to the person you are now, and our growing understanding of it promises to revolutionise our view of what it is to be human. Join him as he reveals why.

**3.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

**THE DANCING BRAIN**



The science of dance is fascinating. Did you know that the way you dance is influenced by your hormonal and genetic make-up, and that dancing in certain ways can make you think faster? **Dr Peter Lovatt**, a former professional dancer turned psychologist, aka Dr Dance, will have you dancing, laughing and learning as he leads you through the fascinating science of dance. Come and dance along as Peter reveals some fantastic facts about the science of dance, and shows you how dancing can help you think more creatively. Dancing shoes optional!

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

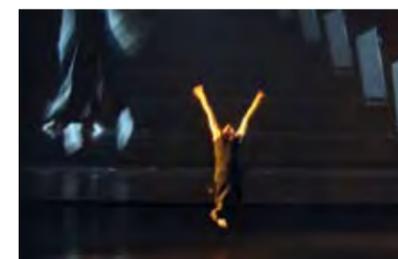
**HISTORY OF SCIENCE THROUGH TEN OBJECTS**



Inspired by Neil MacGregor's award-winning series on the history of the world in 100 objects, physicist and author **Manjit Kumar** takes you on a journey through the history of science. Travel through time and across continents with him as he shares tales of discovery and wonder. Along the way, you'll encounter some of the fascinating characters behind some of science's most important and iconic objects and the revelations they enabled.

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

**MONDAY 2 APRIL**  
**EMOTION AND MOTION**



If someone cried out, would you help them? If someone asked you to remember three simple things, could you? Want to know the answers to these questions and more? The art of dance and the science of psychology come together as former professional dancer turned psychologist **Dr Peter Lovatt** (aka Dr Dance!) explores the science behind these intriguing questions, while dancer and choreographer **Ruth Mills** performs contemporary dance pieces that bring the emotion behind the science to life.

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

**BUILD YOUR OWN TIME MACHINE**



There is no physical law to prevent time travel – nothing in physics to say it is impossible. So surely the invention of a time machine is just a matter of... well, time? At least according to acclaimed science writer **Brian Clegg**. Join him as he shares some secrets – why wouldn't HG Wells's time machine have worked. And what do you need to do to make a real one?

**5.30pm (90 minutes) • £8/£6**  
**Scottish Storytelling Centre**

Presented by Duckworth Publishers

**Don't miss our Earth and Environment series, p31.**

**MADWOMEN IN THE ATTIC**

AGES 18+



The violent and feral Bertha Rochester in *Jane Eyre*, the mysterious *Woman in White* whose escape from an asylum begins Wilkie Collins's gripping thriller, and the terminally delusional Emma in *Madame Bovary*... All famed for their dubious grasp on sanity but were they really mad? Would we today recognise them as mentally ill or were our heroines merely misunderstood, not to mention a tad inconvenient? Journalist and broadcaster **Viv Parry**, lecturer in contemporary fiction **Sarah Dillon** and psychiatrist **Dr Raj Persaud** diagnose our troubled heroines in an evening of scientific and literary detective work.

**5.30pm (90 minutes) • £10/£8 • Ghillie Dhu**

**THE SECRET OF SUCCESS**



From the Greek Default to why Scotland is so rubbish at international football – why do some succeed while others fail? Beliefs over what controls our destiny could be the most important driving forces in our lives. **Dr Raj Persaud** invites you to take part in a unique psychology experiment that explores this vital question.

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

**DARK MATTER**

No-one's ever seen dark matter. Science has struggled to find even a single particle of the stuff. So why do astronomers insist that it's all around us? Astronomer **Andrew Pontzen** and particle physicist (and FameLab winner) **Tom Whyntie** try to convince you that they're not utterly bonkers and that it's not simply a figment of their imagination. Warning: this event will raise profound questions, not just of fundamental physics, but of what we even mean by science... Get ready to cast your vote.

**8pm (90 minutes) • £8/£6**  
**Scottish Storytelling Centre**

Presented by Tree of Physics

# ARE YOU SCI-CURIOUS?

## LATELAB

Throughout the Festival, Inspace will be transformed into *LateLab* – a creative, social and participatory space for adults where they can make, do and interact with art, science and technology.

Come to *LateLab* to continue your Science Festival conversations and enjoy our evening events and activities. You can meet other festival-goers and speakers, take part in genuine experiments and get hands-on with some fascinating stuff.

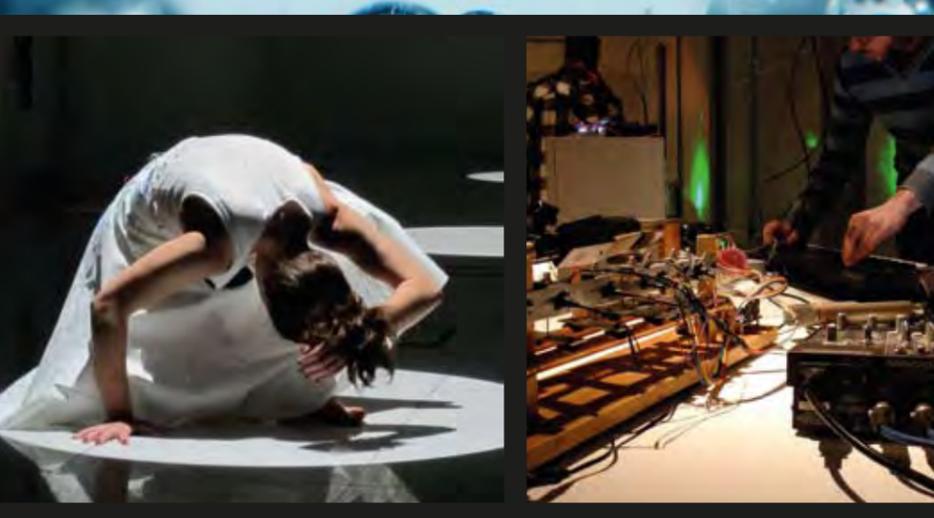
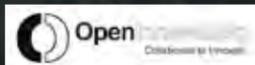
As well as some of Inspace's most popular regular events, including *The Stitch Lounge*, *Electric Bookshop* and *Dialogues*, there will be a series of special Science Festival offerings complementing the lab's research into faith and magic. With talks, performances, films, table-top science and creative catering, no two evenings will be the same. Drop by, take a pew and become part of the experiment!

*LateLab* is a collaboration between the Edinburgh International Science Festival, New Media Scotland and the University of Edinburgh's School of Informatics.

Wednesday to Saturday throughout the Science Festival (7pm-10.30pm) • Free – for table reservations and information: [inspace.ed.ac.uk/latelab](http://inspace.ed.ac.uk/latelab)



Supported by:



### CALORIES AND CORSETS

AGES 18+

Today we are urged from all sides to slim down and shape up, to shed a few pounds and lose life-threatening stones. The media's relentless obsession with size may be a 21st century phenomenon but, as award-winning historian **Louise Foxcroft** discusses with food writer **Alex Renton** (*The Times*), we have been struggling with what to eat, when and how much, ever since the Greeks and the Romans first pinched an inch.

8pm (90 minutes) • £10/£8 • Ghillie Dhu

In association with Profile Books

### TUESDAY 3 APRIL

#### AFFAIRS OF THE HEART

What is sudden cardiac death in the young? What is being done to identify and protect those who might be at risk? What more might be done? Join us for an in-depth discussion of these and other issues about sudden cardiac death in young people. This will be a deliberative event; your views will help to inform how this problem is managed in Scotland. With **Dr John Dean**, Consultant Clinical Geneticist, NHS Grampian and **Dr Iain Findlay** Consultant Cardiologist, NHS Greater Glasgow & Clyde.

2pm (3 hours) • Free (ticket required) Surgeons' Hall

Presented by Gengage

### FEEDING THE 7 BILLION



Food shortages, price rises, civil unrest and riots are all real threats as demand for food rises and the amount of land suitable for food production decreases. Journalist and broadcaster **Viv Parry** will lead our panel – **Professor Julie Fitzpatrick** (Moredun Research Institute), **Professor Peter Morgan** (Rowett Institute of Nutrition and Health) and **Professor David Hopkins** (Head of Life Sciences, Heriot Watt University) – in an accessible and interactive exploration of the main issues around food security and how science might help secure the future of our food.

5.30pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium

Presented by Moredun Research Institute

### WHERE NATURE MEETS NANO



Can smart materials help make you fitter or faster? While there's no denying that natural talent and dedicated training put an athlete on the path to success, technology plays an increasingly important role. From lightweight footwear to high-tech swimsuits, technical textiles and smart fabrics are making their mark. Join **Keith Dingwall** from Strathclyde's Institute of Nanotechnology and experts from the Scottish Academy of Fashion for the latest on wearable technology, nano materials and techno threads. Where will it go from here and how are Scottish companies leading the field?

5.30pm (90 minutes) • £8/£6 Scottish Storytelling Centre

Supported by:



### EMERGENCY 2012?

AGES 18+

Our climate is increasingly unpredictable, natural disasters seem constantly to be in the news and rising populations fuel fears of pandemics. You'd be forgiven for wondering what will get us first! Science broadcaster **Hermione Cockburn** is joined by author and volcanologist **Professor Bill McGuire** and guests to ask where the greatest threats might lie and how we should best face them. Are the scale and range of hazards from climate change greater than we have appreciated? Should we be more worried about the next swine flu outbreak?

5.30pm (90 minutes) • £10/£8 • Ghillie Dhu

In association with Oxford University Press

### THE SKY'S DARK LABYRINTH

It's the mid-17th century. No one understands why the planets move as Johannes Kepler so elegantly described almost a century earlier. Edmond Halley, adventurer, astronomer and ladies' man, asks reclusive alchemist and fearsome mathematician Isaac Newton for help with solving the problem. From this simple act, the lives of both men are plunged into crisis. Join author **Stuart Clark** as he weaves a fictionalised tale of the time when science was rife with sex, lies and spies!

8pm (90 minutes) • £8/£6 Scottish Storytelling Centre

Presented by Polygon Books

### HOW FAR, HOW FAST, HOW HIGH?

What are the genetic, physiological, biochemical and psychological limits to the human body? Former UK Athletics Performance Director, **Professor Dave Collins**, joins sports scientists **Dr Yannis Pitsiladis** and **Professor Andy Jones**, and nutritionist **Professor Ron Maughan** to discuss the physiologic, genetic, psychosocial and economic determinants of success, and the limits to performance. *Citius, Altius, Fortius* is the Olympic motto, but how far, how fast and how high can we actually go?

8pm (90 minutes) • £8/£6m National Museum of Scotland Auditorium

### X MARKS THE SPOT

AGES 18+

Men are often derided for not knowing where the clitoris is, but who can blame them? Until recently even anatomists got it wrong. Do we even know what it is for or its evolutionary history? Journalist and broadcaster **Viv Parry** is your guide in the fascinating story of this poorly understood part of the female anatomy.

8pm (90 minutes) • £10/£8 • Ghillie Dhu

### WEDNESDAY 4 APRIL

#### CATALYTIC CLOTHING: FIELD OF JEANS AND KILTS



*Catalytic Clothing* by artist/designer **Professor Helen Storey MBE** and scientist **Professor Tony Ryan OBE** is an exploration of how clothing can be used as a surface to purify air. For the first time, a small field of bespoke denim kilts, kindly produced in Edinburgh by 21st Century Kilts, will be catalysed and 'planted' with denim jeans in St Andrew Square to demonstrate this compelling idea which has global significance for the air we breathe and the reduction of harmful pollutants.

[www.catalytic-clothing.org](http://www.catalytic-clothing.org)

10am-5pm • Free (no ticket required) St Andrew Square

### EDINBURGH'S MATHEMATICAL PAST AND FUTURE



Join our gentle stroll through Edinburgh's Old Town, visiting sites associated with some of the mathematical and scientific stars of the city's illustrious past. Then look to the future as we preview the forthcoming 21st anniversary exhibition at The International Centre for Mathematical Sciences.

2pm (1 hour 30 minutes) • Free

Presented by The International Centre for Mathematical Science

### CATALYTIC CLOTHING



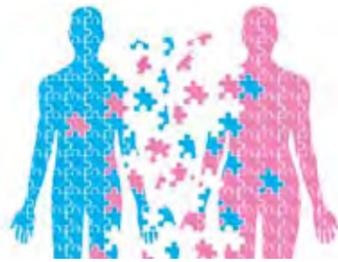
Pollution and air quality have been linked to increases in respiratory problems worldwide, so wouldn't it be brilliant if we could clean the air around us as we go about our daily lives? Artist and designer **Professor Helen Storey MBE** and polymer chemist **Professor Tony Ryan OBE** believe that catalytic clothing offers just such a solution, using textiles as a catalytic surface to purify air. Here they discuss with **Professor John Shepherd** the motivation behind their collaboration, the technology they have developed and the benefits it could bring.

5.30pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium

Presented by The Royal Society



For tips on going green, visit [www.greenerScotland.org](http://www.greenerScotland.org)

**THE OTHER SIDE OF SEX**

We've all heard the saying, 'men are from Mars and women are from Venus', but are we truly worlds apart? And, perhaps more intriguingly, what part might testosterone have played in the global financial crisis? Chaired by **Professor Alan McNeilly**, internationally renowned neuroscientist **Professor Joe Herbert** and MRC Centre for Reproductive Health Director **Professor Philippa Saunders** will dispel many myths about the role of the sex hormones and provide an insight into this intriguing and misunderstood area of biology.

**5.30pm (90 minutes) • £8/£6**  
**Scottish Storytelling Centre**

Presented by the Society for Endocrinology

**ON EXTINCTION**

AGES 18+

How do we think about the things we have lost, be they species, ideas, languages or cultures? In an evening of poetry, conversation and reflection, science broadcaster **Hermione Cockburn**, poet **Melanie Challenger** and linguist **Bernadette O'Rouke** ponder some of the things that have disappeared from our world. Can we use what we know about extinctions – cultural, philosophical, biological and industrial – to reconnect with nature and ourselves?

**5.30pm (90 minutes) • £10/£8 • Ghillie Dhu**  
In association with Granta Books

**THE SECRET LIFE OF SCOTTISH SEALS**

Join us for an evening of everything to do with grey seals. Find out how scientists are tracking their movements via satellite, learn about efforts to conserve their numbers and discover how abandoned seal pups are rescued, rehabilitated and released. Get to see the inner anatomical workings of a grey seal. Using ultrasound and the latest keyhole surgical techniques, we will see the unique anatomical adaptations that allow seals to survive their marine lifestyle.

**6.30pm (90 minutes) • £10/£7.50**  
**Edinburgh Zoo**

**IN THE FOOTSTEPS OF GIANTS**

AGES 18+

Walk in the footsteps of Edinburgh's own time lord, James Hutton, and find out how one man's vision combined with the rocks of Salisbury Crags to change our understanding of how the world works. This event includes a wine reception at Our Dynamic Earth and a unique, bike-powered, outdoor screening of Rock Opera at Hutton's Section of Salisbury Crags.

**7pm (2 hours 30 minutes) • £10/£8**  
**Our Dynamic Earth**

Presented by Our Dynamic Earth and Geowalks

**UNEASY WORLDS**

This programme of films looks at the worlds created by filmmakers and explores the tension between society and technology. Join us and be immersed in hypnotic and unsettling landscapes where industry and machines have begun to encroach on the world as we know it. Screenings will take place in two atmospheric lecture theatres at Summerhall, Edinburgh's new arts venue. Visit our website for programme details.

**4-6 April (7.15pm) • 7 April (3.15pm, 7.15pm) • £5/£4, or a batch of 3 tickets for £10/£8 • Summerhall**

Presented by Summerhall

**BRAVE NEW WORDS**

How many clones does it take to change a light bulb? Why did the chicken cross the wires? The members of Edinburgh's premier spoken-word performance collective offer their unique perspectives on science and fiction in all-new stories. Warning: may contain rocket science, brain surgery and assorted nuts!

**8pm (2 hours) • £8/£6**  
**Scottish Storytelling Centre**

Presented by Writers' Bloc

**COMPUTER ANIMATION: WHERE SCIENCE MEETS ART**

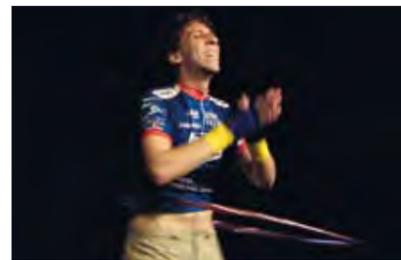
Computer animation comes about through a remarkable collaboration between scientists, technologists and artists. Top animation scientist **Ronen Barzel**, whose career includes a stint at award-winning Pixar, gives his take on the nature of the collaboration; how research and technology advances inspire artistic achievement, which in turn drives further research and technological development. The latest in an ongoing series of Sydney Michaelson Memorial Lectures.

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Presented by The British Computer Society

**BALL AND OTHER FUNNY STORIES...**

AGES 18+



Surviving cancer is only half the battle! Far from the world of yellow bracelets and pink ribbons, *Ball...* is **Brian Lobel's** story of his quirky and unique struggle against cancer. Challenging the stories of cancer survivors and cancer martyrs, he'll infuse the 'cancer story' with an urgency and humour that is sometimes inappropriate, often salacious and always, above all else, honest and open. You'll laugh, you'll cry, you'll want to perform a self-exam.

**8pm (90 minutes) • £10/£8 • Ghillie Dhu**

**THURSDAY 5 APRIL****SPOTLIGHT ON: THE SCIENCE OF ARCHAEOLOGY**

AGES 16+

Join two of the museum's archaeology curators, **Fraser Hunter** and **Martin Goldberg**, as they show how modern scientific techniques of excavation and analysis can enrich our understanding of finds of gold and silver treasures – old and new.

**2pm (1 hour) • Free (ticket required)**  
**National Museum of Scotland Auditorium**

**DESIGNER ATHLETES: FAIR PLAY OR FOUL?**

Imagine sporting events of the future – genetically modified, physically and pharmacologically enhanced athletes smashing the world records we consider impressive today. Ethicist **Professor Andy Miah**, former Olympic athlete and exercise scientist **Professor Greg Whyte**, physiologist **Professor Chris Cooper** and *Sporting Integrity's* **Michele Verroken** will outline the research that could produce the super-athletes of tomorrow. Would we want such athletes? Would sport still be a true test of physical ability? Where exactly is the fine line between 'doping' and 'natural enhancement'? Cast your vote and tell us what shape you think our future sporting champions should be in.

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Presented by The Physiological Society

**INVISIBLE WORLDS**

Science and technology provide us with windows to normally hidden worlds – and NASA's Kepler Mission is currently doing just that. Orbiting the Sun for a 3.5-year mission, it is revealing the shadows of invisible planets, peering into the hearts of stars using sound and has so far discovered more than 1700 exoplanets. **Marek Kukula**, Public Astronomer at the Royal Observatory, Greenwich, chats with **Professor Don Kurtz** about Kepler's discoveries and its search for another Earth in the 'Goldilocks zone' where life might exist.

**5.30pm (90 minutes) • £8/£6**  
**Scottish Storytelling Centre**

**SCOTLAND 2030: WHAT'S NEXT FOR SCOTTISH SCIENCE?**

What will Scotland look like in 2030? With competing and complex issues on the horizon, and limited funding available in an uncertain financial future, what are the future priorities for policy and funding? Will the big issues of today – climate change/energy, healthcare and reform, transport, GM – still have relevance, or will new, bigger problems have taken their place? BBC Scotland presenter **Ken MacDonald** is joined by Oil and Gas UK's Supply Chain Director, **David Ripley**, and Director of the Edinburgh Centre on Climate Change, **Andy Kerr**, as they explore the opportunities and challenges facing the nation and ask 'who decides where the priorities lie?'

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Supported by:

**BRIGHT CLUB: BODIES**

AGES 18+



Heard the one about academics doing stand-up? Join Scotland's best comedic academics as they transform their research into side-splitting stand-up comedy in the latest instalment of the nationwide sensation, *Bright Club*. By day they study the physiology and the workings of the human body, by night they know a thing or two about tickling your funny bone. Hosted by **Andy Zaltzan**, *Bright Club* promises to be authoritatively original and brilliantly entertaining!

**8pm (3 hours) • £10/£8 • Ghillie Dhu**

Presented by Beltane/Bright Club  
Supported by The Physiological Society

**EARTH AND ENVIRONMENT**

It's the UN International year of Sustainable Energy for All.

Energy, earth, environment and climate are never far from the headlines – or from our minds. The Science Festival tackles the big issues head on with a timely and fresh look at some of the most important and topical issues.

From catalytic clothing that cleans the air you breathe, to poetic explorations of extinction (via some hard-hitting debates on food security, climate change and energy), there are some great events. Naturally, this year's Edinburgh Medal awardee, US climate scientist and activist **Dr James Hansen**, is the perfect figurehead for this focus but there's plenty to choose from and something for anyone interested in our precious planet.

**Look out for our Earth and Environment events throughout this brochure. See page 5 for details of all of our themes for 2012.**



# JAMES HANSEN AND THE EDINBURGH MEDAL

James has dedicated his career to the study of the Earth's atmosphere and, since the birth of his grandchildren, has dedicated himself to helping people understand climate change and our role in causing it. Highly respected in scientific circles for his 'courageous and steadfast advocacy of scientists' responsibilities to communicate their scientific opinions and findings openly and honestly on matters of public importance' (AAAS), he is admired far beyond the science sphere for his fearless commentary and authority on climate change. In his Edinburgh Medal address, James will share his passion, commitment and vision for ensuring a healthy, natural and prosperous future for the next generation and beyond.



SEPA welcomes this award and recognises that climate change is the greatest threat to the future of the planet's ecosystems, with significant socio-economic consequences for humankind.

## EDINBURGH MEDAL

The Edinburgh Medal is awarded each year to men and women of science and technology whose professional achievements are judged to have made a significant contribution to the understanding and well being of humanity.

## PREVIOUS RECIPIENTS

- |                                     |                                  |
|-------------------------------------|----------------------------------|
| 1989 Professor Abdus Salam          | 2001 Sir John Sulston            |
| 1990 Professor Stephen J Gould      | 2002 Lise Kingo                  |
| 1991 Professor Jane Goodall         | 2003 Professor Wang Sung         |
| 1992 Professor Heinz Wolff          | 2004 Professor Steven Rose       |
| 1993 Professor Wangari Maathai      | 2005 Professor Colin Blakemore   |
| 1994 Professor Manuel Patarroyo     | 2006 Professor James Lovelock    |
| 1995 Sir John Crofton               | 2007 Dr Richard Horton           |
| 1996 Professor Richard Levins       | 2008 Professor Chris Rapley      |
| 1997 Professor Amartya Sen          | 2009 Professor Jonathan Beckwith |
| 1998 Sir David Attenborough         | 2010 Sir Alex Jefferies          |
| 1999 Professor Jocelyn Bell Burnell | 2011 Professor Carl Djerassi     |
| 2000 Professor Lynn Margulis        |                                  |



## DAYGLO

It's just not rock 'n' roll. Edinburgh Fringe First winners Y-Touring theatre company mix pharmacogenetics and punk in this screening of a live performance of Abi Bown's *Dayglo*, their latest Theatre of Debate production. Inspired by likely advances in personalised medicine and the story of Poly Styrene, an era-defining female punk icon recently cut down by cancer, *Dayglo* and the panel discussion that follows asks how uncertain medicine is now and how 'less uncertain' are we daring to be in the future?

Researched and developed in partnership with the University of Ulster and the Association of Medical Research Charities (AMRC) and supported by the Wellcome Trust.

**8pm (90 minutes) • £8/£6 • Scottish Storytelling Centre**

In association with Y-Touring

## FRIDAY 6 APRIL

### PREGNANT IN THE WRONG PLACE?

The female body's ability to reproduce is extraordinary. Most women conceive easily, have unremarkable pregnancies and deliver healthy babies. Yet ectopic pregnancy (where the pregnancy implants in the wrong place) happens in one in 80 pregnancies, can still kill young women and undoubtedly causes heartache for those who experience it. Join **Dr Colin Duncan** and **Dr Andrew Horne** from the MRC Centre for Reproductive Health to hear about the progress being made in diagnosing, understanding and treating ectopic pregnancy.

**5.30pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium**

Presented by The Medical Research Council

### THE OPTIMISM BIAS

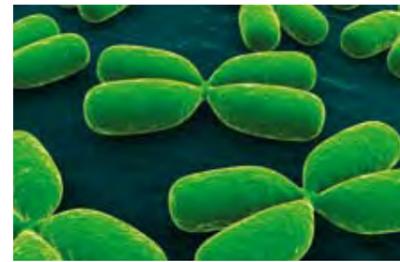


We often tend to be over-optimistic in our predictions for the future. Sometimes irrationally so. But can imagining a rosy future make us happier, healthier and more successful? Neuroscientist **Dr Tali Sharot** first encountered the optimism bias while working on 9/11 victim memories. Here she talks to **Professor Richard Wiseman** in a fascinating dissection of why the brain generates hope, how optimism may be central to our survival and why we may have evolved to imagine a brighter tomorrow.

**5.30pm (90 minutes) • £8/£6 Scottish Storytelling Centre**

In association with Constable and Robinson

## THE EPIGENETICS REVOLUTION



How is it that, despite each cell in your body carrying exactly the same DNA, you don't have teeth growing out of your eyeballs or toenails on your liver? How can one blueprint lead to so many different results? Join biologist and author **Nessa Carey** as she reveals why epigenetics – the study of heritable changes that occur without a change in the DNA sequence, rather through variation in the way our cells read our DNA – is the fastest-moving field in modern biology, how it is rewriting our understanding of genetics, disease and inheritance, and what amazing possibilities it offers for the improvement of humankind. Along the way, she'll deftly explain why we age, develop disease and become addicted to drugs, and why tortoiseshell cats are always female!

**8pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium**

## THE INFINITY PUZZLE



We are living in a Golden Age of physics. Forty or so years ago, three brilliant, yet little-known scientists – an American, a Dutchman and an Englishman – made breakthroughs that inspired the construction of the Large Hadron Collider at CERN: a 27 kilometre-long machine that has already cost ten billion dollars, taken 20 years to build, and now promises to reveal how the universe itself came to be. Eminent physicist and award-winning author **Professor Frank Close** draws upon his close friendships with those involved to tell the inside story of those 40 years of research, breakthrough and endeavour.

**8pm (90 minutes) • £8/£6 Scottish Storytelling Centre**

## SATURDAY 7 APRIL

### THE FORAGER'S BREAKFAST

AGES 15+



Foraging experts, author **Miles Irving** and River Cottage's **John Wright**, will lead you on a morning walk around the Botanic Garden to identify edible wild foods, and offer hints and tips on using foraged foods in cooking. You will then be treated to a breakfast of wild delights in the Gateway restaurant, where hosts Miles and John will talk about the menu.

**8.30am (2 hours 30 minutes) • £16 Gateway Restaurant, Royal Botanic Garden Edinburgh**

Presented by Royal Botanic Garden Edinburgh

### FIREWALKING

AGES 18+



Is it really possible to walk on red-hot coals? If so, is it the supernatural at work, mind over matter or the power of physics? Join psychologist **Richard Wiseman** and Science Festival director **Simon Gage** as they separate fact from fiction, and invite you to put your faith in science.

**3pm (also Sunday 8 April) (90 minutes) £20 • West Princes Street Gardens**

NB Strictly over 18s only. ID must be provided and you will be asked to sign a waiver.

## OVERCOMING OSTEOARTHRITIS



Osteoarthritis affects and disables millions of people across the globe, damaging joint surfaces, causing pain and restricting movement. University of Edinburgh's **Professor Stuart Ralston** is joined by a clinician, researcher and patient to explore the personal and medical aspects of the disease. With a chance to handle some of the hardware (old and new) involved in joint replacement, you'll be able to see, hear and feel the problem (and some of the solutions) for yourself and share your experiences of osteoarthritis.

**3.30pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium**

Presented by The University of Edinburgh's College of Medicine and Veterinary Medicine

## THE SOLAR SYSTEM: THE ULTIMATE GRAND TOUR



Bestselling author and creator of the Solar System iPad app, **Marcus Chown**, leads us on a grand tour through the incredible diversity of planets, moons, asteroids, comets, and spacecraft that surround the Sun in our cosmic backyard. Strap yourself in for the journey of a lifetime as Marcus takes you on a glorious journey to our planetary neighbours. Let your imagination roam free... from Mercury to Pluto and beyond.

**5.30pm (90 minutes) • £8/£6 National Museum of Scotland Auditorium**

Presented by Faber & Faber

**TWEETING THE UNIVERSE**



Like a challenge? Writers **Marcus Chown** and **Govert Schilling** do, so they set themselves one: boiling down explanations of the biggest cosmic questions into tweets of 140 characters! Now it's your chance to ask them anything you like – from 'Where did the big bang happen?' to 'What's it like in a black hole?' – and for them to try to answer in as few words as possible. See if you can catch them out with some big questions; not a word will be wasted and feel free to tweet their answers!

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**  
 Presented by Faber & Faber

**SUNDAY 8 APRIL**

**APHRODISIAC COCKTAILS AND CANAPES**

AGES 18+



'Of life's many joys, the pleasure of the table and the delights of the boudoir are without question what make life worth living.' Join author and aphrodisiac expert **Mark Douglas Hill** and nutrition scientist **Dr Alexandra Johnstone** for a fun evening of the ultimate aphrodisiac canapés and cocktails, and learn the facts, history, biology and psychology behind each titillating titbit as the aphrodisiac and amorous qualities of each ingredient is examined and appraised.

**7pm (2 hours) • £20 • Gateway Restaurant, Royal Botanic Garden Edinburgh**

Presented by Royal Botanic Garden Edinburgh

**MONDAY 9 APRIL**

**TRUSTING IN SCIENCE OR IN GOD**

There is ongoing debate about the relationship between science and faith, but are they really mutually exclusive? Are the science and faith communities enemies? A panel of scientists, philosophers and clerics discuss whether you can be both a scientist and a person of faith. Along the way, they'll ponder the nature of scientific creativity, the role and limitations of science, and ask 'does a modern scientific approach mean we have no need (or room) for religion?'

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**  
 Presented by The Church of Scotland

**THE STORY OF TIME**

You can't see it, hear it, feel it or smell it, yet it rules our lives and everything around us. It varies from place to place, gets slower the higher you are and seems to go half as quickly when you're bored... With tales of calendars, water clocks, candles, pulsars and atomic clocks, broadcaster **Adam Hart Davis** reveals the story of one of the most fascinating and mind-bending subjects there is. One event that definitely won't be a waste of time!

**5.30pm (90 minutes) • £10/£8 • Jam House**  
 Presented by Mitchell Beazley

**SWEET DREAMS**

AGES 18+



Join psychologists **Professor Richard Wiseman** and **Dr Caroline Watt** as they reveal the results of a mass experiment into dreaming, and delve deep into the science of nod. Why do you dream? Is it possible to control your dreams? Do your dreams predict the future? Richard reveals what happens when your brain goes to sleep, and reveals the new technology that claims to be able to create your perfect dream.

**8pm (90 minutes) • £10/£8 • Jam House**  
 Supported by:



**DJ PHYSICS**



Ever wanted to DJ? Did you know that physics could help you? Physicist and DJ **Martin Archer** takes you on a journey into sound with his virtual DJ booth. He'll spin some tunes and explain the science behind the cueing, beat matching, blending and EQing that go into his club mixes, while showing some surprising connections to seemingly unrelated, cutting-edge physics research.

**8pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**  
 In association with The Royal Institution of Great Britain

**AT THE FRINGE OF REASON**

AGES 18+



Using science to evaluate myth, superstition and pseudo-science, Edinburgh Skeptics bring their highly successfully Fringe format to the Science Festival. Each evening involves an informal talk and lively discussion in the bar afterwards. Check out our website for details of subjects and speakers.

**9-13 April • 8pm (1 hour) • Admission free (donations welcome to cover costs)**  
**Banshee Labyrinth Cinema**

Presented by Edinburgh Skeptics

**TUESDAY 10 APRIL**

**WHISKY WISDOM**

AGES 18+



Pale golden or ruby red? Mountain, moorland or windswept coastline? Honey sweetness or pungent peat? The words used to describe whisky only serve to highlight how the making of whisky – the most multi-faceted of spirits – is a unique blend of art and science. Join Glenmorangie's **Dr Bill Lumsden**, Head of Distilling and Whisky Creation, for talk of fermentation, distillation, maturation and, of course, appreciation, as he explores the depths of the water of life.

**5.30pm (90 minutes) • £15/£12**  
 (includes whisky tasting) • **Jam House**

Supported by:



**EDINBURGH MEDAL ADDRESS: THE CASE FOR YOUNG PEOPLE AND NATURE**



Climate change is a moral issue of unprecedented scope – a matter of intergenerational injustice. As today's adults obtain benefits from fossil fuel use, the consequences will be felt mainly by young people and future generations. Meanwhile, people in less developed countries and indigenous people across the world are likely to be burdened the most but are least able to adapt to a changing climate. In his stirring medal address, **James Hansen** will draw attention to these pressing moral issues, highlighting our obligations to young people, future generations, less developed nations, indigenous people and our fellow species.

**7pm (90 minutes) • £10/£8**  
**City Chambers**

Supported by:



**E<sup>2</sup>: THE EDINBURGH ENLIGHTENMENT EXCHANGE**

*"We look to Scotland for all our ideas of civilisation." Voltaire, French philosopher*

In the 18th century, the Scottish Enlightenment was characterised by the vibrant flowering of ideas and enquiry that flourished as Scottish thinkers and scientists sought to understand the natural world and the human mind, and improve the world through new ideas, discoveries and inventions.

An unprecedented outpouring of intellectual and scientific accomplishments led to 18th-century Scotland being described as 'a hotbed of genius', with rapid advances in philosophy, political economy, engineering, architecture, medicine, geology, archaeology, law, agriculture, chemistry and sociology.

Our vibrant flagship Science Festival event, the Edinburgh Enlightenment Exchange – Edinburgh E<sup>2</sup> – celebrates and revives this spirit by bringing together some of Scotland's most creative individuals for a day-long showcase. Join scientists, artists, musicians, authors and other creative innovators as they share their ideas, inspiration and passion, and see what new ideas evolve from this unique meeting of minds.

A day of short, sharp presentations and performances that will inspire and enthral, celebrate Scotland's creative present and (re)imagine our future.

Speakers include:

- Polly Arnold, Chair in Synthetic Inorganic Chemistry, University of Edinburgh
- Steven Blackmore, Regius Keeper, Royal Botanic Garden Edinburgh
- Suzy Glass, Trigger
- Simon Kirby/FOUND
- Peter Lovatt, Principal Lecturer and Reader in Psychology, University of Hertfordshire
- Suba Subramaniam, choreographer, dancer and educator

See our website for full line-up.

**Saturday 31 March (9am-5pm) • Full day £35, Half day £20**  
**National Museum of Scotland Auditorium**

Supported by:



## JUST FOR LAUGHS

Laughter – it’s a funny old thing but why and how do we do it? What happens to us when we do? And can we make you laugh about cancer? This year, the Science Festival presents science with a sense of humour with a series of evening events at Ghillie Dhu and the Jam House that will make you laugh, think and then laugh again.

Comedian and Science Festival favourite **Robin Ince** (p37) is back in 2012, delving into the evolutionary basis of comedy and laughter with Oxford University’s **Professor Robin Dunbar**. He is also a special guest, along with **Richard Wiseman**, at *Festival of the Spoken Nerd* (p38). This fabulous comedy night for the insatiably sci-curious features stand-up mathematician **Matt Parker**, geek songstress **Helen Arney** and *Blue Peter*’s resident science expert, **Steve Mould**, in a night of comedy, science, maths, geeky songs, special guests, interactive experiments – and maybe even some things that go bang...

Heard the one about academics doing stand-up? Scotland’s best comedic academics transform their research into side-splitting stand-up in the latest instalment of the nationwide sensation that is *Bright Club* (p31). Meanwhile, Australia’s leading maths communicator and stand-up mathematician, **Simon Pampena** (p37), is in training for the *Maths Olympics* – comedy gold. All this plus **Brian Lobel’s Ball and other funny stories** (p30) – a tale of his quirky and unique struggle against cancer. Yep, that’s right, cancer. You’ll laugh, you’ll cry, you’ll want to perform a self-exam!

Join us – just for a laugh – for some side-splitting, but still scientific, entertainment across the Science Festival.

Media partner: The Skinny



### WHAT MAKES A WINNER?



Just what is it that makes a winner – in sport and in life in general? In an engaging exploration of the psychology of winning, former UK Athletics Performance Director, **Professor Dave Collins**, anthropologist **Professor Rob Barton** and psychologist **Nick Neave** unlock the hidden power that colours can have over your life and reveal how red can make you a winner.

5.30pm (90 minutes) • £8/£6  
National Museum of Scotland Auditorium

Supported by:  Edinburgh Napier UNIVERSITY

### SENSORY DINING

AGES 18+



How do your other senses affect your taste buds? Comedian and broadcaster **Steve Mould** is joined by scent technician **Ericka Duffy**, linguist **Christine Cuskley** and scientists **Professor Charles Spence** and **Professor Andrea Sella** for a sensory dining experience that will intrigue and explore your palette. Savour sensuous flavours, smells and textures, and playfully challenge your palate to tease out the mysteries of the menu. Playing with texture, light, sound and colour, you’ll never look at dinner the same way again!

8pm (3 hours) • £35 (includes a 5 course tasting menu) • Jam House

Supported by:  Edinburgh Napier UNIVERSITY

### CREATING WITH CREATION

Biology is becoming a new material for engineering. The field of synthetic biology aims to ‘make biology easier to engineer’ through the design and construction of new biological parts, devices, and systems and the re-design of existing biological systems for useful purposes. Biologist **Alistair Elfick** is joined by social scientist **Jane Calvert** and artist **Daisy Ginsberg** to explore this fascinating new territory between synthetic biology, art and design.

8pm (90 minutes) • £8/£6  
National Museum of Scotland Auditorium

Presented by The University of Edinburgh, School of Engineering

### WEDNESDAY 11 APRIL

#### RICHARD WISEMAN’S BEGINNERS’ GUIDE TO... EVOLUTION



Always wanted to know but were afraid to ask? In the first in a series of three entertaining and accessible conversations on some of the most fascinating areas of science, psychologist, science communicator and Festival Advisory Group member **Professor Richard Wiseman** asks some of the hard questions for you. He is joined by **Robin Dunbar**, Professor of Evolutionary Anthropology at Oxford University, for a quick dash through all things evolutionary.

1pm (1 hour) • £5/£3  
National Museum of Scotland Auditorium

### SCIENCE AND THE CITY

PAST. How did advances in science affect our cities in history? A historian and an architect explain how science and engineering shaped our street patterns and our architecture.

6pm • Summerhall

PRESENT. Get under the skin of a recently completed Edinburgh building to discover its hidden technology on an expert-guided building visit.

Thursday 12 April (1pm) • **John Hope Gateway, Royal Botanic Garden Edinburgh**

FUTURE. *Metropolis to Inception*. Using stills and film excerpts, science fiction writers discuss their ideas of utopia with architect Oliver Chapman.

Friday 13 April (6pm) • Summerhall  
£5/£4 per event or £11/£9 for all three

Presented by The Schop Institute with Summerhall

### SCIENCE, LOVE AND BETRAYAL

Falling in love is one of the strangest things we can do – and one of the things that makes us uniquely human – but what happens to our brains when our eyes meet across a crowded room? Science songstress **Helen Arney** is your host and **Robin Dunbar**, Professor of Evolutionary Anthropology at Oxford University, your guide in a witty event for anyone who’s ever wondered why we fall in love and what on earth is going on when we do.

5.30pm (90 minutes) • £8/£6  
National Museum of Scotland Auditorium

In association with Faber and Faber

### THE MATHS OLYMPICS

AGES 18+



Aussies have conquered every sport, right? What about maths? While the world focuses on London this year, Australia’s leading maths communicator and stand-up mathematician, **Simon Pampena**, is concentrating on the toughest competition of all, *The Maths Olympics*. After sell-out seasons at Melbourne Comedy Festival and Adelaide Fringe, experience the show that turns potential into gold medal reality.

5.30pm (90 minutes) • £10/£8 • Jam House

### OUR CLIMATE FUTURE



The 2012 Edinburgh Medallist, US physicist **Dr James Hansen**, is one of the world’s most respected climate scientists. Here he is joined by some of the UK’s leading voices, including Professor Pete Smith and Lord Giddens, to discuss the status of the climate change debate and shine a light on current and future challenges.

8pm (90 minutes) • £8/£6  
National Museum of Scotland Auditorium

### HUMOUR ME

AGES 18+



What do a stand-up comedian and an evolutionary anthropologist have in common? Apart from the fact that they’re both called Robin? Funnymen **Robin Ince** and scientist and author **Professor Robin Dunbar** have a shared interest in laughter. They’ll reveal why and how do we do it and what happens to us when we do – while psychologist **Professor Richard Wiseman** asks them what’s so funny.

8pm (90 minutes) • £10/£8 • Jam House

### THURSDAY 12 APRIL

#### RICHARD WISEMAN’S BEGINNERS’ GUIDE TO... PHYSICS



Always wanted to know but were afraid to ask? In the second of his entertaining and accessible conversations on some of the most fascinating areas of science, psychologist, science communicator and Festival Advisory Group member **Professor Richard Wiseman** asks some of the hard questions for you. Here he is joined by theoretical physicist and popular broadcaster **Professor Jim Al-Khalili** as he tackles the laws of physics.

1pm (1 hour) • £5/£3 • NMS Auditorium

#### PARADOX: THE NINE GREATEST ENIGMAS IN SCIENCE

AGES 18+

How can a cat be both dead and alive at the same time? And why will Achilles never beat a tortoise in a race, no matter how fast he runs? Academic, author and broadcaster, **Professor Jim Al-Khalili**, is just the man to help get your head around some of these mind-boggling ideas. Don’t miss a fascinating exploration of some of the most profound ideas in human knowledge.

5.30pm (90 minutes) • £10/£8  
Jam House

Presented by Transworld Publishers

**FIXING THE PLANET**

The UN International year of Sustainable Energy for All finds us with various tools with which to confront the climate change crisis. The possibilities seem endless (and are definitely confusing!), so why don't more of us know about them? Join Edinburgh Medal recipient **Dr James Hansen** – an advocate of next-generation nuclear power – and a panel of experts in some of the alternatives as they weigh up the various possibilities. Host **Ian Sample** (*The Guardian*) asks how do we decide what our best bet(s) might be?

5.30pm (90 minutes) • £8/£6

National Museum of Scotland Auditorium

Supported by:

**FESTIVAL OF THE SPOKEN NERD**

AGES 18+



After a year of sold-out shows in London and at science festivals across the UK, geek songstress **Helen Arney**, *Blue Peter*'s resident science expert, **Steve Mould**, and stand-up mathematician **Matt Parker** (via skype!) bring you *Festival of the Spoken Nerd*. A comedy night for the insatiably sci-curious, it's a 'Riotously funny show about science... brimming with unashamed geekery' (*Three Weeks*). Join three of London's best (and nerdiest) performers for a night of comedy, science, maths, geeky songs, special guests, interactive experiments and maybe some things that go bang... With special guests **Robin Ince** and **Professor Richard Wiseman**.

8pm (3 hours) • £10/£8 • Jam House

**THE THINKING ROBOT**

Press headlines frequently refer to robots that think like humans, have feelings, or even behave ethically, but are these simply sensationalist hype? The question of robot intelligence intrigues **Professor Alan Winfield**, Director of the Science Communication Unit at the University of the West of England, Bristol. What's the current state-of-the-art in robot intelligence, and could we design robots that are not only more intelligent but also have a sense of self? If so, would they think like animals, or even humans?

8pm (90 minutes) • £8/£6

National Museum of Scotland Auditorium

Presented by Edinburgh Napier University

**FRIDAY 13 APRIL****OPEN SOURCE SCOTLAND**

#oss2012 is a two-day digital forum bringing world-class speakers and new ideas to Scotland. Each day has three concurrent work-streams: Creative Thinking, Web Development and Software Development, while two keynote speakers finish each day on a high note. See [www.open-source-scotland.com](http://www.open-source-scotland.com) for a full speakers list, including guests from Google, Wordpress and Facebook. We think of #oss2012 as Glastonbury for geeks!

13-14 April (9am-5pm) • £200

Appleton Tower

**RICHARD WISEMAN'S BEGINNERS' GUIDE TO... CLIMATE CHANGE**

Always wanted to know but were afraid to ask? In the last of his entertaining and accessible conversations on some of the most fascinating areas of science, psychologist, science communicator and Science Festival Advisory Group member **Professor Richard Wiseman** asks our expert some of the hard questions for you as he explores how and why our climate is changing.

1pm (1 hour) • £5/£3

National Museum of Scotland Auditorium

**ETERNAL SUNSHINE OF THE SPOTLESS MIND**

RATED 15

Ex-partners Joel (Jim Carey) and Clementine (Kate Winslet) want to forget the heartbreak of their relationship, so they erase their memories of each other. But as Joel watches memories of his past with Clementine fade away, he realises he still loves her... Human memory is a complex, brain-wide process and this film is a moving intro to neuroscientist **Professor Richard Morris**'s discussion of its essential role in making us who we are.

3.15pm (145 minutes) • £7.50/£5.50

Filmhouse

In association with Filmhouse

**HUMAN 2.0**

What does it mean to be human, past, present and future? As we re-engineer the human body, and even the human genome – through technology, drugs and genetic manipulations – how do we define and value our humanity? What are the social, political and cultural challenges inherent in our enhanced future? As part of our *Future Human* mini festival, sociologist and author **Professor Steve Fuller**, and sci-fi writers **Ken MacLeod** and **Justina Robson**, join ethicist **Andy Miah** to mull over these compelling questions. Are we facing a re(evolution) of the species?

5.30pm (90 minutes) • £8/£6

National Museum of Scotland Auditorium

In association with Palgrave MacMillan

**FRANKENSTEIN**

SCREENING

RATED PG

This is rare opportunity to see the classic 1931 version of Mary Shelley's tale of humanity, biology and scientific responsibility in all its cinematic glory. Boris Karloff's monster and Director James Whale's stark and eerie atmosphere provide a perfect backdrop for **Professor Alistair Elfick** and **Jane Calver**'s discussion of synthetic biology, the fear of humans playing God and the moral responsibilities of science.

6.15pm (110 minutes) • £7.50/£5.50

Filmhouse

In association with Filmhouse

**THE SELF ILLUSION**

Newsflash! Cutting-edge cognitive psychology and neuroscience herald a mind-boggling fact: your 'self' does not exist. It is, in fact, an illusion; a brilliant conjuring trick. With anecdotes, practical thought experiments and science, and via talk of dominatrices, tattoos and teenage rebellion, **Professor Bruce Hood**, Chair of Developmental Psychology at Bristol University and 2012 RiGB Christmas Lecturer, reveals this astonishing sleight of hand and what it means in our everyday lives. Are you ready to face the illusionary nature of the self?

8pm • £8/£6

National Museum of Scotland Auditorium

Presented by Constable and Robinson

**ROBOCOP**

SCREENING

RATED 18

A policeman killed in the line of duty is resurrected as an indestructible half-human, half-robot supercop who gives you only '20 seconds to comply'! But behind the fast-paced, violent action sequences in this cult film, and beneath that tough metallic exterior, what are RoboCop's views on resurrection, human nature and the unnatural? Writer **Justina Robson** discusses the fascinating issues after the screening.

8.45pm (140 minutes) • £7.50/£5.50

Filmhouse

In association with Filmhouse

**SATURDAY 14 APRIL****GOOD WITHOUT GOD?**

A recent survey showed that 40% of the Scottish population no longer belong to any religion, yet most Scots are law-abiding citizens. Are they obeying a natural moral code which predates religion, or does morality ultimately derive from belief in gods, or God? Is there any correlation between religion and goodness or the lack of it? Two humanists, scientist **Professor Paul Brateman** and teacher of Religious, Moral and Philosophical studies **Keith Gilmour**, ask where does our sense of right and wrong come from?

1pm (90 minutes) • £8/£6

National Museum of Scotland Auditorium

Presented by The Humanist Society of Scotland

**GATTACA**

SCREENING

RATED 15

'In the not so distant future', DNA determines a person's role and status in society. Vincent (Ethan Hawke, who stars with Uma Thurman and Jude Law) was born with a genetic make-up which, in this futuristic world, classifies him as an underclass. But just how real is the real of Gattaca's world of gene selection and discrimination? ESRC's **Professor Steven Yearley** will explore the implications after the screening of this stylish modern classic.

3.15pm (140 minutes) • £7.50/£5.50

Filmhouse

In association with Filmhouse

LOOK OUT FOR  
FUTURE HUMAN  
EVENTS

**FUTURE HUMAN**

In a series of special screenings, conversations and events, *Future Human* asks what it means to be human – in the past, present and future. As we re-engineer the human body (and even the human genome) through technology, drugs and genetic manipulations, how do we define and value our humanity?

Beneath the crazy costumes and impossibly large ray guns, sci-fi offers us a window to endless possible worlds. Through the medium of film, we can address some very real questions about our present and future, and debate the promise and challenges presented by science and technology.

What do *Frankenstein* and *Splice* have to say about playing god, humanity, biology and scientific responsibility, and what's the relevance to today's cutting-edge synthetic biology research? Beneath the fast-paced, violent action sequences, and that tough metallic exterior, what are RoboCop's views on resurrection, human nature and the unnatural? And how real is the 'real' of *Gattaca*'s world of gene selection and discrimination? Add to this *A Scanner Darkly*'s take on the future of psychoactive drugs, plus the memory manipulation of *Transfer* and *Eternal Sunshine of the Spotless Mind*, and there's quite a selection.

But how plausible are the scenarios? How far-fetched is the science and what do the films ask us to consider? Scientists authors, ethicists and philosophers will explore these big questions after each screening and also in our special *Human 2.0* event. Then, for a little light relief, the Science Festival comes to a suitably cosmological conclusion with *Rocket Lolly* – where Brighton's Spacedog and Scotland's DJ Bongoboy merge retro-science film gems with cutting-edge music and sparkling tunes from the outer reaches of the known musical universe. A guaranteed feast of retro-futurist fun.

Media partner: The Skinny

**BIOFUELS: AN ETHICAL SOLUTION?**

Fuel for transport accounts for around a third of current world energy consumption, and concerns about the environmental (coupled with ever-increasing petrol prices) make alternative fuels a hot topic. Biofuel is one of the main contenders. Have you ever filled up your car with biofuel? Would you consider it? Would you be willing to pay slightly more for a biofuel if you knew it had been produced ethically ('Fairtrade' fuel)? **Joyce Tait**, Chair of the Nuffield Council on Bioethics Working Party on biofuels, and a panel of experts will tackle some of the most pressing environmental and ethical issues in the global biofuels industry.

**3.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Presented by The Nuffield Council on Bioethics

**BUGS, DRUGS AND ROCK 'N' ROLL**

It's a small world, and the micro-organisms that share it with us play a far more important and helpful role than you may think. Did you know that Botox uses a toxin from the bacterium *Clostridium botulinum*? Or that your denim jeans would look very different without the involvement of micro-organisms? Professors **Mervyn Bibb** and **Phil Luton** reveal some of the many ways in which we exploit micro-organisms for our own gain.

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Presented by The Society for General Microbiology

**TRANSFER**

SCREENING

RATED 12

In the Menzana facility, wealthy customers can escape the constraints of mortality by having their consciousness and memories implanted into the minds of young, healthy bodies (largely those of immigrant Africans), who have agreed to participate in the procedure for the money their families will receive. An intriguing and highly original German production, this screening of *Transfer* tackles race, privilege, class, identity, ethics and the nature of consciousness through a premise not beyond the realm of scientific possibility, as our expert will explore in a post-screening discussion.

**6.15pm (130 minutes) • £7.50/£5.50**  
**Filmhouse**

In association with Filmhouse

**eXistenZ**

SCREENING

RATED 15

*eXistenZ* is a new organic game system that, when downloaded into humans, accesses their central nervous system – at least in the mind of Canadian filmmaker David Cronenberg. His fascination with the ways new technology shapes and manipulates human beings is revealed in this futuristic thriller which sees Jude Law and Jennifer Jason Leigh caught in the crossfire as two game companies compete against each other, and 'realists' fight both companies to prevent the 'deforming' of reality. After the film, our experts will challenge you to consider how we react and interact with the technologies that surround us and what the future holds for human-machine interaction.

**8.45pm (130 minutes) • £7.50/£5.50**  
**Filmhouse**

In association with Filmhouse

**SUNDAY 15 APRIL**

**A YEAR IN THE LIFE OF THE LARGE HADRON COLLIDER**

Be among the first to discover the latest news from the furthest reaches of the known universe. Affectionately known as the LHC, the Large Hadron Collider and its experiments at CERN near Geneva have had an exciting 12 months. **Dr Tara Shears** from the LHC collaboration will explain all the latest discoveries and **Dr Mike Lamont**, head of operations at the LHC, will reveal what it feels like to be at the controls of the world's highest-energy particle accelerator.

**1.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

In association with CERN

**A SCANNER DARKLY**

SCREENING

RATED 15

In a totalitarian society in the near future, where citizens are assumed guilty until proven innocent, undercover detective Bob Arctor is working with a drug users trying to reach the big distributors of a brain-damaging drug called Substance D; a substance which he himself is addicted to. Keanu Reeves, Winona Ryder and Robert Downey Jr are the animated stars in this depiction of a bleak, dark dystopia. Question the use and abuse of chemical substances and their impact on individuals and society in our post film discussion.

**3.15pm (135 minutes) • £7.50/£5.50**  
**Filmhouse**

In association with Filmhouse

**A QUESTION OF SCI-FI**

EVENT

AGES 18+

Everyone loves a pub quiz, right? Well, how about a sci-fi pub quiz? You've got to love that! Whether you know your THX1138 from you R2D2 or worry you know nothing about other worldly narratives, we guarantee you an entertaining afternoon of friendly rivalry. Pit your wits against the Science Festival's in-house team and challenge yourself (and your friends) to a battle of wits in this multi-media pub quiz brought to you courtesy of Sci-Fi London. Bring your inner geek or, better still, bring a team!

**3.30pm (2 hours) • £1 entry per person**  
**Ghillie Dhu**

In association with Sci-Fi London

**MAXWELL: DISCOVERY, DAEMONS AND DEMOS**

Einstein kept a photograph of Scottish physicist and mathematician James Clerk Maxwell on his study wall, alongside pictures of Michael Faraday and Newton, and described Maxwell's work as the 'most profound and the most fruitful that physics has experienced since the time of Newton'. Join **Professor Ron Pethig** and **Professor Frank James** as we bring Maxwell's work to life with a special live demo of the world's first colour photograph by the University of Edinburgh's FUSION team, and show how his work underpins such fields as cutting-edge modern bioelectronics.

**5.30pm (90 minutes) • £8/£6**  
**National Museum of Scotland Auditorium**

Supported by the James Clerk Maxwell Foundation

**DR JEKYLL AND MR HYDE**

SCREENING

RATED 12A

Dr Henry Jekyll believes there are two distinct sides to men – a good and an evil side – and that by separating the two man can become liberated. He succeeds, but with terrible consequences... Based on Robert Louis Stevenson's classic book, Rouben Mamoulian's 1931 classic film, which won star Fredric March an Oscar, was an early take on manipulation of the mind through chemical/pharmacological means. But what is the real-life potential and peril in this sphere as we are increasingly able to manipulate our minds?

**6.10pm (130 minutes) • £7.50/£5.50**  
**Filmhouse**

In association with Filmhouse

**ROCKET LOLLY**

EVENT

AGE 18+



Bringing the 2012 Edinburgh International Science Festival to a suitably cosmological conclusion, Brighton's **Spacedog** and Scotland's **DJ Bongoboy** (one half of retro-futuristic podcast Project Moonbase) make a rare visit to planet Earth. With old film footage, live theremin and truly modern robotic instruments, *Rocket Lolly* is a cabaret evening like no other. Merging retro-science gems – think space-age fashions, smoking robots and other strange visions of the future – with cutting-edge music and sparkling tunes from the outer reaches of the known musical universe, it's a guaranteed feast of retro-futurist fun.

**8pm (3 hours) • £10/£8 • Ghillie Dhu**

In association with Spacedog and Project Moonbase

**WISH YOU WERE HERE? SEARCHING FOR EXOPLANETS**

In Scotland, there are many scientists who devote their research to the field of exoplanets – planets outside our Solar System that orbit stars other than our Sun. These two short documentary films by Edinburgh College of Art students look at the work they do and what inspires them. Followed by a Q&A session with **Dr Duncan Forgan** and **Dr Ken Rice**.

**8pm (90 minutes) • Free (ticket required)**  
**National Museum of Scotland Auditorium**

Presented by The Royal Observatory Edinburgh

**SPLICE**

SCREENING

RATED 15

Despite the plug being pulled on their research, two young rebellious scientists (Adrien Brody and Sarah Polley) secretly continue to experiment with the splicing together of DNA of different animals to create new hybrids. After this provocative take on the Frankenstein story, our experts will explore ideas of biology, humanity, playing god and scientific responsibility in the context of cutting-edge synthetic biology research.

**8.45pm (2 hours) • £7.50/£5.50**  
**Filmhouse**

In association with Filmhouse

**SATURDAY 21 APRIL**

**DERREN BROWN: THE CONVERSATION**



Join psychological illusionist **Derren Brown** as he chats to **Professor Richard Wiseman** about the tricks of his trade. A rare opportunity to journey backstage and discover Derren's thoughts about mind control, hypnosis, the paranormal, parrots and a whole host of other odd phenomena. No card tricks – and a packet of peanuts for the best question.

**2pm (90 minutes) • £15 • Pleasance**

**EDINBURGH INTERNATIONAL science festival**

**INTERNATIONAL PARTNERSHIPS**

*Yves Rossy 'Jetman'*

**In November 2011, Edinburgh International Science Festival worked in close partnership with the Abu Dhabi Government to stage the inaugural Abu Dhabi Science Festival and bring the world's best science events to the region.**

Drawing on its 23 years of experience of entertaining young people and their families in the UK, Edinburgh International Science Festival showcased 20 of its own events and helped co-ordinate the involvement of performers and events from around the world. Edinburgh International Science Festival's team of Science Communicators also worked with hundreds of local university students to help bring the events to life.

Performing some surgery in our ER **page 8**

Dig up a Dinosaur proves just as popular in Abu Dhabi as it is in Edinburgh **page 8**

The Street Science team entertains crowds in shopping centres around the city **page 20**

Dr Bunthead wows the crowds with his unique blend of explosive science **page 20**

**The Abu Dhabi Science Festival exceeded all expectations attracting over 100,000 visitors during the nine days of events.**

To find out more about hiring our events or how we work with international partners, please visit [www.sciencefestival.co.uk/hire-us](http://www.sciencefestival.co.uk/hire-us)

### EDINBURGH INTERNATIONAL SCIENCE FESTIVAL

Edinburgh International Science Festival, founded in 1989, is an educational charity that inspires people of all ages and backgrounds to discover the wonder of the world around them. We are best known for organising Edinburgh's annual Science Festival – the world's first celebration of science and technology, and still one of Europe's largest. Of equal importance, however, is our schools touring programme, Generation Science, which brings science to life in Scottish classrooms throughout the year.

Charity Number: SC003790  
Registered Office: Suite 1, Mitchell House, 5 Mitchell Street, Edinburgh EH6 7BD

### YEAR-ROUND STAFF

**Laura Bain** Fundraising Assistant  
**Laura Brettle** Events Development Coordinator  
**Helen Chomczuk** Fundraising Manager  
**Lindsay Coulton** Fundraising Coordinator  
**Nicola Coutts** PA to the Directors  
**Debbie Crawford** Fundraising Officer  
**Joan Davidson** Education Manager  
**Amy Elder** Generation Science Production Manager  
**Simon Gage** Festival Director  
**Pat Hymers** Festival Administrator  
**Fiona Logue** Business Director  
**Wendy McCormick** Finance Assistant  
**Andrew Owens** Finance Manager  
**Emma Pirie** Marketing Manager  
**Amanda Tyndall** Deputy Festival Director

### FESTIVAL STAFF

**Lyndsey Clark** Project Manager, InMotion  
**Adele Conn** Events Manager  
**Debbie Howard** Events Manager  
**Augusta MacDonald** Events Development  
**Gill Plag** Staff Manager  
**Josephine Power** Marketing Officer  
**Sarah Ratcliffe** Production Assistant  
**Peter Scott** Production Manager  
**Frances Sutton** PR Manager  
**Matthew Wright** Events Development

Edinburgh International Science Festival also employs around 150 additional staff over the festival period and Generation Science tour.

### BOARD OF DIRECTORS

David Milne (Chair)	Ian Ritchie
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### SCIENCE FESTIVAL ADVISORY GROUP

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**Ian Sample** The Guardian  
**Nigel Townsend** Y Touring Theatre Company  
**Richard Wiseman** The University of Hertfordshire

### EDINBURGH INTERNATIONAL SCIENCE FESTIVAL



We would like to thank Generation Science Club members for their support of the Edinburgh International Science Festival's schools touring programme. Generation Science Club is a network of individuals and companies dedicated to engaging the next generation in science and technology. Members of the club donate funds to help ensure our school shows and workshops can be enjoyed by all pupils – wherever they are and whatever their financial background. With particular thanks to:

### HONORARY MEMBERS

Professor Anne Glover  
David Sibbald  
Professor Lord Robert Winston

### MEMBERS

Philip Young (Chair)  
Dugdale Bradley  
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Alex Callander, Baillie Gifford & Co  
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Ian Wall  
Wolfson Microelectronics

### EDUCATION AMBASSADORS

Professor Jack Jackson, Strathclyde University  
Heather Reid OBE

### VENUE AND PROGRAMMING PARTNERS

Edinburgh International Science Festival events are programmed with help from our venue programming partners. We'd like to thank them for their support.

BBC  
BBC Scotland  
Filmhouse  
National Museums Scotland  
Our Dynamic Earth  
Royal Botanic Garden Edinburgh  
Scottish Storytelling Centre  
University of Edinburgh

Edinburgh International Science Festival is a partner in the Interreg IVB funded Open Innovation Project.  
[www.openinnovationproject.eu](http://www.openinnovationproject.eu)

### EDINBURGH'S FESTIVALS



Edinburgh is the world's Festival City with events happening all year round. Visit [www.edinburghfestivals.co.uk](http://www.edinburghfestivals.co.uk) for insider information, listings, competitions and news across all Edinburgh's Festivals.

**Bank of Scotland Imagine Festival**  
7-14 May 2012  
[www.imagine.org.co.uk](http://www.imagine.org.co.uk)

**Edinburgh International Film Festival**  
20 June – 1 July 2012  
[www.edfilmfest.org.uk](http://www.edfilmfest.org.uk)

**Edinburgh Jazz and Blues Festival**  
20-29 July 2012  
[www.edinburghjazzfestival.com](http://www.edinburghjazzfestival.com)

**Edinburgh Art Festival**  
2 August – 2 September 2012  
[www.edinburghartfestival.com](http://www.edinburghartfestival.com)

**Edinburgh Festival Fringe**  
3-27 August 2012  
[www.edfringe.com](http://www.edfringe.com)

**Royal Edinburgh Military Tattoo**  
3-25 August 2012  
[www.edintattoo.co.uk](http://www.edintattoo.co.uk)

**Edinburgh International Festival**  
9 August – 2 September 2012  
[www.eif.co.uk](http://www.eif.co.uk)

**Edinburgh International Book Festival**  
11-27 August 2012  
[www.edbookfest.co.uk](http://www.edbookfest.co.uk)

**Edinburgh Mela**  
31 August – 2 September 2012  
[www.edinburgh-mela.co.uk](http://www.edinburgh-mela.co.uk)

**Scottish International Storytelling Festival**  
19-28 October 2012  
[www.scottishstorytellingcentre.co.uk](http://www.scottishstorytellingcentre.co.uk)

**Edinburgh's Hogmanay**  
30 December 2012 – 1 January 2013  
[www.edinburghshogmanay.com](http://www.edinburghshogmanay.com)

**Edinburgh International Science Festival**  
23 March – 7 April 2013  
[www.sciencefestival.co.uk](http://www.sciencefestival.co.uk)

### GETTING HERE

Many of our venues in the city centre are easily accessible on foot or by public transport. Please consider using public transport when visiting our events. As an incentive, if you present your ticket or travelcard at the City Art Centre, you'll receive a free gift (supported by the Scottish Government).



### Public Transport

Public transport information for the whole of Scotland is available 24 hours a day from [www.travelinescotland.com](http://www.travelinescotland.com) and **0871 200 22 33**.

### By bus

We've teamed up with Lothian Buses to offer information about travel to all our venues. Please visit [www.lothianbuses.com](http://www.lothianbuses.com) or call **0131 555 6363**.

### By train

For train travel in Scotland and tickets, visit [www.scotrail.co.uk](http://www.scotrail.co.uk). For National Rail Enquiries, see [www.nationalrail.co.uk](http://www.nationalrail.co.uk) or call **08457 48 49 50**.

### By car

There are multi-storey car parks and metered parking around the city centre. Keep in mind that many of our venues are easily accessible on foot or by public transport. Please consider the environment when planning your travel to and from our events. If you are travelling by car, you might want to consider car-sharing. [www.gocarshare.com](http://www.gocarshare.com)

Public and shared travel information available from:  
Buses ([lothianbuses.com](http://lothianbuses.com)), Trains ([scotrail.co.uk](http://scotrail.co.uk)), Car Sharing ([gocarshare.com](http://gocarshare.com)), Cyclists journey planner ([edinburgh.cyclestreets.net](http://edinburgh.cyclestreets.net))



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Nicolson Street EH8 9DW  
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Bus: 1, 10, 11, 15/A, 16, 22, 24, 30, 34



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