

# Bang Goes The Borders EVENTS 2016 – by zone



Exact timings and locations aren't guaranteed as there may be late changes to the programme, but just contact us via our Facebook page with any queries. There will be lots of friendly volunteers on the day to help you find the workshops, toilets and café!

## All around the venue

### **Scientist in my Pocket**

**NEW!**

We can all be scientists everyday with some help from the Scientist in my Pocket team from Selkirk High School. Using technology, observational and investigative powers they'll take you on a tour of the festival explaining the science behind the sights and sounds. [All ages]

All day

*Selkirk High School*

### **Science Busking with Street Science**

Roving all over the venue, Newcastle University's Street Science Team will bring to life science, technology, engineering and maths through the medium of street performance! [Ages 7+]

All day

*Newcastle University*

### **Bird of Prey Display**

**NEW!**

Drop in and meet two beautiful birds of prey who are visiting BGTB for the first time. If you've seen and admired the aerobatic prowess of birds of prey before, this is a chance to get close enough to touch. A fantastic experience for anyone who loves nature! [All ages]

All day

*Borders College*

Don't forget that if you get hungry, our Science Café is open all day at the heart of the site – just follow the signs or ask a volunteer.

## The Purple Zone – Look for the Marquees and Huge Bus!

**NEW!**

### **Join the Rocketeers**

Design, build and launch your own rocket car at the BGTB inaugural grand prix. See if you can beat the record for a chance to get your name emblazoned on the BLOODHOUND rocket car which is set to break the world land speed record by reaching over 1,000 mph. We'll be aiming for a slightly less dramatic 62 mph on the day – will you take the podium? [Ages 9+]

Building all day, ignition times will be posted

*Borders College*

### **Building a Hyper Light Boat**

**NEW!**

With some help from Frazer-Nash Consultancy (who have designed Olympic rowing boats), and Dr Tom Hawson, we will be building the lightest boat we can possibly dream up using new and old techniques and technology. On display will be the story behind our design thinking and a walk through display of how you go about building a boat from sketches and drawings to full size loft and moulds. The plan and challenge is to build the boat on the day and for two adults to paddle it across the Tweed!

Enthusiastic visitors to our boaty encampment can have a go and get hands on at some element of the boats building - we will need all the help we can get to have it done on time! [Ages 7+]

Building all day

*Tom Hawson & Fraser Nash*

### **Wild About Scotland**

**NEW!**

Wild about Scotland connects people with Scotland's amazing biodiversity. Our double-decker bus has been fully converted to provide a unique and inspiring mobile museum. Visitors to the bus can take part in activities such as guess the animal skulls, build a beaver dam and look at mini-beasts under microscopes. They can also find out about RZSS native conservation projects, and discover how they can help protect their local wildlife. [All ages]

Drop in all day

*The Royal Zoological Society of Scotland*

## The Green Zone (near the information desk)

### **Explosions!**

This is an activity that will be presented by very enthusiastic U6 Chemistry students from Sedbergh School under the supervision of their Chemistry teacher. The essence of what an explosion actually is will be explained together with some spectacular and loud demonstrations – bring your ear muffs! The session will conclude with a short workshop with participants having the opportunity to make a home-made bomb from materials that can be found in an ordinary domestic kitchen. [Ages 9+]

Various times (check venue – this workshop is very popular every year so scheduling will be flexible to allow for as many re-runs as possible)

*Sedbergh School*

### **Cold Science**

Investigating cold science using solid carbon dioxide. Funny things happen at very cold temperatures – come and find out about just a few of them! [All ages]

10, 11, 12.45, 1.45, 2.45

*Oundle School*

### **I see – Light Fantastic**

**NEW!**

One of our senses is sight. Adults take it for granted, whilst young people don't fully understand it. To see the world around us, light from the objects we are looking at must **enter** our eyes; but how do we manage to fit the world outside in our tiny eyes which are only as big as a ping-pong ball?

We will explore light, colours, reflection, how lenses work, and rainbows in order to find out more. [Ages 9+]

45 minute Workshops at 10.30, 1.00, 3.00 (times may flex to allow more shows)

### **Scab in a Cup**

One of our great favourites returns to BGTB! An interactive (and oh so messy) investigation into what happens when our skin is injured and the steps we take in making scabs – our natural healing plasters!

Dr. Sarah Jayne Boulton (possibly the most enthusiastic scientist we've met) from the School of Biomedical Sciences at Newcastle University will guide you through the squidgy business of making scabs, from finding out about the different ingredients needed to the emergency responses our bodies trigger when we get cuts and grazes. [Ages 4+]

20 min sessions at **10.15/10.45/11.15/12/12:30/1:45/2.15/2:45/3.30 (times may flex to allow more shows)**

*Newcastle University*

### **Rings of Colour**

**NEW!**

We are surrounded by colour, but how much of the science behind the beauty of our world do you understand? With the sparkling team from HLC you can make rainbows in a test-tube, become a colour detectives, and build some colourful constructions, learning all the time about the combination of chemistry and physics behind our kaleidoscopic environment. [Ages 7+]

30 minute sessions, every hour. **10.15/11.15/1.15/2.15/3.15**

*Harrogate Ladies' College*

## **The Yellow Zone (behind the information desk)**

### **Bad Bugs Fighting Back!**

**NEW!**

Try out our antibiotic attack game and learn the names of some pathogens, the so-called "bad bugs" that make us sick, give us diarrhoea and cause pus-filled wounds and snot. We have plenty of gross props, fluffy bugs and yucky photos to keep you entertained. [Ages 4+]

20 minute workshops throughout the day

*Novoscience*

### **Blast a biofilm, the invisible world and the microbiome**

Discover more about biofilms, the predominant life style of bacterial populations, and prepare to be convinced of the importance of tooth brushing and surface cleaning like never before!

**NEW!**

Then step into the microbiome: Its widely known the number of bacterial cells on and within the body far exceed the number of human cells, but what are these microbes doing? Explore a full size outline of a human and various giant microbes (both commensal and pathogenic) to understand where specific microbes exist on/in the body and their impact (if any).

*45 minute workshops at 10:15/11:15/1:15/2:15/3:15*

*Cardiff Metropolitan University*

## **The Blue Zone (near the information desk)**

### **Meet “Wee ARCHIE”, the Small-Scale Supercomputer**

Wee ARCHIE is our own suitcase-sized Supercomputer, the little brother to ARCHER – the fastest computer in the UK. Come and find out how Supercomputers work and what they are used for. Try out Wee ARCHIE for yourself with one of our fun demos, and look inside the machine while your code is running!

**NEW!**

While you're waiting, why not join our wireless 'task-farm' and do some science using one of our iPads, or even your own smart-phone... [All Ages]

Drop in all day

EPCC, the University of Edinburgh

### **Build a Computer Scrapheap Challenge**

Ever wondered what's inside your computer and how all the parts fit together? Come along and build a computer from scratch (sorry you won't be able to take it home)!

Work by yourself or with a friend or parent - step-by-step instructions and hands-on help will be available. The workshop will last approximately 45 minutes, long enough to get your computer built, booted up and running. [Ages 8+]

10.30, 12.00, 13.30, 15.00.

EPCC, the University of Edinburgh

### **The Magic of Chemistry (Flash, Bangs and Smells)**

The Head of Science at Rugby School, Dr Mike Thompson, has been giving lecture demonstrations across the UK for the last 20 years. This is his second appearance at Bang Goes the Borders, the premier Science event North of the Border (his words, and who are we to disagree!) Chemistry is perhaps the most creative of the Sciences.

Through a series of exciting demonstrations, all members of the audience will be amazed at how the simple rearrangement of atoms can lead to a whole range of effects; from flashes, bangs, smells, colours, Foams, bubbles and making the invisible visible. Participation is highly recommended and essential. [All ages]

Demonstration lecture at 2pm

**NEW!**

### **Queensferry Crossing**

If you've crossed the Forth by road or rail in the last few years you've probably been intrigued and impressed by the gradual appearance of the Queensferry Crossing. This is your chance to find out exactly how this masterpiece of modern engineering is being built and to learn about the materials and techniques involved. Even better, you can meet one of the engineers involved and get an insider's guide to Scotland's newest landmark. [All ages]

Drop in all day

*Forth Crossing Bridge Constructors*

### **Journey to the Centre of the Earth**

What do crystals and bubbles tell us about volcanoes and how explosive they are? Come and join in with our interactive talk about volcanoes: what makes them so dangerous; and what are they telling us about the centre of the earth? Then take a hands on look at rocks, minerals and fossils. We will have a microscope to look at the finer details and we're looking forward to hearing (and trying to answer!) all of your questions. [All ages]

Drop in all day, interactive talk scheduled on the day

*Scottish Universities Environmental Research Centre, University of Glasgow*

### **Technology Overload!**

We are surrounded by technology that would have been science fiction twenty years ago. This is your chance to get to grips with some of the most exciting developments in available tech of the last few years. Pilot a drone, programme a path for Sphero the Robot, produce animation and enjoy a virtual reality experience. Don't miss the chance learn about the science and engineering that goes into them and impress your friends! [All ages]

**NEW!**

Drop in all day

*Borders College*

### **Animal Handling**

If your parents have rather prosaic views about which animals make suitable pets, bring them along to meet Mr King and his menagerie. If it creeps, crawls or slithers, he's probably got one and they are all keen to meet you – close up and hands on! [All ages]

**NEW!**

Drop in until 12.30

*Merchiston Castle School*

## **The Orange Zone (main hall and verandah classrooms at front of school)**

### **Fish sCool**

An interactive session that will allow children to learn about the adaptations fish have for living in the local river Tweed. Children will learn about the ecology and natural history of Tweed fish, particularly Salmon and Trout, with live fish shown in the aquarium for demonstration. [Ages 7+]

Drop in all day

*Tweed Foundation*

### **Make your own Fruit Fly**

Why are you similar to your mum in some ways, to your dad in others... yet different? It is all in your DNA: we get half of our genes from each of our parents. Scientists use fruit flies to study what makes you so special. Genes get shuffled like cards in a deck to produce unique combinations. You will shuffle the cards yourself, decipher the genetic code, find out how the fruit fly should look like... and then build your own fly with play-dough. [Ages 6+]

Workshops running all day

*The University of Edinburgh*

### **Mega Metal-Munching Microbes Miners**

**NEW!**

Microbes love to eat metal! And they're fantastic at it! Can you use our specially designed squidgy bacteria to mine our toxic waste and pull out harmful metals like arsenic or lead, or valuable metals like gold and platinum? If you do a good job you'll win a prize and become an environmentally-friendly scientist for the day! [Ages 4+ - We'll talk to anyone!]

Drop in all day

*The University of Edinburgh*

### **BGTB Step Challenge**

**NEW!**

Before you start your exploring, come and 'check in' at Step Challenge HQ and attach a pedometer. Wear it as you walk/run/skip your way around BGTB then 'check out' before you leave. We'll help you complete a 'steps taken record' and explain a little about the impact activity has on your health and wellbeing, encouraging you to hit a daily target! [Ages 5+]

Drop in all day

*University of Aberdeen*

### **Discovering the 5 senses**

**NEW!**

We will perform experiments that will trick your senses! This demonstration will show you how your brain works to give you the ability to perceive the world using sight, taste, touch, smell, and hearing. [Ages 7+]

Drop in all day

*University of Edinburgh*

### **Beyond the Panda**

**NEW!**

The Beyond the Panda is an interactive space in which you can investigate and discover more about China, its language, geography, giant pandas and other Chinese wildlife. Learn more about how Chinese animals are classified and the lifecycle of the giant panda along with many other fascinating facts [Ages 5+]

Drop in all day

*The Royal Zoological Society of Scotland*

## The Red Zone (next to the rear entrance)

### **Zoolab – pre-prep gym**

Fancy getting up close and personal with some wonderful animals and insects? After a great reception at Bang Goes the Borders every year to date, we're delighted to welcome back Zoolab. Arrive early – always popular and numbers limited! [All ages]

11:00, 13:00, 14:00

*Zoologica Ltd.*

### **Bubbles**

Come and see how big a bubble you can blow. Make bubble prints. What's the best bubble shape? Change the colour of water with bubbles and see how this affects our oceans. The amount of carbon dioxide in the atmosphere is an ever increasing problem so come and explore the effects and the solutions to the carbon dioxide problem. [Ages 4+]

Drop in until 3pm, workshops at 10,11,12 and 2pm

*Loretto School*