

2013 Cambridge Science Festival





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2013 Cambridge Science Festival - Introduction

Cambridge Science Festival is committed to engaging the public with science, technology, engineering, mathematics and medicine. In 2013, the Festival ran from 11 to 24 March and comprised over 200 events. It attracted a wide audience of all ages from the local area and beyond, including many international visitors. The Festival is evaluated by the visiting public, comments are collated and assessed in order to improve and grow the Festival each year.

The objectives of Cambridge Science Festival are to:

- Encourage young people to study science, technology, engineering and mathematics further and to consider careers in these areas
- Engage researchers and the public with issues of scientific interest and concern
- Promote research conducted within the University of Cambridge and partner organisations
- Reach at least 25,000 visitors each year and engage new audiences in the Festival

This report shows that we continue to meet these objectives.

Cambridge Science Festival depends on the continued support, hard work, creativity and enthusiasm of colleagues in the University and other agencies, schools, institutions and businesses which take part. We thank everyone who contributed to the Festival this year; as speakers, event coordinators, volunteers, sponsors and patrons.

2013 Cambridge Science Festival – Contact us

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The Cambridge Science Festival is financed through core funding from the University of Cambridge and generous support from our sponsors. We thank them all for their support.



2013 Cambridge Science Festival - Patrons

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Professor Malcolm Longair Cavendish Laboratory

Mr Tim Radford Journalist

Professor Barbara Sahakian Department of Psychiatry

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Professor Ron Laskey Former director Hutchinson/MRC Research Centre

Professor Bill Sutherland Department of Zoology

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2013 Cambridge Science Festival – Team

This year's Cambridge Science Festival team were:

Lucinda Spokes Science Festival Co-ordinator (maternity cover)

Shelley Bolderson Science Festival Co-ordinator

Sue Long Festivals and Outreach Officer (Community and Schools)

Will Betts Festivals and Outreach Assistant
Sophie Dawson Festivals and Outreach Assistant
Andy Whitten Festivals and Outreach Assistant

Stuart Roberts Communications Officer

Becky Wieczorek Public Engagement Communications Officer

Nicola Buckley Head of Public Engagement

Dane Comerford Public Engagement Events Manager

Rachel Teubner Public Engagement Assistant

Malavika Anderson Festival and Outreach Co-ordinator (Arts and Humanities)



2013 Cambridge Science Festival

Festival Patron, Professor Barbara Sahakian

Nothing is more thrilling than seeing young minds fascinated by science and the amazement on children's faces when they are dazzled by experiments or participating in demonstrations.

As Jacqueline Robbins and I walked through the Downing and New Museum Sites on the horribly bitter-cold 'Super Saturday', even we were surprised to see the steamy windows and rooms packed out with young visitors and their parents. One of the absolute thrills is to watch children donning mini-sized white lab coats and popping on protective glasses to execute a Chemistry experiment, carefully supervised by a PhD student or postdoc.

And that is the other side of the Science Festival that blows my mind, PhD students giving freely of their time to help out and clearly enjoying every minute of it.

Other highlights for me? Well, it had to be the brilliant lecture given by Professor John Gurdon on the future of cell replacement in age and disease. The 500-seater Babbage Theatre was packed out with the public eager to learn and they were equally fascinated by Gurdon's discussion of the science as they were by his superb discourse on the ethical aspects.

In the past two years, we have had presentations on neuropsychiatric disorders, in which people with obsessive compulsive disorder (OCD) and attention deficit hyperactivity disorder (ADHD) have participated. These events have been highly successful, with the majority of the audiences being from outside the University. Hopefully, these events will help to reduce the stigma associated with mental health problems.

This year, there was also a wonderful event on 'smart drugs', which Dr Hannah Critchlow from the Naked Scientists helped to organise. Sixth form college students debated the pros and cons of their use both now and in the future and how the use of cognitive enhancing drugs by healthy people might alter society. The debate was remarkably thoughtful, considered, educational and fun – exactly what a science festival event should be! Alok Jha, the Guardian's Science Correspondent, contributed greatly through his perceptive comments and the chairing of the audience discussion and vote.

Our Guest Director, Benedict Cumberbatch, added enormously to this year's Science Festival through his enthusiasm, inspiration and erudite podcast and programme notes. It was so generous of him to take time out of his busy schedule, but it is clear that not only is he turned on by science himself, he also wants to help children and young people to open their minds and explore scientific ideas.

As you guessed from these comments – yes, I am a Science Festival Addict! I am already looking forward to the excitement and intellectual stimulation in March 2014.

Finally, I would like to thank the financial Sponsors for the University of Cambridge Science Festival. In a time of austerity and financial hardship, you have allowed us to continue to provide educational entertainment and to stimulate the interest of young people to choose a career in science, so that through your generosity, these events remain free.

Barbara J Sahakian
Professor of Clinical Neuropsychology, University of Cambridge



2013 Cambridge Science Festival - Overview

- Benedict Cumberbatch was our Guest Director this year. Initial introductions were made through Professor Barbara Sahakian following a meeting at the Royal Society. Benedict's involvement generated a huge amount of media interest and was successful in raising the profile of the Festival to a younger audience.
 "Benedict's message as Guest Chairman really inspired me to think more about science and gave me the momentum to pick out three events that I could attend."
 As part of this role, Benedict Cumberbatch spoke to Ben Valsler of the Naked Scientists and this interview is available at: http://www.thenakedscientists.com/HTML/podcasts/specials/show/20130306/
- Media interest in the Festival was high this year with coverage in both local and national press. BBC Radio Cambridgeshire was our media partner again, running features throughout the Festival and an outside broadcast on 16 March at the New Museums Site. The Communications Team within the Office of External Affairs ran an expanded social media campaign on Science Saturday, with audio content from talks, video clips from activities, Facebook posts and tweets uploaded throughout the day.
- After the success of Sunday opening last year, Science Sunday was expanded in 2013 with top talks in the Babbage, Robin Ince's 'Show and Tell' in the Union and his touring show 'The importance of being interested' in the evening. All bookable events were fully booked. The Biology Zone in the Arts School was open from 11am to 3pm and was as busy as on Science Saturday. Surveys of numbers attending suggested that over 5000 people visited the Biology Zone over these two days. Festival events in the city on Sunday were also extremely popular. Cambridge Science Centre had its busiest day since its opening in February and was extremely busy over the entire Festival with over 2200 visitors coming to the Centre.
- We used the theme 'Join us on an exploration of Cambridge Science' because the original theme of Re-gene-eration lacked substantial uptake. We believe this change had no significant impact on the Festival.



2013 Cambridge Science Festival - In pictures





2013 Cambridge Science Festival – In Summary

- Science Festival evaluation forms were distributed to visitors at all centrally organised
 events and at a number of events run by Science Festival Coordinators. A total of 1063
 evaluation cards were collected over the Festival. In addition to the paper evaluation
 forms, information was collected online during booking (2293 responses) and one month
 following the Festival (224 responses). Both internal and external event coordinators
 were emailed following the Festival to provide comments and feedback.
- 52% respondents to the online booking evaluation had not attended the Festival previously, 25% of respondents had been to more than three previous Festivals.
- The majority of visitors came from Cambridgeshire with significant numbers also from the Eastern region and London. International visitors came from Austria, Belgium, Italy, Germany, Denmark, Norway, Finland, Israel, Singapore and the United States of America.
- 98% of respondents had a positive overall impression of the Cambridge Science Festival one month after attending (based on 209 online evaluation responses)
- 97% of respondents had positive impression of the event they had just attended (based on 1063 responses obtained at events, 97% responded that the event was good or very good)
- 22,487 unique visitors to the website
 (38,408 visits to the website, from Google Analytics for 4 February to 24 March 2013)
- 47% new visits to the website (increased information and news stories on website including extended speaker spotlights)
- 20% people accessed the website through mobile devices and 45% of people who
 responded to our evaluation after the Festival said they would like a mobile app
- 3290 followers on twitter, 3758 likes on Facebook (1106 new followers on twitter, 1284 new likes on Facebook compared to data from 2012)
- 140 people acted as volunteer stewards throughout the Festival.
- University academics gave 41 Schools Roadshow talks on 23 different topics to over 3000 primary and secondary schools in Cambridge and the Fenland District
- Visitors spent on average 8.5 hours at the Festival (based on online evaluation responses one month after the Festival)
- 30% of visitors used the printed programme to plan their visit, 63% used the Science Festival website which contained a downloadable pdf of the programme. However comments suggest that some people using the website would prefer to use a printed programme but couldn't access a hard copy.
- The Festival welcomed people of all ages. Using data collected from evaluation cards at the Festival, children (0-15 years in age) represented 21% of respondents indicating a significant family audience, 36% of respondents were between 36 and 55 years old, the oldest was 93 and 12% were in the 16-25 age category.



2013 Cambridge Science Festival - Feedback

General visitor comments about the Festival

98% of people who completed our online evaluation had a positive overall impression of the Festival one month after attending the Cambridge Science Festival.

Encourage young people to study science, technology, engineering and mathematics further and to consider careers in these areas

There is always something interesting and I take my teenage children. I am delighted to say my son wants to be a scientific researcher when he grows up and my daughter wants to take her nursing into medical research.

The Festival provides fuel for our daughter to continue her enthusiasm for science. It made her feel girls could succeed in science. We are a low income, disabled family and could not offer her these experiences without the Cambridge Science Festival.

The Cambridge Science Festival exposed my young children to a wide variety of fascinating subjects first hand. This is vital for them to become interested and feel engaged for the future.

Science is much more inspiring when it is made accessible like this. My children came away wanting to be scientists!

Engage with the public on issues of scientific interest and concern

I had a very poor school science education. Using my son as a pretext, I come to the Festival to be educated and inspired.

I enjoyed every event. I congratulate you on the great effort made to organise and provide quality talks I learned lots of things I didn't know before in a greatly entertaining way. The speakers were also very good so I felt I had a good lesson in what works in public speaking on a technical subject. I also saw some fantastic locations that were inspiring and piqued my curiosity about what the scientists did.

The Festival makes me feel proud to be working in a science-based profession. I feel inspired by the range of insights that every discipline can offer.

Brilliant range of events to cater for people of all abilities and ages and the best thing about the day was being able to talk to the many passionate scientists and students about their fields.

We live quite a distance away in Chelmsford and thoroughly enjoyed our day attending talks, demonstrations. We will definitely be attending next year and would like to say a very big thank you to everyone for organising such a thought provoking event.

Everywhere we went the intense commitment and knowledge of the organisers was palpable.

Promote research conducted within the University

I have enjoyed learning new things alongside my children and have been able to listen to very eminent scientists. I have also felt welcomed into the University's domain.

I have gained a greater understanding of what goes on in the University and why funding for research is needed. The Festival really successfully integrates town and gown.

I have gained a better understanding of the work that has been done and is currently being done at the University of Cambridge and in science in general.

The Science Festival gives us all access to: expert scientists who were all willing to demonstrate and share their expertise; science contacts for the future and information about how to apply to Cambridge University. I've also gained a feeling of how exciting the future could be.



Opportunities for improvements

Crowding

Feedback comments focused on how crowded events were, especially on Saturday.

Too many good things all crammed in together too closely.

The only 'downside' was how popular the talks were. We struggled to find seating in several lectures. Is it worth limiting the number of people at any one time or getting people to book?'

Could you do more sessions of the most popular talks?

Particularly in the Biology Zone

I really enjoyed the biology exhibition the only problem was it was so cramped - maybe next year it could be at a larger venue?

I was able to see some things and talk to some presenters upstairs, but downstairs was packed. We also went to the Biology Zone which had some interesting hands-on activities, but was extremely crowded. Again, this can't be helped, as it's a testament to the popularity of the festival.

Improvements:

- More sessions of popular talks or live streaming into another lecture theatre?
- Allowing fewer people into the venues at any one time?
- Changing the venue for the Biology Zone? The New Museums Site is being redeveloped in 2014 and the Arts School and Babbage Lecture Theatre are unavailable next year. We are currently investigating alternative venues.
- Spread events more evenly between Saturday and Sunday? There appears to be a strong desire for more events on Sunday with many people choosing to attend on Sunday instead of, or in addition to, Saturday. We will continue to expand our Sunday offering.

Event booking

78% of people who completed our online evaluation said the website and booking system were mostly easy or very easy to use but some feedback comments suggest there is still room for improvement.

The website is hard to use! It would be better to be able to search for activities by age suitability. We spent a lot less time at the Festival this year, largely because I found the booking methods difficult, and I didn't get a 'what's on' booklet sent through the post and couldn't find one locally to pick up. The events we went to were great.

I would have liked to attend some to the performances but only found out about them when they were already sold out.

Improvements:

- Consistent booking method for all bookable events during the Festival? We are trialling this with Festival of Ideas and will assess the success of this.
- Ability to search for events using multiple terms e.g. teenager and talks, clearer that
 booking needed for certain events and when booking opens? The Festival website
 will be moved to the new University of Cambridge website shortly and we are using
 feedback comments to improve search functions and accessibility. More notice will be
 given of the date that booking opens using social media and the University of
 Cambridge 'What's On' service.



Events for different ages and levels of scientific understanding A number of visitors commented on the scientific level of events and several wished to have more events available for teenagers.

Some of the talks billed as suitable for teenagers had an audience of mainly adults and younger children and this put my teenager off going again. This age group does not need to be accompanied by parents and arguably is the most important group to be encouraged to stay with science as they are choosing their GCSE's.

Many hands-on activities we're on a very basic level of understanding - I attended with a class of high school children (age 17-18), we were a bit disappointed since we had hoped to learn more/new stuff about medicine. DNA etc.

The Festival is too child centred. I know children are the future but there is also a present and too much is focussed at a sub adult level.

Improvements:

- More events focussed at teenagers? We run very successful programmes in Cambridgeshire schools for teenagers but are extremely keen to engage more with this age group during our public events. We will continue to expand our offering to this age group. The issue we face is that all children up to the age of 16 have to be accompanied by an adult. We are reassessing our age categories for 2014 – to include a 13+/teen age grouping. We hope that this will encourage older children to attend and that fewer parents will bring younger children to these events.
- More high level science? We run a fantastic evening talk session will continue to promote these events to everyone, including teenagers and their families.

Signage and maps

94% of people who completed our online evaluation said it was mostly easy or very easy to get around the Festival, but comments on the day that it was difficult to find certain venues due to a lack of signage and inadequate maps.

It was not easy to find venues. I suggest only ONE map in central pages. In the current edition maps are distributed throughout the booklet. It is quite difficult for Festival visitors to find their way around, otherwise wonderful event very well organised.

It was hard to find where to go, so I feel we missed out on some potentially good things to see and do. There were no maps or brochures available to take away when we asked.

Improvements:

- Clearer more prominent maps? We will reassess our use of maps within the Science Festival programme and online and ensure those we use are clear and accurate. We will offer leaflets with event listings and maps for visitors on Saturday and Sunday in addition to complete Festival programmes.
- Better signage? This year we purchased flags and bunting and produced new signs for venues and promoted the Festival through bus advertising. We need to expand and improve publicity material to promote a feeling within Cambridge that a Festival is taking place.



2013 Cambridge Science Festival – Volunteers

Visitor information throughout the Festival was provided by Science Festival staff and over 140 volunteer stewards. Sue Long and Rachel Teubner from the Public Engagement Team kindly co-ordinated the volunteer stewards throughout the Science Festival. We are extremely grateful to Sue and Rachel and all our stewards for volunteering their time, enthusiasm and expertise. Without their support the Festival would not be possible.

One of the most memorable parts of the Festival was the amazing people/staff/students. They were all so enthusiastic and polite (even the poor man stood in the snow in the car park!).

I would like to express my gratitude for letting me volunteer; it was a great series of events and a great introduction to Cambridge, where I hope to study medicine myself at some point.

Thank you to all the staff for making the Festival accessible and helping us find appropriate things for a teenager to attend.

2013 Cambridge Science Festival - Events

Centrally organised talks running through the Festival

We were extremely fortunate to have 2012 Nobel Prize winner Professor Sir John Gurdon as our Spotlight Speaker this year. Professor Gurdon's talk 'Cell replacement in age and disease: what are the prospects?' was fully booked and extremely well received.

Excellent lecture and very inspiring to an early career scientist.

John Gurdon's lecture was excellent and wonderful opportunity to see a Nobel Prize winner.

The event and following reception was sponsored by TTP Group and we thank them for their continued support of the Festival.

In addition to our spotlight lecture, we organised 18 other talks running on weekday evenings, summarised below. Building on actions from 2012, all speakers were asked for a biography including their favourite place in Cambridge and how their science would help them survive on a desert island and these were used to introduce speakers at the start of their talk.

Around 4000 people attended centrally our organised talks. In addition to these, coordinators arranged and ran 48 additional talks, films and demonstrations on weekday afternoons and evenings throughout the Festival.



Office of External Affairs and Communications

Date	Event Title	Speaker
11 March	The amazing world of cells, molecules and cancer	Dr Robin Hesketh
11 March	The cost of conservation	Dr Bhaskar Vira (Chair) Dr Chris Sandbrook Dr Toby Gardner Dr Tony Whitten
12 March	Molecular advances in the diagnosis of infectious diseases Sponsored by CUP	Dr Tim Wreightt
12 March	How to spot a shabby statistic	Professor David Spiegelhalter
13 March	The future of energy	Mr. Tim Radford (Chair) Dr Richard McMahon, Julian Allwood Dr Emily Shuckburgh
11 Marah	Sponsored by AAAS	Tony Roulstone
14 March	Focusing on ADHD Sponsored by The Wellcome Trust and the British Association of Psychopharmacology	Professor Trevor Robbins Dr Sam Chamberlain Dr Ulrich Muller Mr Terry Laverty
15 March	Andrew Chamblin Memorial Lecture: The infinity puzzle – from the Higgs Boson to the LHC	Professor Frank Close
15 March	Cell replacement in age and disease: what are the prospects? Festival Spotlight Lecture Sponsored by TTP Group	Professor Sir John Gurdon
18 March	Smart Pills Anyone? Project of The Naked Scientists and the Behavioural & Clinical Neurosciences Institute at the University of Cambridge	Mr Alok Jha (Chair) Dr Hannah Critchlow Professor Barbara Sahakian Mr Ben Johnson Schools from the Eastern Region
19 March	Incredible edibles	Mr Stefan Gates Professor Andrea Sella
19 March	The wisdom of Psychopaths	Professor Kevin Dutton
19 March	When we walked on the moon Sponsored by CUP	Mr Ian Ridpath
20 March	Global Science from the Antarctic Continent Sponsored by CUP	Prof. David Walton
20 March	Our fluid Earth Sponsored by CUP	Professor Dan McKenzie
21 March	MRC Centenary Lecture: 100 years of TB – poets, sanatoriums and the MRC Sponsored by the MRC	Ms Vivienne Parry
21 March	Open access Sponsored by CUP	Professor John Naughton (Chair) Dr Neil Hammond Dr Cameron Neylon Dr David Carr Dr Rupert Gatti
21 March	Open your mind with the Naked Scientists	The Naked Scientists Dr Hannah Critchlow
22 March	Beyond the Higgs Boson: antimatter, spacetime and supersymmetry	Professor Val Gibson Professor Andy Parker



Selected feedback

Event: The amazing world of cells, molecules ... and cancer.

Speaker: Dr. Robin Hesketh, Department of Biochemistry, University of Cambridge

Venue: Mill Lane Lecture Rooms Monday 11 March 6pm – 7pm

Just to say thank you for inviting me to give a lecture, for introducing me so nicely and for being so fantastically well organised. I gave a talk as part of the first ever Science Week that Biochemistry contributed to. It is wonderful how the event has developed since then and, especially over the last few years, how professional it has all become. It's a great tribute to you and those involved and I'm delighted if I've helped – and still slightly amazed at the number that turned up, in view of the weather!

Clear presentation, accessible to the whole audience but challenge thinking also

The lecture was fantastic. The school students absolutely loved the whole experience and the lecture fitted in with what they have just been studying at A Level so they had an understanding of what he was talking about. The staff were all really friendly and welcomed us and made us feel special as they all knew we were from Haverhill. Thank you so much for helping to organise the trip and I look forward to working with you again.

Event: Focusing on ADHD

Coordinators: Dr Petra Vertes Department of Psychiatry, University of Cambridge

Dr Mercedes Arroyo, Department of Psychology, University of Cambridge

Venue: Babbage Lecture Theatre, Thursday 14 March 5.30pm – 7pm

We just wanted to congratulate on running this event (and all others I'm sure) so smoothly. The team of volunteers was also incredibly impressive and we're very grateful to each and every one of them.

Excellent event- very informative

Event: How to spot a shabby statistic

Speaker: Prof David Spiegelhalter, Statistical Laboratory, Centre for Mathematical

Sciences, University of Cambridge

Venue: Babbage Lecture Theatre, Tuesday 12 March 7.30pm – 8.30pm

David Spiegelhalter was good value, as ever. Also - very good questions, which is a rarity Excellent tall, clear and informative insight into the tricks (or plain stupidity) of people in the media and how to read between the headlines

Clear and informative insight into the tricks (or plain stupidity) of people in the media and how to read between the headlines. Extremely interesting. Excellent relaxed delivery from Prof Spiegelhalter.

Event: The Wisdom of Psychopaths

Speaker: Dr. Kevin Dutton, Department of Experimental Psychology, University of Oxford

Venue: Lady Mitchell Hall, Tuesday 19 March 7pm – 8pm

Taking part in The Cambridge Science Festival 2013 was an absolute blast. The organizers managed to pull off the fiendishly difficult task of combining attention to detail with a distinctly personal touch. From the minute I arrived at the venue for my talk -indeed, even before that: right through the set-up phase on email - I was made to feel part of an indomitably cohesive, incorrigibly enthusiastic and inestimably switched-on team. No wonder my audience gave me such good feedback at the end. Hats off to you guys - every single one of you. Will I be back next year? You bet!

Kevin Dutton gave another amazing talk.

Please bring him back again next year. Amazing slides & media in the excellent presentation Excellent presentation, fascinating



2013 Cambridge Science Festival - Events

Science on Saturday 1: 16 March and Science on Sunday: 17 March

Top Talks - Science on Saturday 1

Centrally organised events were held in the Babbage Lecture Theatre and the Arts School on the New Museums Site and at the Cambridge Union. All events where booking was required were fully booked prior to the event. Events were organised to span the entire age range with family highlights from Simon Mayo, Professor Andrea Sella and Steve Mould and an adult focused science comedy event from The Festival of the Spoken Nerd.

Recent participants in the University Rising Stars course also very successfully honed their public engagement skills at top talks on Saturday. Department of Zoology PhD student Nick Crumpton's 'Dinobores: why mammals are way cool' talk was extremely well received and Cavendish Laboratory PhD student Michael Conterio developed and presented interactive demonstrations for the 'Sciencelele Singalong' with Helen Arney.

The Public Engagement team worked with Dr Paul Elliott from Homerton College, University of Cambridge and The Faculty of Science and Technology at Anglia Ruskin University to facilitate the delivery of a new activity 'The secret of the sinister scientist'. This was held within the historic setting of the Central Science Library on the New Museums Site, a perfect venue for a forensic investigation.

Over 3000 people attended top talks and feedback showed they were very well received.

Date	Event Title	Speaker
16 March	The secret of the sinister scientist	Dr Paul Elliot
16 March	Itch Rocks	Simon Mayo
		Professor Andrea Sella
16 March	Strange ice'	Professor Andrea Sella
16 March	Science pranks	Mr Steve Mould
16 March	Anturus – survival science	Mr Huw James
16 March	Dinobores: why mammals are way cool'	Mr Nick Crumpton
16 March	Sciencelele singalong	Ms Helen Arney
		Mr Michael Contario
16 March	The evolutionary Olympics'	Dr Matt Wilkinson
16 March	Not-so-scary skulls'	Dr Phil Cox
16 March	Festival of the Spoken Nerd presents	Ms Helen Arney
	Full Frontal Nerdity	Mr Steve Mould
		Mr Matt Parker



The Biology Zone

The Biology Zone in the Arts School on New Museums Site featured 20 different hands-on exhibits for all ages and, building on the success of 2012, was open both Saturday and Sunday. A survey of visitors suggests that the number of people attending the Biology Zone reached ~5000 over the two days and that Sunday was as busy, if not busier than Saturday. Some visitors commented on overcrowding and we are looking at ways to alleviate this. The Biology Zone was facilitated by the Science Festival team and coordinated by participants, led by Dr Steve Scott at the Sanger Institute and Adrian Penrose from the MRC.

2013 Biology Zone Participants

MRC

Hutchinson/MRC Research Centre

MRC Cancer Cell Unit

MRC Biostatistics Unit

MRC Epidemiology Unit

Wellcome Trust – MRC Cambridge

Stem Cell Institute

MRC Mitochondrial Biology Unit

MRC Laboratory of Molecular Biology

MRC Human Nutrition Unit

University of Cambridge

Division of Cardiac Medicine, Department of Pharmacology Cambridge Infectious Diseases Metabolic Research Laboratories

EPIC Norfolk (European Prospective

Investigation of Cancer)

Cancer Research UK Cambridge Institute

MedImmune

Papworth Hospital

EMBL – European Bioinformatics Institute

and Wellcome Trust Sanger Institute

The Babraham Institute

Biotechnology and Biological Sciences

Research Council Society of Biology

Long Road Sixth Form College

Cambridge Association for Women in

Science and Engineering

Packs of Bug Battles, a card game initiative of Cambridge Infectious Diseases, were given to adults and children and proved extremely popular both as a game and as a way of spreading information on a wide range of microorganisms. Cambridge Infectious Diseases received consultancy and development support for Bug Battles from the Science Festival team.

Throughout the University and the City on Saturday

The University and City were extremely busy throughout the day. The Chemistry Department were joined by the Royal Society of Chemistry, The Departments of Zoology, Pathology, Psychology, Plant Sciences, Biochemistry, Anatomy, Materials Science and Metallurgy, Engineering along with the Gurdon Institute and the McDonald Institute for Archaeological Research were open with a wonderful range of hands-on activities and talks on offer. he Admissions Office also ran their 'GetSET' event providing information on how to apply to study sciences at the University of Cambridge.

All the University Museums contributed with tours, talks and hands-on activities. Anglia Ruskin University took over The Guildhall with a host of interactive activities for all ages and CHaOS ran their extremely popular 'Crash, Bang, Squelch workshops. ThinkCon, a series of talks for young people and adults took place in the McCrum Lecture Theatre, the education charity STEM Team East ran robot workshops and St. John's College library proved very popular again this year.



Top Talks – Science on Sunday

Building on the popularity of last year's Sunday events, a series of centrally organised top talks for families were held at the Babbage Lecture Theatre and the Biology Zone was open throughout the day. We also welcomed back last year's Guest Director Robin Ince who compered his 'Show and Tell' at The Cambridge Union in featuring Cambridge scientists. In the evening Robin played to a sell-out audience with his show 'The importance of being interested'. All events where booking was required were fully booked prior to the event and over 1850 people are estimated to have taken part.

Date	Event Title	Speaker
17 March	Stand up mathematics	Mr Matt Parker
17 March	The Naked Scientists	The Naked Scientists
	Stripping down science	Dr Chris Smith
		Mr Ben Valsler
		Mr Dave Ansell
		Ms Hayley Frend
		Mr David Weston
		Mr Sam Gregson
17 March	Demo-derby – Cambridge versus	Mr Dave Ansell
17 March	Robin Ince's show and tell	Mr Robin Ince
17 March	The importance of being interested	Mr Robin Ince

Throughout the University and the City on Sunday

In addition to centrally organised events, the Institute of Continuing Education organised three events at Madingley Hall, the Science Festival Choral Evensong took place at Great St. Mary's Church and Cambridge Science Centre had their busiest day since opening in February.

Speaking to visitors, there appears to be a real enthusiasm for Sunday opening with people attending on Sunday instead of, and in addition to, Saturday. In 2014 we plan to increase our Sunday offering, including perhaps access to the University Museums which not normally open on Sundays.

I would prefer Sunday to be as full on as Saturday but appreciate when it is run by volunteers that is perhaps too much of an ask.



Selected feedback – Centrally organised events: Saturday and Sunday

Event: Itch Rocks

Speakers: Simon Mayo and Prof. Andrea Sella, Department of Chemistry, UCL

Venue: Babbage Lecture Theatre Saturday 16 March 10am – 11am

I heard terrific things about the event from my colleague Alex and I am so pleased Simon was such a success. We are very grateful to you for ensuring it all ran so smoothly, and that he had such a large audience. Clare Hall-Craggs, Random House Publishers. Agent for Simon Mayo

Simon Mayo was excellent-captivating, Prof Andreas Sella was great, they held everyone's attention Very interesting, learnt a lot about explosions

Want to know more, now! Prof Sella was brilliant too! We loved the experiments

Event: The Biology Zone

Coordinator: Adrian Penrose MRC, Dr. Steve Scott, The Sanger Institute
Venue: Arts School, New Museums Site, Saturday 16 March 10am – 4pm

Sunday 17 March 11am - 3pm

Just a very quick note from all at the MRC and my Biology Zone co-conspirators, Claire Cockcroft (Babraham Institute) and Steve Scott (Sanger Institute), to say a huge thanks for all the organising you did to lay on the Biology Zone. It was a terrific weekend and the feedback suggests that you have a very happy public out there!!

I wanted to drop you a line to say how much we, especially our 8-year old son, enjoyed Science on Saturday. We only scratched the surface of what was on offer but the range of events that we tried gave a great insight into what science is about. The enthusiasm and patience of both staff and students was wonderful. What was particularly exciting for my son was conducting experiments for himself with genuine equipment in a real lab. He has been talking about how he extracted DNA from a strawberry every day since. Many thanks to everyone involved – and we look forward to next year!

The Biology Zone was amazing! I am an aspiring doctor and I learnt so much which has further inspired me to start a career in medicine. I will definitely be returning next year.

My children had a fabulous time in the biology zone last weekend. My son went back the following day and the collectable cards were an enormous hit, with him and his micro-biologist dad!

The guys on the Medimmune stand were very good engaging with children of all ages. My six year old daughter can still give a comprehensive explanation about a virus and an antibody!

Event: Demo Derby

Speaker: Dave Ansell, CHaOS, The Naked Scientists, IOP, Cambridge Science Centre

Venue: Babbage Lecture Theatre Sunday 17 March 3pm – 4pm

Demo Derby: A real crowd pleaser. This type of talk is perfect headline stuff for the festival. The demos were imaginitive, and varied, with many having a big 'wow' factor, yet the science and engineering behind each demonstration was explained clearly throughout. Dave was a natural. He should do big annual one man demo show, doing for physics what Dr Wothers does for chemistry.

Event: Stand-up mathematics

Speaker: Matt Parker, Outreach Officer, Queen Mary University, Stand-up mathematician

Venue: Babbage Lecture Theatre Saturday 16 March 10am – 11am

An excellent talk. I'm not a mathematician, but loved the talk and had some "light-bulb" moments! The whole family really enjoyed this talk and succeeded in texting in binary.

Brilliant – managed to convey some quite complicated ideas without making the audience feel stupid. Quite an achievement given some of the ideas being presented.



Events organised by other coordinators: Saturday 16 March

Event: Crash, bang, squelch!

Coordinator: Alex Davies CHaOS President

Venue: Department of Zoology, Saturday 16 March 10am – 5pm

Thank you for the exceptional amount of hard work that you and your team obviously put into organising this years' Science Festival. From CHaOS' point of view it was probably the smoothest running year yet! All our contact with the Science Festival team was clear and efficient and everything was organised well in advanced! As always we were full to capacity from 10:30am and got some lovely feedback, photos and video of the day. I would also like to thank you for providing the four Science festival stewards for our event, who were fantastic.

Event: ThinkCon

Coordinator: Andy Holding, MRC

Venue: McCrum Lecture Theatre, Saturday 16 March 10am – 7.30pm

The ThinkCon event was not only had a great series of talks, really interesting with great speakers, but an excellent venue as well.

I attended a ThinkCon lecture that I was quite interested in (Kate Russell, how not to do the internet) and it was so good I stayed the rest of the day. I have to say I strongly rate the Science Festival; I had not been before, despite living in Cambridge a considerable time, now I cannot wait until the next one! The 'What's On' page from cam.ac.uk is now bookmarked on my computer.

2013 Cambridge Science Festival - Events

Science on Saturday 2: 23 March

Science on Saturday 2 took place on 23 March in snowy weather around the West Cambridge Site and in the centre of Cambridge. The weather may have deterred some people from attending but venues were still extremely busy. The Cavendish Laboratory, The Institute for Manufacturing, The Centre for Mathematical Sciences, The Isaac Newton Institute for Mathematic Sciences, The Institute of Astronomy, the Computer Laboratory, the Geological Conservation Unit and the Botanic Gardens all welcomed visitors.

We were also very fortunate to have the West Cambridge Archaeology site open to the public, with archaeologists and re-enactors showing how our ancestors lived 2000 years ago. Despite this being an outdoor activity in the snow, over 450 people attended this event.

My son is 11 and we found the nanoscience lecture at the Institute of Manufacturing very interesting. We also enjoyed the maths activities. The posters were very good, they really engaged us. The visit round the dynamic fluid labs was likewise fun and interesting.

It was as always very well presented. It was a special treat to visit the West Cambridge Site and hear about the research being undertaken at the Cavendish Laboratory and the Institute of Manufacturing.



2013 Cambridge Science Festival - Schools

Schools Zone: 23 March

Visitors were also given the opportunity to find out what tomorrows scientists are doing today in the Schools Zone in the Hauser Forum on the West Cambridge Site. Teams of up to eight students were invited to showcase their science project work, conducted as part of the curriculum or in after-school STEM Clubs.



School	Project	
Chesterton Community College	A Gaussian Gun experiment	
Ely College	Heads, shoulders, knees and toes	
	Investigating semi-conductors	
Sawston Village College	Do try this at home	
Stamford High School	Woodlouse habitats	
	Antibacterial surface cleaners	
The Perse School	The UK Rocketry Challenge	
Parkside Federation	An amazing laser transmitting audio device	
Hills Road Sixth Form College	Hills Road Robotics Team	
Bancrofts School *	Discover the world of algae *	
Chelmer Valley High School *	Up, up and away *	
* Unfortunately unable to attend on the day due to the weather		

It was great to speak with young, well-mannered and incredibly bright young people



2013 Cambridge Science Festival – Roadshow

The Schools Roadshow, 4 to 8 March

The Schools Roadshow continues to be an important and very popular feature of the University's Science Festival offering, taking University academics into both primary and secondary schools. This year the focus was on Cambridge schools and schools in the Fenland district to the northeast of the county. This is an area where engagement with curriculum enrichment schemes is traditionally low. As a consequence, we are particularly pleased that so many Fenland Schools applied for a Schools Roadshow visit, including three of the four secondary schools – Thomas Clarkson Academy in Wisbech, Sir Harry Smith Community College in Whittlesey and Cromwell Academy in Chatteris.

This year 18 researchers, including former and current participants on the Rising Stars course, gave 41 talks on 23 different topics over the Roadshow week. Speakers this year were: Karen Angus, Alice Denton, Richard Wells, Rosalyn Wade, Ed Roberts, Dr David Bainbridge, Jonathan Lawson, Dr Dawn Eagle, Dr Rebecca Fitzgerald, Dr Pierre Lao-Sirieix, Dr Lucinda Spokes, Dr Andrew Holding, Dr Christina Nombela Otero, Dr Jo Montgomery, Alex O'Bryan-Tear, Dr Amy Milton, Dr Suman-Lata Sahonta and Dr Lisa Jardine-Wright. We thank them all for giving their time to enthuse around 3000 pupils about science and promote research undertaken at the University of Cambridge.

Selected feedback

Lecturer: Karen Angus, Department of Medicine

Talk: Killing germs!

School: New Road Primary School, Whittlesey and Peckover Primary School, Wisbech

Thank you so much, your workshop on germs was great and the children really loved the different characters you brought with you. It was also encouraging to see all of the children engaged with an understanding of the subject you were talking about. So thank you again for making it accessible to all (including the adults). I hope that the school can benefit from the workshops again. We really do appreciate the time and effort that you and your team obviously put into the project.

Thank you so much for your brilliant presentation about germs. The children loved it! I've learnt that Luke shoots the rhino virus It was wonderful, even though it was about germs! She was friendly and wore a white scientist coat

Lecturer: Alex O'Bryan-Tear, Cromwell Community College

Talk: Ghosts on the mind: why you see things that aren't there

School: Cromwell Community College, Chatteris

The students loved the talk, the atmosphere was really great. The feedback from the students has been incredibly positive. Alex had a really good approach to the event and was fun to listen to.

Student comments:

It was really good - I thought it was going to be boring but I actually really enjoyed it" He was honest and blunt giving the talk humour and interest I learnt a lot and it was really engaging



Lecturer: Dr Suman-Lata Sahonta, Department of Materials Science and Metallurgy

Talk: Matter in the Universe

School: St. Bedes Inter-Church School, Cambridge

This was a superb presentation which was very relevant to the students on the course, presented in a clear and dynamic way. It was both challenging and thought provoking, and gave them a chance to have a wider perspective of the subject

Lecturer: Dr Andrew Holding Talk: Alchemy and air

School: Sir Harry Smith Community College, Whittlesey

Thanks again for taking the time to speak to our students today. The students I have spoken to really enjoyed it and it has made the whole topic more relevant to them.

We received excellent feedback from students, in the form of tweets.

Great lecture, thanks for coming to Sir Harry @JackMHx Loved the lecture :) @Sophie_Bx wow dem explosions @CallumBates10 I loved your lecture - @Lewis_neal

Developing schools activities in 2014

In 2014 we will promote an even greater school participation in the Science Festival.

- Schools Zone
 - We will encourage more schools to bring STEM projects to the Festival, promoting it as an opportunity for pupil engagement with the public. In addition to project work undertaken in STEM clubs and through the British Science Association CREST scheme, we will also suggest schools bring curriculum based projects. We will further develop our links with STEM Team East, the regional STEMNET contract holder for Cambridgeshire and Bedfordshire and, through them, encourage advanced level Engineering Education Scheme students and Nuffield Research Bursary students and to attend and present their research results. Many of the Nuffield Research students are hosted at the University of Cambridge and we will ask University project supervisors to encourage their students to attend.
- Schools Masterclasses
 - Masterclasses were not run in 2013 due to staff changes but we would like to re-introduce these for 2014. They provide opportunities for year 9 and 10 students across Eastern England to experience a taste of life at Cambridge in a programme of activities designed to enrich their science curriculum. The schools and pupils are recruited by the Schools Liaison Officer for Pembroke and St. Catharine's Colleges and Cambridge Science Festival puts together a programme of interactive lectures and hands-on activities for participants and a chance to talk to current students.
- School trips to the Science Festival
 A number of schools attended the 2013 Science Festival bringing pupils to public
 evening talks and to events taking place on the main weekend. Groups came from
 local schools, from London, Norfolk, Suffolk and Essex and as far afield as Norway
 and Denmark. We supported their attendance by providing advice on attendance,
 suggesting suitable talks and activities and reserving spaces. We will continue to
 encourage schools to attend future Festivals, providing information on the website
 and through direct telephone and email contact.



2013 Cambridge Science Festival – Publicity

Programme and posters

40,000 near A5, 44 page programme

12,000 A5 4 page brochures promoting museum activities during the Festival

25,000 bookmarks

2000 A3 posters

35 A1 posters

Pull-up banner for events

Long banner for positioning between the Guildhall and Petty Cury.

1800 badges in 6 different designs

4000 postcards in 5 different designs

Programme distribution

9000 copies to a regional 75 mile radius from Cambridge using the Cambridge City

Council Distribution Service

5000 to all Cambridgeshire schools and colleges + 24000 bookmarks + 800 posters

4000 copies through the University

400 to the Cambridge Tourist Information Centre

300 to the Grafton promotion day

1000 to sponsors, lecture and reception guests

1000 to event co-ordinators

400 to Cambridge colleges

3000 available for Saturday and evening lectures

1000 available for telephone and email requests, and to our mailing list

9500 to businesses and community venues

5000 to tourist venues

1000 to specialist science interest venues

More programmes were distributed externally before the start of the Festival than in previous years resulting in a greater information spread. However this led to a shortage of programmes during the Festival itself. A5 booklets were produced highlighting weekend events and distributed to visitors, these worked well and we plan to repeat this in 2014.

The University 'What's On' event notification service produced three targeted Science Festival e-bulletins, resulting in distinct peaks in bookings for events.

2013 Cambridge Science Festival - Press

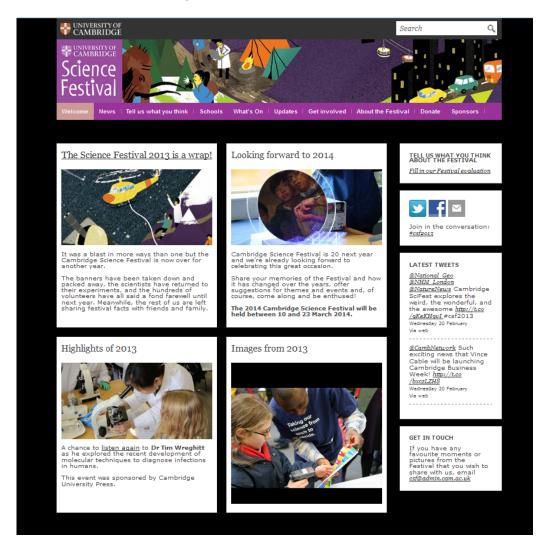
This year's Science Festival received extensive national and local media coverage and included articles in The Times, The Sun, The Independent, The Independent on Sunday, The Sunday Times, amongst others, and over 40 articles in local press. In total, there were nearly 30 pre-recorded and live interviews across local, national and international radio stations and TV networks, such as BBC national and local radio programmes and China Central Television. In addition, there were a further 50+ mentions on a wide range of websites and blog pages reporting on the festival.

A media coverage compendium is available as a separate document.



2013 Cambridge Science Festival - Website

Working within the Science Festival template, the site was re-designed and populated to reflect the look of the printed programme.



Web analytics show that the website – www.cam.ac.uk/sciencefestival received 22,878 unique visitors between 11 February 2013 (when event booking opened) and the end of the Festival on 24 March 2013. The site was, and continues to be, regularly updated:

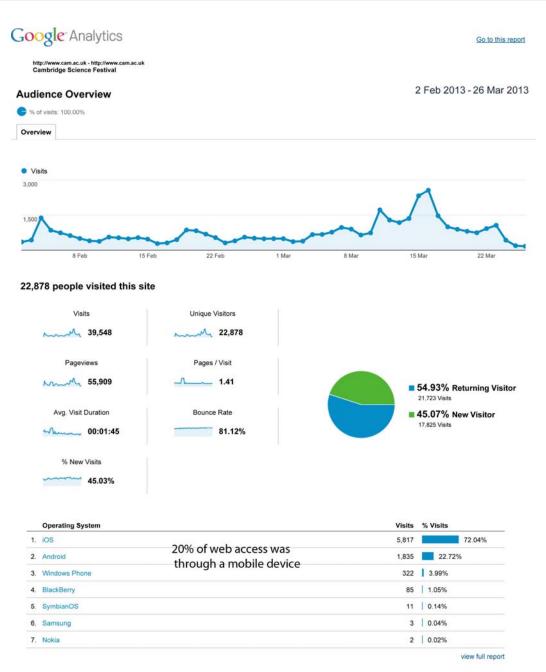
- prior to the Festival with features promoting talks and events
- during the Festival with information, press releases and speaker spotlights
- post Festival with audio transcripts of talks, photogalleries, highlights of media coverage, evaluation results and information on related events.

The Science Festival website will be moving to a different format in 2014. Using feedback from online evaluation responses, we will work with the webteam to ensure the site, particularly the booking system, is easy and straightforward to use.



and Communications

2013 Cambridge Science Festival - Web traffic

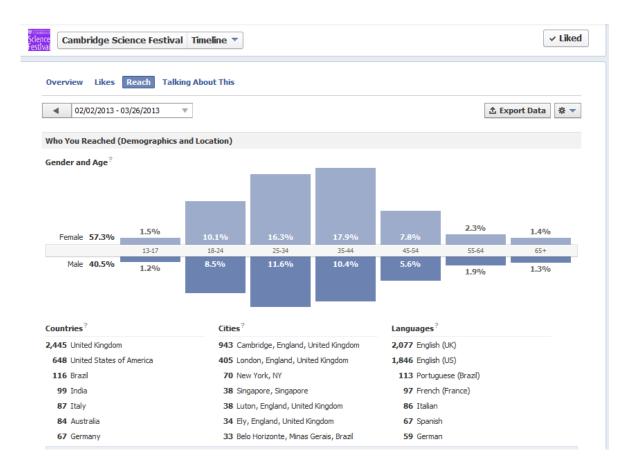


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2013 Cambridge Science Festival - Social Media

Face book and twitter have proved important ways to promote events and build interest in the Festival. We have 3290 followers on twitter (1106 new followers from 2012) and 3761 likes on Facebook (an increase of 1284 likes compared to 2012). The age demographic has shifted slightly to an older range group compared to 2012, perhaps reflecting the growth and wider use of social media throughout the population.



The Science Festival made a concerted effort on Science on Saturday 1 on 16 March to communicate with visitors to the Festival and provided information, photographs, video clips and audio transcripts of talks live from the Festival through twitter.

@<u>Cambridge_Uni</u>, @<u>camscience</u> and @<u>ThinkOutreach</u> are really showing what a science festival should be.



2013 Cambridge Science Festival

Recommendations for 2014

Expanded Sunday opening

There appears to be a strong desire for more events on Sunday with many people choosing to attend on Sunday instead of, or in addition to, Saturday. We will therefore continue to expand our Sunday offering, including perhaps access to the University Museums which are not normally open on Sunday.

Improved website booking

We are in the process of moving the Cambridge Science Festival website onto the new University of Cambridge website template. Working with web developers, we will use feedback from Festival participants to improve search functions and web accessibility.

Better promotion our offering for teenagers

We already provide many events suitable for teenagers but will better promote our weekday talks to older teens and their families. We will also target publicity to schools and sixth form colleges encouraging school groups to attend. We received excellent feedback from school groups who attended weekday talks in 2013. We will also reassess our age categories to encourage teenagers to attend specific weekend events.

Promotion of the Festival to all ages

Feedback suggests that many people believe that the Cambridge Science Festival is targeted to families with younger children. We provide a wonderful offering to this demographic but also have an excellent talk series throughout the two weeks for adults and older teens and science inspired comedy events for adults. We will therefore reassess our publicity materials to ensure they appeal to a wider age range.

Many people in Cambridge are unaware of the Science Festival or where the venues are. We will provide clearer maps in the Science Festival programme and better signage around the city, on and inside buildings. We are investigating the use of lamp post publicity banners to promote a feeling within Cambridge that a Festival is taking place.

Suggestions from feedback comments for future events

Nanotechnology – graphene research
Maths talks – putting maths in to context
Materials science for adults
Autonomous robotics
Veterinary Science
Climate change –challenges of population growth - water supply, food security
Engineering lectures



2013 Cambridge Science Festival – Thank You

We thank the senior management of University of Cambridge including Professor Sir Leszek Borysiewicz, the Vice Chancellor, Professor Jeremy Sanders, Pro-Vice Chancellor (Institutional Affairs) for their support for the Science Festival. We are also grateful to the Cambridge Science Festival Patrons, chaired by Professor Malcolm Longair, and Heads of Schools for their support for the Festivals Administered Fund. We also thank the many Heads of Departments for their financial, staff and student time commitment.

We thank our sponsors, many of whom have been Festival partners for many years: Cambridge University Press (who support the printing of the programme), Darwin 2009 Anniversary Festival, the Medical Research Council, Anglia Ruskin University, Science AAAS, Royal Society of Chemistry, TTP Group, Arts Council England, Linguamatics, the IET, MedImmune, The Wellcome Trust, British Association for Psychopharmacology, Society of Biology, Cambridge Infectious Diseases, Pye Foundation and Bird and Bird. We are also grateful for in-kind support from Cambridge Science Centre, Hills Road Sixth Form College and The British Science Association. Our media partner was BBC Cambridgeshire. We thank Ben Valsler and the Naked Scientists for interviewing Benedict Cumberbatch, our Guest Director this year.

We would like to thank our colleagues in the Office of External Affairs and Communications for their considerable support for the Science Festival.

Steve Homent and his team at Central Sites Technical Services were a huge help again with their dedication, technical skills and enthusiasm for the Festival. Steve Matthews and Tori Robinson were invaluable in their logistical support. We also received excellent technical and custodian support from Clive Squires and others in multiple venues.

Thanks go to our designer, Mark Mniszko of Cambridge Design Studio, who designed the programme. Thanks also to Tim Parker who provided the front cover artwork, illustrations through the programme and those that featured on the publicity materials.

We are extremely grateful to Barney Brown and Lloyd Mann for their great work on the website and events system and to Julia Moore, Finance Officer, for her hard work and patience in supporting all of the finance aspects of the Festival.

In addition to the many lecturers and contributors listed in the main body of the evaluation report, we also thank the event co-ordinators across the University and partner organisations whose hard work and volunteer recruitment and management was much appreciated by thousands of visitors.



2013 Cambridge Science Festival – Co-ordinators

In addition to the many lecturers and contributors listed in this evaluation, we also thank the event co-ordinators and their networks across the University and partner organisations. Without their enthusiasm, knowledge and hard work this Festival would not be possible.

University of Cambridge

Cambridge Admissions Office Cambridge Archaeology Unit Cambridge Graduate Orchestra Cambridge Immunology Network Cambridge Infectious Diseases Cambridge Neuroscience

Cambridge University Botanic Garden Cambridge University Library

Cambridge University Press Cavendish Laboratory Centre for Mathematical Sciences

CHaOS - Cambridge Hands-On Science

Computer Laboratory

Department of Applied Mathematics and Theoretical Physics

Department of Biochemistry

Department of Chemistry

Department of Chemical Engineering and Biotechnology Department of Engineering

Department of Materials Science and Metallurgy Department of Pathology

Department of Pharmacology

Department of Physiology, Development and Neuroscience Department of Plant Sciences

Department of Psychology

Department of Zoology

Tennie Videler Anna Davies Mercedes Arroyo Petra Vertes Dervila Glynn Sally Lee

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Microsoft Research

Medical Research Council

MRC Biostatistics Unit

MRC Cambridge Stem Cell Institute

MRC Cancer Cell Unit

MRC Cognition and Brain Sciences Unit

MRC Epidemiology

MRC Human Nutrition Research MRC Mitochondrial Biology

MRC Laboratory of Molecular Biology

MRC Laboratory of Molecular Biology / Brightclub

The Naked Scientists

Papworth Hospital

Royal Society of Chemistry

Shepreth Wildlife Park Society of Biology

Squeaky Gate Theatre Company

STEM Team East

The Open University in the East of England

Wellcome Trust/ MRC Cambridge Stem Cell Institute Wellcome Trust Genome Campus, Sanger Institute

Wesley Methodist Church

Tourist Information Centre

Bob Gray Stephen Lovell Tim Wilkinson Chris Graham

Giulia Portuese-Williams

Neil Birkett John Elvin

Monika Papworth Patrick Morris Paula Halpin Adrian Penrose Simon White Jenny Nelder Ireena Dutta Mandy Carter Charlotte Ridgway

Hilary Jones Martin King

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Eizabeth Crilly Kelly Cole Hayley Frend Steve Scott Francesca Gale Mary Rycroft

Michael Rycroft Lindsey Payne



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