

CHRISTMAS LECTURES Zone 2013-2014

I'm a Scientist online engagement event

Evaluation Report

The screenshot shows the 'I'm a Scientist' website interface. At the top left is the logo 'I'm a Scientist Get me out of here'. To the right is a 'Meet the Scientists...' section with five portraits: Simon, Karolina, John Robert, Jennifer, and Alison. Further right is a navigation menu with 'Home', 'CHRISTMAS LECTURES', 'Scientists', and 'Teachers'. A search bar and 'Search' button are also present. On the right side, there is a 'Caesium Zone' dropdown, a 'Go!' button, and a login status 'You are logged in as modanqela. Log out'. Below this is the 'Ri The Royal Institution Science Lives Here' logo and 'Ask?' and 'Chat' buttons. The main content area is titled 'Ask your question about the Life Fantastic' and includes a text box for 'Your question:' and an 'Ask This Question!' button. On the right, a 'Recent Questions' section lists several questions with their respective comment counts.

Ask your question about the Life Fantastic

I'm a Scientist: Get me out of here! is your chance to **ASK** about the science behind the **Life Fantastic CHRISTMAS LECTURES**.

You can **register now** and start asking the scientists questions!

Ask a question!

Your question:

Ask This Question!

Recent Questions

- how successful is your research at the moment?
- I understand that the medical advances in stem cell research means that embryonic stem cells can develop into any
- Hi Alison, I enjoyed your Xmas lectures; the demonstrations brought clarity to the subject, though I was curious why (1 Comment)
- is it possible to cry yourself out of tears
- What are the useful properties of oxygen? What is it about oxygen that keeps us alive, what does it do? (1 Comment)

[View all answered questions](#)

Contents

Key findings	2
1. Introduction	3
2. Promotion of the event	3
3. Key Figures	4
3.1. Key facts and data	4
3.2. Popular topics	6
4. Teacher survey feedback	7
5. Scientists evaluation	
5.1. Scientists evaluation.....	9
5.2. Scientists feedback from telephone interviews.....	9
6. Project team feedback	10
7. Appendix	12

Key findings

- Almost 600 people participated in the CHRISTMAS LECTURES Zone, of whom 78% were students, 8% were teachers, and 14% were members of the general public.
- All of the teachers that answered our feedback survey agreed that we should run the CHRISTMAS LECTURES Zone next year.
- The two scientists who we interviewed after the event said that they now feel much more confident in science communication and they would recommend taking part in *I'm a Scientist* to their colleagues.
- There is room for improvement, particularly regarding the participation of the general public, which we would like to see increase in future events.

1. Introduction

Nowadays the CHRISTMAS LECTURES are broadcast on BBC Four. In December 2013, Professor Alison Woollard presented the [Life Fantastic](#) series of lectures. During the three lectures, Prof. Woollard explored the frontiers of developmental biology and unveiled the extraordinary development of complex organisms from a single cell.

In December 2013, the Royal Institution teamed up with *I'm a Scientist, Get me out of here* to extend the discussion around the CHRISTMAS LECTURES, the goal being to give everyone the opportunity to ask questions to real scientists online.

Anyone could ask questions through the *I'm a Scientist* website and schools participated in online chats with scientists, as well as posting questions. Differing from the standard *I'm a Scientist* events, in the CHRISTMAS LECTURES Zone there was no voting. The CHRISTMAS LECTURES Zone ran from mid December 2013 until the end of January 2014

This was the first time we ran an *I'm a Scientist* zone alongside the CHRISTMAS LECTURES. This evaluation will look at the strengths and weaknesses of the event and suggest improvements for future editions.

2. Promotion of the event

As we were initially uncertain of what the take up of new teachers would be, and wanted to make sure there was enough space for them, we decided to email a segment of teachers (842) who'd taken part before at the beginning of December. 55 of these 842 teachers clicked on the email: half of them directly signed in, and 30% clicked on a link to get more information about the Ri. Later on, at the beginning of January we decided to email all teachers in our lists, this makes a total of 1,452 teachers who got sent an email promoting the CHRISTMAS LECTURES Zone. BBC Learning also emailed out to their teachers at the beginning of December. However, only 19 new teachers signed up in the CHRISTMAS LECTURES Zone.

We gave the Ri around 1,500 access cards to hand out to **students** attending to the CHRISTMAS LECTURES filming.

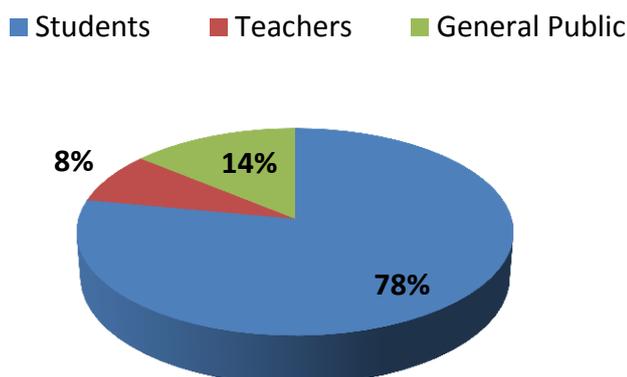
We also used social media to promote the event to the **general public**: during the CHRISTMAS LECTURES broadcasts, members of the team tweeted about the zone to encourage public's registration and participation in the CHRISTMAS LECTURES Zone. The Ri posted on their Facebook page in mid and late January, encouraging followers to ask questions.



3. Key figures

2.1 Key facts and data

Almost **600 people** registered in the **CHRISTMAS LECTURES Zone**, of which **78%** were **students** from at least **40 different schools**, the rest were **teachers (47 users)** and members of the **general public (79 users)**.



47 teachers showed an interest in the event, but only around half of them (22) actually took part in THE CHRISTMAS LECTURES Zone. This point will be analysed in further detail in section four of this evaluation report.

Of note, only 17 of the 1,500 access cards given out to the students attending to the CHRISTMAS LECTURES filming were actually used to create a new account. We think this might be due to the fact that access cards were delivered at the end of the event, and with no explanation of their utility. In future events, cards could be left on each chair, or be given out when the public access the broadcast hall, together with a brief introduction to the CHRISTMAS LECTURES Zone.

Being online gives us the opportunity to gather a massive amount of data about the event. The table in the next page summarises some of the data collected for *I'm a Scientist* in November 2013, compared to The CHRISTMAS LECTURES Zone. It should be noted that the CHRISTMAS LECTURES Zone lasted longer and featured more scientists than the standard *I'm a Scientist* Zone.

	CHRISTMAS LECTURES ZONE	ZONES AVERAGE NOV 13
Length (weeks)	8	2
Scientists	25	5
Registered students	445	281
% of active students (used ASK, CHAT, VOTE or commented)	70%	85%
Questions asked	99	438
Questions approved	66	169
Answers given	173	380
Comments	41	64
Live chats	30	13
Lines of chat per session	213	339
Schools	22	7

The percentage of active students was slightly lower than that registered in our previous event in November (see chart above). A total number of **99 questions** were asked throughout the event and a higher percentage (67% versus 39% in the previous *I'm a Scientist* event in November) of them were approved to be sent to the scientists, which may mean that questions were more focused and on-topic than in the previous event in November. In the CHRISTMAS LECTURES Zone, each question got an average of 2.6 responses from the different scientists participating in the event, compared to an average of 2.2 responses per question in the event in November 2013. This increase in the number of answer per question is likely due to the lower load of questions as well as the event lasting longer than the standard two weeks and involving more scientists in just one zone.

Most of the teachers participating in the CHRISTMAS LECTURES Zone had already taken part in a previous *I'm a Scientist* event. We estimate that out of the 22 schools participating, only a couple of them were new to *I'm a Scientist*.

Between the end of November 2013 and the beginning of February 2014, there were over 26,000 page views from 3,477 visitors – that's almost 3,000 visitors looking at the site on top of the registered users.

CHRISTMAS LECTURES Zone	Page views	Zone average Nov 13
Total zone	26,043	16,397
ASK page	878	953
CHAT page	3,110	1,760
Scientists profile	1,449	872

2.2 Popular topics

The tag-cloud and wordle below show the main themes that came out in questions and live chats.

Ask ?

ageing¹ amino
acid² apoptosis³ braincancer⁴ career² **cell**¹⁸ celldivision² cellnumber¹
chromosome² cloning² colour³ dead² development³ DNA⁵ energy²
epigenetics² evolution¹³ gene⁶ geneticmodification⁴ genetics⁴
growth¹ human⁶ memory³ muscle¹ mutation¹² natural selection²
organs² personal⁷ plants² protein³ research⁷ sight² sperm¹ stem cells²
technology² transplant² trees¹ virus² work³ worm⁷

Chat ?

animals humans
brain worms
body
blood cure
grow teeth
life
cells
cancer
human time
genes DNA
stem

There was a clear focus on biology, with a special stress on genetics and cellular biology. There were several questions and online discussions related to *C.elegans*, the model organism used by Alison Woollard in her research, or to the science demonstrations that she presented during the CHRISTMAS LECTURES broadcast. Here are some examples:

[“Are my cells dividing at the same rate as those on the worm cam?”](#)

[“Do you think that the protein making naked mole rats live longer could be mimicked for humans?”](#)

[“How did you create the 3D protein image that appeared above the table?”](#)

[“How does the vein-viewer work?”](#)

[“I have read a small amount about methylation patterns and I got the impression that the proteins you referred to in your lecture switched genes off, rather than on, am I right?”](#)

“How do worms reproduce?” – davedacave, student

“C. elegans worms exist as males and hermaphrodites (having both male and female reproductive system in one!). So the hermaphrodites can self-fertilize, i.e. they use their own sperm to fertilize their own eggs inside themselves.” – Serena Ding, scientist

4. Teacher feedback survey

We emailed the 22 teachers who took part in the CHRISTMAS LECTURES Zone to ask them to fill out a feedback survey. At the time of writing, 14 teachers (64%) have responded to this survey. **Our main question was whether we should run the zone again next year, and the teachers all agreed that we should.** When asked for the main outcome of the CHRISTMAS LECTURES Zone, we received a variety of responses emphasising the positives effects of linking the event to the CHRISTMAS LECTURES broadcast:

“The pupils really enjoyed speaking with the scientists and asked some questions that they had thought of themselves since watching the Christmas Lectures” – Danielle Newman, Teacher

“It was lovely to give them a useful focus over the holiday period that wouldn’t feel like homework. Some of the students would not have heard of the CHRISTMAS LECTURES if we’d not promoted them at school.” – June Thompson, Teacher

We then asked for the teachers' reasons for participating in the CHRISTMAS LECTURES Zone. 6 out of the 14 teachers who responded said they did it because they were particularly interested in Developmental Biology and the other eight were interested in the CHRISTMAS LECTURES broadcast, independent of this year's topic.

We were interested to learn more about the way in which this activity was delivered in relation to the "Life Fantastic" TV broadcast. 42% of the teachers said the students watched the CHRISTMAS LECTURES at home, and later went online during class. 25% of teachers said that they watched the CHRISTMAS LECTURES in class with the students, and later went online to interact with the scientists. The remaining teachers said that they related the two events in a different way, or that they did not relate the two at-all during school lessons.

When we asked teachers who had participated in previous *I'm a Scientist* events how the CHRISTMAS LECTURES Zone compared to them, we obtained a variety of responses. 50% of teachers said that they particularly liked the CHRISTMAS LECTURES Zone because the lectures added an additional dimension to it and students were better prepared with questions prompted by the lectures. However, 33 % of teachers preferred standard *I'm a Scientist* zones. Some of their reasons were missing the voting stage, or not finding an easy access to the lectures online. One teacher commented that the CHRISTMAS LECTURES were not available online long enough after school started again to show in class, so many students weren't familiar with the content discussed in the zone. However, the CHRISTMAS LECTURES are available online at the Ri site, but we might need need to add a more direct link from the CHRISTMAS LECTURES Zone in the future.

Finally, one teacher emailed to suggest that we give teachers more advance notice and more detailed information on the CHRISTMAS LECTURES topic in advance, so they can plan better to deliver the event alongside the curriculum. We think this could explain the big difference between the number of teachers who showed an interest in the CHRISTMAS LECTURES Zone and the final number who actually took part in it, which makes a strong case to approach teachers earlier in the year and provide them with information about the lectures as soon as possible in the following years.

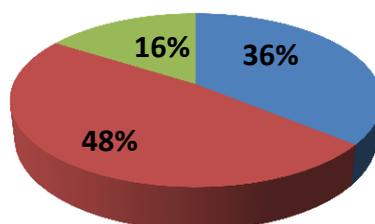
5. Scientists evaluation

4.1. Breakdown of scientists participating

Academic career stage

26 scientists took part in the CHRISTMAS LECTURES Zone, 36% of them were PhD students, 44% Postdoctoral researchers or staff scientists, and 36% were Lecturers or Principal Investigators.

■ PhD student ■ Postdoctoral researcher ■ Principal investigator/Lecturer



5.2. Scientist feedback from telephone interviews

Interviews were conducted with two of the scientists who took part in the event. One of them was [Matthew Tomlinson](#), a Postdoctoral researcher at the University of Leeds who had already participated in the Stem Cells Zone in November 2013. The second scientist was [Serena Ding](#), a PhD student in Alison Woollard's laboratory at the University of Oxford.

"I do plan to do a postdoc, but I will now pay more attention to Science engagement opportunities" – Serena Ding, scientist

Answering questions and taking part in online chats in the CHRISTMAS LECTURES Zone was the first science engagement experience for Serena. Matthew on the other hand, had run workshops and science demos in some local schools and had participated in *I'm a Scientist* in November 2013. For this reason, Serena didn't know what to anticipate, whereas Matthew knew what to expect and had his expectations fulfilled.

"It is great to take down stereotypes of young people not being interested in science, they actually are!" – Matthew Tomlinson, scientist

Matthew said that the CHRISTMAS LECTURES Zone was much quieter and relaxed than the previous Stem Cells Zone. From his point of view, the fact that the CHRISTMAS LECTURES was less intense and time consuming, completely changed the dynamic of the event.

Both of them said that they now feel much more confident in science communication. Matthew even mentioned that he was thinking about starting a blog or visiting some local schools.

When asked for the best outcome of the event, Serena said it had opened her mind to look for **different opportunities after her PhD**. For Matthew, the best outcome of taking in part in *I'm a Scientist* was **knocking down stereotypes about young people not being interested in science**.

The two scientists interviewed agreed that **they would recommend taking part in *I'm a Scientist* to their colleagues**.

6. Project team feedback

At the end of the event, the main project leaders were interviewed: [Olympia Brown](#), responsible for running the CHRISTMAS LECTURES Zone, and Shane McCracken, *I'm a Scientist* Director.

- **Why run a CHRISTMAS LECTURES Zone?**

Shane explained that his main aim was to provide an online structure, where scientists could interact with the CHRISTMAS LECTURES' viewing public in an organised way, to build a place for the discussion of the science. He explained how the Ri already had a website, but most comments were made on their *YouTube* channel, where comments often get lost, as they are not even indexed by *Google*.

For Olympia, the main aim of running a CHRISTMAS LECTURES Zone was to deepen and extend engagement with their audience, implementing a two way dialogue. She mentioned how the CHRISTMAS LECTURES had several associated online resources, and how they had been promoted through Twitter since 2010. She was hoping to get a different quality of engagement, with time for reflection and less time constraints than that offered by Twitter.

- **Have your expectations of the CHRISTMAS LECTURES Zone been fulfilled?**

During the interview, Shane recognised that he didn't know what to expect of the event before it happened. He was uncertain about the number of schools and members of the general public that could be reached, so he was careful not to set his expectations too high.

Both, Shane and Olympia, agreed that the event had worked to an extent, leaving room for improvement in the coming years. Shane said that he was disappointed by the level of

questions from the general public, as he had expected it to be higher. Olympia, on the other hand, was pleased by the breadth and quality of questions, but was less satisfied with the number of interactions, which was particularly low especially when compared to the number of television viewers.

- **What was the best outcome of the event?**

For the two project leaders, the best outcome of the CHRISTMAS LECTURES Zone was the quality of the experience. 25 scientists got the experience of engaging with a young audience, and students benefited from talking to real world scientists.

"It was great opportunity to add something new to an already classical event – Olympia Brown, Royal Institution Science Learning Manager

Olympia mentioned that it was a very good opportunity to add something new to a classical event. Shane thinks this is an excellent opportunity to further involve Alison Woollard's lab members in science outreach activities.

- **Would you run this event again? What would you do different?**

Both, Shane and Olympia were quick to say that they would be happy to run the event again next year. However there is a list of improvements to be implemented.

In order to increase the participation of the public attending to the CHRISTMAS LECTURES filming, Shane suggested that they are handed *I'm a Scientist* access cards before the event, rather than after it, as it was done this time. He also suggested changing the design of the cards.

As for the television viewing audience, Olympia mentioned that, according to BBC data, 60-70% of the CHRISTMAS LECTURES viewing public is over 40 years old; a sector of population that may be less naturally inclined to engage with an online activity. Shane suggested encouraging online participation throughout the broadcast, maybe with a behind the scenes theme. Olympia recommended making the process as easy and straight forward as possible for the public, for instance, eliminating the registration step. According to her, another simple way to increase participation could be organising the event earlier, this way, the Royal Institution could promote the CHRISTMAS LECTURES Zone during its Advent Calendar and other activities prior to the CHRISTMAS LECTURES broadcast.

Finally, Olympia also suggested running live chats for the general public, and not just schools.

7. Appendix

The 22 teachers who participated in the CHRISTMAS LECTURES Zone were emailed this feedback survey:



What did you think of our Christmas Lectures Zone?

Thank you for taking part in the Christmas Lectures Zone supporting the Ri Christmas Lectures and funded by the Biotechnology and Biological Sciences Research Council.

This was our first time running a zone around them and we want to know what teachers thought of it.

1. Was this the first time that you participate in an *I'm a Scientist* online event? ***This question is required.**

- YES
- NO, I had already participated in previous events

Next

Teachers who answered YES, were taken to this second part:

2. Why did you take part in the Christmas Lectures Zone? Please, mark as many options as you need

- I was particularly interested in the topic of Developmental Biology
- I was attracted by the fact that it was linked to the Christmas Lectures
- Other Please enter an 'other' value for this selection.

3. Did you run the Christmas Lectures Zone relating it to the "Live Fantastic" TV broadcast? If so, how?

- Yes, I took the students online after watching the Christmas Lectures in class
- Yes, the students watched the Christmas Lectures at home and I took them online in class
- Yes, but I related the two events in a different way... Please enter an 'other' value for this selection.
- No, I didn't relate the two events.

4. From a technical viewpoint, how did you find using the site?

- Difficult throughout
- Quite difficult to start but easy once I was used to it
- Quite simple and straightforward
- Very easy
- I didn't use the site

Next

Teachers who answer NO to the first question, were taken to this other second part:

2. Why did you take part in the Christmas Lectures Zone? Please, mark as many options as you need

- I've already participated in I'm a Scientist before, and I think it is a good experience for the students
- I was particularly interested in the topic of Developmental Biology
- I was attracted by the fact that it was linked to the Christmas Lectures
- Other Please enter an 'other' value for this selection.

3. Did you run the Christmas Lectures Zone relating it to the "Life Fantastic" TV broadcast? If so, how?

- Yes, I took the students online after watching the Christmas Lectures in class
- Yes, the students watched the Christmas Lectures at home, and I took them online in class
- Yes, but I related the two events in a different way... Please enter an 'other' value for this selection.
- No, I didn't relate the two events in my lessons.

4. Did the lack of voting have any impact on your students interest in the Christmas Lectures Zone?

- No, I don't think so
- Yes, most probably
- I don't know

5. How do you think the Christmas Lectures Zone compared to other *I'm a Scientist* zones?

- I particularly liked this event because ... Please enter an 'other' value for this selection.
- I liked this event less than the previous one, because... Please enter an 'other' value for this selection.
- I didn't notice any major differences

Next

All teachers were asked a few last questions:

6. If we had a Christmas Lectures Zone next year, would you participate again in it?

- Yes
- No

7. From your point of view, what was the main outcome of the Christmas Lectures Zone for you and your students?

8. Is there anything else you would like to add, such as things you particularly liked or disliked about the event, or what you would change about the Christmas Lectures Zone?

9. If you want to participate in the raffle of one of our *I'm a Scientist* mugs, please give us your email: