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1.0 Executive Summary

Science Uncovered 2013 welcomed 10,000 visitors and generated approximately 70,000 interactions between researchers and members of the public. This compares with 9,077 visitors last year and 47,160 interactions (a 35% rise in the average number of interactions per visitor).

As an overall indicator of success, 96% of visitors rated their experience of SU 13, reported on feedback forms, to be ‘good’ or ‘excellent’. This matches closely the 95.5% that we recorded from visitors for last year.

The surveys conducted at the event show visitors appreciated and responded well to the great diversity of activities and experiences. They were moved and impressed by the passion and enthusiasm of the researchers they met. The format and timing of the event were widely appreciated and enjoyed by participants, much of which related to the thrill of a privileged and unusual insight into science and the NHM.

Both quantitative and qualitative evaluation measures were used to explore the success of the four primary visitor outcomes of the event.

Outcome 1 – Increase awareness that researchers are a diverse community from a wide range of backgrounds

Data suggests that visitors became more aware that researchers are a diverse community from a wide range of backgrounds. These included diversity in terms of age, gender, country of origin and backgrounds. These aspects of diversity are supported by the interview data collected in which there were 39 out of 55 reports of such diversity and only 14 reporting a lack of such diversity. The majority of comments about lack of diversity related to the ethnicity of researchers. Feedback form responses strongly showed that visitors were aware of the diversity of fields in which researchers work and the wide range of roles that researchers play in society. The passion and enthusiasm of researchers, their knowledgeable, attractiveness and friendliness were the categories of response with the most comments, doing much to challenge traditional stereotypes of researchers.

Outcome 2 – Participants are aware of the central role of researchers and research careers and of the key benefits research brings to society.

The effectiveness of SU 13 in enabling visitors to become more aware of the importance of researchers is best demonstrated by responses to a closed feedback form question “Has tonight made you think more about the importance of researchers to society?” This question received an 86% ‘yes’ response from visitors to both South Kensington and Tring. An entry/exit poll shows that more people strongly agreed that ‘Researchers play a central role in our society’ after the Nature Live event than before, while fewer people strongly disagreed with this statement. Evidence from feedback forms shows that visitors became aware of benefits in the fields of medicine, conservation, education and the understanding of our planet.

Outcome 3 – Participants are inspired to take part in other science activities

Visitors to SU 13 were inspired by a wide range of experiences. Feedback form and interview responses both place interacting with scientists, specific specimens and the passion and enthusiasm of researchers at the top of the list of such experiences. During the event each visitor engaged with on average seven different activities during the evening. The percentages of visitors requesting further contact with and information from the Museum rose significantly compared with last year. At South Kensington a rise of 19% was recorded and at Tring a
rise of 10%. The interviews recorded 60, (n=61), visitors explicitly stating that they would return to Science Uncovered or similar events, with only 1 stating they would not.

**Outcome 4 – Participants are inspired to consider research careers and understand the diversity of careers in science.**

The diversity of roles ascribed to researchers on the feedback forms demonstrates that visitors left the event with an understanding of the diversity of careers in science. Poll data from the Year 6 students attending daytime events at SU 13 shows a distinct increase in the number of students viewing a science career as ‘very interesting’ as a result of the event. The same poll conducted with adults in the evening shows an increase in the numbers of visitors viewing science careers as ‘interesting’. The feedback form and interview responses provide some powerful examples of potentially life changing experiences at Science Uncovered, including one participant who was inspired to enrol in a degree in science as a direct result of last year’s event.

Evaluation also explored the features of Science Uncovered that appear to generate and promote such impacts for our visitors. They include:

- opportunities to increase knowledge about the natural world
- opportunities to hear from experts in their fields
- powerful and authentic specimens
- the variety of engagement formats
- the passion and enthusiasm of researchers
- the Museum at night

While we can be confident that visitors to SU 13 did indeed leave with the intended outcomes, there is evidence that the audience came to the event already convinced of the importance and value of science research. This is further evidenced by the segmentation results showing 51% of SU13 audience to be Contemporary Cultured and 27% Learned Liberal. This pre-existing possession of ‘science capital’ calls into question the degree to which the event was responsible for achieving the outcomes and objectives set for it. Further research is needed to establish the pre-existing knowledge, experience, and attitudes of the audience and so better understand the impact of SU on this audience.
2.0 Background
The purpose of this document is to report on the impact of SU 13 upon visitors to the event, and also, though to a lesser extent, upon the researchers presenting at the event. Four visitor outcomes were set for SU 13. These informed the development of activities associated with the event, and were also the focus of the evaluation. The outcomes are:

1. Increase awareness that researchers are a diverse community from a wide range of backgrounds
2. Participants are aware of the central role of researchers and research careers and of the key benefits research brings to society
3. Participants are inspired to take part in other science activities
4. Participants are inspired to consider research careers and understand the diversity of careers in science

The impact assessment builds on a growing body of knowledge about the impact of visitor-researcher interactions in museums and visitor perceptions of science, researchers and scientific careers. In the previous years of Science Uncovered, NHM evaluations have focussed primarily upon the question: “Did visitors achieve the outcomes that we wanted for them?” For SU 13, while we still want to assure ourselves that the outcomes are being achieved by visitors, we also want to extend and develop our own understanding of interactions between researchers and visitors by addressing the question: “What is it about Science Uncovered that makes it successful?”

This report will address each outcome in turn and then will pull together and reflect upon the evidence that was collected in relation to the research question for this year.

The NHM’s evaluations of last year’s event (SU 12) demonstrated that visitors had achieved a wide range of outcomes from the event and hinted at some of the features of the event and of the researchers which created these outcomes. Chief amongst these were:

- Visitors were surprised that the researchers they met did not accord to stereotypical images of scientists
- Visitors were surprised by the passion/enthusiasm of researchers
- Visitors were surprised by researchers communication skills
- Visitors discovered that scientific roles and jobs were more diverse than they had expected
- Visitors were convinced that researchers played a central role in society, contributing to our knowledge of the world and the quality of human life
- Visitors were inspired to find out more and engage in other science activities
- Increased understanding of what is involved in a science career and what the life of a researcher involves.
- Increased awareness of the variety of opportunities for working in science

Visitors were extremely positive about SU 12, with 72.9% rating their experience of the event as ‘excellent’, a further 22.6% rating it ‘good’ (n = 468). Further feedback was gained about the event as a whole, both from the group interview participants and on the feedback forms, showing visitors valued the interactions with researchers, the scale of the event, and the number of specimens and activities available.

This year’s impact assessment uses information gathered via a number of data collection methods, some repeated from past years, such as feedback forms, and entry and exit polls. Other methods were new to our repertoire, such as roving interviews with visitors and engaging visitors via social media. The majority of data collection has focused on the visitors to Science Uncovered at South Kensington and Tring sites, as well as online engagement. Feedback has also been collected from the researchers taking part from the NHM and participating organisations.
3.0 Data collection

5138 evaluation contacts were made with visitors across both sites amounting to 50.7% of the total audience. Additionally 165 responses were collected from researchers to the evaluation surveys that were carried out both before and after the event. Both qualitative and quantitative data were used in the impact assessment in order to strengthen confidence in the findings, and allow triangulation of the data collected, comparing findings with those gained from different activity types.

3.1 Evaluation methods

The methods used in the evaluation and impact assessment of SU 13 are listed below.

3.1.1 Polls

A visitor voting in the mass polls at South Kensington – SU 13

Polls were used successfully again at SU 13, following their use at SU 10, 11 and 12. This year multiple polls were created, to explore a number of different outcomes. Poll questions were displayed on a large card, and five boxes were labelled with different options in answer to the question, see Appendix 1 for an example. Visitors on their way into the Museum, or to a specific activity, were asked by evaluation staff or volunteers to place a blue token in the box which best represented their view, and were given an orange token on their way out of the event or Museum, and asked to vote again on the same question. This allowed us to quantify the change in visitor opinions resulting from the visit or activity. In all, a total of 4258 votes were cast across the South Kensington and Tring sites, representing 42% of the total 10,120 visitors to Science Uncovered.

Main entrance poll ‘To what extent does the work of scientists benefit society’

As in previous years this poll was situated at the front entrance at both South Kensington and Tring sites and the five answer options presented to visitors were ‘Not at all’, ‘Very little’, ‘Not sure’, ‘Quite a lot’ and ‘Very much’. A total of 2369 votes were cast for this poll.

Exhibition Road poll and for Year 6 RBKC students participating in SU 13 activities during the day ‘What would it be like to be a scientists?’

Students attending the events during the day and visitors using the Exhibition Road entrance and exit to the Museum in the evening were encouraged to vote in this poll about how they felt about a career in science. The five voting options were ‘Very dull’, ‘Dull’, ‘Not sure’, ‘Interesting’, ‘Very
interesting’. A total of 738 votes were cast for this poll during the evening session with 546 cast by students in year 6 attending daytime events.

**Nature Live poll** ‘Scientists play a central role in our society. To what extent do you agree?’

This poll was situated at the Attenborough Studio, and visitors to the Nature Live shows were given the options of ‘Strongly disagree’, ‘Disagree’, ‘Neither’, ‘Agree’ and ‘Strongly Agree’. A total of 615 votes were recorded at this poll.

### 3.1.2 Feedback forms

Visitors completing feedback forms – SU 13

As in previous years, self-administered feedback forms were distributed at both South Kensington and Tring sites. The questionnaire contained four open-ended questions relating to the visitor outcomes and research question. The questionnaire also contained questions eliciting demographic, psychographic and marketing data. Visitors provided email addresses if they wanted further information on future science activities at the Museum. The questionnaire was available to visitors at both sites, at all seated events such as Nature Live and the Science Bar, and then at feedback stations dotted across both sites including at the Welcome desks. A total of 388 questionnaires were completed at South Kensington and 37 at Tring. Responses to these questions were transferred into the SNAP programme so that they could be aggregated, coded and analysed. Please see Appendix 2 for the questionnaire.

### 3.1.3 Graffiti Walls

These walls provided visitors with an open-ended opportunity to respond to one specific evaluation question. Visitors were enlisted randomly by evaluation team members and invited to contribute their comments about the question.
A visitor contributing to a graffiti wall at South Kensington – SU 13.

**Graffiti Wall 1** ‘What would the world be like if the science you have seen or heard about tonight wasn’t happening?’
This was a repeat of the successful graffiti wall used last year. The question posed to visitors was designed to collect qualitative data on visitors’ reflections on the research they have heard about during the evening, and its importance and value to wider society. A total of 80 entries were posted on the graffiti wall, including both written comments and drawings.

**Graffiti Wall 2** ‘What has been memorable or powerful about tonight’s event?’
Visitors were prompted by evaluation team members or volunteers to respond with more detail that just... ‘it was fun’ or similar statements. This was an effort to establish answers to the research question. A total of 50 entries were posted on the graffiti wall, including both written comments and drawings. Please see Appendix 3 for the graffiti wall question panels

### 3.1.4 Interviews
Short face to face interviews were carried out with visitors during the event. The interviews were voice recorded, transcribed and coded. The questions directly addressed either the SU 13 outcomes or the wider research question. See Appendix 4 for the questions. 51 interviews were conducted at the South Kensington site. These took responses from 95 participants, some interviews being conducted with small groups rather than individuals. 64 females were interviewed and 31 males.

### 3.1.5 Pre and post contacts with researchers
To deepen our knowledge of how interacting with the public impacts upon the researchers presenting at SU 13, an online survey was sent to researchers pre and post the event. 165 responses from researchers and presenters at SU 13 were collected, giving a greater insight than ever before into what, how and why researchers were trying to communicate at the event. See appendix 5 for the questions asked before and after the event.

### 3.1.6 Stamped on Science card
Stamped on Science required visitors to tour the South Kensington site collecting special stamps from designated staff members. Visitors collecting all of the stamps could submit an application to win a trip to the New Forest with a NHM researcher conducting fieldwork. The form also contained one open ended evaluation question relating to our research question. This asked visitors to identify their ‘highlight’ of the night. 107 completed cards were submitted. 73 highlights were identified.
3.2 Other data collected
Other data was collected to provide evidence of the impact of SU 13 including:

3.2.1 Visitor numbers
The numbers of visitors to the whole event and to each individual activity in the event were recorded. In most instances these were actual counts – using the Museum’s intelligent visitor counting systems or counts of number of visitors taking part in activities. The Science stations and Soap Box Science and Art were drop in, continuous activities without a defined space, so the number of visitors was estimated by staff running these events. Details of visitor participation in these activities are given in WP1 and 2 reports.

3.2.2 Audience segmentation
Short surveys were conducted using i-pads with randomly selected visitors in the wifi accessible zones of the Central Hall, North Hall Café and DC Atrium. The survey consisted of the MUSE segmentation questions from which the SU audience could be identified against the NHM’s audience segments. 82 surveys were completed.

3.2.3 Media reach
Data regarding the reach of SU 13 through a range of media including radio, print, marketing campaigns, online and social media are available in WP1 and 2 reports.

3.2.4 Visitors online.
Last year Science Uncovered raised just under 1000 tweets from participants. For 2013 we sought to capitalise on this interest by allocating a member of staff to engage with tweeted comments in order to elicit more detail from visitors than given in their initial tweet. We have not attempted to use Twitter in this way before for evaluative purposes, but hoped to initiate Twitter conversations with visitors who were motivated to engage with the Museum via social media. For 2013 we received 1550 Tweets to the SU 13 hash tag. Of those we engaged, only three visitors were encouraged to re-Tweet more detail. This did lead to a fuller description from the visitor than was gained from their original tweet. This was an interesting experiment for us, but the low response rate means we should be cautious of our findings.
4.0 Findings
(Note: summaries of findings are given in bold at the start of each section.)

The following sections outline the main findings from evaluation of Science Uncovered 2013:

4.1 Outcome 1 – Increase awareness that researchers are a diverse community from a wide range of backgrounds

Evaluation data suggests that visitors became more aware that researchers are a diverse community from a wide range of backgrounds. Visitors reported on several aspects of diversity amongst the researchers at SU 13 including diversity in terms of age, gender, country of origin and backgrounds. Few visitors reported a lack of diversity and these mostly related to the ethnicity of researchers. Responses strongly showed that visitors were aware of the diversity of fields in which researchers work and the wide range of roles that researchers play in society.

There was also striking data on what visitors considered researchers to have in common and these were more behavioural than demographic characteristics. The passion and enthusiasm of researchers, their knowledgeability, attractiveness and friendliness were the categories of response with the most comments, doing much to challenge traditional stereotypes of researchers.

4.1.1 Demographic characteristics of researchers. The feedback forms contained an explicit, targeted question to elicit reactions to the diversity of the researchers presenting at the event. Visitors were asked: ‘What did you notice about the range of researchers you met this evening?’ As Figure 1 shows, many visitors took this opportunity to praise the presenters for what they all had in common rather than to reflect upon their diversity. As in previous years the passion, enthusiasm, approachability and the knowledgeability of the researcher were identified as key common features of the visitors’ experiences.

Fig. 1 What did you notice about the range of scientists you met this evening?
Fig 1 clearly shows an awareness that researchers do come from a variety of backgrounds, particularly with regard to age and gender. The diverse ethnic mix of researchers was less specifically commented upon in the responses we received from visitors.

At South Kensington, a total, 171 (88.6%) positive comments were made in response to the question about the diversity of researchers. At Tring, the same question drew 20 positive responses out of 24 comments.

The roving interviews recorded data about visitors’ perceptions of diversity amongst researchers. They included mentions of the following characteristics:

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<th>Diversity characteristic</th>
<th>Frequency</th>
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<tr>
<td>Age</td>
<td>16</td>
</tr>
<tr>
<td>Gender</td>
<td>11</td>
</tr>
<tr>
<td>Ethnicity/nationality</td>
<td>9</td>
</tr>
<tr>
<td>Subject</td>
<td>7</td>
</tr>
<tr>
<td>Other (universities, expertise, piercings, height)</td>
<td>5</td>
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Example quotes for diversity in terms of age:

- F We were really surprised by the demographics, where people are a lot younger than we thought, both the scientists and the people here.
- F Yeah, really surprising. I mean, incredible. Young to old, to people you would never ever consider are academics. Just - you know - appearances are so deceitful. Really pleasant.

Example quotes for diversity in terms of gender:

- F Surprisingly, from my perspective, I think we have seen and spoken to more women tonight than I possibly would have expected from a scientific background. It tends to have a bit of a bias, well people think it does, towards men. But we have seen more women than men so far.
- F I think you guys have done a good job of women in science representation. There's been a lot of women scientists here, I would say. That's cool.
Example quotes for diversity in terms of ethnicity or nationality:

M  I have noticed they come from different countries as well they have said, haven’t they, from Germany and other places.

F  Yes. It is really diverse I would say and there are a lot of people from like all over the world as well which is great because I think science, it brings people together because of like interest really. So like if you know your stuff you can come and work on a project, yes.

The feedback form responses to ‘What did you notice about the range of scientists you met this evening?’ at South Kensington mentioned the wide range of scientific fields that were represented (n=27), the different ages of the researchers (n=18), the representation of genders (n=11), the different backgrounds the researchers (n=8), and one visitor praised the diversity in ethnicities of the researchers. 16% (n=38) of respondents mentioned noticing ‘lots of diversity’ but were not specific about its type.

4.1.2 Range of fields

The diversity of fields in which researchers work was strongly reported from South Kensington and Tring sites and is another example of diversity observed by participants. Unsurprisingly given the relative scales of the events this came through more strongly at South Kensington than at Tring. When directly asked ‘What roles do scientists play in our society’, participants identified 15 different types of roles played by researchers (Fig 2 below). Here we see again the importance that the SU 13 audience placed upon the gaining of scientific knowledge which is described as an end in itself rather than having an immediate utility to society. More utilitarian roles for researchers were also identified. Examples include conservation and medicine, policy making and problem solving.

Fig. 2 What roles do scientists play in our society?
Interviews yielded many comments about this aspect of researcher diversity.

Example quotes for diversity in terms of scientific topic or field include:

- F: *Just going past all the different stations, and seeing the variety of backgrounds. As I said, I study environmental science myself. So I have a little bit of an idea. But when I come here and I see all the different fields, and that basically researchers deal with everything around us. So everybody has got something they like. It’s fascinating.*

- F: *Just the variety of things that you’ve got. Like you’ve got the mammals stuff, but then you’ve also got the space earth section as well. So you can tell that there’s a different range.*

Further details on the visitors’ responses to this question are given under outcome 2.

### 4.1.3 Inspired by the range of researchers

Another question on the feedback form was ‘What has inspired you tonight?’ This question was not specifically asked to find out about the visitors’ awareness of diversity but, despite that, several participants mentioned the diversity of the researchers as something that had inspired them. The following are examples of unsolicited responses and as this question came before the question concerning diversity we can be sure that they had not been primed to think of diversity before answering.

- *Seeing lots of women of colour on your stalls!*

- *Talking to researchers across all fields*

- *Science is carried out by real people!*

### 4.1.4 Attractiveness

An interesting emergent category of ‘attractiveness’ was identified as responded by six Feedback Form respondents in South Kensington (Fig. 1). Comments of this kind also occur in other areas of feedback response, and should thus not be completely ignored. The following is taken from one of the Tweets that the event received from visitors on the night:

- *Tonight I learnt that a man only has to hold up a pickled octopus for me to find him strangely attractive #SU2013*

A similar point was also made by visitors in the roving interviews:
I think, because when I studied chemistry at university it was all old men, there were never any women teaching chemistry, but yes, it is nice to see. It was only biology that you ever saw any women and now there is, I am surprised the amount of women there are and nice looking ones as well! Scientists have got much better looking since I was at college!

This may seem a frivolous point to make but as the theme recurs several times and across data collected from several evaluation methods it bears some scrutiny. There can be little doubt that these respondents enjoyed meeting the researchers in question, who clearly made an impact upon them. This evidence supports the contention that SU 13 contributes to the dissolution of stereotypes concerning researchers in science and we can justifiably regard these as part of the same pattern. The intimations of surprise that we find in these comments suggest that these observations challenged people’s pre-existing notions about researchers in science helping to breakdown existing public stereotypes of researchers.

4.1.5 Lack of diversity. The South Kensington feedback forms contained a small percentage of comments indicating that there was little range of diversity amongst researchers. These responses to the question ‘What did you notice about the range of researchers you met this evening?’ did not indicate that visitors had perceived a diversity of researchers at the event:

- Heavily unrepresentative - oversampling women!
- Friendly, knowledgeable, but not a lot of scientists from black + BME background
- How young they were!

It is not apparent whether these are critical comments about the event, but the prevalence of exclamation marks in these comments can be taken to indicate surprise and the challenging of preconceptions.

Interview responses about lack of diversity in the science community of SU 13 reflected the same pattern as the feedback form responses. There was general surprise and pleasure at the age and gender mix of researchers at SU 13, but we find comments about a lack of ethnic diversity. Of the 14 comments stating that the researchers seen at SU4 had not been diverse, 9 of these mentioned the lack of ethnic diversity amongst the researchers. For example:

- The diversity, in terms of racial diversity, I haven’t seen as much. I think it would be cool to see.
- I think the ethnic groups haven’t been so well represented.

Four comments were about the lack of diversity in terms of gender. For example:

- It seems there are more male scientists at the moment, so yes, more males, so a work in progress.
- I don’t know if it just happens to be the people we’ve seen and spoken to
- They’re mostly males.

The other comment was about lack of diversity in age, similar to the comments listed above from the feedback forms on the same issue.
4.2 Outcome 2 – Participants are aware of the central role of researchers and research careers and of the key benefits research brings to society.

The effectiveness of SU 13 in enabling visitors to become more aware of the importance of researchers is best demonstrated by responses to a closed feedback form question “Has tonight made you think more about the importance of researchers to society?” This question received an overwhelming ‘yes’ response from visitors to both South Kensington and Tring. A high percentage of visitors reported ‘lots/loads’ (12%) when asked directly ‘what roles do researchers play in society?’. Responses using terms such as ‘central’ or ‘pivotal’ also accounted for a high percentage (13%) of responses.

The Nature Live events entry/exit poll shows that more people strongly agreed that ‘Researchers play a central role in our society’ after the event than before. Evidence from the feedback forms shows that visitors became aware of benefits in the fields of medicine, conservation, education and the understanding of our planet. The top response to the obverse question ‘what would the world be like if the scientific work you have seen or heard about tonight was not happening’, asked on a graffiti wall, clustered around researchers’ roles being about understanding the world, with less emphasis upon immediate practical benefits such as medical or technical advances.

4.2.1 The importance of researchers. The Nature Live poll addressed the first part of outcome 2, ‘participants are aware of the central role of researchers’. The poll provided good evidence that a positive shift in visitors thinking occurred as a result of the Nature Live show they attended, at both ends of the response scale. When exiting far fewer people strongly disagreed with the statement ‘Scientists play a central role in society’ compared with their response when entering. Conversely, far more people responded that they strongly agreed with this statement upon exiting compared with the votes awarded upon entry. See Figure 3 below.

Fig.3 Scientists play a central role in our society. To what extent do you agree?
In neither case are the absolute numbers of visitors who changed their views very great because the poll only reached those visitors who attended the Nature Live event. It would, therefore, behoove us to be cautious of these results if it were not for the fact that clearer indications of the same trend are evident in other evaluation responses received.

Question 9 of the feedback forms asked: "Has tonight made you think more about the importance of scientists to society?" The responses to this closed question at both of the sites, shows the same unambiguous pattern and make it clear that the event has inspired visitors to think more about the role of researchers in society. See figure 4.

Fig. 4 Has tonight made you think more about the importance of scientists to society?

In response to questions 11 (What role do scientists play in our society?) and 12 (What did you notice about the range of scientists you met this evening?) of the feedback forms, visitors identified a wide range of roles that researchers play in our society including education, innovation and policy formation. Many responses to this question chose words like ‘pivotal’ and ‘crucial’ including:

- They are essential in so many ways to the functions of our society that I couldn't put it into words.
- Very critical roles for the benefit of the humans and of our planet.
- They are integral to every aspect of society.

Figure 5 illustrates the range of responses given by visitors in the feedback forms to the question ‘What roles do scientists play in our society?’
The data demonstrates the sheer number of roles identified by visitors, showing a detailed and extensive awareness of the part they play in society. It represents an almost unanimous acclamation of the positive effects that researchers have on wider society with only a single respondent indicating that research and researchers could have a negative impact on society. The most critical that visitors were prepared to be in response to this question was the 3% (n=9) who stated that researchers were not visible or influential enough within wider society. Far from decrying the importance of researchers to society, these respondents emphasise that society would be improved if researchers in science were more influential.

4.2.2 Awareness of benefits to society. The second part of Outcome 2 requires visitors to come to an awareness of the benefits that research brings to society.

Poll 1, carried out at the South Kensington and Tring main entrance asked visitors to consider ‘To what extent does the work of scientists benefit society?’ See figure 6.
As in SU 12 only very slight changes are seen in the way visitors voted before and after the event, suggesting that participation in SU 13 had done little to change their awareness of the centrality of researchers and the benefits of research. This would be of considerable concern if it weren’t for the fact that the votes polled for both the before and after polls are so skewed towards the top end of the response options.

This, far from indicating that the event was unsuccessful, can be adjudged to reflect the very high levels of science ‘capital’ enjoyed by the Science Uncovered audience. In short over 80% of our audience came to the event already valuing science and its products in the highest degree as demonstrated in Figure 6.

4.2.3 Examples of benefits to society. We knew from previous years that the polls were likely to give these sorts of results, so in addition to them, we included a question on our feedback form: What
examples of benefits to society have you seen represented in the research tonight? These results are given in Figure 7.

Fig. 7 What examples of benefits to society have you seen represented in the research tonight?

Questions of this kind can be criticised on the grounds that responses have nothing to do with the event and that the same spread of results would be gained in neutral sites such as shopping centres. However we can clearly see from the differences between the two sites that this is not the case here. In South Kensington, where there were several medical and health stands and presentations, the medical benefits of science are the highest category. In Tring, with a much smaller event and no representation of medical or health researchers the category is entirely absent. Thus we can be reasonably confident that the 9 areas of benefit identified by respondents were ones that they encountered and recognised at Science Uncovered.

The roving interviews also targeted this outcome and nine comments from interviewees were made relating to the benefits of scientific research to society. Seven of these comments described specific benefits the interviewees had heard about, or stated in general terms that they felt research might benefit society. One comment revealed a lack of awareness of how a specific area of scientific research could benefit society.

General awareness of benefits to society (n=4):

F  I think it is because we’re all in the same age-group and we study science, physics, biology, so it is great to see something in a text-book in a real-life example.
Awareness of specific benefits to society (e.g. conservation) (n=4):

F  Okay. In the CTI, in the scanner thing, the region that we went to, we know that the population of bees is decreasing and they are trying to do research whether pesticides affect the size of the bee’s brain or affects the brain –

Lack of awareness of benefits to society (n=1):

F  I suppose it just wasn’t really much, more of what they were - you know - why are they studying moss? What is interesting about moss? What is it that they’re doing with it, you know? Just like - It’s just moss.

4.2.4 The importance of understanding the natural world. The final piece of evidence relating to this outcome comes from the graffiti wall at South Kensington. Visitors were asked to freely respond to the following as a way of identifying the benefits accruing from research to society: ‘What would the world be like if the scientific work you’ve seen or heard about tonight wasn’t happening?’

Fig. 8 What would the world be like if the scientific work you’ve seen or heard about tonight wasn’t happening?

Figure 8 shows that the top two response categories here: ‘devoid of understanding’ (n=20) and ‘less interesting’ (n=8) again seem to reflect the importance that this audience placed upon gaining knowledge about the natural world, demonstrating that those are the important benefits that researchers provide to society.
4.3 Outcome 3 – Participants are inspired to take part in other science activities

Visitors to SU 13 were inspired by a wide range of experiences. They place interacting with scientists, specific specimens and the passion and enthusiasm of researchers at the top of the list of such experiences. The percentages of visitors requesting further contact with and information from the Museum rose significantly compared with last year. Nearly all visitors explicitly stated that they would return to Science Uncovered or similar events compared with only 1 saying they would not.

4.3.1 Participation in numerous activities. Two of the headline statistics for SU 13 are revealing here. The 10,000 visitors who came to Science Uncovered this year were responsible for an estimated 70,000 direct interactions with researchers. It is clear from this alone that that the vast majority of visitors were sufficiently inspired by what they heard or saw to keep going and take part in numerous activities on offer during the night.

Further evidence is demonstrated by the Stamped on Science trail. This was a competition in which visitors could win a fieldtrip with a Museum researcher to the New Forest. The competition required visitors to seek out and collect stamps from six different locations in the Museum. In total 107 completed entries were made; another clear indication that visitors were inspired to participate in a range of science activities throughout the evening (which they had to do to collect all the stamps), as well as showing a definite desire to participate in at least one further science activity; the fieldtrip to the New Forest.

At the Tring site a count was made of the brochures and information packs taken away by visitors. 126 information packs were taken by the 218 SU 13 visitors to Tring. This reflects the desire of visitors to pursue an interest, gained at the event, in the future.

4.3.2 What inspired visitors? Investigating what it is about Science Uncovered that inspires visitors is central to our visitor research efforts for SU 13. Feedback forms at both sites asked visitors “What has inspired you tonight?” (Fig 9)

Fig.9 What has inspired you tonight?
Visitors to each site found inspiration in much the same kind of features of the event. Top of both lists is inspiration gained from one particular group/ specimen, with meteorites Antarctica and forensics all receiving multiple citations. This reflects the predilection for knowledge and information about the natural world that we find elsewhere in visitor responses. One notable difference with results gained from the same question last year is the drop in negative responses to this question. The negative responses that we received this year were predominantly connected with the success of the event (e.g. it was crowded) or with the permanent Museum offer (e.g. Dinosaurs was closed) rather than dissatisfaction with what was actually on offer during the evening.

Visitors were asked a similar question: “What was your highlight of the event?” on the Stamped on Science cards. The results are given in Figure 10.

Fig. 10 What was your highlight of the event?

This data supports the contention that the largest number of visitors was inspired by listening to researchers and researchers explain their work.
Given the relatively small number of places that were available on tours it striking that this engagement format manifests so strongly in visitor responses. These were clearly powerful and memorable experiences for visitors. However, as enticing as this data is we would be right to treat it with caution. 15% of these respondents went on tours, which is a vastly higher percentage than the percentage of the total audience that attended a tour, so it’s difficult not to see these respondents as a particularly determined and committed slice of the audience, as indeed they would need to be in order to collect all of the stamps. Partly this makes them unrepresentative, but it also means that they probably saw most of what was on offer at the event.

4.3.3 Future actions. While the feedback forms did not ask directly about intentions to return to later science events at the Museum, many visitors took the opportunity to state that they would. Illustrative quotes include:

*The building, the architecture, the exposition. Absolutely gorgeous. I definitely recommended. Also very friendly staff. Well done! Will return.*

*This was superb. I want more of this!*

*All of it. What a wonderful evening. Sure to come next year.*

(Emphasis added)

Another indication from the feedback forms of the successful uptake of this outcome is the percentage of visitors who left their email addresses in order to be kept up to date with future events at, and news from, the Museum. We can take the leaving of an email address as an explicit statement of intent to participate in other science events. At South Kensington 29.2% of visitors left an email address when completing the feedback form. At our Tring site the percentage was even higher, rising this year to 45.9%.

These figures are especially pleasing in the light of previous years’ results, as shown below (Figure 11). Both sites show a significant increase compared with the results of the same measure from last year.

Fig. 11 *Comparison of percentages of visitors requesting further contact with the Museum following Science Uncovered.*

Interview data also provides strong evidence that visitors are inspired to take part in other science activities. All visitors (by nature of their recruitment) had seen a number of activities already at SU by the time they were interviewed. Many described the things they had seen in detail, showing that they had been to a number of different stations, activities, galleries and talks and tours. For example:
They spray painted our handprints. We had some interesting conversations between the guy who was demonstrating that and then he put us in touch with an expert on the next stand about why handprints are like that. We looked at the mummified cat on the screen through there and just talking to the comet people and the people showing us how you make crystals and the significance of that which was interesting.

So I have had a good walk around. I have seen the minerals and the Antarctica exhibition and a bit about space, was very interesting and also the CSI bit with the fingerprints and the blood. It has been really good.

There were also comments about visitors actually intending or being inspired to do other science activities following SU. The table below summarises these responses – mostly these are to do with returning to the Museum or recommending the event to a friend.

<table>
<thead>
<tr>
<th>Other science activities</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would return to Science Uncovered/similar event</td>
<td>60</td>
</tr>
<tr>
<td>Would recommend SU to others</td>
<td>10</td>
</tr>
<tr>
<td>Had been to SU before</td>
<td>3</td>
</tr>
<tr>
<td>There were things that visitors would like to see further (at the event or in future at museum)</td>
<td>6</td>
</tr>
<tr>
<td>Would not come again</td>
<td>1</td>
</tr>
</tbody>
</table>

4.4 Outcome 4 – Participants are inspired to consider research careers and understand the diversity of careers in science.

That visitors left the event with a greater understanding of the diversity of careers in science is attested by the diversity of roles ascribed to researchers on the feedback forms. Poll data from the Year 6 students attending daytime events at SU 13 shows a distinct increase in the number of students viewing a science career as ‘very interesting’ as a result of the event. The same poll conducted with adults in the evening shows an increase in the numbers of visitors viewing science careers as ‘interesting’. The feedback form and interview responses provide some powerful examples of potentially life changing experiences at Science Uncovered, including one participant who was inspired to undertake a career in science as a direct result of last year’s event.

4.4.1 Consideration of research careers. Over the past four years of Science Uncovered, the first half of outcome 4 has been the most problematic to evaluate. Science Uncovered has been predominantly an adult event with, this year, the majority of visitors falling between the ages of 17 and 34. Such individuals are already committed to a job, career or specific programme of study, leaving little potential within the audience for a radical shift in life direction. In previous years we have had to couch our questions, relating to outcome 4 in purely hypothetical terms, as we did in the focus groups we ran last year (please see SU 12 report).

Children. The inclusion of Year 6 students (10-11 year olds) from the Royal Borough of Kensington and Chelsea was thus of great interest to us as the participants would not already
be committed in their interests. A programme of special events, during the day, was prepared for these students consisting of a show in the Flett Theatre (Revenge of the Minibeasts), another in the Attenborough Studio (Animal Vision) and a session in Investigate (NHM’s hands on science centre).

At each activity, a before and after poll was conducted with the students (n=281) responding to the question: “What would it be like to be a scientist?”. The purpose of this was to gauge students’ interest in becoming a researcher or in pursuing a career or further study in science.

(Please note that not all groups attended each of the events and so were only polled in the first activity in which they participated).

Fig. 12 Poll data from Y6 students attending daytime events at South Kensington responding to the question, “What would it be like to be a scientist?”

![Poll data from Y6 students attending daytime events at South Kensington responding to the question, “What would it be like to be a scientist?”](image)

The planned programme of events did little to change the views of students who came in thinking of science and science careers as dull or very dull; there being little change in these categories of response before and after the event. The significant shift that we do see in the data is between the interested and very interested categories. In short the activities undertaken seem to have moved the children who were already interested in science careers so that they became very interested in science careers.

**Adults.** The same poll was run in the evening of SU 13 at the Museum’s Exhibition Road entrance to gain an appreciation for how careers in science would be viewed by the adult participants to the event. Figure 13 below shows an increase in the percentage of visitors who considered careers in science as interesting before and after the event with a concomitant decrease in the percentage who regarded such careers as dull. However, it also represents a slight decrease in the percentage who thought that working in science would be very interesting.
From the roving interviews, 7 interviewees mentioned how SU had made them consider science careers in a different light. Four interviewees mentioned that the event had provided them a better idea of what roles were possible in science and what work in a science job might entail:

F And it’s interesting to see how they all sort of, it’s a lot more practical than you actually think a job in science would be rather than just sitting in a lab and doing chemical engineering.

F You also learn about things that you don’t necessarily hear in the news. That there is this research going on and you are like, okay, so if I did go into a career in science I could do that.

One interviewee mentioned the event in terms of potential role models for themselves in pursuing a science career:

F But it is nice when you see a female scientist cos it’s like we’re aspiring scientists so it’s nice to see that.

Another interviewee mentioned that the event would be useful if they did decide to pursue a science career in future:

Would you come again, not just to the museum but to Science Uncovered? Would you come again to the event?

F Yeah definitely next year especially if I want to pursue science more cos I reckon it would be really useful for that.
Finally, one interviewee reported that it was her experience at SU3 last year which inspired her to start a science course, and discussed the interaction with a museum scientist in detail which led her to make her decision:

F  Coming last year, basically gave me the last little nudge. That even though I’m quite old for it, I did sign up for a science degree.

Really? Last year?

F  It did give me that last little nudge. I was always like - nah, nah. But it’s so exciting. You know? So for me it’s what I’ve always wanted to do, and it was just like that last little push.

And what about it last year? Can you pinpoint it at all?

F  I was here last year with my mother-in-law, and we spoke to a lady down at the Antarctic station. And it was just very exciting. And I felt it was something I wanted to do. And you don’t know, until you talk to someone and you kind of connect to it, I think. You don’t know until you get that connection. And I think it was last year for me, that last little bit.

And so now you’re studying environmental science?

F  Yes, I am.

Brilliant. And was there anything in particular about that interaction? So you were talking about the interaction with the lady at the Antarctic station. Is there anything in particular that kind of made you think right, that’s it, I’m definitely going to do it?

F  Probably the experience itself. Because you can watch television programmes, and they tell you all the beautiful things about nature and about science, but to speak to a scientist about the everyday work that they do - sometimes little details that might not interest most people. But I’m like - you know - now, that’s an experience that I think I could live with. I know it’s not all positive. But it’s something I would like to do. I’m not very good at expressing myself, but I hope it makes sense.

Yeah, yeah. And you were talking about sort of everyday life, were you, last year? Is that something you were talking about?

F  Yes. About what she does when she goes in the field, what she does with the materials at home. So just the everyday job.

Another strong piece of evidence suggesting that SU 13 provided an environment in which visitors were enabled to consider a career in science comes from unsolicited comments in the feedback forms. None of the questions on the form targeted this outcome directly but we did receive a number of unsolicited comments about careers in answer to our question: “What has inspired you tonight?”

Everything! We had a fascinating evening. My daughter is now keen to become a scientists...
I really enjoyed the medical stall and gave me an idea to be a doctor.

The library tour and the vault tour. The former made me consider it as a career option and the latter made me reconsider geology/mineralogy as an interesting field.

Learnt about civets, different degree + career options

(Emphasis added)

Such comments, although few in number, are impressive evidence precisely because visitors responses were not solicited. It is clear that this outcome was available on the night for those who wished to pursue it.

4.4.2 Understanding the diversity of science careers. The success of the second half of this outcome ‘understand the diversity of careers in science’ is much easier to demonstrate. When asked about the diversity of researchers available at SU 13 in the feedback forms, just over 11% specifically mentioned the breadth of fields in which researchers met were engaged, see figure 14.

Fig. 14 What have you noticed about the range of scientists you have met this evening?

![Bar chart showing the diversity of scientists noticed by visitors in South Kensington and Tring.](image-url)
When asking about the roles that researchers play in society we received a multitude of suggestions from conservation, medicine and new technology to understanding the world, impacting on policy and education, see figure 15.

Fig. 15 What roles do scientists play in our society?

As usual the *lots/loads* category was one of the largest, but unusually this year we had a category, albeit small (3%), for responses indicating that researchers should be more influential in shaping society.
5.0 What makes Science Uncovered successful?

The preceding data gives significant evidence to support the contention that visitors to SU 13 were successful in taking away the outcomes that were set for the event.

In addition to this, we wanted to go beyond the analysis of whether visitors took away specific learnings, as defined by the project outcomes and attempt to ascertain what it was about Science Uncovered that made it powerful and effective. Hence the research question, What is it about Science Uncovered that makes it successful?

5.1 Diversity of opportunity. In responding to this research question the first sign post towards an answer is the diversity of opportunity provided by the event. The variety of opportunities for visitors comes through strongly in the range of experiences that they report as ‘inspiring’. Please see Fig 9 above. The largest number of responses to this question concerned specific groups or specimens, but visitors also reported deriving inspiration from the personalities of the researchers they met, as well as experiencing particular activities, such as talks and tours and the opportunity to question researchers.

Diversity of pedagogical approach is a strong feature of what researchers planned for visitors to the event. In the pre-event survey with researchers we asked: “What ways of engaging visitors that you’ve seen or used before do you intend to use at this year’s event?” (Fig 16). The vast majority of respondents indicated that they had prepared and would use between two and five different engagement strategies during their session. This indicates a laudable appreciation of the differing needs of audience members and an awareness of the importance of offering each person choice, variety and media that they feel comfortable in accessing.

Fig.16 Mechanisms for engaging visitors – responses from researchers pre event

The data illustrates the range and diversity of approaches that were available to visitors on the night. There was literally something for everyone. There is debate in educational circles about
the utility and validity of aligning learning activities with so called 'learning styles' in formal contexts, but there can be little doubt that in a free choice, informal context, such as Science Uncovered, presentations that accord with visitors' preferences are most likely to be approached by visitors. The sheer range of learning opportunities available at Science Uncovered means that visitors would have been able to find media and strategies that they found attractive and accessible.

5.2 Authentic specimens. Specimens and impressive specimens was the most cited way that researchers planned to engage visitors. This builds upon and reflects not just the fundamental resource of the Museum, but also the wealth of experience the NHM has within Science and Public Engagement groups, that validate such impact. Real specimens create physical, tangible links to remote times and places, they are vehicles for the imagination, leading towards awareness, appreciation and understanding of far off things.

This approbation is mirrored in the responses of researchers answering the post-event survey we carried out. When asked: “What did you do on the night that was most successful in engaging visitors and why do you think it worked so well?” researchers overwhelmingly identified contact with authentic specimens as the most successful engagement mechanism (Fig 17).

1 Ref. H. Gardner (Frames of Mind: The Theory of Multiple Intelligences 1983)
2 Ref. Frank Coffield (in Bad Education 2012)
5.3 Knowledge of the natural world. From responses collected from feedback forms, interviews and graffiti walls it is clear that the SU 13 audience appreciated and valued scientific knowledge about the natural world. They felt that gaining understanding of the world was the most important role of the researcher (Fig 2 and Fig 8 above), it was one of the aspects of the researchers that they valued most (Fig 1 above) and was what they most wanted for themselves (Fig 9 above).

5.4 Preferred formats. There is evidence that this audience preferred to gain the knowledge and information they sought from relatively transmissive and didactic presentations. Fig 10 above clearly identifies researchers talking at stands and stalls as the most inspiring experiences for visitors and also shows how well this audience regarded the guided tours that were on offer.

These responses suggest a preference for knowledge transfer, supported by the preponderance of responses citing learning about one specific group of organisms (fig. 9). Many others cited talks and tours as inspirational. Talks and tours are largely transmissive rather than interactive formats; these responses likely reflect that visitors gained interesting factual information about the natural world.
5.5 Interactive formats. Fig 17 shows those features of the event that the researchers themselves judged to be most effective in engaging the public. These choices primarily represent the importance and efficacy of real specimens. But interestingly those formats that are specifically interactive such as ‘engage in debate’ (n=19) and ‘activities and games’ (n=16) when summed come a close second to specimens as successful mechanisms for engagement. So we can conclude that while many visitors wanted to gain facts and information about the natural world, often in a traditional, didactic fashion (as reflected by the high percentage of visitors who valued and were inspired by these kinds of formats) there was a considerable appetite for more interactive engagements with science.

5.6 Passion and enthusiasm of researchers. As in previous years the passion and enthusiasm of the researchers present is referenced by many visitors (n=54) as being a source
of inspiration (Fig 9). The importance of this to the visitors is also strongly reported in Fig 1 above.

Passion of researchers

5.7 The Museum at night. 61 of the 123 posted comments mentioned enjoying visiting the Museum at night and/or expressed a desire to visit the Museum at night. This was by far the largest category of responses of the tweets we received. Supporting this is the Figure of 41.5% of respondents to the feedback forms who stated that they were attending SU 13 because they wanted to visit the NHM in the evening. This could be an expression of a desire to see/experience familiar things in an unfamiliar way. People enjoy visiting the Museum by day (the feedback forms revealed that 90.5% of the SU 13 visitors had visited the Museum before), but the chance to see it in a different way and in a different context (at night and in an adult social circumstance) is a powerful driver.

A social event

5.8. Features of SU 13 that visitors thought were most impactful. Interview data provides further corroboration of the features of SU 13 that visitors reported as having the greatest impact upon them (Fig 18). Again we see interactions with scientists topping the list (32%) with significant contributions made by specimens (15%) and specific activities (12%) and
the social elements of the event (12%). We also see here further evidence of this audiences’ proclivity for gaining new information about the natural world in the Learning category (10%).

Fig. 18 The features of SU 13 that were most impactful for visitors.

Data captured from Tweets supports this further. 34 tweeted comments mentioned specific staff, the specialties of staff, and specific talks, while 25 mentioned specific specimens. This again gives us corroboration that the impact of Science Uncovered is driven by the conflation of passionate experts and the spectacular collections upon which they work.
6.0 Outstanding issues and concerns

Our evaluation report identifies many areas of success regarding the SU event in 2013. There can be no doubt that visitors to the event enjoyed the experience and responded well to the activities and experiences offered on the night. However, the patterns and inferences seen in the data inevitably lead us to ask further questions.

6.1 Audience and ‘science capital’.
Chief amongst these questions is the nature of the audience that attended the event. There is evidence that the audience came to the event already convinced of the importance and value of science research. This comes from poll results, from interview comments, from feedback from researchers at the event and much anecdotal evidence from other staff, and evaluation team members.

This pre-existing possession of ‘science capital’ calls into question the degree to which the event was responsible for achieving the outcomes and objectives set for it. Simply stated, if visitors were already in possession of the outcomes then they did not gain them at the event.

Researchers identified this audience before the event, perhaps drawing from their experiences of visitors to similar or previous events. In the pre event survey we conducted with researchers at SU 13 they made the following responses to the question ‘What do you think the public reaction to your work will be?’.

- Extremely positive – the people attending the event are self-selected bio-science enthusiasts
- I think attendees are probably either already science enthusiasts or interested in debating/discussing science issues. So I expect lots of interest/willingness to engage.

Responses to the feedback form demographic questions shows that 90.5% of respondents at SK had visited the Museum before, with 9.3% previously attending a previous Science Uncovered event. For Tring the figures were 70.3% and 27% respectively. This shows that the SU audience has a high propensity to visit this and possibly other science/cultural institutions. Valuing this kind of experience would contribute to ‘science capital’.

Other evidence that supports this can be seen in the visitor segments that make up the SU audience. Segmentation analysis shows the SU13 audience to comprise of the following:

<table>
<thead>
<tr>
<th>Segment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contemporary Cultured:</td>
<td>51%</td>
</tr>
<tr>
<td>Learned Liberals:</td>
<td>27%</td>
</tr>
<tr>
<td>Parks &amp; Gardens:</td>
<td>12%</td>
</tr>
<tr>
<td>Family Focussed:</td>
<td>5%</td>
</tr>
<tr>
<td>Theme Park Purists:</td>
<td>5%</td>
</tr>
<tr>
<td>Social Thrill Seekers:</td>
<td>0%</td>
</tr>
</tbody>
</table>

There is likely some relation between attitudes and knowledge of science or science in informal learning environments, education and profession (i.e. factors contributing to higher levels of ‘science capital’) and the defining characteristics of Contemporary Cultured and Learned Liberal audience segments. While we do not have data on the levels of ‘science capital’ attributed to each segment (if indeed these are fixed amounts), the findings provide further evidence that the SU13 audience was in possession of high levels of ‘science capital’.
In interviews, visitors were not asked directly about their personal experience with science but many gave unprompted or spontaneous comments that give insight into their ‘science capital’. Visitors were on the whole familiar with the museum, may have had science qualifications or jobs themselves or knew someone who did, had other interests in science and took part in related activities.

Fig. 19 The pre-existing ‘Science Capital of visitors to SU 13 from interview data

In 51 interviews conducted with visitors at South Kensington, there were 14 examples of visitors who had pursued science as a career or as a qualification.

Oh yeah definitely. You can see by the people that are presenting. We all did science degrees at uni anyway nearly ten years ago so we kind of identify with that anyway.

Nine who regularly visited the NHM.

I have come here over the last thirty years regularly, so yes.

Another 5 visitors made direct references to friends or family who were presenting at the event

We went down here because one of our friends is on the MRI stand, so we saw that.

This would fit with data that was obtained relating to preferences for transmissive formats, such as talks and tours (Fig 10). These formats are great for knowledgeable, highly motivated audiences, but often less accessible for, and less appreciated by, non-specialists. Such a reading of the data should also make us cautious in asserting the achievement of some key objectives of the event such as those relating to the event reaching people who do not usually attend science events and about inspiring people to become scientists/researchers.

6.2 Aspects of negative experience.
A very few visitors did take the opportunity of the feedback form to relate their area of dissatisfaction:
In reviewing those things that visitors identified as their least favourite aspects of SU 13, we should note that dissatisfaction about the organisation and operational aspects of the event outnumber those relating to the content of the event by more than 2:1.

The roving interviews enabled interrogation of visitors responses and generated 65 comments about things that visitors felt had not worked well at SU, what they felt was their least favourite aspect of the evening, and suggestions for improvements for other events (Fig 20 below). Another source of information about aspects of SU 13 that worked less well was the responses from researchers to the post event survey.

6.2.1 Queues, crowding and busy-ness. This category received the greatest number of comments from researchers on the night who responded to the post event survey (n=91). Of these respondents, 28.5% made a statement about crowds and queues. It should be noted that many of these were complaints about how long researchers had to queue at the bar to redeem their free drink voucher, though some also commented that this meant they had less time to interact with visitors at the Science Bar.

From the interviews (n=51) there were 17 comments to the effect that the queues and crowds had impacted negatively upon the event.

Do you know I haven’t gotten a chance to get up too close because it has been so crowded, so we have been mostly walking around and looking at all the other regular exhibits.

I wouldn’t say there has been anything that has been particularly bad. I think it has been quite busy so there has been a few things I have gone along to that maybe I have wanted to see or kind of try and get a little bit more involved with that has, you know, been a little bit more difficult just because there are so many people here.

6.2.2 Navigation. The navigation of the event, sign-posting and highlighting, was another issue commented upon by both researchers (n=8/61) and visitors (n=7/51).
Visitor: You know what, the signposting could be a little bit better, where is what and what it is because I got lost quite a few times to be honest. (interview)

Researcher: I wanted to get to visit a stall manned by the scientists who work on malaria research but couldn’t find them. In fact, as a visitor, when I wasn’t behind our own stall, I didn’t know where I could find things, eg, if a person is interested in meteorites and mineral, where could they speak to a scientist about that? or if they were interested in malaria research, where to find the team that works on that? Was there a guide that visitors were handed when they came in? (post event survey)

Visitor: What has not inspired me tonight? Organisation and layout of exhibits chaotic. Many incomprehensible. Each exhibit should be numbered separately, and clear routes through labelled or marked. Some areas too crammed and noisy. (feedback form)

6.2.3 The end of the evening. The fact that many of the activities ended at 10.30 rather than midnight as was advertised, and the music in the central hall was criticised by both visitors (feedback forms and email feedback) and researchers (post event survey).

Researcher: One big criticism is that without warning very loud music started in the Science Bar, which immediately killed the interesting conversation I and a fellow scientist had with a young couple visiting the event. The PEG staff did a great job to get interested visitors in contact with the scientists in the Bar and that was completely ruined by the start of the music (WHY MUSIC ANYWAY?)

Researcher: The end of the night - between 10pm-12am in the central hall didn’t seem to go well. People were herded in there, to where there was only one bar with a very long queue. Apparently there was to be music/djs but there didn’t seem to be. I think a lot of people would have stayed right to the end had this been better organised. As it was by 10.45 it was quite flat.

Visitor: Who the ****thought it was a good idea to play a ZK sound system of dubious quality in the space we’re meant to try and sit and chat to the scientists! It’s not a **** club.

Visitor: arrived at 10:30 so all the stations were closed. Update website please.

After the event we received the following email feedback from a visitor...

I briefly attended the Science Uncovered LATE on Friday 27 September. Having been before, I took some friends from out of town promising it would be a great night. I had looked up online and the hours were clearly stated as being until midnight. However, we arrived about 9.45pm only to discover that we couldn’t enter the galleries and many of the interactive stations and scientists were closed/going home. We were really disappointed as I couldn’t find any information online stating that it really only went until just before 10pm. I may well have overlooked this, but can you please specify next time what time the event actually goes til as we would have come earlier had we known.

6.2.4 Least popular format. The individual format that received most criticism from researchers in the post event survey was the Science Bar. 15% of respondents commented negatively about the Science Bar. Again many of these comments were connected with the queues and with crowding, making it difficult or impossible to engage visitors.
Visitor: *On occasion, the queue for the Science bar stretched almost into the Reptiles gallery which made seeing some of the stalls there a bit tricky.*

Several comments identify the organisation of the Science Bar as a problem. Some researchers felt that the format was not conducive to the objective as they felt ‘rude’ intruding into visitors’ conversations.
7.0 Future evaluations

In looking forward to future evaluations of similar events we need to recognise that some of our results from SU 13 are compatible with the hypothesis that visitors arrived at the event already convinced of the value, importance and utility of science research.

Important questions about the success of Science Uncovered hinge upon the nature of the audience that attends:

- Who comes to SU?
- What levels of ‘science capital’ do they possess prior to the event?
- What attitudes to research and researchers does this audience have before coming to the SU?
- How much value does the event add to visitors’ understanding of the role and importance of research and researchers?
- How much that is new to them do they gain from the event?
- How much affective change is the event responsible for?

Future evaluations of Science Uncovered need to collect evidence relating to these questions if we are to be sure of the impacts of the event.

If the intimations regarding science capital are borne out by research then two courses of remedial action can be recommended

1. Change the outcomes in order to better reflect the nature of the SU audience and to understand the events impacts on them. These could be phrased such that: ‘Visitors become more aware…’ or ‘Visitors become more inspired…’

2. Attract a different audience to the event, one that does not already possess the outcomes.
8.0 Appendices

8.1 Appendix 1:
An example of poll question (poll at main South Kensington entrance and at Tring) and attendant voting options
8.2 Appendix 2: The feedback form

This was the version we used at the South Kensington site. The version for Tring used the same questions but with some slight changes to the front side to make it specific to that site.
8.3 Appendix 3:
The graffiti wall question panels
8.4 Appendix 4:
The interview questions

1. What have you seen so far?
2. What has been your favourite (activity, presentation)? What made it so?
3. What has been your least favourite (activity, presentation)? What made it so?
4. Does what you see tonight convince you that scientists are a diverse group of people from a wide variety of backgrounds? Please give an example...

   Prompts... Age/Gender/Ethnicity

5. What did you get from this event?

   Prompts... Skills/ Facts/Values

6. Would you come again?
7. Is there anything you’d like to add?
8.5 Appendix 5:
Pre and post event survey questions with researchers

We used an online survey tool to deliver these questions in the week before and then in the week after the event. An explanatory email accompanied the link to the survey.

**Pre-event.**
**Impact on scientists:** What ways of engaging visitors that you’ve seen or used before do you intend to use at this year’s event?
**Expectation:** What do you think the public reaction to your work will be?
**Engagement:** What do you think you might see/hear from visitors to reassure you that they are engaged and interested in your presentation/activity?
**Outcome:** What do you want visitors to take away from your session?
**Other:** Do you have other comments you’d like to make at this time?

**Post-event.**
**Activity:** What did you do on the night to engage visitors? (Eg. talk about your work, answer questions, run an activity, invite them to explore a collection etc.)
**Success:** What did you do on the night that was most successful in engaging visitors and why do you think it worked so well? (Eg. activity/specimens/equipment/personality/stories)
**Expectation:** How did your expectations of visitors match the reality of the evening?
**Improvements:** How could you/we improve the event for next year?