PUBLIC ENGAGEMENT AND SCIENCE COMMUNICATION SURVEY 2014

APPENDIX 2

Contents

Principle Investigators

1) Please highlight any points on which you agree or disagree with BBSRC PE and SC definitions below.

In general agreement with terms outlined
- These seem clear and appropriate
- These definitions seem very reasonable to me
- Totally agree the definition about Public engagement
- The use of "engagement" and "communication" makes sense as it makes a useful distinction between two type of interaction with an audience. The use of "public" and "science" on the other hand doesn't make sense and only confuses. Both engagement and communication can be public and scientific - the easiest solution is to skip "public" and just use "science". "Science engagement" then involves dialogue, interaction and participation, drawing in researchers and/or non-academics. "Science communication" then is primarily a one way communication process for researchers and/or non-academics, although there may be some, limited, opportunities for discussion.
- Generally agree
- I would say science communication use to be one way -- however for almost every article posted on internet, it is possible to leave comments, and if researchers are involved in responding etc .. this somehow get closer to public engagement - although I agree overall with the distinction
- Until I attended the BBSRC public engagement training I was not aware of these definitions but I think they are useful.
- They seem reasonable to me.
- The BBSRC definitions make sense to me.
- The statement conforms to my understanding. I wasn'y aware to my knowledge of the BBSRC definition.
- I agree.
- these definitions sound reasonable
- Good definition - 'public engagement' has always seemed a bit woolly to me.
- I agree with these definitions. While I would not be able to quote them exactly when asked, this is how I understand "public engagement" and "science communication".
- I agree with those definitions.

Would use different terminology/definitions
- Although I agree with the need for two definitions (dialogue vs. one-way information), I think the them [sic] 'science communication' is misleading; instead, I consider one-way information to be defined under 'lay-man' or public dissemination, which includes things like press releases and web-pages.
- I think that the reciprocal role is a good way to distinguish between engagement and communication. "Communication" may reach a wider audience than "engagement" and this ought to be reflected in the definition,
- I'm not sure I'd view science communication as quite so one way! Conventional workshop events are highly interactive, a number of the new online journals encourage dialogue, ResearchGate is interactive, some scientists even use Twitter...
- I would consider science communication to also involve two way dialogue but in specific forums such as conferences, symposia and workshops.
- Science communication can be a bidirectional communication if you include blogs or other social media.
- The language used in public engagement must be appropriate and critical here
- Public engagement happens every day when researchers explain their work to family, relatives, friends, etc.   Science communication can lead to discussion as different interpretations of scientific data are possible. This has been taken-up by several journals that added a discussion

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forum on published articles (e.g. PLoS Open Access Journals). The term defined by BBSRC is more thought on science information i.e. to inform the public about the current engagement and results.

Would not differentiate terms

- I'm not sure of the need to differentiate the two terms, nor whether, in reality, people will use them as defined
- I'm not sure how rigid the distinction needs to be. I hope I manage to do some science communication within public engagement.
- We would not make this distinction so categorical - public engagement covers a very wide spectrum of both two-way and one-way forms
- This makes sense, but I had thought of the terms as being interchangeable. These definitions are helpful to clarify the difference between the two categories.
- I would argue that science communication is a key element of public engagement and not separate. I would also disagree that 'effective' science communication is one way - the best communication has to be a two-way dialogue.
- I agree, I just think that science commutation if the first step to public engagement
- They sound like synonyms to me. Assigning them the meanings above seems arbitrary and I would be surprised if most people realised the difference.
- Surely these two notions can overlap and it appears somewhat needless to me to separate them. Is science communication aimed also at both researchers and non-academics - communication to researchers or to non-academics could be very different. I would have thought that it is best to consider the whole area of public engagement and science communication as the intereaction with non-academics/non-researchers.
- I think there is considerable overlap between these two activities.

Disagreed with terms outlined

- I do not agree that science communication is primarily one way. Indeed, any scientist worth his/her salt will be well aware that two- (or multi-) way communication is essential for progress in research
- I disagree on 2 points: When scientific communication is done well this invariably includes the opportunity for scientific discussion within groups and /or individuals from non-scientific backgrounds.   Scientific communication with the immediate and extended families also leads to scientific discussions with non-scientists at non- scientific venues. This activity should not be under-valued by the BBSRC, because it typically transends three generations.
- Not so clear cut?   Science communication is like a report setting out discoveries, outlining methods etc. Usually given as a paper but also as a seminar. Feedback is expected either directly or indirectly via emails etc.   Public engagement is more out in the open, mostly through talks, where active discussion is encouraged. Often with non specialists, schools, public but also industry and policy makers.
- I agree that public engagement should involve dialogue with various public categories. I disagree that scientific communication is a one way communication.
- I had previously considered science communication to also be a two way communication. I had considered the difference between public engagement and science communication to be the target audience.
- The definition is not accurate since a lot of public engagement activities end up being "one way communication processes" whilst science communications can often be associated with intense dialogue, interaction and debate...often leading to participation in the form of collaborative research, as well as competitive research which may not have been initiated without dialogue. It is wrong to try to broadly define the meaning of Public engagement and science communication, both should aim to be informative as well as interactive.
- They're your definitions.   Science communication is easier and more often feasible than public engagement, I suspect.

2) Please rate the importance of the following statements as reasons why you participate in public engagement and/or science communication.

Advantageous to career/research
- I would like to say that the benefit to my research, to my career and to hit the BBSRC target are all less important but hey are of course all linked. So for pragmatic reasons all are lifted up to important because if you don't keep the bbsrc happy, you don't get the grant, if you don't get the grant it is bad for the research and the career etc.
- Normally the progression of my research depends on intellectual input and experimental work. However public engagement activities are useful in helping consider the application of research, and giving the opportunity to try hands-on application.
- It is also an important research training opportunity and I found that PDRAs can enjoy this a lot.
- I wanted to note that although I don't think public engagement benefits my career directly my University (Sheffield) and my department does place a lot of value this activity, for example it can be used in promotion cases and it is accounted for in workload allocation models. My evaluation here is personal-I don't think this is an area were I in particular excel.
- I can't think of specific examples of how it has benefited my career or research but I guess it may do in the future.

To encourage interest in science/next generation of scientists
- Also to encourage the next generation to study and enjoy science.
- Also undertake as a general wish to encourage new and young people to be enthused by science such that they want to get involved.
- Difficult to rate accountability and BBSRC requirements. Clearly they are important as funds are awarded on this basis, but I don't think this is a driver for the activity. It's to excite people about science.
- It may be helpful for the BBSRC to encourage researchers to collaborate in this activity ie communicate research activities around a common theme. Perhaps they could organise an open day for the public with several speakers and the chance for the public to direct their questions to a panel of experts at the end of the day. BBSRC could perhaps faciliate these events.

Consider engagement a requirement as a researcher
- I think public engagement and science communication are extremely important, as they help disseminate and focus the work we do and should be an absolute requirement for any scientist engaged in research supported by public funds
- I would engage with the public whether it were a requirement or not
- I was unaware of the BBSRC grant minimum requirement for public engagement and science communication activities and therefore engaged in these activities thus far for other reasons.
- The minimum grant requirements are easily achievable by an established research team and PI .

Other
- Probably the bar should be raised by BBSRC for through who repeatedly win their funding.
- I am now over 65 and this is my last research grant so I regard any effects on my career and research as unimportant to me.
- We work with farmers and the farming industry, we have funding directly from farmers so its important they can see their money is being well spent.

Personal enjoyment
- Because I enjoy it --> Very important Is limited due to time demand --> Very important
- My work is primarily aimed at application and impact so I communicate with a wide range of non-academics including the general public. I do it because I enjoy it and see it as my part of a contract between me and the tax payer who funds much of my activity.

Sense of personal responsibility

- My main purpose behind my own public engagement is to compensate for the loud shouting anti-science-oriented minority that influences the public opinion. If scientists don't engage with the public in an informed manner, who else will? The second most important reason for interacting with the public is simply because I enjoy doing this and to hear as many alternative viewpoints as possible. My own research benefits because it is surprisingly productive to have a broad perspective, even to solve specialist problems.

3) Please tick to indicate how easy or difficult you have found (or imagine) the public engagement and science communication activities below to be. Please feel free to voice your opinion on every activity and do not limit yourself only to rating activities you have previously participated in.

Time constraints
- The main difficulty relates to the time these additional activities take. My current BBSRC grant application stated I would require 6 hrs per week to fulfil the duties associated with it - including the public engagement, communication and impact activities. BBSRC cut this to 4 hrs per week when it was awarded. Many of the activities stated above (i.e. schools, educational, festivals etc) require substantial time input.
- Growing demands on time.
- Some of these activities I haven't tried, because I spending most of my time on public engagement would harm my research.
- I don't feel any of the activities are intrinsically difficult - the major constraints is simply time. With ever increasing student numbers and growing teaching and administrative requirements associated with academic posts, research time is restricted, and it is difficult to balance the wide ranging and ever
- Depending on who you are talking to communicating the message across can be difficult and can be very costly in terms of time. However I do see it as very important and needed.
- Difficult to get public to attend open days unless they are put on with activities for children. People are not going to take time off work to attend unless they have a specific interest such as being involved in a patient support group or fund raising. We have had a very good response from teachers and schools for activities that support keeping teachers up to date with current technologies and the development a range of teaching resources.
- It is very difficult to have the time to do this additional and important activity in really important areas. For example developing educational recourses and tools would be of high value within most grants and it would be best to have time that could be allocated to science communication and engagement activities that was better recognised during reviewing and awarding of grants
- The activities ticked as "difficult" are those considered as "time-consuming".
- Some of the public engagements are difficult - or are getting increasingly more difficult - to pursue on a regular basis due to time constraints given the high expectations at Universities in terms of teaching, research, and administration.
- most of my 'difficult' answers relate to having the time and opportunity to be involved in these activities
- Major difficulty with public engagement of any form is to find a time. Most of the Universities currently put very large number of detailed numerical targets on individual staff. Fulfilling these usually ill-formulated targets is already impossible and everybody feel that they fail something. Public engagement is never included into the list of targets so there is always activity which University demands to be prioritised.
- While these activities may be easy, the difficult part is finding the time as the activities require development work and this is not supported by institutions.
- Time is the main limiting factor.
- Participation in exhibitions/science festivals or presenting at science centres/museums is not difficult intellectually, but it is simply difficult to find the time to deal with administration, and to be physically absent from the work place for long periods. An activity with a priary school usually lasts for 1-2 hours only and does not require much organisation, just good ideas and willingness to interact with teachers and children..

Press specific comments
- Once I get to the point of having a science communication or public engagement activity to do I find it fairly easy. What I find difficult is persuading press officers within our institution that our work needs to be communicated. It varies with the press officer and is currently very difficult.
- To clarify point 1. Working with journalists can be tricky, but not so for own press office. My experience has been that they are very supportive and helpful.

- working with media needs a little bit of guidance - I personally found it uneasy as reports are too often far from what is intended ; there are several good books -- and some courses that can be recommended to researchers
- Communicating with journalists - written press and radio can be easy, but even with a careful press release, post-additions by the journalist can sometimes alter or overly sensationalise the message.
- High impact science with an unusual angle can often get journalists interested relatively easily. Twitter etc. often require frequent updating and I think would have limited effect. Also could end up with erroneous or unreviewed material being made public before proper thought.
- Connections with the BBC were made through the Royal Society and then it became easy.
- Experience with journalists is very mixed. I acted as a panel member for a journalist briefing on one topic that got totally derailed by journalists from the Daily Mail and Telegraph who wanted a completely different story.   European journalists seem far more responsible and interested in the actual science
- Working with the press - I've found it is really important to make sure they get things correct - they ofter mis-interpret, get things the wrong way round etc.
- Some of these are difficult to assess - can vary considerably within category. For example, our University press office can be very helpful or very obtuse.
- Press is very difficult as in order to garner attention the journalist or press office tends to want an 'angle' which goes against the whole purpose of public engagement in the first place, it ends up dumbing down the science at best or misrepresenting it at worst. Not sure what can be done about this as it is a catch-22 of trying to get press but trying to ensure the science is reported correctly.
- At the moment, we just started the project and are not in the position yet to contact the press on our research.   I have the impression that the press tends to report on simple and directly human related research. If you work in the basic biomedical science as we do, it is much harder to attract the attention of the press as our findings cannot be explained in a single easy phrase but need some more background etc. to understand the significance of our findings.
- working with journalists (including own press office) is by far the hardest of these activities. It is hard to avoid being misinterpreted, and it is extremely hard to avoid being overhyped (or entirely silenced). Journalists seem to think that the public is only interested in huge ly important discoveries (life-changing) or otherwise rate the research results as not interesting at all to the public.
- I find dealing with journalist directly difficult in light of possible misrepresentations.

Long/hard work investment
- Although the events I have been involved with have been 'easy' (in the sense that I have found it easy to get involved and participate), they have certainly been a lot of hard work to make successful.
- I have taken part in different events with different levels of engagement. I am not a fan of social media, but have reached audiences otherwise. I would like to try citizen science, but this can take a great deal of preparation and may have financial implications, so if not costed in a grant can be difficult to do. Presentations at schools/clubs/societies is fun an can give challenging questions. Hands on activities at museums are the best for engaging the public at different levels. I have also prepared a teaching toy for protein chemistry and we have a travelling hands on exhibit we can use to explain the science resulting from this particular BBSRC grant
- We have taken part in the Royal Society Summer Science exhibition and the logistical requirements were quite considerable. This is definitely difficult but rewarding.
- I've ticked "Don't know" for the ones I have no experience in. Really, working with schools is not "Easy" nor "Difficult" but just requires a lot of preparation time in advance, even just for items like making websites and resources available on their restricted school networks through the count council proxy officers, and requires a lot of energy on the day.
- Effective public engagement requires considerably input of time, thought, energy, and can rarely be described as "easy".   I have answered with respect to the former.

- The difficultly with using social media comes from the fact that providing regular updates of our activities and staying aware of others' activities is very time consuming. Ideally, there should be budgets allocated for outreach activities, which would encompass all types of communication with the research community and the public at large. Concerning crowdsourcing: provenance, reliability and consistency are difficult to track/achieve.

Have found one or more things listed easy
- Difficult markings indicate: in the context of the research project rather than any inherent difficulty in access to the routes.
- Again I have a lot of experience in this and find it relatively easy and quite enjoyable
- Our institution arranges meetings for lay public which can be straightforward to participate. Have also been involved in lay public lab visits organised by research charity which seem to be very successful.
- I, personally, have had most experience of dealing face-to-face with our stakeholder audience at roadshow/workshop-type events, but I can see the merit in embracing social media
- I regularly present at festivals, exhibitions and schools and run various active outreach activities to this effect. These events are made easier by support of the event organisers and the institute, which has been positive for me.
- In our current project we have undertaken various public engagement activities such as a radio broadcast (Inside Science, Radio 4), given talks to the public and stakeholders and participated in Science Sunday at the Glasgow Science Festival. All of these activities have been quiet easy to organise and deliver.

Unable to comment
- I've ticked easy in these areas as we have people whose job it is to facilitate schools activities, development of resources, events etc.
- Citizen science/crowdsourcing - very variable ease/difficulty depending on the specifics. Social media - Don't use, so can't comment.
- Never used crowdsourcing.
- Publicity/social media are difficult due to family circumstances; secure adoption, face must not be linked to name on websites etc.
- Do you mean easy/difficult to find opportunities to get involved, or easy/difficult to do well.
- I do not use Twitter and Facebook at all, so this question is not applicable

Barriers associated with difficult activities
- As someone with a young family, it is difficult to attend public science forums as any I am aware of have been in the evening or in London.
- Due to the nature of our work, which is very specialized, public engagement with schools and the likes of citizen science is difficult.
- Social media question appears misdirected - message out does not mean message received as the audience is self-selecting i.e I do not think there is a chance that Wayne Rooney will read my tweats and frankly I would question social media having appreciable impact beyond a self-focused community
- I can only rate the activities I have participated in, as I don't know how difficult it will be to do the activities I have not yet tried. IMPORTANTLY, public engagement activities are made much easier (for me or my Post Doctoral researchers funded by the BBSRC) if we join events which are organised by others. Events/activities are being organised by my host institution or my colleagues. However, I am not very aware of events organised by the BBSRC where the BBSRC invites scientists they fund for their contribution (my apologies if this is being done by the BBSRC, but I am unaware of it). The latter would possibly have result in greatly enhancing my public engagement activities.

Have found difficult challenges valuable
- There is clearly a difference between 'doing' and 'doing well' for these activities. Working with journalists has highlighted to me how much jargon and background knowledge I assume when

describing my own research interests. With that knowledge it is a real eye opener and a challenge (albeit an exciting and stimulating one) to re-think the delivery of my engagement/communication activities.

4) For each of the activities below please tick any that apply to indicate whether you feel it is worthwhile for yourself, worthwhile for your audience, or worthwhile for neither. Please feel free to voice your opinion on every activity and do not limit yourself only to rating activities you have previously participated in.

Found activities to be worthwhile or helpful
- Most tasks in fairness are worthwhile to both yourself and the audience. Little is made of the key transferable skills that can be gained from theses activities. Where I would like to see more effort is for more time and recourse to be available for researchers to play a more active role in these activities and gain important transferable skills that will benefit them in there career progression. Make my science open to the public is very important to me and thus I like to consider varying processes to achieve this, the latest being a comic
- I consider that all activities will have some benefit to both parties. The benefit to the audience is more obvious, but often re-learning activities while trying to present to a different audience can help see things in a new light, and allow us to reconsider some of our own dogmas.
- Interacting with non-academics is very rewarding so provides me with many benefits
- Generally i see the participation in such outreach activities as being useful for both myself and hopefully for the audience as well.
- I feel it is mainly worthwile for the whole Organisation or the Programme rather than just me.
- All worthwhile, just time consuming
- I believe that these activities are mostly beneficial for the audiences in an altruistic and humanistic sense. Clearly, there is often an added benefit in terms of reflections on the own research and on learning to get your points across and be imaginative about presenting science and impacts of science.
- Presenting at science centres and museums would benefit me directly because of the potential to recruit participants in research on ageing.
- Any educational outreach activities undertaken by myself or my group have been rewarding for my audience and for the group as they have given us a chance to interact with non-scientists. Hopefully we have increased the audience's understanding of our research and how analysing genomic data could contribute to food security and health. In turn their questions have been really helpful for us in thinking about how to present our science in a simple clear way that even a lay person can understand.
- All activities above are worthwhile, but I have never presented for primary school. I think that any truly worthwhile activity is beneficial for everybody involved - both myself and the audience in this case.
- For most of the items listed, this is only worthwhile for the audience if the materials presented are well targeted to the audience. A lot of the items listed can be worthwhile for the persons presenting the materials, if by doing so they gain skills, confidence, awareness to their work, or recognition. If they already have those, then it is less worthwhile for them. Concerning crowdsourcing, it all depends how the system is implemented: in cases like Wikipedia, authors are not directly visible (so it is less worthwhile for them), but in cases where all contributors are properly cited, then it becomes more worthwhile (and potentially also encourages higher quality work, as all can see who produced it).

Have found one or more thing listed enjoyable
- If you include simple enjoyment in 'worthwhile for me' I would move the last two categories across too!

Unable to comment
- Never used crowdsourcing
- I find most of these headings sufficiently vague to be unhelpful. I have been involved in several of these activities on various occasions. Some have proven more successful, others not. Most often, the success depends on the way in which the material is organised, advertised and the nature of the audience and their engagement.
- There should be another box for 'not used'

- I do not know the term crowdsourcing.
- I don't use social media Worthwhile for me is in the sense that I feel I benefit as a person overall, not in terms of my career - see earlier comment

Found activities to be not worthwhile or unhelpful
- Having watched a PhD student (not mine fortunately) tweet 1000s of banal comments over the course of a conference I am not convinced that these have any value to the audience and are just a distraction for the author. Talking to the public either directly or through the press is good as it helps to define the key points of my research and to present them clearly. It also clearly helps to promote the understanding of science. Enthusing the next generation of scientists is vital and I enjoy participating in activities for schools but see it as an extracurricular activity on top of my research.
- Face-to-face is far better than at a distance, through twitter and facebook. My PhD student frequently indicate that the scientific discussions on line are selfishly hijacked by others with other motives.

5) Please tick to indicate whether you were aware of any of the following prior to starting this survey (hover over statements for more information).

Would like more information/opportunities
- There is very little dissemination on impact and indeed what this is and how to capture this. Many of the pathways of impact I review from RCUK councils are heavy on dissemination, which of course is not impact and thus more focus and activities that will capture impact are needed. I hope hat the BBSRC will have a panel that will consult and discuss this at varying levels as often the impact and communication present is classical traditional methods in a 21st century that is technology dominated.
- I must admit that I am not aware of some of these activities. I hovered over the statements to learn more and took some notes. However, I would really appreciate if this information would be made available somehow. I will check on the website. I would very much appreciate any updates from the BBSRC in a written form. It sounds a bit outdated but again there is a limited time for regular visits to the Research Council Webpages, so the flow of information is limited.
- I did not realize that, as a BBSRC grant holder, I must spend 2 days/annum on public engagement/science communication. I do not know of sufficient opportunities to achieve these numbers. Usually, we get exciting results in the final year of the grant but I do not know how to spend 6 days on public engagement/science communication. I would find if very useful, if the BBSRC could actively help grant holders to achieve this.   Regarding the REF2014, I think that impact goes beyond simply communicating science.
- I can see that my awareness of the above is quite limited. I will take more interest in the future.

Aware of one or more points
- I wrote our REF submissions for UoA5 so am well aware of the impact weighting!
- Its worth poiting out here that BBSRC Institutes do much PESC and that this is highly regarded.
- Indeed, we used some of our very high impact science engagement (Gold Medal at Chelsea Flower Show for Beneath the Sea Blooms) and the creation of a tangleproteins protein building kit.
- I am our institutes public outreach co-ordinator and therefore have likely a better than average knowledge of public engagement activities and the importance of the associated impact they deliver.

Disagrees with one or more points
- I am very active with public engagement and have taken a lot of initiatives, for instance running a primary school allotment project, giving talks to the public (i.e. Cafe Scientifique), speaking at primary and secondary schools, interviews with BBC Radio 4 etc..., and I don't do this because I have attended a course, I do it because I find it important, I enjoy it and I have ideas about what works and what doesn't. I believe that it is not possible to patronise scientists by running courses, formulating manifestos and establishing coordinating centres. If scientists have the ability to engage with the public they will do so unaided, and if they don't have this ability nor the interest, it isn't possible to employ a few people to make it happen, to tick a few boxes, it won't work.
- I do not believe that the 2014 REF allows public engagement and communication in the way you have stated. It only allows impact if it results from a clear research paper; which very little science communication and public engagement does.
- As mentioned previously, public engagement happens every day when explaining research to people in my living environment or during travel. BBSRC may reconsiders the 2 days rule as this should be let to the researcher and not controlled by an administrative body.

Other opportunities mentioned
- I am funded by a Royal Society Fellowship, and have attended outreach training courses run by the Royal Society, so didn't look into training schemes provided by the BBSRC.
- The BBSRC-DTP and BBSRC-ATP schemes would have been good to include in this list. Similarly the 3 month parliamentary placements for BBSRC PhD students and the Industrial CASE schemes.

Unaware

- I am filling this survey on the behalf of Henning Hermjakob, as I am co-investigator on the grant. I am more junior and my answers here might not reflect the normal knowledge of a PI. Anyway, it might useful to send a couple of email notifications per year to all PI/CoI/CoS to inform of all BBSRC's portfolio of services and schemes which could help the grant holders (that would encompass a lot of the items you listed here). Maybe you already do so, but as a CoI I never received such notifications.

6) What, if anything, can BBSRC do to foster more public engagement and science communication?

Current BBSRC support works well
- I think BBSRC offers excellent support in this area
- I think BBSRC does enough
- I think the progress made has been impressive and I do not know what else the BBSRC can do. I think there is onus on organisations like the BBC to maintain and increase the amount of accessible radio and tv programmes on modern science method and practice
I think BBSRC do an excellent job in fostering public engagement and science communication. I have attended several excellent stakeholder events at the launch/completion of BBSRC-funded projects. My personal experience is that the university sector are more reticent about KTE activities than the research institutes, and just want to be left alone to get on with their science, they don't see why they have to write impact statements on grant applications or actually engage with anyone other than the science community if successful
- Continue to provide funding streams for public engagement activities
- not sure about this, most seems already done
- I think it currently does a good job in this area.
- From the list in q5, seems like they are already doing quite a lot!
- I think BBSRC already does a very good job.
- I think BBSRC do already a lot. The main limitation is time, this combined with institutional 'performance management' and the use of workload models which no not fully account for a number of external activities.
- Already effective I thought, but from the previous question, there are clearly some initiatives of which I am unaware.
- I think you already do a pretty good job. Using social media well is probably the most important thing, especially with younger people who use this to get most of their information.
- I think current efforts are more than adequate. Engagement is important, but we shouldn't forget about the science.
- BBSRC has managed to pitch this well to benefit both scientists and the public. The requirements for public engagements and science communication are perfectly reasonable, but should not increase.
- They do quite a lot already. I'm not sure what more, which would not involve using more resources. I am not in favour of cutting core research funding to provide further support in these areas, nor am I in favour of forcing BBSRC-funded postgraduates (and post-docs) to spend even more of their time on non-core research activities. If new funding were provided, and not taken from elsewhere, it could be spent on promoting undergraduate participation, specific postgraduate positions for engagement in/support of outreach activities, etc.
- I think it is doing an excellent job already
- I think the BBSRC does a commendable amount in this area, but some of the aspects in this questionaire I was not aware of, so it would be good if a similar questionaire could be sent to new grant holders as they start a grant to check they know the latest information.
- I think there is already substantial science communication in the UK. BBC and newspapers regularly report about science work etc. I believe that there is more public engagement than in other European countries. Of note, there is also indirect science communiciation -e.g. University open days where one talks about the science in the labs (sponsored by the BBSRC).

Increase work/contact/support with existing or new institutions
- Perhaps work with existing institutions or events to increase the number of opportunities for engagement to occur
- As above - I have found lab visits for interested public, jointly organised by the funder and researcher beneficial and easy to be involved with. Funder working with the researcher seems to be beneficial and strengthens ties.
- Be Pro-active in suggesting ideas and opportunities to current grant holders, particularly after an important piece of work is published.

- Ensure that universities are appropriately supportive of their members taking part
- Provide financial and organisational support. There are too many initiatives with too little coordination, so more needs to be done to stop these conflicting pressures.
- More direct contact with postdocs keeping them informed about activities they could engage in.
- Help provide a framework (at Organisation level) to minimise impact on time of individuals
- make the community more aware of resources available to assist in PE and SC
- Visit institutions with BBSRC grant holders.
- Make our employers and university management more aware of the importance of public engagement.
- Very few grant applications request resource for outreach activities. I believe that as much thought should be given to these outreach activities as the impact statements. Perhaps the BBSRC could run region or national outreach days and ask grant holders to be part of these to help get holders engaged?
- Encourage universities to hire outreach staff who work with their PIs and help them to make contact with media, schools and organise science festivals held at the university or in schools Fund science writers or set up 'science writing for the public' grants that support scientists who want to spend some time writing for the lay public
- Those who are good at public engagement and science communication are generally also excellent and inspiring scientists. Getting such scientists out and about enthusing academic & public audiences about there science will spread good practice in these areas and enthuse others to participate and deliver high quality activities.
- Advertise more the PIs/CoIs about the schemes you already have in place to help them in this endeavour. Organise events with a specific theme (based on the portfolio of grants you have) and invite the relevant grant holders to contribute (presentations, tutorials, posters, demos, ...). Set aside, in each grant, a greater percentage of money to be dedicated to outreach activities. Not just to attend a few conferences a year, but to actually create materials (that actually can take a lot of time, specially when targeting people outside of our area of research or the public), write newsletters, update our presence on social media, etc.
- The BBSRC could provide even more avenues for public engagement. We are involved in the BBSRC Great British Bioscience Festival and view events such as these as very beneficial to allow dissemination of research to the wider public audience. Therefore, I would encourage the BBSRC to look to organise additional events such as the GBBF.
- To communicate its importance to the scientific community in a more comprehensive, transparent way and offer technical help for doing that.
- Includes funds automatically into grants to support academics in PE & SC. To encourage academics to take up training for free.

Increase work with own training and general PE opportunities
- compulsory training for PIs on public engagment (half day course or something similar)
- Perhaps be more proactive in offering the training available
- Raise the awareness and provide corresponding training workshops
- Case studies, examples, impact champions and regular consultation of activities that are being done and achieved. A better and more publicised portal that allow of other forms of communication that words would help also.   BBSRC need to bring together people that have not only wrote good impact statements, but lead by example in engagement and science communication. This is something I would welcome as I am trying to drive this forward myself at Brighton
- Provide specific schools training The Public engagement, Science communication training was very useful
- Provide training in effective communication.
- Without specific knowledge .... are secondments of PhD students possible to national newspapers or broadcasting companies, rubbing of science shoulders together with the media. The science I read/hear in the media in the UK is relatively trivial (even in "quality" outlets) .... a new drug developed always has promise for a cure but the public hear this all the time and the system is saturated with promise but little reality of consequence

- Provide more information on training opportunities and opportunities to take part in public engagement activities.
- I think providing funding and training in Universities for University-based public engagement activities is likely to be the best way of involving a broader range of academics in this area, and this is then likely to encourage them to become involved in other activities subsequently.
- disseminate methods to engage the public to grant holders more effectively
- Mandatory training in how to become involved in PE and SciComms for all PIs. Build cross-institution networks of PIs and provide support for working group meetings to plan dissemination of science. PIs are scientists and are mostly notoriously bad at conceiving of viable PE activities. I hear what are to me 'crazy-sounding' ideas for outreach activities that turn out to be very successful, e.g. the Oxford Brookes University annual 'Science Bazaar' which attracts 100s of visitors each year.   What I would suggest, therefore, is that BBSRC become much more pro-active in signing PIs up for PE activities which have been organised regionally.
- Help to find opportunities to present/discuss our research.
- Although I am a STEM ambassador, I feel that his is not well supported. I have done the STEM triaing through the pirbright insititute but it seems disorganised and i would like to do more PE.
- Suggest forums where scientists can find information about events or make contact with organizations involved in science communication to the public. It would help if the BBSRC could provide some tailor made suggestions for individual scientists based on their field of interest.
- If it is not available, it may be a good idea to have a special section on the BBSRC web to educate scientists about public engagement and science communication.
- Develop more materials and organize more events similar to the BioEnergy Dialogue. Provide more support for these events.
- It could support some of the successful schemes such as the STEM ambassadors and the BSA (maybe it already does)
- Currently the interface between scientists and the public is still underdeveloped. While I believe there is great willingness of scientists to engage with the public effective opportunities are still limited. Social media appear to facilitate this but their use is still pretty much one way science communication and only the tech savvy members of the public are reached. Setting up more classical events (such as science fairs or science discussions) is a huge organisational challenge that does not easily fit with the existing time commitments of academics. If the BBSRC could contribute to reducing the organisational burden that comes with setting up science communication events I believe many scientists would be thrilled to communicate their science.
- Provide more training for researchers and facilitates meetings between media/journalists and academic researchers, for example in form of conferences/seminars
- Provide direct source of funds to support activities. Training courses can be helpful. Sponsorship and support for particular small events (say values of a few £K) would help a lot.

Provide (or encourage) greater incentives (e.g. time, value-based measures)
- See to it that it actually is valued by those who call the shots.
- Some sort of incentive scheme would be useful. "Incentives" are all stick and no carrot at the moment
- Ensure all institutions place value on PE and SC activities specifically inscentivising staff i.e., all institutions recognise and reward staff that are involved. Ensure all institutions make sure staff have time to participate in activities, their development and related training. Ensure institutions appoint professional services staff to support these activities, make links with schools and public bodies etc.
- Time is a limiting factor for many academics, also the audience often expects 'fancy' graphics and e resources but these all take time and expertise to be done well
- More effective co-ordination of resources would make a difference. There is always an activation energy to undertaking public engagement or science communication events. Having some resources as a start point can help people over that. There was a BBSRC workshop available on DNA and cells. While as a whole it was more complex than I needed, it was a really useful start point to think about what could be achieved with groups of children. The Institute of Physics has very good resources of this kind. Having pooled resources means that everyone can adapt

according to style but they don't have to come up with All the ideas.   In my experience of working with schools however, it is a lot to do with the teachers and whether they are willing to embrace the possibilities. Maybe, more workshops for teachers and possibly the expectation that all schools will be encouraged to have links to specific university staff, might help.   In terms of scientific communication, the University has some great lectures, and festivals that encourage much more general public interest. These are well supported and work well to bring science to the people. Support of such festivals and again, possibly making programmes of events more broadly available so ideas can be communicated effectively between people. What works well, what hasn't worked. All of this information is relearned many times. So again, the idea of BBSRC facilitating co-ordination and communication of ideas, programs, might help.

- Universities expect that their staff prioritise the teaching of their students and conducting research, that brings in overhead income to the University. The latter requires funding, which is getting harder to secure and the application process is becoming more time-consuming and burdensome. The BBSRC could help by streamlining the grant funding process.   Awards of BBSRC-funded studentships to groups that were highly prominent in public engagement would be an incentive.
- Make it as respected as publications as far as outputs from grant proposals are concerned. So that we feel justified spending the time on it. 2 days per year is a tiny amount (1 day prep and one day in a school/exhibition/etc?)
- Set aside time on a grant for public engagement and science communication. These are very important and rewarding activities but incredibly time-consuming. Currently, time spent on these activities is not recognised.
- Provide more hours in the day
- Offer fellowships for this purpose; persuade grant-holders' institutions to provide time for the preparation of these activities (and incentivise - through consideration as an activity contributing to promotion).
- It has to be two way affair not simply a tick box
- Argue with Universities that it is important and that staff should be given time to do it. This can be achieved either by formulating numerical targets that allow staff to be rewarded for public engagement or preferably, by relaxing culture of strict, unrealistic, randomly formulated numerical demands that most people fail anyway. Most of academics are interested in interaction with the public, we just do not have time to do it.

Encourage media presence within institutions and combat problem of 'sellable' science

- Work on changing the attitudes of scientists towards projects that catch the public's imagination. The best way to engage with the public is to also award some funding in areas that will provide good stories, likely to be picked up in the media. Of course scientific quality should not be compromised, but I have felt that some my previous applications have been unsuccessful because a perception that popularity equals poor science.
- Support a small number of well-qualified popular communicators to raise the profile and make clear the significance of BBSRC remit bioscience. Ability to convey complex (non-medical) bioscience in an accessible way across a range of media.
- Involvement with the public and science communication is still very ad hoc. It's something I do when I have a "saleable" piece of science, or when I make an effort personally to get involved with schools or summer students. There seems to be a lack of an organised framework through which to perform these activities.
- Ensure Press Officers in each University understand how important it is that our science is communicated and do not make their own judgement as to whether a scientific paper is worth communicating which results in good work being blocked from being communicated.
- Providing embedded media professionals in each University.
- Build connections to their grant holders to act together on various approaches for connecting to the public. Try to develop a sense of being on the same team.
- One thing that seems to be a major issue is science education for journalists -- this is an area where a lot needs to be done and it would be worthwhile spending effort there.
- Sponsor public engagement events (e.g. York Festival of Ideas)

- Promote more TV and radio programmes that feature all types of science (not just the medical sciences, physics and astronomy). Ensure that more science articles reach local, regional and national newsrooms. Three months places in a news room would be very informative to PhD students and vice versa.
- Sponsor major professional science events / conferences in uk and more science events for schools- roadshows. Through better media coverage- produce short filmed sequences highlighting impact of bbsrc funded projects which are then viewed through access on bbsrc website but also aired on regular basis via terrestrial TV e.g the one show
- I think the increase in Science Festivals are important to engage young children and they are increasing interest. The press are very difficult as apart from one or two papers such as the Guardian, science is often too dumbed down for the public in my opinion. Maybe an attempt to change attitudes towards science so that everything that is in the press can be seen as positive science rather than constantly having to be a 'miracle cure' or 'magic bullet'. How to achieve this however is beyond me!
- There are two immediate areas. One concerns the researcher the other the public. One is the research support that the universities provide. At this moment we are judged at my university what our output was in teaching and research within the last two years. While I agree with some high expectations, I do not agree that a researcher can be creative judge on a 2-year basis. There are periods of personal hardship or learning new techniques or simply bad luck in one funding cycle or - as any active researcher knows - difficulties with the experiments. The public needs to provide university scholars with a more safe environment and a better future. The second issue is that there is two much hype or wrong reporting the public press. It appears that someone has a panaceum for a major disease or we advice on our nutrition in such a way that is better not to eat anything. We are creating scepticism and disbelief in the general public.
- It is often difficult for individual scientists to publish articles in non-scientific journals such as National Geographic and American Scientist, which are aimed at the general public rather than the scientific community. It would be very useful if the BBSRC could set up relationships with the Editorial Boards of these types of journals and recommend successful BBSRC-funded researchers to write non-technical articles about their science.

BBSRC to increase work with schools to foster better connections to institutions
- Establish well-funded science centres where it is "easy" for scientist to contribute to a programme instead of having to organise an extensive programme. Such places connect the public with scientists - making direct interaction with scientist compulsory as part of the national curriculum for every year group in schools
- More funding to enable schools to visit research institutes - for both the schools and the scientists
- Promoting opportunities and networks for public engagement. For example, I used to support the RSC school events, but since I have moved institutions I have been unable to find a local equivalent.
- Scholarships for school children (year 12?) to spend some weeks in their summer vacation working with scientists
- Develop a programme to involve secondary school in scientific research. Provide instructions on public engagement.
- Scientists would benefit from better interactions with teachers. also more professional help with engagement
- I have given talks in several schools, the public engagement often initiated by me. I wonder whether BBSRC should communicate directly with schools (perhaps via advertisement in TES, with link to BBSRC website), alerting headteachers that they can approach universities to request speakers [you could have a search facility on the website - find a BBSRC grant holder near to your school. I also speak as a governor of a large grammar school. While some schools are pro-active about organising public events, others are not.
- Probably the best group to engage are the 11 to 16 year olds. There used to be an organisation called "British Association of Young Scientists", which arranged monthly talks and demonstrations using university buildings and drawing in the 11 to 16 year olds from local

schools, using their science heads as contact points. RCUK and the British Association and/or Royal Society could re-invent this programme.

Raise public profile of BBSRC itself
- Perhaps gain more direct high profile exposure as an organisation (not its scientists) on eg Today, Horizon, national news
- Webinars, website
- Heavier political campaigning? I feel that scientists like myself and my team do a lot at grassroots level, eg with local schools, but lack the clout of a national RC in objecting to reduced science funding, the removal of assessed practical science from A-levels, etc. These national/political moves can reduce the visibility and effectiveness of public science education even as BBSRC-funded individuals are striving to promote it.
- Organise more public events to highlight UK science.
- Organise events to highlight BBSRC funded activities in specific areas.
- Continue to highlight research funded by BBSRC, include papers, talks, etc.
- Engage better with television and radio. For example, radio 4 general news programmes (eg "Today programme") have wide audience and regularly have brief science slots. However, these are often relatively trivial items and have clearly simply been taken from a cursory reading of the journal Science. BBSRC could promote higher impact UK research by feeding stories to these programme makers.
- More publicity around the minimum requirement (2d/yr/grant) would assist in making internal arguments to invest time in such activities within the work week.
- Provide more showcase opportunity for BBSRC grant holders (either an event or dedicated website). If various efforts of all BBSRC grant holders would be more coordinated that might appeal more to public and would benefit grant holders.
- Put in place a programme of lectures for lay people

Provide funding/salary for time spent on activities
- The minimum of 2 days is a good idea. I expect to do this at least as per my impact statement. However maybe the BBSRC should pay out for the PI's time to do this separately from their hours per week contribution or ensure PIs need to cost in their impact statement in terms of time and costs specifically to their time.   Ask PIs to write a short report in their public engagement and science communication near the end of their grant.
- Provide flexible funding – sometimes opportunities for science comm project arise for grantholders that can't be anticipated prior to grant writing. It would be useful to be able to be able to make quick, easy applications for small pots of money (a few £100 or a few £K) to facilitate such projects.
- Make it more worthwhile for researchers to undertake engagement and support these activities (e.g. with specific grants/funding for engagement activities to cover time and salary costs).
- Provide time/money for academics to undertake these activities - either indirectly, through grants or directly - through a competitive Fellowship for Engagement Award
- Specific funding for public engagement, organise public engagement fora, actively promote rather than encourage public engagement and communication of BBSRC funded projects
- Provide funding for time away from research

Set more stringent rules for grant holders
- The biggest problem is that many (most?) scientists see public engagement as an imposition on their scientific endeavour. I suspect drilling into them that its an integral part of their funding is a prerequisite
- I think some more schools/public information resources on the website would be good and maybe we should canvass (read: force!) those with high/repeated levels of BBSRC funding to prepare such resources on their work
- Make grant awards contingent on attendance on courses and at science events run by the BBSRC.
- direct contact with grantholders;email

- Perhaps to make it a requirement that for grant application that at least 1 link will be or is already established (e.g. links with school) to disseminate information
- Maintain the requirements for grant holders. Organise an annual prestigious event where grant holders can come together and contribute for public engagement.
- Great accountability and review of impact activities stated in Pathways to Impact
- I think that forcing scientists to consider the impact of their and ways to engage the public at the application stage is very helpful in raising the profile of this aspect of their role as a researcher.

Request/require less public engagement and science communication work/justification
- Remove it as a requirement. Forcing people turns them off. Organise more local fun events for children and adults to discuss ideas.
- reduce the time burden on academics by simplifying the grant application procedure, which currently has a huge number of relatively pointless and ill-defined impact and stackeholder type of sections. everyone at BBSRC involved should try to write and upload a grant to JeS to see the issue.
- The culture in universities is changing to favour more engagement etc. Encourage this change but be patient and don't try to impose from the top down.
- Improve the quality of engagement and communication and not be so focussed on impact. Too much saturates the public's attention span and focussing on impact detracts attention from what science has been actually achieved.
- In my case, the only way in which the BBSRC could help me spend more time in public engagement and science communication is to establish funding streams that are more predictable and less time-consuming. The current grant application process is not sufficiently aided by previous achiements of the applicants, and the application process is far too time consuming. The trend to allocate larger grants to less scientists is the opposite of what should be done when funding is cut. More, smaller grants, and an overall higher successrate would reduce the anxiety associated with grant applications, and would liberate free energy to engage more with the public. However, I still find public engagement important enough that I make the time for it, even if it means not submitting a grant application when perhaps I should be submitting one.

Create a central database of information
- create database of experts for media etc. to consult/interview   - fund school teachers to spend a few weeks during the summer to work in a BBSRC-funded lab to develop teaching material
- Create a list for people who organise public events related to your field of work, so that people can contact researchers to request public engagement activities

Individual unaware of current opportunities/support in place
- Provide direct source of funds to support activities. Training courses can be helpful. Sponsorship and support for particular small events (say values of a few £K) would help a lot.

8) Please tick any reasons for not mentioning public engagement or science communication.

Feel research is not appealing to public
- I did not think method/math applied research as suitable for such activities
- I didn't think any outreach I do would relate to this grant - it was too mathematical. Other projects that I run are much better for public engagement, as people can understand them.

Feel research is too complex for public appreciation
- rather technical for public engagement
- it is a very technical piece of work that would be difficult to explain to lay audiences

Feel research is too sensitive for public consumption
- The data were confidential and commercially sensitive

Have since included plans
- Since developing computational tools, concentrated on engagement with end-users rather than the public. In more recent grant applications we have included public engagement.

9) Please tick any reasons for not applying for funding that apply below.

Planned activities did not require funds
- the engagement activities do not require additional funds
- This grant is part of a joint project with Prof John Brown (Dundee University). Funds specifically for public engagement were included in the Dundee budget. Public engagement work at Glasgow (building a web site) is funded by our Institute so no BBSRC funds were needed.
- My activities do not require specific support
- I allowed time in the workplan, but didn't need any other resources. Not sure if this counts as funding or not.
- We already have some local funds for public engagement
- I thought that there was sufficient training/PE/SC opportunities without requesting funding
- Activities planned are local, incurring minimal or no cost
- I did not consider applying as I felt there was no need for the resource for this grant nothing to do with whether it was wortwhile or not, simply not a requirement
- Our science communication activities are already funded through the main resource funded (the ChEBI database and website). In addition there is already some funding (from EBI) to support those activities.
- Varioud outreach activites link to grant and where already funded and supported

Felt applying for funds would mean more time spent writing/justifying on application
- I was already engaging in similar activities without funding and it would have been one more thing to budget and justify
- Funding for communication events is not the most important issue, finding time for such events is a greater problem.
- Cash limited initiative, budget was already highly constrained to achieve core science objectives, but industry and peak bodies are participants so engagement embedded in project
- Time pressure for those of us involved in university teaching and admin as well as research means that it is difficult to complete the required Responsive mode application as is.

Plan to request funds in future applications
- Public engagement activities are strongly embedded in our Faculty strategic plan; I will ask for separate funding in future applications
- The engagement I planned did not need specific extra funding, but actually some of the opportunities that have come up since we started the project would have benefited from extra public engagement funding

Was not responsible for this part of the application
- I was not the main PI on the grant
- I was a minor co-applicant on this - nevertheless we managed to exhibit at the NHM Universities week with this science

Costs for activities were actually budgeted in the overall grant request amount
- The small consumables costs involved could be covered by the costs awarded under the grant so I did not itemise them separately
- I was not expecting the public engagement to cost more than staff costs on the grant.

Funding not deemed an important part of the grant purpose
- The public would have limited interest in the project
- I am not particularly interested in public engagement or science communication
- I just didn't think of anything that I needed to apply for regarding my planned public engagement activities
- The TRDF is limited pump-priming funding for 18 months and it was not possible to budget for public engagement funding without compromising objectives of work.

Desired to keep overall grants costs down
- Need to keep the total cost of the grant low

Had not realised that activity costing could be included in the grant budget
- Just an oversight; it didn't really occur to me to cost this aspect

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11 A) What were the reasons for not participating in any activities, please tick all that apply.

Too early in grant
- Early in grant - still within first year, but plan to do so.
- Currently working on plans for some activities/too early in the research to do this.
- major planned activities are just getting underway
- Our part of this particular consortium project is in very early stages, engagement activities planned for later years
- The project started recently, we plan to start participating in these activities soon
- Post-doc only employed 4 months ago
- This grant has only been running for about 15 months and we have not had a suitable opportunity for public engagement yet.
- I started the grant in last November and my first engagement will be next week (Alzheimer's Society Conference). I also applied for the Sparking Impact Award, but the decision on my application will only be made at the end of July.
- I am still carrying out the research and do not yet have results yet to communicate.
- This grant is only 7months into a 5 year allocation, the PE and SC activities have yet to take place
- It's too early in the grant to have anything much to communicate: We are still getting the new methods sorted.
- Additionally, our project is about mid-way and we are in the middle of our analysis before we can present exciting results. It seems to premature to communicate our research without presentation of key findings.
- We are only in the first few months of the specified grant, and as such it is too soon to take part in any public engagements or science communication activities.
- Grant start was delayed, and only just commenced....we will be carrying out this side of things in the months to come

Research material too difficult to communicate
- I would find it very difficult to engage an audience about the sort of work I'm doing on that grant, which involves development and validation of statistical analyses for MEEG data. The work has clear direct beneficiaries (researchers) who are best targeted through conference attendance, release of code through git, and publication of papers.
- This is a small, very technical project.

11 B) Please detail, if there is any reason, why or why you did not evaluate your activities.

Find feedback helpful
- The organisers of one of my public talks provided me with feedback from the audience, which was very helpful and encouraging.
- Discussions with teachers and children at the school to determine impact. Outcome a significant number informed now about the problems of antibiotic resistance and a number enthused to think about a career in scientific research following attendance at a 20 questions panel (what's my job) at Warwick School yesterday 16th June.
- To understand the potential impact of the activity (we organised a workshop and attracted attendees from various disciplines)
- Feedback was solicited to evaluate the effectiveness of the communication.
- These activities are discussed at our regular grant management meetings and they inform our planning for new activities.
- Evaluation was based around numbers of people we engaged with at the NHM Universities week (ca 600), and verbal feedback received at the time
- It was far for a communication and not engagement activities for the BBSRC funded activity. On some other funded activities where we've had themed workshops etc with end users we have evaluated. Also some of the schools training we've done has been evaluated in terms of "what we learned" and "most/least useful"
- We try to get feedback in order to understand if we clear enough in effectively communicating our science
- Science communication in the form of book chapters, teaching text was evaluated by peers and colleagues as was engagement activities for school pupils undergraduate students in the form of a teaching course (SEEING!) designed to introduce students to facets of plant biology and technologies used for research.
- The activities were part of UEA events such as 'Campus in the City' where the public are requested to reflect and feedback on those activities they attended/participated in.
- We did not evaluate the activities formally. They were talks at schools and in a science festival and no formal surveys were taken of how well the talks were received. However, we did get good feedback fro staff that the talks had been appreciated.
- Verbal feedback was provided
- As a professional university teacher, I am naturally interested in the efficiency and impact of my teaching, lecturing and communication activities.
- Public engagement activities are a regular item on our lab meeting agenda. The whole group is involved in planning and evaluating them. I was involved in the filming the BBC documentary "Under laboratory conditions". My team participated in the organisation, e.g. the safety aspects of the filming and also worked in the background to provide atmosphere. The documentary aired in March and we immediately spotted that the film makers had completely misinterpreted polyadenylation, despite numerous explanations. We've now decided to insists on checking that film makers understand the work and/or ask to see the documentary before it is finalized.   Next week, a group of 6 secondary school students will be doing their work experience placements in our lab. We have done smaller placements in previous years and over the years have worked out a program that allows the students to make real discoveries in their stay in the lab, by studying the poly(A) tails of mRNAs that we haven't looked at before using a PCR based assay. Four members of the team will be engaged full time for 5 days. We do ask the students at the end what they thought of the experience and record their responses. I generally try to keep track of the work experience students by e-mail, but only a few keep in touch.
- We have reviewed the most recent public engagement activity that we took part in (demonstration of our research in general terms to a group of secondary school children) and have looked at ways to develop a more impressive demonstration that can be used at subsequent public engagement events.

Informal evaluation used e.g. self-reflection

- Not formally, at least. I have given several talks in secondary schools and received very positive feedback which I used to modify the later sessions. I've also been invited to return to these same schools.
- Mostly reflected on what went well and what didn't to seek improvements for future events.
- Activities were very busy and hard to consider how to successfully evaluate. A reflection after the day was useful in planning how to improve future activities.
- I received feedback from my school talks and read the article resulting from an interview with Bloomberg and saw myself on ITN News, so of course there was evaluation; but there was no formal process.
- Whenever I give a presentation in front of the public, I reflect on how it worked out and if I could have done anything better. The same happens when I give a lecture at the University, and I make personal notes about possible improvements. This is an automatic process, I call it self-reflection. However, it is not a formal process that involves meetings, evaluation forms etc...
- We have shared our project and its results in various public engagement activities (Radio 4 Inside Science, Science Sunday at Glasgow Science Festival, Talk at Argyll Bird Club Meeting, Open evenings at the Scottish Centre for Ecology and Natural Environment, Stakeholder engagement meeting at the Scottish Centre for Ecology and Natural Environment). Informal evaluation of these activities has been positive, and there has been lots of interest in our work.
- We have reflected on the value of the activities undertaken to date in order to refine activities in the future and make these work better or to identify complementary/alternative outreach activities.
- There was no formal evaluation. We do however discuss public activities between applicants.

Too early in grant/activity plans to have evaluated
- Grant has only been running for 6 months so no activities undertaken yet.
- The grant has only just started, nothing to evaluate yet
- Well they have just started the process of building an activity.
- the grant just started. Evaluation will be done lateron.
- We plan to do more later in the project - which is still running
- The grant is only in its first year and we have engaged with specific farmer groups who are helping us with the field work. We envisage, in time, when we have more data and information to disseminate, we will do so to a wider stakeholder audience(s). As our project is an IPA, with co-funding from the industry levy boards, these key stakeholders are kept informed and engaged by default.
- The grant has only just started.
- Not yet occurred
- too soon
- Not yet completed!
- not yet - there is still time, as we will do most of our PE and communication activities towards end of grant, when we know results are secure.
- We're only 1 year in to a 3 year project grant. We had some discussion this morning but that was just to confirm what has been done so far, prior to completing this survey. I believe the sessions delivered were well received.
- Our grant has only been going for 1 year (out of 5).

Too difficult to evaluate
- They were just done in the course of in this case speaking to a schools science club , by me the PI
- hard to evaluate
- We did a children's Science festival in Sheffield City Centre. Although we saw many happy and enthusiastic faces this sort of event is difficult to evaluate.
- School presentations, difficult to find meaningful ways to evaluate
- Difficult to evaluate. We have been at several science fairs and shows with an online bioinformatics game that we created. We've spoken to lots of children as they play it. They get involved and ask great questions. I don't know how to evaluate that without disrupting the day.

- It was a live radio interview - hard to evaluate. (Though people I know who listened to the interview said it was very good).
- The term evalution is not clear in this context. Of course we considered whether the public seemed to react/responded well but this is not anything easily or reliably quantifyable.
- difficult to do so
- There was no obvious means of evaluating the event
- My PE and SciComm activities include a weekly BBC radio show, school talks, WI talks, Popular science presentations, Presenting regional BBC science activities related to TV shows (Stargazing Live and BBC Summer of nature), a science blog (DrMolecule.org), family science events (Brookes Science Bazaar and Science Week activities).   Evaluation of any of these activities is not straightforward - the metrics I could use are listenership, readership, or attendance at these events. I am not, however, an expert in evaluation of outreach activities. I do understand that evaluation is important. I was unsuccessful in a recent STFC SciComms Fellowship application and one of the main criticisms of my application was that I had failed to adequately describe how my activities would be evaluated. PIs need to be instructed in how to design activities that have clearly measurable outcomes.
- Time restrictions. Already many indirect evaluation of activities.

Evaluation processed by another source
- Keele Outreach team formally evaluates our activities such as Girls-in-science school visit days and Keele Community Open Day as a key part of impact monitoring.
- Activity was evaluated as part of the larger event organised by the Institute hosting this work
- Activities were part of Faculty Open Days and Centre Open Days that were evaluated as an overall activity
- We mainly participate in activities/events organised by others, who also evaluate the impact of the event in general. As such, general evaluation is already performed and we are being informed of the outcomes of the evaluation.
- interaction was embedded within a larger course which upskills young scientists in optical imaging - especially microscopy. My work formed part of my demonstration sessions with the student groups, which were not independently evaluated seperately from the course itself.
- Evaluation was carried out by colleagues leading the public engagement activities (science festivals) in our host Centre.

No evaluation attempted
- The public interaction was enjoyable but not formal evaluation was undertaken
- We did not see a point in 'evaluating' these activities (presentations at open day to the public)
- I know what they've done.
- I tend not to because I do it all the time (many times per week) and it would slow me down too much. I see it as an integral part of my daily activity
- This wasn't part of the process
- Not applicable, was judging at an event.
- we did not prioritise this activity

Dislike evaluation
- I'd rather do activities than spend time evaluating them.
- Did not consider this as useful.
- I really hate the way whenever you do a public engagement activity someone goes around and quizzes the participants about what they felt about it.
- I don't even understand the question. If you give a school's lecture, or speak to parents etc there is no evaluation nor should there be.

Purpose of evaluation not clear
- I don't know what is meant by evaluating the activities
- Unclear what the question means.

Please detail, if anything, how you used the evaluation information.

Feedback used to improve future activities
- Comments or suggestions can be used to improve similar future events.
- deciside whether or not it was worth doing again.
- we will always respond to feedback and adjust accordingly
- After evaluation we discussed what worked/did not work, and what to do in next grants.
- In previous projects I discussed with the research group what the activities can be during the project.
- To pass tho son to colleagues as an effective means of engaging with schools
- Planning for the next event
- Evaluation has been on an ongoing and informal basis. It has been used to improve resources and materials, as well as the general approach used, when undertaking further engagement and communication activities.
- The evaluation of the activities was utilised to reflect on perceptions of the science and challenges in biosciences and specifically how technology can help to assist this. We carried out surveys and also have learn about activities that people would be interesting to learn to direct our activities. We have also carried out activities to showcase products and devices to an array of audiences to educate them about our product. The majority of this evaluation will be used to direct future activities and tasks and also consider new and different approaches for dissemination and capture of communication and engagement
- we evaluated which aspects of the science being conducted were suitable (IP issues, public vs peers, etc.) for public engagement and/or science communication. This information was used to shortlist the information available for dissemination
- Identify the potential collaborations from different diciplines
- to feedback to participants on good and bad practice and how to improve communication and to build on for future activities.
- Future chahges made to approaches used in specific fora.
- Evaluation was based on feedback from 3 classes of children to determine whether the activies were too easy, the level of interest, whether they wanted more discussion, for example.
- survey (online and hardcopy) plus verbal feedback
- To ensure met objectives
- The evaluation information was really useful for planning future communication and engagement activities
- To inform us about what worked and what did not.
- Planning for future events
- Used in our planning for on-going and future activities. As an example, I spoke at a new academy school (years 7 and 8 only at present) in a deprived area of Barking in early 2014. Our evaluation of the potential impact of my visit (evidence from a personal letter sent by 3 of the pupils after my visit) resulted in our decision to invite six of the pupils (aged 11-13) and their teacher to visit our mass spectrometry facility and meet with our postdocs and PhD students. We will follow this up with a second visit next year.
- By being at a fixed stand, we realised we had to be mobile and travel around the NHM to engage audiences - this worked very well and will be built into future engagement activities
- We made a more detailed plan for engaging with the public and have generated video and other resources following on from our evluation
- To improve the handouts and posters to be used at future open days.
- I organised a school visit in May 2014 to our research labs and collected feedback from the students (answers to five questions) a week later. We will use the evaluations from these students to improve future visits
- Feedback and comments from visitors to Open Day exhibits and from UEA alumni were collated to inform the design of future events.
- I use this to keep track of activities, then see how these are followed up, use them to update material etc.

- We presented to the University of the Third Age (UA3) and to the Swansea Women's Society lunch meeting. Both were very popular, even though we talked about infection in the female genital tract!
- to inform future activities for target audience
- There is generally no formal evaluation of participation in these type of events but just a general sense of what went well and what did not. In future events are altered accordingley.
- Informed our activities for the subsequent year
- Feedback assessment from colleagues was to help modifying methods of engagement and content to improve communication.
- For planning of further activities
- Monitored press feedback to improve performance
- The evaluation information was used to see if I had pitched the presentations at the correct level
- Better orientate our work (specially for services) and slightly alter our plans so that we better fulfil users' needs as the landscape evolves during the grant.
- Discussed internally and fed back to the BBSRC
- We have reflected on the value of the activities undertaken to date in order to refine activities in the future and make these work better or to identify complementary/alternative outreach activities.
- I gave a general lecture on our research at a local alumni science festival last year, at the beginning of the grant. I have self-evaluated my impact as positive based on interesting and stimulating follow-up discussions with participants after my lecture and the festival.

Positive evaluation received
- I had god feedback from the lunchtime science club organiser
- Positive responses to our roadshow events at Community Day have promoted planning of repeat events and roll-out of a new interactive actiity tested at Keele Community Day into our next schools visit day. I consider science articles that I write for the general public to be successful if more articles are commisioned by the same editors.

Too early in grant/activity plans to have evaluated
- Our project is in the early stages (first year). However we have impact activities on our agenda to discuss at bimonthly meetings.

Informal evaluation used e.g. self-reflection
- There is no such thing as "evaluation information", I simply self-reflect and act upon it (like try out new ideas, stop doing what doesn't work).
- I try and learn from it

Purpose of evaluation not clear
- I really am not sure what these questions are asking, are they to do with public engagement for the grant or the grant itself? Apologies but I am not sure if the evaluation mentioned is about public engagement or not.

Please detail, if anything, how you did or did not feel supported during your activities.

Did/do feel supported (either monetary, time, or personal)
- My employer is supportive of the activities and provides help.
- Support from BBSRC (financial or training) n/a, because not solicited. My university is generally very supportive in funding & promoting outreach.
- supported by the colleagues and collaborators and the administrative team (certainly with this grant awarded by BBSRC. if without the grant, we could not perform any activity)
- We have a very capable public engagement unit who help with organisation and logistics
- The major activity has been as part of a larger programme of public engagement supported by the host institute
- Support from the Roslin Institute communications team in the design of posters and activities relating to food safety and opportunity to give a short public lecture at 'Open Doors' day.
- We feel very grateful to receive financial support from the BBSRC for developing tools and services useful to the community.
- Usual University support. However, our Faculty cannot provide for organizing a conference (events team) but they have set-up a marketing team that could help us.
- Supported by additional material supplied by colleagues.
- University administrative and clerical staff are involved in the overall organization, as well as technical support staff running the teaching laboratories (=exhibition space) for specific, logistical support for the various exhibits.
- We got the requested support from the university staff.
- We did not in fact ask for any extra support so far, but felt supported since the BBSRC funded our research
- The Babraham Institute has a PESC team that supports its scientists
- UCL has very good infrastructure to support staff in impact activities.
- The School of Biosciences is supportive of outreach activities and has an outreach coordinator.
- The university of Liverpool provided some support in organising the event

Did not/do not require support
- Not sure what this question is asking. I supported my researchers but I dont expect anyone to support me in delivering my grant objectives, except financially.
- I don't think we need much support, the things we're doing are working. In previous years, the University and BBSRC press offices have helped with press releases, which usually are well picked up by media world wide. We participate in various broadcasts on average once a year, because of the interest in Cordyceps fungi. It has been frustrating that the only way I could get a grant was by leaving nearly all cordycepin work out of it, event though the original discovery on which the work is based was made with cordycepin.
- No support was needed.
- Not necessarily unsupported, but given the nature of the activities pursued so far, minimal support was required from outside the research group.
- Some of the engagement activities were organised by our department or via other parts of the University in wider public engagement intiatives (for example at the Scottish Centre for Ecology and Natural Environment).
- No interaction with BBSRC on this aspect
- My outreach activities are in general STEM awareness. Many of these activities deal with the science and technology underpinning my funded research, e.g. microscopy and cell biology, but I am not supported by BBSRC except in the sense that a small percentage of my time in these activities is required as a grant holder.
- All activities are strongly supported by the award itself, which allows me to hire a postdoc or a technician, buy equipment and consumables, obtain new and exciting results and have something new to report to the scientific community and the public. If I participate in an open day or agree to hold an interview, then I have to motivate myself, and I have to be approached in the first place. The latter is increasing due to the awareness raised by previous public engagements,

people talk about me until someone calls me and asks if I am willing to give a presentation. The more you engage, the more opportunities arise, this is where most of the support comes from.

Would like more support
- i had some support from the MRC Press officer, principally to tell me of my responsibilities. Long ago I did a media training course. If I was to appear on TV regularly, I would probably request some help.
- I do public engagement since I believe it is the right thing to do. I do not receive any support from my University. Indeed, the person in my group who coordinated much of our public engagement activities has been moved into a teaching appointment.
- Although I am supported by colleagues who think public engagement is important, public engagement is not considered important for career progression or by my host institution (e.g. in our workload analysis). As such, public engagement is in danger of becoming as important as 'Health & Safety' in the sense that some see it as a necessary evil (although I still enjoy it).
- There is no support available that I am aware of.

Response answering further to last question
- The current grant still has 2 years left to run
- As stated earlier, we are only in the first few months of a 4-year grant
- Its mainly a case of finding free time away from the many other commitments university sector academic staff have to deal with
- The grant has only just started.
- Too early to say (I'm only 3 months into a 5 year grant)
- It is very difficult to free the time from other University duties.
- I feel there are some good courses available to researchers on doing outreach. The main issue is finding the time to do it.
- (still at an early stage)
- Grant is ongoing
- The grant has only just started, nothing to evaluate yet
- See comments above - grant has not been running for long enough yet for this to be relevant.

Unsure of support question
- What support? From whom?
- Again I don't see what the question is getting at
- Sorry but I really do not understand this question   "Please estimate the percentage of the activities that were directly related to the research carried out under your grant"
- I am not sure what this question means. We organised the activities ourselves.
- This is 18 months project. We are implementing the software for simulation of whole-cell molecular interaction networks. I gave Bright Club presentation about general idea of this simulations and participated in free online MSc "taster" courses attended by the public (~c.a. 300) participants. This constitutes about between 0% and 1% of my time spend on the grant. I do not completely understand questions above (do you mean grant research activities or public engagement activities?), hence detailed account. We will intensify our public engagement activities from Jan 2015, when we will have working version of our software.

Would like more support directly from BBSRC
- I have had some informal / indirect support from BBSRC staff during some activities but I feel a more formal recognition and support from BBSRC of the work we have been doing would be useful (this would be particularly useful for the junior staff working on our project).
- Supported yes as I am very keen and interested in this area, but with the other things I have learnt from the completion of the survey then it would have been nice to see the BBSRC workshops or more importantly send the PDRA to these to educate themselves on this important area.
- Good in house support, external support would be welcome.

Felt unsupported with negative consequences
- My head of college instructed me not to take part in my impact activities and put in place serious consequences

Doctoral students

1) Please highlight any points on which you agree or disagree with BBSRC PE and SC definitions below.

In general agreement with terms outlined
- I agree that discussions about science with the public are important.
- I agree.
- I agree with the above definitions and feel that letting the public and non-academics know about the nature/importance of work being performed should be a high priority. Especially given the propensity for newspapers and the public to misunderstand recent discoveries or place more emphasis on them than perhaps should be given.
- I agree that science communication is primarily a one way communication, however Doctoral Training Centres and DTPs are good forums for scientific communication that allow and encourage discussion.
- Only because I have never looked into it
- I think the points are very clear and concise. The difference between the two is set out very well and minimises confusion. Perhaps more in depth analysis of the environments one may communicate science or engage with the public will give them more body though.
- I completely agree that the public need to be informed about research that goes on behind closed doors.
- I agree with them as a description
- Fully agree with both statements.
- Great definitions! I'd been wondering what the differences between these terms are and these definitions are clear and make sense.
- I agree with these definitions.
- I agree with both definitions; science communication could perhaps be described as more two-way than it is currently.
- I agree with both of these definitions
- I agree completely. Though, the level of discussion in scientific communication can vary depending on the audience involved.
- This makes perfect sense. Before reading this, I was unaware of the distinction between the two.
- I agree with both definitions.
- Agree public engagement is a 2way dialogue and science communication is more one way

Would use different terminology/definitions
- I would state that science communication is generally one way if it is directed to the public but within research is is two way, especially if the respective scientists are from the same field.
- I think science communication can be more interactive also.
- Public engagement as defined in the terminology encompasses activities whose purpose is to engage the general public in our research field. Science communication is how to communicate our research.
- I think science communication is not only one way comunitation. It's very importan the feedback/dialogue with audience
- Agree with both definitions. For increased clarity the definition of "science communication" could explicitly include the target of the process, similarly to the definition of "public engagement".
- I believe that public engagement may well have certain aspects of science communication, to initially inform the audience, prior to a 2-way dialogue.
- I agree with the definitions outlined, although I do feel that there is a higher level of dicussion within scientific communication than expressed here. This is still distinct from public engaement, as it ususally only occurs with others within a specific field.
- I agree with the public engagement name and definition, however, the definition of science communication having limited opportunities for discussion could be misleading for some. Although the definition of communication does fit this, I think people who don't know the specific

definition could be led to believe that communication should be a two way discussion. Maybe a better word could be used to prevent any confusion?

Would not differentiate terms
- I would see public engagement and science communication to be the same except for public engagement is talking to non-scientists
- I suppose these definitions hold but I would have said the first definition applies to both really
- I consider that when I am at a science communication event I have the opportunity to talk about my research and/or some science-related subject. In this case I would consider both definitions to be very close.
- I probably agree though hadn't thought about the distinction before - the terms are often used quite interchangeably.

Disagreed with terms outlined
- I agree engagement should involve interaction and participation. I disagree with science communication being one way. I believe communication should enable the public to join discussion, communicate their ideas and beliefs.
- I think this difference is very academic. In reality all discussions would probably fall somewhere between the two - if someone asks a question at a talk which would be considered science communication, does this now become public engagement?
- Disagree - science communication has limited opportunities for discussion
- I think it's a bit clunky - and not exactly easy to remember. Also it is not clear that science communiction is written for people who are not specialists - I interpreted 'science communication' as the communication that takes place between scientists. I had to look it up because I was shocked by the idea that it wasn't a discussion. I think something like "Science communication is an attempt to summarise complex information in order to make the general concepts available to a broad audience of non-specialists. This tends to be a one way process where the research community publish or otherwise pass knowledge and information to the public. Public engagement on the other hand is an attempt to encourage dialogue, interaction and participation - often on the subjects covered by scientific communication".

Unaware of BBSRC definitions
- I do not disagree with the definition I just was not previously aware the the BBSRC had personally defined it
- Agree, just was not aware it had a definition within BBSRC

2) Please rate the importance of the following statements as reasons why you participate in public engagement and/or science communication.

To encourage interest in science/next generation of scientists
- Most of my public engagement would not be at a high enough level to influence the impact of my research, but it has helped to highlight to people to application of biosciences.
- I participate in public engagement because I want to share scientific knowledge with as many people as possible and to inspire people, especially children and teenagers, to get involved with science. I believe the public should have the opportunity to interact with scientists to learn more about scientific advances and research.
- I hope to influence the younger generations to love science and possibly go on to study science.
- My main view of public engagement is that it would primarily inspire people and get them interested in the research or just get them more interested in science in general.

Personal enjoyment
- I enjoy it!
- It is also fun being able to share enthusiasm about science and maths, particularly with schools.
- I also enjoy it!

Other
- I have no idea what the "BBSRC grant minimum requirement for public engagement and science communication activities" are. I have never heard of them.
- I've never had any communication from the BBSRC until this email- so if I was supposed to participate in things, I wouldn't know about it.
- Please be aware that this question assumes we take part in public engagement
- I don't hink these factors are actually unimportant at all, they just do not really play a part in my decision to participate in these activities.

Sense of personal responsibility
- Science communication and/or public engagement is something that I wanted to do previous to start my PhD, the grant minimum is a positive but it would not encourage me to do these activities if I would not want to.

Advantageous to career/research
- I've found it more rewarding than expected, how much I gain myself from communicating my research to others.
- "It benefits my career/ planned career" - only marked as important because I would like to consider working in scientific communication

3) Please tick to indicate how easy or difficult you have found (or imagine) the public engagement and science communication activities below to be. Please feel free to voice your opinion on every activity and do not limit yourself only to rating activities you have previously participated in.

Long/hard work investment
- Support in organising events for science festivals have been much better than when I have worked with school or organised a class for school children. This might be to do with the intensity of the activity planning. Festivals involves capturing attention for a few minutes, a lesson plan involves holding it for an hour.
- Whilst I have ticked difficult for a range of points, particularly developing and delivering sessions for schools and exhibitions, this is down to the quantity of work and lack of experience. That does not mean that I do not enjoy delivering the task! Also, once a stock of material has been developed, it will be a lot easier to recycle it. It also takes time (and experience) to adjust to your audience and develop the skills to pitch content appropriately.
- I have held workshops and done tasks in a number of different environments. They are not very easily accessible but if you put a bit of work in and contact the right people then you can get around problems.
- Sometimes it can be hard to get the general public and school children to engage fully with the research being outlined. My research is 'invisible', you cannot see metabolism so I have found it hard to engage them using props. Pictures and diagrams don't seem to have the same impact as, say, someone bringing a plant to show.

Have found one or more things listed easy
- I have never worked with journalists before, and do not use social media to access science apart from reading electronic newspapers and blogs. I am not sure if by public debates means going to conferences and/or seminars, which I attend often. I found science exhibitions quite new and interesting but I have never seen any in museums apart from animal collections (nothing contemporary). For the activities for secondary and primary schools, I have been part of a mentor program with secondary school pupils, and being part of STEM helps me select between different events.
- I currently take part in AU science magazine, a free resource of science that is out there for public access, including scientific writing, blogging and public engagement. I've been involved in helping organize a open day for the public about exercise physiology. And more recently, I was at universities week at the national history museum in London for 3 days, teaching the public about musculoskeletal research, and found this very exhilarating and inspiring.
- I think I find public engagement much easier, or certainly less stressful, than science communication. It feels far more natural and I like the flow of dialogue, which can be used to gauge whether people are actually enjoying the interaction.

Time constraints
- It can be quite hard to get to debates and public dialogues in person as train fares to London, where many of the debates seem to be held, are so expensive, especially when the meeting starts at 9 or 9.30am. I also don't hear about that many of the above opportunities, not sure how to be better informed?
- I have found public engagement to be very time consuming and difficult, although rewarding when working with young children.
- I find the delivery of many of these easy but the preparation is difficult and very time consuming.

Unable to comment

- Unsure what citizen science/crowdsourcing is?
- I am sceptical in how open I can be with my research as some members of the population with definitely have ethical quarrels with my work, and could be threatening to myself and others who know me.

Press specific comments
- I think that talking to the press is easy. Dealing with their cravings for high profile 'shock factor' stories to the extent that they simplify and sometimes vilify what are often very complex problems that need complex levels of debate is frustrating, difficult and puts me off talking to journalists - not least because society needs and deserves better information when it comes to things like pesticides food security. Using social media when you only claim to be yourself is easy - although I recently heard of an issue where PhD students commenting on a website discussing food security were told not to speak to the public about GM but rather than the public should be directed through the press office. Fear of bad publicity seems to rife at the corporate/ insitutional level that we are restricting access to scientists - which only makes the public trust us less. Scietists should be speaking directly to the public - the press office should just help us make sure our message is clear rather than filled with words and acronyms that are indecipherable to the public.
- Social media can be difficult if you consider that the target audience is not clearly defined - whatever you say is potentially reaching out to anyone and everyone.

4) For each of the activities below please tick any that apply to indicate whether you feel it is worthwhile for yourself, worthwhile for your audience, or worthwhile for neither. Please feel free to voice your opinion on every activity and do not limit yourself only to rating activities you have previously participated in.

Found activities to be worthwhile or helpful
- At my stage of research, I am happy to experience any form of interaction with he public in connection with my work and feel that I gain a lot of skills and experience from doing it.   Possibly after doing some of these activity once or twice, the balance might shift, and I may not get as much from doing them as I once did.
- Most activities should be worthwhile for the person carrying them out as it is an opportunity to develop skills and spread interest in the field of research. And if it's not worthwhile for the audience....
- Participating in science festivals and science museums helps me in my communication skills, on how to improve my presentation skills, but at the same time I expect the public to become more interested in science in general.
- I have previously developed educational recourses. It was very hard and time consuming. I'm not sure it will aid me when applying for research positions however I am still glad I attempted it at least once.

5) Please tick to indicate whether you were aware of any of the following prior to starting this survey (hover over statements for more information).

Unaware of one or more points
- Not aware!
- Never heard of any of these and I have never before received any communications from the BBSRC
- The two days per year spent on research is not broadcast very well - I only heard this through word of mouth (from someone who is involved in organising grants for outreach activities). The majority of staff do not seem very forthcoming in this area - it would be great if it was publicised more as it would alleviate the sense of time pressure on people who wish to take a day off for outreach events.

Would like more information/opportunities
- Advertisement of these initiatives is too limited - wider broadcasting is necessary.

6) What, if anything, can BBSRC do to foster more public engagement and science communication?

Increase advertisement/communication of opportunities (e.g. events, training, etc.)
- Advertise the opportunities more. I only hear about things through STEM
- I'm aware of certain things like the media training however I have absolutely no idea how to go about getting this training. I was not aware of some of the other things listed
- Email list of up-to-date opportunities to be involved in public engagement and science communication
- Arrange their own conferences throughout Britain which has a paid team of employees to set up tasks and science days for the public where they are presented to by academics who carry out tasks, presentations and talks that are tailored to suit the general publiuc rather than a common science audience.
- Inform students about opportunities to participate in public engagement and science communication.
- Sending out a monthly/quarterly newsletter to researchers advertising upcoming festivals/events/etc may be useful. It may also encourage people to attend events outside their local region if something catches their interest.
- Increase the awareness of public engagement training opportunities.
- Send information packs to BBSRC funded students/persons outlining ways of getting involved with public engagements and science communications and how to set up such events if they do not currently exist.
- Make researchers more aware of the training available.
- I am interested in the schemes from the last question, for BBSRC public engagement and I think it would be useful if they were promoted/advertised more widely.
- Better advertising of training opperutunities availible. Also the creation of BBSRC organised events such as conferences or exhibitions of funded work.
- Possibly be more active in promoting the opportunities, training and requirements for these activities. Over the course of my project, so far, I have been fairly active in these activities but was unaware of a lot of the programmes/requirements on the previous page.
- Make us aware of opportunities to engage with the public (e-mail round-up 4 times per year to let us know the festivals and government events for that quarter). Science communication I presume is journals and conference posters/oral presentations, which I know about and am aiming towards.
- Raise awareness with their students that they are supposed to engage in public engagement and communication. My DTP has a yearly summer school, perhaps this could be included?
- Not sure what you already do which is maybe quite telling! If you are on twitter, I have never come across you in any tweets, and that seems to be a pretty good forum for science communication, albeit probably with people who are already pretty science literate.
- As PhD student, it would be useful to receive more communication from the BBSRC highlighting opportunities for public engagement and science communication
- Raise awareness through emails of how to get involved or plan your own public engagement activities - I would love to take a more active role but am not sure how to get involved.
- Broader advertisement across a wider range of media of the initiatives for public engagement and science communication already in place/upcoming initiatives would help.

Increase work with own training and general PE opportunities
- I happily put a time and effort into organising events that I have done in the past, but for those less interested in pubic engagement might be persuaded by events that they can just slot in to. For example science festivals with stalls. These are an easy format to create and run an activity, this can then be repeated at other such events.   I think people are more than happy discussing their work, it is just about finding them forums to do it in that they feel comfortable with.
- Publicise opportunities more.
- make scientists aware that they are organising this type of activities

- I think it would be great, from my perspective, if the BBSRC held more PhD student training courses - I attended the public engagement course, and although it explained thoroughly 'what' public engagement was and we did some useful exercises, I think a bit more training on actually engaging (hands on!) people in pretty complicated science would be great!
- Provide easy access to short public engagement guides (e.g. "Do's and Don'ts of Public Engagement" etc.)
- Approach and train more scientists on Public engagement
- Arrange events in which students can contribute to public engagement through different means (not just forcing them to stand up and talk for 15 minutes)
- Provide educational resources and ideas for demonstrations researchers can use for science communication
- I think sometimes it can feel a bit vague as to what we are supposed to do, so maybe meeting up with a group to figure out some specifics based on what we can do and what is expected of us well in advance as I have found sometimes we are just supposed to turn up with 'stuff' to fill the criteria and we're exactly sure if we have or not as sometimes it can be quite vague.
- Organise more events at which many scientists can engage with a large audience as opposed to individual scientists trying to organise their own engagement events
- Less paperwork means that there is more time for doing science and communicating it.
- Focus on person-to-person communication and not on social media. Nobody cares about social media.

Set more stringent rules for funded students
- make it an option as a PIP for the 4yr PhD.
- Could encourage public engagement activities in doctoral training programmes, so rather than doing say a Pips conference, or one of the similar days, try to get everyone outside to the festival of nature or similar scientific outreach opportunity?
- If the BBSRC provided some mandatory public engagement training for all its funded studentships this would at least heighten awareness amongst these students, who would hopefully go on to spread the word amongst their colleagues.
- I think training for public engagement is important and above all making new scientists realise how importart public engagement is.
- Perhaps a more formal format to get PhD students to engage in science communication and public engagement.
- As a phd student, I think it would be emphasised as the start of every students project. After a few months they tend to get engrossed in the own research and many do not consider doing much public engagement/science communication. But if they are 'targeted' in the first few months with plenty of info on what options are available to them for public engagement/communication then they may be more likely to be aware of this and take part throughout their phds.
- Make phd students/post docs more aware of all initiatives (in Q5)

Raise public profile of BBSRC itself
- advertise to the public better about up and coming science events hosted by people from BBSRC
- More information as to what the BBSRC actually is promoting.
- Festivals/exhibits to celebrate the research being funded by the BBSRC
- Offer an email newsletter of the research being conducted under BBSRC grants
- More publicity about its own activities
- Bring science to the public. Most people do not know what science is in reality.

Cultivate a positive appreciation for public engagement and science communication in funded staff
- Increase its value amongst researchers. Change the way IPs think about the usefulness of it.
- I think researchers need to be shown the benefits to THEM. And how their careers will profit.
- Encourage researchers to do it and provide the framework. Make sure all researchers are aware of the criteria and how much bbsrc values our involvement.

- Provide enough time to complete research work, internship, sysmic course and engage in public outreach within our Phd framework. We have precious little time, everything we do must be valuable for our progression.
- Get members of staff on board and set up a more robust support system for people who wish to be involved. In our PhD programme we have formed a group of us who are willing to go and do outreach activities. We are developing material and ideas together, which we can then go out and deliver. However, the thing holding us back is that we are all so busy with work that we cannot justify taking half a day or a full day off for outreach. If it was more advertised, I think we would be encouraged to do so by supervisors.   Maybe build an organised resource bank? This way people could add their resources to an accessible area, for others to look at and use. This might help provide ideas and reduce the work load. The difficult thing is developing material which takes time - if there was something which only needed adapting or which sparked an idea I think this would take some time pressure away.   Provide outreach resource packs for different subjects? Sometimes we require materials but they are too expensive to buy on our own (however this does lead to creativity).   Advertise how much fun outreach activities can be!!!

Provide advice/training on activities regarding 'difficult to understand' or controversial topics
- From my point of view, most of the public perceives science as something very complex that they cannot understand, this is where I find public engagement should make a difference by explaining simple concepts and from those build up into something more complex. As an example, I have joined last April a BBSRC-funded Matlab course, its been a long time since I used maths and they are quite basic, but from the very start the problems were quite simple and I was able to work the program on my own (working the programs out), I actually felt quite proud and I am encouraged to continue with the course, which I am enjoying! I guess the main population does not have a great interest in science because they don't find it accesible for them
- Encourage more involvement of the public in learning about science and discussions, especially for controversial practices e.g. GM and stem cells. This would allow scientists to dispel common misconceptions and fully explain why they believe what they do is safe, responsible, and in people's best interests (and welcome opposing views and suggestions so people know they are being heard and acknowledged, their points are being addressed, etc. and make them feel involved).
- Break ideas down to their simplest form before putting them to the public.
- Make the scientists available to the public. When a huge issues comes up in the press - GM, the effect of neonics on bees, the MMR vaccine - get the experts together and ask them to write the articles that appear in the press. Make them balanced articles -articles that explain the complexity of the situation and what we do and don't know. Allow the scientists to debate with each other in public and have a press office that doesn't hinder their ability to interact with the public but rather gives advice and ensures that any communication is simple and accessible when being read by someone who is a non-specialist. After all, the press office are not the specialists. Youtube the debates and discussions, allow the audience to ask questions specialists can answer. People are only afraid of what they don't understand - and who understands a subject better than someone who has been researching the area for years? Also, bear in mind that science communication is not just from researchers to general public. It is from specialist to non-speacialist - for example I am not a specialist in the economics of food security but would like to understand it because food security is the broad area I work in. As such, there is no need to 'dumb down' information - it just needs to present clear information and a logical argument
- I think they will find it difficult because of ethical and moral barriers of certain work but they can simply provide the resources and funding to allow those who want to undertake it. They should not try to force it as then people will not give their heart and soul, and may not inspire as such as if they would if it was a free choice to undertake such work. It is also a difficult task for some PhD students who have such demanding projects and the simple fact is our PhD projects will always come first.

Increase work/contact/support with existing or new institutions

- Ensure that all PhD students have at least one opportunity to do public engagement - a lot don't get any experience whilst others are far more dedicated
- Have a welcome day when students find out: what the BBSRC is all about, it's objectives, how the grant money is spent, obligations of those awarded grants (I have no idea what these are). Could link in with career opportunities associated with Public Engagement and Science Communication.   I'm not sure how involved PhD students are with the BBSRC. As an example it took me about a year before I knew what BBSRC stood for
- More available funding and educational resources available to allow people to take part and develop and idea rather than having to have one immediately available and original.

More BBSRC presence regionally
- More local training programmes (Scotland)
- BBSRC could attend more regional events to boost their profile. I am aware of BBSRC's involvement in major science communication events (e.g. the Big Bang Fair), and their plans to showcase major research in their Great British Bioscience Festival, but they could run more activities for regional events.
- Organise more local lectures

Current BBSRC support works well
- I thinik that there is enough resources and courses for BBSRC funded students to access to improve and partake in public engagement and science communication.
- I think BBSRC is doing a very good job already

BBSRC to increase work with schools to foster better connections to institutions
- Sponsor more public engagement specific events throughout the year to make it easier for academics to promote their work and field in general. As well better engagement with children at primary and secondary level provides the basis for future generations of researchers
- There could be more opportunities to discuss scientific research with school children to educate and enthuse them at an early age

Unsure
- No idea
- Unsure

Provide (or encourage) greater incentives (e.g. time, value-based measures)
- More events where the public have the opportunity to interact with science/ scientists. Increased funding for researchers to go into schools and present and allow school children to interact
- Less paperwork means that there is more time for doing science and communicating it.

Encourage BBSRC influence of policy outside of institutions
- Ensure that data and publication are open access so that all interested parties can access any information and engage in an informed debate.

11 A) What were the reasons for not participating in any activities, please tick all that apply.

Plans for activities
- I start a 3 month internship with the centre for public engagement on Thursday (19/06/2014), aiming to communicate some aspects of my research to A-level maths and biology students.
- I am generally very nervous about public speaking, but I feel that if I had the training and opportunities then I would be prepared to give it a go.
- I do intend to engage in activities, as my PhD is not yet completed.
- Generally, I wouldn't have time to organise any public engagement activities myself. But I would be happy to join any initiatives, although I haven't heard about any such opportunities yet.
- Still completing studies and aim to try and get involved in such events, but have not done so up until this point.
- I would really like to take part in more public engagement activities, particularly with high school age children. My institute regularly takes part in public engagement, but I have not been asked to participate and am unsure how to get invovled

Too early in PhD
- Still two years of PhD to go.
- Have not yet completed PhD- have not participated in activities thus far.

Other
- Personal health reasons
- I have never heard of this and I don't know of any opportunities to do this

Does not wish to participate in activities
- Prefer to focus on research. Opportunities which were of interest clashed with other commitments.

11 B) Please detail, if there is any reason, why or why you did not evaluate your activities.

Find feedback helpful
- Assess the effectiveness of activities for educating children and to improve them. Children evaluated science week for BSA
- To improve it for next time
- Evaluation helped us make a better effort in the future.
- We evaluated our activity to make sure it was pitched to the correct level for the public and that it would catch their interest.
- to get a feedback on what to improve
- To improve it for the next time
- To improve how we deliver information to the general public and to scientists.
- To understand whether our exhibition at a science festival was accessible and whether we felt the public had understood our message.
- To see what could be improved
- We wanted to ensure the activities provided adequate information for school curricular outlines.
- I evaluated the public engagement at the request of the organiser.

Informal evaluation used e.g. self-reflection
- It was pretty informal, I thought about how the event worked and what I wanted to change for a future event. I reflected on how effective it was.   this is a natural response to work like this. I think in larger groups a small meeting to wrap up everything that happened would always be a good thing.
- Informal evaluation - discussing what worked well, what we could do better.   I delivered a talk at my old school - I was able to get feedback from some of the students who I knew - this gave me an idea of how well the talk was pitched, how engaged they were etc. These points can be used in my next activity.
- I'm not sure what you mean by evaluate... do you mean reflect on how good the activities were? If so, we talked about it, but nothing formally
- Informally and not as a team. More one to one discussions
- We talked about it very informally and discussed ways of improving similar future activities. Afterwards, we were also provided with feedback from the participants/audience via the event organiser
- We discussed on improving our techniques to make them more efficient
- We relied on feedback from others on how it went, as sometimes I think it's hard to judge if things have come across at the right level.
- I wanted to be able to communicate better to the public in future, so I self-critiqued and asked my colleague and supervisor for feedback.

No evaluation attempted
- We participated in a "meet the scientist" event at the science museum in birmingham where we talked to families and children. Demonstrating some basics of our research. We did not feel there was a need to evaulate this since the feedback we received was positive.
- There was no need to
- A colleague and me volunteered for a few events, on one of them we had to design and perfrom a hands-on experiment. These activities were not evaluated as they were not part of any program: we have seen in STEM that they needed the people and we volunteered.
- Did not occur to us to do so.
- I did not feel there was a need.
- No formal opportunity for evaluation.

Evaluation processed by another source
- Was part of a public discussion not organised by BBSRC, my uni or department. I was participating from own interest.

- Activity was outsourced from local science centre - they may have evaluated previously? It was a well established activity

Purpose of evaluation not clear
- Not sure, I wasn't asked for any feedback
- They we're voluntary

Too difficult to evaluate
- It is hard to gauge impact

Please detail, if anything, how you used the evaluation information.

Feedback used to improve future activities
- To order more supplies and rethink our pitch to younger children
- We used it to judge if other students should take part in similar activities/ which activities. We used it to judge my progress in supervisory committee meeting.
- We designed our activity for UoN Mayfest 2013 around this information.
- Points raised will allow the activities to be more appropriately pitched.
- Just informed me on things I need to prepare for next time, equipment I needed, points of view I need to be aware of (spiritual healing and its role in microbial diseases was an interesting one)
- I learnt from it
- did activities that worked well again, didn't use the ones that didn't work so well
- To inform the next one
- The evaluation information was used to refine and develop a schools activity for future sessions.
- To improve ourselves.
- We used the evaluation information to improve future public engagement activities.
- To plan and improve the next activity
- We used it for planning other activities.
- To improve the talk given
- We provided feed back to our school ION Newcastle University
- Evaluation was performed with an academic before the activity to ensure it was appropriate and safe.
- To improve the activity in future (science demonstrations)
- Looked at which activities were popular via a questionnaire. Considered tailoring activities based on this.
- We you the feedback from what we have done to know what went well and what seemed to put people off, especially if it's new material. We then can use this to make the next one even better.
- For feedback to shape and improve future sessions, for administration/promotional purposes and (possibly, although I am not sure as evidence to support future applications for grants for such projects)
- To monitor safety and relevance.
- I found it hard at first to talk in big crowd in big conferences, but after some important advice from my supervisors and attendance to workshops I have improved vastly. Regarding participation in public engagement events, it was hard to explain in simple terms my research to children or the general public. Through time and after speaking to people participating in many events, I manged to become better and tailor the way I communicate science taking into account the age and general knowledge of the public I am interacting with.

Positive evaluation received
- Following public engagement, audiences could fill out surveys to say how useful this was, and positive feedback was given.
- Hearing back about positive feedback made me content to have put the time and effort in, and more willing to participate in future public engagement activities.

Too early in grant/activity plans to have evaluated
- I haven't yet but I will enagage with the public again before my PhD ends and I will make sure they understand better, more easily, what I am doing.

Informal evaluation used e.g. self-reflection
- Used it to gain experience and knowledge of how to communicate with a lay audience

Evaluation not used
- I didn't.

Please detail, if anything, how you did or did not feel supported during your activities.

Did/do feel supported (either monetary, time, or personal)
- My supervisor was very helpful and gave me time to prepare things for outreach. She also shared ideas and explanations with us so we could better explain some principles of bacteriology
- The museum provided many ideas for engaging with children and we worked as a team to put across some basic science to people who may not have previously known much about our subject area
- My supervisor is very supportive for public engagement and outreach activities.
- Yes, but not by BBSRC
- The training and support classes for Mayfest really helped our group produce a good solid idea for our activity, where we could get good constructive feedback to help improve it.
- felt supported due to efficient team work and collaborations
- Guidance from local science centre
- Training was provided to the group
- my supervisor and LLC team suported me.
- For one activity, we were given two full days of training and a mentor afterwards. They helped with ideas, planning and the risk assessments.   STEMNet - Science, technology, engineering and mathematics network provide a training session and support if required. They also have facilities to put ambassadors in touch with schools who are looking for outreach opportunities.
- The university ran a course teaching us how to engage with non-scientists and scientists. The leaders of the course were hands on in helping us prepare for our first public encounter and subsequently sent us helpful feedback on our performances.
- The institute has a dedicated public engagement team.
- Ran a workshop as part of the Brighton science festival, who provided support.
- Well-organized event in which roles were assigned to each member. Meetings before the event also helped a lot.
- By supervision team
- My institute (Roslin) provided resources and funding.
- Large amounts of feedback from supervisor on level of content
- I would say it's mostly 50/50, again I think at least two planning meetings with the people who are running the event and the organisers to make sure everyone is aware of exactly what they want.
- We took on work experience students (from school) in our lab, and supported each other (if someone was busy, we filled in for each other, etc.).
- Help was always available from trained staff and coordinators of the projects. Training was often supplied beforehand also.
- The Grdauate School at my University supported me with training courses and staff available to e-mail about public engagement. BBSRC IBTI Club enabled me to practise science communication.

Felt unsupported with negative consequences
- My supervisor is not supportive of public engagement activities, and views them as a "distraction" from research rather than as an essential component in a wider research programme. I was fortunate to have undertaken a PIPS placement in public engagement, which allowed me to develop my skills in this area and gain experience in methods for public engagement in science.
- I found it hard within my institute to get people to help. We had a very small budget and my supervisors were concerned with the time I was taking away from research work.

Did not/do not require support
- My supervisor seemed relatively unaware of my activities/did not have any comments to make about it
- Yes and No. Activities that I organised myself I had little help, but this was not an issue as I expected this.   Having someone to guide me through some of the red tape would have been nice, but I am pretty resilient in that respect

Would like more support
- Personally, I get fully supported from my supervisor to do any public engagement activities and/or science communication, but within the department there is not a team that organisers events and/or encourage students. Also, developing the experiment was a lot of work for just 2 people.

Unaware of any support available
- We were not aware of any support available

Unsure of support question
- Put yes, but unsure what the question means.