MINUTES of the BBSRC/EPSRC Synthetic Biology Oversight Group Meeting held on 3 February 2010 at RIBA, London.

Those attending:-

Panel Members

Brian Johnson Chair

Katherine Bainbridge Defra (for Stuart Wainwright)
Jane Calvert University of Edinburgh
John Connolly Department of Health

Janet Cotter Greenpeace
Pete Ferris EPSRC

Laura Grant Laura Grant Associates (to end of agenda item 4 only)

Jackie Haq PEALS, University of Newcastle

Suzannah Lansdell Sciencewise

Emma Longridge BBSRC, Secretariat

Patrick Middleton BBSRC

Lesley Paterson Royal Academy of Engineering

Helena Paul Econexus
Susan Soulsby EPSRC
James Tweed Sciencewise

Bella Williams Laura Grant Associates

Dawn Woodgate ESRC

Darren Bhattachary
Andy Hunter
Juliet Pascall

BMRB (after 2pm only)
BMRB (after 2pm only)

Apologies

Ben Davis University of Oxford Robert Edwards Durham University Emma Southern Society of Biology

Judith Petts University of Birmingham

James Wilsdon Royal Society
Phillip Wright Sheffield University

1. Chair's update

Brian Johnson welcomed everyone to the meeting. He drew the Group's attention to the updated agenda and to the additional tabled papers: Terms of Reference, Formative Evaluation of the Oversight Group, Synthetic Biology Workshop 1, Workshop 2 Draft Structure, Synthetic Biology Oversight Group - Key Decisions and the Decision Register. He went on to remind the Group, with reference to their Terms of Reference, that they should work as a critical friend to facilitate the dialogue process. Should the Oversight Group be unable to reach a decision that the Group can accept, they will defer to the Steering Group. A subset of the Steering group held a telephone conference on 26 January.

Brian Johnson asked for crisp and concise comments from group members during the meeting, with recommendations for change if possible. He pointed out that papers OG 13-15 in item 10 on the agenda, are matters for the Steering Group to deal with but that the papers may be of interest for the Oversight Group to see.

Brian Johnson drew the Group's attention to the Decision Register, which will be used during the meeting to record any questions which arise and the key decisions reached/advice agreed upon during discussions. It will be updated live on a laptop and projector. He asked

the group to add their names to a flipchart to sign up to observe workshops 2 and 3. Suzannah Lansdell noted that it was hoped that some Sciencewise staff may also be able to attend the workshops.

2. Minutes of the meeting held 1 December 2009

The minutes of the meeting held 1 December 2009 were APPROVED subject to a number of minor amendments.

In matters arising from the minutes Brian Johnson noted that, as minuted in item 3, changes had been made to the Communications plan to reflect the Group's request that it describe the reasons for conducting a dialogue in this area. Jackie Haq noted, in relation to discussions at the previous meeting about involving inter-faith groups in the dialogue, that she now had a contact in an active inter-faith group that may be useful to BMRB. The Group asked that the Secretariat provide them with more prompts when they are needed to contribute information.

The Group also agreed a number of questions to ask BMRB:

- Are the telephone interviews and analysis completed (as this impacts on how they can feed into the second workshop as intended)?
- Will it be possible for the Oversight Group to have access to interview material?
- What are the revised costs of the interactive voting and other options?
- Have participants had access to a resources list yet?

3. Evaluation of the Oversight Group's working

Laura Grant introduced a summary of the feedback from the Group about the way that they work. She thanked the Group for their input. Several themes had emerged and Laura Grant spoke about these as they were presented in the tabled paper.

Brian Johnson invited the Group to comment around the different sections of the paper, beginning with the section titled 'Scope and role of the group' and this lead to discussion of 'Time'. Several members of the Group commented that they are not able to dedicate significant periods of time outside of meetings to comment in detail on materials/topics raised via email. These people felt that they could offer more strategic input at this level and become more involved in operational matters at meetings. There was interest from members to know how much time others dedicate to this project. It was noted that allowing time to discuss issues properly at the meeting would relieve pressure from email discussion. ACTION: Laura Grant Associates to collect and analyse information about the time that members of the Oversight Group contribute to the project. The Group concluded that the diversity of the group is its strength and that people should feel able to concentrate on the parts of discussions that are important to them and that which they feel informed about. Whilst they would try to maintain a broader oversight of process, it would also be necessary and important for some members to delve into details of particular matters. However, ultimately this is BMRB's work and it is not appropriate to try to do their job for them.

The Group moved on to discussing the section 'Emergent themes'. **ACTION: Secretariat** agreed to construct and circulate a description of what is meant by 'facilitate' in the **Group's Terms of Reference.** The Group talked about their role as a critical friend, to provide comment and advice but to then trust BMRB to take that advice forwards as appropriate. It was also noted that some members of the Group trust the Research Councils to draw their attention to really key areas that require input from the Oversight Group.

Discussing 'Decision-making' the group agreed that the Decisions Register is helpful but that they would like an additional column to recognise when a minority of members still have

reservations about a decision that has been reached by the Group, the Decision Register was amended. It was also necessary to recognise that decisions are happening as the process continues to move on and whilst it may be impossible to retract many decisions, the Group should also have the option to revisit decisions taken in the light of major unpredictable events, e.g. a bioterrorist attack.

The value of the 'Diversity of views' within the Group had already been discussed. Related to this, Brian Johnson encouraged the Group to circulate any pieces of information that they may come across that maybe of interest to the rest of the Group.

There followed some discussion of how email discussions, and reaching decisions via email, might be better managed. There were issues raised about inclusivity, whether people have time to read all emails and may miss ones where a decision is required and about feeling out of control when decisions happen quickly when a person might be out of email contact. A suggestion was made that the Decision Register form could be used to help make clear which decisions need making and when. **ACTION:** Research Councils to devise and communicate a process for discussion and decision making via email.

The interaction of Steering Group and Oversight group was also revisited here. **ACTION**: Research Councils to write a communication to clarify the relationship between the Steering and Oversight Groups.

4. Risks of a Dialogue around Synthetic Biology

Brian Johnson asked the group whether the risks listed in the paper are correct or whether any should be added or removed. One suggestion was to add a risk that, once the dialogue is complete, there may be retaliation from members of the Oversight Group who may have disagreed with the process. This should be mitigated by being aware of the diversity of views represented, and that this may lead to disagreement but that those discussions can be managed. The additional column on the decision register should also help transparency of the process. Another additional risk is that this dialogue may become confused with other dialogues in related areas, for example the FSA dialogue. There is also the risk that the project becomes an academic research project. The group felt that, whilst there will be a tension between the dialogue itself and any academic research coming from it, as long as the research does not impede the dialogue, the research itself is acceptable. It was questioned who the data generated from the project belongs to. **ACTION: Research Councils to confirm who the dialogue data belongs to.**

There was also some discussion about using innovation in the dialogue. Some felt that there was a danger of trying new things just because they are new and without considering whether they are useful to this process. It was also noted however, that the Group should not discard an idea because it is new but be open to ideas and how they might relate to this project. New innovations might be particularly appropriate because of the upstream nature of this dialogue. Brian Johnson summed up by identifying four new risks to add to the paper summarised as: disagreement among the Oversight Group, dovetailing with other activities in this arena, that the dialogue might become an academic research project and risks around innovation in the dialogue. **ACTION: Research Councils to update the risk paper with these suggestions.**

This paper also prompted questions to ask BMRB:

- How do the current plans and activities link back to the original and revised tender documents?
- There is a desire to maintain stakeholder engagement what are BMRB and the Steering Group doing in this area?
- Clarify how involved the Durham contingent is with the project

5. Reflection on Workshop One

Jackie Haq began this discussion by describing her experiences of observing the first workshop in Newcastle. She noted that some of the group she was observing had not brought any newspaper clippings with them (for the ice-breaker activity) and were provided with magazines to look through and select an article from. She raised a concern about how this material might have skewed the process. She did not feel the group had bonded well at the end of the day and felt this may have been to do with the way the group was facilitated, most discussions happened through the facilitator rather than directly between participants. She also commented that the responses to the articles the group were discussing had been extremely positive and questioned whether they could have been helped to challenge that view point and look at different aspects. In response, Laura Grant Associates noted that they had been to four different sessions and had seen big differences between different groups in their attitudes to science and technology. It was noted that it is actually a good thing to have variety between the groups.

Laura Grant went on to describe some of the other observations made by herself and Bella Williams. They had noted lots of concerns among the participants about the commercialisation and drivers behind science and technology – although scientists weren't mentioned as having control over the direction of science. Most participants had not heard of synthetic biology, or if they thought they had heard of it, they had misconceptions about what it is. The participants commented in their feedback that the evening had allowed them to consider the role of science in society. There was some discussion amongst the Group about the increased awareness of the general population about the role of science in society, perhaps prompted by recent media attention. In relation to this, Bella Williams noted that in the groups she observed people where usually able to recall a science or technology article without having a newspaper clipping with them.

Jackie Haq raised the concerns from her experience that the participants were very passive in the process and that words such as 'drivers' were difficult to understand and did not encourage discussions to happen. It was noted that the word 'microbe' had caused difficulties for more than one group.

The group moved on to discuss the importance of placing synthetic biology in the context of science and technology more widely and the challenges associated with dealing with such an upstream topic. Those who had attended workshops had seen participants looking for something to hook their thoughts onto, and asking for examples of synthetic biology applications. Facilitators had been unable to provide these and participants were asked to explore the topic themselves before the next workshop. There was a feeling that case studies might be an important tool to help make the subject area more real for participants. Laura Grant noted the impact of different facilitation styles on the groups. One style of facilitation promoted the exploration of the issues in more detail, at the expense of group bonding. Where the facilitator was more hands off, the group bonded better but had not explored the issues as deeply as other groups had. She noted that because the aim of the workshop did not appear to be clearly written down anywhere, this variation would make it challenging to evaluate the workshops. **ACTION: BMRB to provide clear aims for workshops two and three.**

Suzannah Lansdell commented that the participants in the group that she observed had been pleased to discover that their discussion would help to inform policy and that this really helped to gel the group. She also commented that it is important to nurture these people and take care of them. Some of the logistics of the evening could have been better, such as the quality and quantity of food and drink provided.

Bella Williams commented that, from her observations, certain phrases kept recurring during discussions, 'science is good and bad', 'the pace of technology is too fast', 'no control'. She would be interested to explore whether the phrase 'science is good and bad' reflected the participants attempts to mediate the discussions in the group or whether there might be more to it than this.

6. Options for the dialogue

Brian Johnson reminded the Group of the decisions to be made at this meeting and asked Patrick Middleton to reiterate BMRB's position on the first topic for discussion – use of experts at workshop two. Patrick Middleton referred to BMRB's paper and email correspondence which clearly set out their arguments for using only academics as experts in workshop two. Patrick Middleton suggested that it may now be very difficult to change this plan for workshop two but that there may be more flexibility in workshop three. The Group discussed involving academics noting that academics will be aware of the issues their research raises and that this might allow for there to be more nuanced discussions rather than polarised arguments to be used.

Brian Johnson reminded the group that they initially accepted a discursive methodology rather than an adversarial one. He thought that the group could still accept this if they can be sure that the academics are well briefed. Academics should be asked to clearly state where they are from and be available for further interrogation about their motivations and potential conflicts of interest, they should also be well briefed about the process that they are joining, what has gone before and what is coming up. It was noted that interaction between public participants and scientists is an important part of the dialogue process. Bella Williams commented that she would be interested to see how the academics are affected by the process. The Group also felt that there should be the opportunity for participants to ask to hear from particular people and groups in workshop three, they felt that it was very important that there be flexibility in this final workshop.

The Group wanted to know from BMRB:

- How will the academics be briefed?
- How will academics interact with the members of the public? This is especially important where there might only be two academics in a group of 40.
- Will the public will be allowed time to prepare for discussion with the experts?
- Who will be used as experts at each workshop?
- Can workshop three be flexible enough to include experts that the participants request?

Brian Johnson moved the discussion on to the proposed use of actors in workshop two to relay stakeholder opinions. It emerged that, from the information provided it was very difficult to see exactly how actors would be used. He conveyed comments about the use of actors from Judith Petts to the meeting. Benefits of the methods could be seen, it would make the material more accessible, engaging and liven the workshop. The method could also help give participants something to hold onto and hook ideas onto when trying to comprehend this difficult subject. However, there were concerns about whether verbatim quotes would be used or whether actors would be asked to improvise, whether having a person say the words meant they could add layers of tone that were not there originally. The Group concluded that they needed clarification about how actors would be used. They also wanted to know whether BMRB had used the method before. There was a suggestion of asking participants to role play stakeholder opinions.

The Group moved to talking about the interactive voting option, IML. Brian Johnson read out some comments about this option from Judith Petts. The Group talked about whether voting condensed complex issues to black and white choices and whether this was helpful when

this dialogue does not have a clear issue that can be voted on but we are interested in the ways that people reach decisions. It was noted that the voting could prompt discussion if facilitated well and can be interactive and fun for participants. The question was raised as to whether the use of this technology provides the opportunity to use the methods and results to understand how to manipulate people in other situations. It was also noted that technical failure could be a big problem. It was pointed out that the system could generate quantitative outputs and that these would be particularly welcomed by policymakers. It will also be useful to be able to track changes in people's opinions. The Group felt they needed more information from BMRB especially around why and how the system will be used.

A draft Topic Guide for workshop two had been tabled and was now discussed. Bella Williams reiterated the importance for them as evaluators and for participants to have a clearly stated aim for the workshop. Other comments highlighted the large amount of material to be covered in one day. The Group wanted to see time for breakout groups to feed back to a plenary. It was not clear whether the initial reflection was within breakout groups, across areas or across the country. There was concern that the format might not allow enough time for participants to 'get' synthetic biology quickly enough. There was the suggestion that case studies or scenarios might help with this. There were concerns that people might not be interested in the section on funding and regulation, particularly in such detail, and that this could be something people request to hear more about in workshop three. There didn't seem to be enough time to look in detail at ethical and social issues. The Group felt the format was rather linear and perhaps not iterative enough, that it siloed issues together rather than teasing them out. It was noted that hopes and concerns should also include risks, which differ from concerns.

The Group briefly discussed the potential involvement of industry in the dialogue. In written comments, Judith Petts felt that industry should be involved at the earliest stage. It was raised that it would be challenging to get industry involved and that if industry were involved in workshops other groups would also need to involved, such as NGO's. However, engaging industry in the dialogue findings is different from involving them in the dialogue process. Bella Williams noted that at the workshops there had been a feeling that industry drives science and that this was an issue that is likely to come up again and therefore will need addressing. Again, the Group needed more information from BMRB.

Some of those who participated in the 6DTV demonstration described their experiences. The group were not strongly for or against inclusion of 6DTV in the dialogue. It was not clear when the 6DTV will be used and for what purpose. There was a suggestion that it be included with the caveat that results derived from it would not be used in the report if uptake from participants was not good.

BMRB then joined the meeting

7. Update on progress so far and emerging findings

Darren Bhattachary gave a run through of the first workshops and some of the emerging points. He commented that the first workshops had had a good turn out and people had enjoyed them. They seemed excited to be involved and keen to meet the scientists at the next workshop. In one group there may have been some bonding issues due to disagreements within the group. BMRB had seen that people were generally positive towards science and technology but that they did have specific concerns in some areas. The polar opinions were held around 'green views' and the feeling that we should get back to nature and at the opposite end of the spectrum views around the fact that science and technology can benefit us in our modern lives so we should just accept that there may be problems too. People brought up issues of equity of access to products and of control science, who is driving it and what their motives are. There were interesting observations about how people are becoming their own experts in many areas of their lives and about the

commodification of science. There were differences between the food and medical sectors around whether people do or don't trust regulators and commercial companies.

Participants had specific questions about who is shaping the field of synthetic biology. They want to be able to stop and consider the issues. Participants found technology easier to grasp than sciences which were seen as being more complex. The term synthetic came out as having connotations that don't relate to the field itself – perhaps it needs 'rebranding'. There will be a need to engage as the dialogue moves forward with some of people's misunderstandings about science.

8. Options for the dialogue

Brian Johnson referred the Group to the Decision Register and opened the discussion with the first decision – whether to use academics as experts at workshop two. BMRB stated that they hoped to get academics with a range of views. Brian Johnson explained that the Oversight Group had agreed to using academics as experts in workshop two but with the caveat that briefing of experts should be thorough. BMRB explained that they would have a long conversation with the academics by way of brief. They may be encouraged to use a recent Nature paper (Volume 463, 21 January 2010, page 288) as a starting point, to give coherence across workshops. They will be asked to present technical information but also to honestly discuss the issues. There was some discussion about talking about applications at the stage and about how this would lead to discussions about the risks associated with specific applications. BMRB noted the difference between what the scientists seem to view as the unremarkable, day-to-day work that they do and the huge implications that the scientists recognise in the overall endeavour – the two seem not to be linked in scientists' minds.

Brian Johnson voiced the groups desire to allow participants to ask who they want to hear from at workshop three and BMRB agreed to this.

BMRB pointed out that they have been successful in getting agreement in principle from academics and the Group noted that they would need to know who was to be involved at each workshop.

In reference to questions about how participants will be prepared to ask questions of experts, BMRB spoke about an idea to use word clouds during the reflection session to help them see the issues that they raised and which seemed to be most important. It was clarified that reflection would happen within each area and not across the country.

BMRB expanded their description of how experts would interact with participants. They said that they would hope to move academics between small groups and that they would be encouraged to listen to discussion and to, at the prompting of the moderator, reflect on the ideas. The group hoped the experts would be briefed to be available and approachable over the lunch break.

Moving on to discuss actors Brian Johnson said the group were positive but had some questions and also a suggestion about asking participants to role play. BMRB said that this had been an early idea but that there was not now time to support the participants to do that. BMRB intend to look at the questions the participants raised at the end of workshop one and to then go back to stakeholder interview transcripts to build a script for actors to follow. The script will be text from several individuals from each sub set of the stakeholders leading to, for example, an industry script. The script will be responsive to the issues that have been raised by stakeholders but will also raise new issues in line with those discussed by each stakeholder. **ACTION: BMRB agreed to send an example script to the Oversight Group by Friday 5 February.**

BMRB noted that the actors should liven up the workshop and prevent it from becoming too dry but that the text will also be unpacked by the participants later in the workshop. BMRB said that they had not used actors before but that they had used the concept, of splicing interviews together to create stimulus material, before. The group asked how the culture clash between biology and engineering will be addressed. BMRB said that this is part of what makes synthetic biology different and that they hope this will be something that the scientists will discuss.

The discussion moved to the use of interactive voting. BMRB noted that they had now secured a reduced quote for this option. They would use the technology at the start and end of each workshop to track the changes in opinion rather than to prompt discussion. They will report the results as they will be able to relate individual pads to the characteristics by which the individual was selected to take part, e.g. social economic status. They would need a good reason to use the voting more often that at the beginning and the end as there is a tendency to lose the nuance of the discussions when people latch onto the numbers generated by the voting. They will have a back-up plan in case the technology fails. The system can be used to measure change, won't have simple yes/no questions and can be used to react to issues coming up in workshops as questions can be changed easily.

After some discussion, Brian Johnson concluded that the Oversight Group's questions had been addressed and said that they would support the use of interactive voting.

The discussion moved to look at the topic guide for workshop two. Brian Johnson stated the key points from earlier discussions: that the Group felt there should be an aim for the workshop, that the agenda was ambitious and that some sections may be rather dry.

BMRB agreed to state a clear aim for workshop two. They noted that from the first workshop that participants are very interested in the drivers for research, how research councils drive science and what strings they attach to funding in terms of ethical considerations. The translational research funded between government and industry may be particularly interesting. Brian Johnson raised the idea of using case studies earlier in workshop two but BMRB commented that they want to unpack the broader issues around science and technology before introducing case studies. There was some discussion about whether there was enough material to engage people without a case study and whether a case study may be needed to help them understand what synthetic biology is about. BMRB were not keen to end up reducing the discussion during the workshops to the risks and benefits of a particular scenario. These issues may come out from the discussions after the actors play out stakeholder interviews.

Brian Johnson noted the Group's key questions and suggestions from the Decision Register. **ACTION: BMRB to provide the Oversight Group with an updated and more detailed topic guide.**

There was then some discussion around the involvement of industry in the dialogue. BMRB said that they had completed industry interviews readily and suggested that a special report could be prepared for industry. There was concern that industry, and not other groups, should receive 'special treatment'. The suggestion by BMRB to involve industry seemed to be to do with dissemination of findings and therefore an issue for the Steering Group, rather than the Oversight Group, to deal with.

Brian Johnson summarised the groups discussions around 6DTV. They felt BMRB should try 6DTV with the caveat that results not be included in the report unless they are robust. Some discussion followed around accessibility and who would be asked to participate. It was concluded that 6DTV should not be used to engage with a wider audience but should only be used for dialogue participants, including stakeholder interviewees. BMRB said that they

would include all results in the report, but as they would know who had taken part they would be able frame the findings in light of any caveats, such as limited participation. It was raised that this could be used as a way to continue participant engagement even after the workshops.

Jackie Haq offered BMRB her inter-faith group contact, which they accepted as a useful person to interview as a stakeholder.

9. Evaluative reflection and summary

Brian Johnson ran through the decision register to ensure the group were happy with it. Patrick Middleton recorded remaining questions for BMRB to ask them subsequently. It was noted that one person disagreed with the decision to only use academics at the first workshop.

The Group talked again about the importance of workshop three being iterative and the importance of enforcing this with BMRB. They would like to see the draft version of the topic guide for workshop three relatively earlier than they had seen that for workshop two. There was a feeling that the format of workshops needs to be more encouraging of participation so that they are more intensely participatory and less ad lib.

ACTION: Secretariat to check upcoming deadlines with BMRB.

ACTION: Laura Grant Associates to ask for details of the time people spend on the project and for their feedback on meetings.

10. Items to Note

Brian Johnson reiterated that these papers were on issues that the Steering Group will deal with but were presented here for the information of the Oversight Group.

11. AOB

Susan Soulsby noted a week long Synthetic Biology event with artists exhibiting in London 16-21 March. She commented that Oversight Group members may wish to attend.

Jackie Haq noted the website (www.stemistry.com) of a dialogue project that she knew of involving writers, members of the public and a scientist that Oversight Group members may wish to look at.

ACTION: Secretariat to set a meeting in mid April to reflect on the lessons learnt and to deal with any remaining issues.

Summary of Actions

ACTION: Laura Grant Associates to collect and analyse information about the time that members of the Oversight Group contribute to the project.

ACTION: Secretariat agreed to construct and circulate a description of what is meant by 'facilitate' in the Group's Terms of Reference.

ACTION: Research Councils to devise and communicate a process for discussion and decision making via email.

ACTION: Research Councils to write a communication to clarify the relationship between the Steering and Oversight Groups.

ACTION: Research Councils to confirm who the dialogue data belongs to.

ACTION: Research Councils to update the risk paper with these suggestions.

ACTION: BMRB to provide clear aims for workshops two and three.

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