

Report on ELSI and public engagement strand of SynBioNT Network

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Ethical, Legal and Social issues

A major focus of the ELSI strand of the SynBioNT Network was to “bring together scientists, policy makers, voluntary groups, bioethicists and social scientists working on new technologies to debate the main social and ethical issues raised by synthetic biology”. Whilst the public engagement activities described below have involved members of the lay public and community organisations, an important and distinctive feature of the network’s activities has been to establish a dialogue between scientists working on synthetic biology and social scientists and ethicists interested in its broader implications. Whilst there have been similar exercises in other fields, few have moved beyond one-off events with limited exchange of ideas. In staging these Network events and discussions our intention has instead been to look at how a more meaningful exchange of ideas and views can take place, how new forms of collaboration can be established around the social and ethical implications of synthetic biology, and the challenges and barriers facing this type of work.

In order to establish, consolidate and maintain relationships between the social and natural scientists an ELSI component has been included in the main Network events. The kick-off meeting included a general introduction outlining some of the major ethical and social issues in synthetic biology and directing members towards the report produced by Balmer and Martin on “Social and Ethical Challenges in Synthetic Biology”. Andy Balmer has participated in a number of the Network meetings, including speaking on the questions around ‘Life and Ethics’ at the December 2009 meeting and generating discussion of ELSI in the development of pitches for future research projects in October (Sheffield) and December (Nottingham) 2009. In addition, a seminar on the social implications of synthetic biology was organised by the Institute for Science and Society (ISS) with the invited speaker Dr Susan Moleneux-Hodgson, (University of Sheffield). Andy Balmer has also spoken at ISS on synthetic biology and social issues, and has given guest lectures to the incoming PhD students in the Department of Computing on a range of ELSI dimensions.

A major bridging event between social scientists, ethicists, and natural and computer scientists was conducted during an important one-day workshop organised as an integral part of the 6th Network meeting on “Challenges in Top-Down, Bottom-Up and Computational Approaches to Synthetic Biology” held in Nottingham between 18-22nd March 2010. This was a unique event which brought together ~ 15 scientists working on synthetic biology together with ~ 15 social scientists and ethicists. There were a number of presentations from sociologists and designers working on synthetic biology, including Andy Balmer, Susan Molyneux-Hodgson, Claire Marris, James King, J-Paul, and Daisy Ginsberg. To produce more dialogue, smaller discussion groups were organised to explore the main issues of the day: What do we want to get out of collaboration? What are the key societal issues at stake? What is our relationship to public engagement? Are social scientists observers, participants or critics? How should we foster better communication?

Following up this event, Professor Natalio Krasnogor will take part in the upcoming meeting at Sheffield, “Synthetic Biology Meets Science and Technology Studies” in November 2010 where further discussion will be had of the relationships that have begun to develop between Network members in these fields. Furthermore, a national meeting on the themes of collaboration between

social science, ethicists and natural scientists/ engineers around the ELSIs on synthetic biology will take place in Nottingham in June 2011.

In addition, Paul Martin has played a leading role in establishing a national network (led by Jane Calvert, University of Edinburgh) of social scientists and ethicists concerned with the ELSIs raised by synthetic biology. This has formed the basis for a successful bid for an ESRC funded seminar series on *Synthetic biology and the Social Sciences*. The second meeting of this series will be held in Nottingham (see above).

Paul Martin has also written a paper, with Jane Calvert, on the role of social scientists in the field of synthetic biology published in EMBO Reports (2009). Another more substantive paper on the same topic is currently under review in a leading social science journal. Andy Balmer and Camille Herreman (2009) have written a chapter in a flagship book exploring the use of metaphors in science communication. The chapter examines how metaphorical language not only describes science, but also highlights particular ethical issues whilst erasing others.

A social science grant proposal looking at the construction of 'life' in different lay and expert scientific setting is currently under development in collaboration with a group at the University of Hamburg. This will directly involve scientists who are members of the SynBioNT Network. In addition and as a direct result of his involvement in the Network, Professor Martin was invited to become CoI on a major EPSRC grant on *The Chell: a bottom-up approach to minimal life-like constructs* and is involved in a recent application to EPSRC on the use of synthetic biology in advanced bacterial engineering led by Professor Krasnogor.

Public engagement

A public dialogue meeting titled "Should we create synthetic life?" was held at the Broadway Cinema on Sunday 21st March 11.00-12.30. This attracted over 30 members of the public from various sectors of society and was attended by 10 scientists and 5 social scientists involved in the "Challenges in Top-Down, Bottom-Up and Computational Approaches to Synthetic Biology" meeting held at the University of Nottingham.

The Broadway Cinema was chosen as it is in a central location in Nottingham City Centre and is well-known as a place for cultural discussion. Holding the event on a Sunday lunchtime meant that we attracted participants that might otherwise have been unavailable, providing us with a broad mix from school children to retirees, professionals to career seekers, and individuals from a variety of faiths. The event was an integral part of the scientific meeting and attracted participation from leading biological and computer scientists, and social scientists from Nottingham, Edinburgh, London, and Sheffield.

The agenda for the meeting covered a range of issues including: Are scientists 'playing God'? Can synthetic biology help prevent climate change and produce a greener future? Will synthetic biology be used for biological warfare? Who should decide what research is done and how it is controlled?

Short elevator talks were given by Miguel Camara, Natalio Krasnogor, Jennifer Hallinan and James King that helped spur a debate between the members of the public, the scientists and the social scientists. Following this group debate the room was split into two smaller groups that allowed everyone to voice their opinion on what they had heard, ask questions of the scientists and social scientists and to speculate about where they thought synthetic biology should go. The

two groups were brought back together for a closing plenary with some further discussion and feedback. Lunch was provided after the event with all the public members mingling with the academic attendees, producing a convivial break out of individual discussions and debates, with many people staying for hours afterwards. Feedback of the event was extremely positive and we hope to test the model again in the future to explore how the emerging relationships between synthetic biologists and sociologists can be best utilised to promote engagement that goes beyond the didactic interactions so common in traditional public talks.

Calvert, J. And **Martin, P.** (2009) *The role of social science in synthetic biology*. EMBO Reports, 10(3):201-204.

Balmer, A.S. and Herreman, C. (2009) *Craig Venter and the Reprogramming of Life: How Metaphors Shape and Perform Ethical Discourse in the Media Presentation of Synthetic Biology* in Nerlich, B., Elliott, R. and Larson, B. (eds.) "Communicating biological sciences: ethical and metaphorical dimensions" Hampshire: Ashgate