

Conceptual Issues in the Dissemination of Genomics (Representing Genes III)

Venue: ESRC Centre for Genomics in Society, University of Exeter,

This workshop will bring together academic historians and philosophers of science working on the history and current status of the gene concept and related constructs used to represent DNA in an interactive discussion forum with people who have been actively involved in communicating work in genetics and genomics to non-specialists. The conference will open with a presentation of some of the results of the Representing Genes project – a project funded by the NSF which used a web-based survey to examine how working bioscientists are responding to the conceptual challenges posed by recent advances in genomics.

Programme

**Friday 13th May 2005 (PM),
University of Exeter, Streatham Court Xfi centre, conference room 1**

(1:45) Coffee and Registration

(2:15-2:30) Welcome: John Dupre, Director Egenis

(2:30-3:30) Paul Griffiths & Karola Stotz – Diverse conceptualizations of the gene and why they matter.

(3:30-5:00) Panel Discussion: Jon Turney (moderator), Lenny Moss, Staffan Mueller-Wille, David Heaf (?), Robert Sternberg (?), Karola Stotz and Paul Griffiths

(5:00) Shuttle to Crossmead Centre

(7) Conference dinner (Crossmead Centre)

**Saturday 14th May,
University of Exeter, Streatham Court Xfi centre, conference room 1**

(8:45) Shuttle from Crossmead Centre

(9.30-10.15) Session 1: Disseminating genomics: A case study (Brandy Smolnik)

(10.15-10.45) Coffee break

(10.45-12.15) Session 2. Roundtable discussion: Communicating scientific dissent and the contestability of science. Discussion leaders: Jeffrey Schwartz, Lenny Moss

(12.15-1.30) Lunch buffet

(1:30-3.00) Session 3: Roundtable discussion: Bioethics meets the Philosophy of Biology Discussion leaders: Rachel Ankeny, Tim Lewens

(3.00-3.30) Coffee break

(3.30-5.00) Session 4: Roundtable discussion: What are we studying in the history and philosophy of genomics? Genes, gene concepts and other historiographic approaches to DNA. Discussion leaders: James Griesemer, Hans-Jörg Rheinberger.

End of conference

Session Descriptions

Friday May 13th

Paul Griffiths & Karola Stotz – The Conceptual Impact of the Genomic Revolution

Our research documents the shift from a gene-centered view to a broader, genomics-oriented approach in contemporary molecular biology. Some biological research fields are pressing forward by broadening current models of the organization of genomic elements whilst others are trying to hang on to the older concept of a particulate gene, a concept that is unable to accommodate the genomic complexities that are being discovered on a daily basis. During 2003-4 we collected 500 responses to an online survey in which biologists were asked to annotate conceptually challenging cases of genome transcription with the aim of revealing the range of conceptions of the gene operative in contemporary bioscience. The results of the study seem to corroborate the widespread view amongst commentators on contemporary biology that the diversity of understanding of ‘gene’ in contemporary biology seems to be so great that it leads to frequent miscommunication even between active researchers, and that the textbook conception of the gene, the so-called ‘classical molecular gene’, is simply not up to the job of characterizing the full range of genetic elements. We further argue that the cases unearthed for this study challenge the molecular-genetic dogma of the last century that a clearly defined entity called the ‘gene’ contains all the information that determines a ‘gene product’ such as a protein. These suggestions have implications for the public understanding of genetics and for bioethics, fields which involve taking claims about genes outside the specific research context in which they originated. Recognizing how much emerging areas of science such as postgenomic biology will transform the nature of society highlights the role of the science journalist not only as a mediator or translator of complex scientific information, but also as an informed critic.

Panel Discussion: Jon Turney (moderator), Lenny Moss, Staffan Mueller-Wille, David Heaf (?), Robert Sternberg (?), Karola Stotz and Paul Griffiths

Saturday 14th May

Session 1: Disseminating genomics: A case study (Brandy Smolnik)

Session 2. Communicating scientific dissent and the contestability of science.
Discussion leaders: Jeffrey Schwartz, Lenny Moss

Paleontologist Jeffrey Schwartz has written two popular books advocating heterodox biological views, *The Red Ape* (1987, 2nd Ed. 2005) and *Sudden Origins* (1999). We have asked him to discuss his experience of communicating the contestability of scientific orthodoxy. Lenny Moss is the author of *What Genes Can't Do* (2001).

Session 3. Bioethics meets the Philosophy of Biology. Discussion leaders: Rachel Ankeny, Tim Lewens

Abstract: What opportunities (and risks) might there be for philosophers of biology (or historians, or even those doing social studies of biology) to contribute to debates in bioethics? There has been limited work done at the interface of bioethics and the philosophy of biology. Bioethicists typically have training in ethics, medicine, law or social science, whereas philosophers of biology usually have backgrounds drawing from general philosophy of science as well as the biological sciences. On the surface, it might seem obvious that there will be difficulties in communication due to the differing conceptual and epistemological bases of these fields. But there do seem to be areas where the two disciplines can be brought closer together. How, for example, might recent work on the nature of genes and genomic science contribute to policy debates about the use of genetic technologies or discussions about resource allocation with regard to genomic science?

Session 4. What are we studying in the history and philosophy of genomics? Genes, gene concepts and other historiographic approaches to DNA. Discussion leaders: James Griesemer, Hans-Jörg Rheinberger.

Authors from several disciplines and several intellectual traditions have contributed to discussions of the changing understanding of the hereditary material in the history of biology. Philosophers of science have traditionally understood the object of this enquiry to be one or more concepts that have been used by scientists to understand heredity. Historians of science have been more inclined to understand the object of enquiry as the changing scientific practices in genetics and related disciplines. Some more recent authors have treated the gene (or other, related constructs) as themselves historical entities whose nature has changed in the history of biology.

Attendees

Egenis participants

- John Dupré (Egenis)
- Christine Hauskeller (Egenis)
- Ginny Russell (Egenis)
- Adam Bostanci (Egenis)
- Barry Barnes (Egenis)
- Steve Hughes (Egenis)
- Steffan Mülle-Wille (Egenis)
- Jane Calvert (Egenis)
- David Reece (Egenis)
- Paula Saukko (Egenis)
- Michael Hauskeller (Egenis)

UK participants

- Tim Lewens (Cambridge)
- Bronwyn Terrill (Sanger)
- Pamela Black (Cambridge Genetics Knowledge Park)
- David Heaf (Freelance)
- Eluned Hughes (London Knowledge Park)
- Kate Mathieson (North West Genetics Knowledge Park)
- Katherine Mathieson (Program Manager NESTA)
- Robert Sternberg (Filmmaker, Imperial College London)
- Jon Turney (Freelance)

International participants

- Paul Griffiths (Queensland)
- Karola Stotz (Pittsburgh)
- Brandy Smolnik (Pittsburgh)
- Jeffrey Schwartz (Pittsburgh)
- Hans-Jörg Rheinberger (MPI)
- Lenny Moss (Notre Dame and Exeter)
- Jim Griesemer (UC Davis)
- Rachel Ankeny (Sydney)