A Lancaster – Cardiff collaboration

Proteins don’t have a social life:
Sociomics perspectives on proteomics and post-laboratory life

Ruth McNally cesagen Cardiff

BSPR – EBI Meeting 2007

Integrative poteomics: From molecules to systems

Wellcome Trust Genome Campus, 25-27 July
1. CESAGen
2. Innogen
3. Egenis
4. Genomics Policy & Research Forum

- Phase 1: 2003 - 2007
- Phase 2: 2007 - 2012
Transcending the Genome: The Paradigm Shift to Proteomics?

Peter Glasner & Ruth McNally

Flagship Project 2003-7, cesagen Cardiff

ESRC Centre-Linked PhD Studentships:
Andrew Bartlett, Jamie Lewis
Q: What are the differences between genomics (DNA) & proteomics (proteins)?

Answers:

• Proteome is more complex
• Proteomics platforms still immature
• No protein equivalent of PCR ...
Q: What are the differences between genomics (DNA) & proteomics (proteins)?

Social Science Answer:
Proteins don’t have a “social life”
ELSI & ELSA - the constant companions of human genome research programmes

**ELSI** - US Department of Energy & National Institutes of Health

**Ethical, Legal & Social Issues**

**ELSA** - Europe European Commission

**Ethical, Legal and Social Aspects**
There is no ELSI in HUPO
Laboratory Life: The Construction of Scientific Facts

Bruno Latour • Steve Woolgar

Introduction by Jonas Salk

With a new postscript by the authors
Transformations in Knowledge Production Since 1970s

• “Big Science”: transcends lab walls

• “Technologically-driven & technologically-dependent”: transcends the academy; commercial developers & vendors; multidisciplinary

• “E-science”: internet, databases, search engines, e-journals
Any study of paradigm-directed or of paradigm-shattering research must first begin by locating the responsible group or groups (Thomas Kuhn 1970: 180)
A protein-protein interaction network?
“Soci-omics”

A hybrid word from social and omics meaning:

1. convergence of approaches to knowledge production in the social sciences & the “omics”

2. the entanglement of the social sciences & the “omics” (genomics, proteomics ...) they study;
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Photograph courtesy of Henning Hermjakob, EBI
The “Core-Set” (Collins)

A small number of experts (allies & enemies) who are focused on resolving a problem of validity - though not necessarily in the same way, for the same reasons, or even towards the same outcome.
The “Certainty Trough”

Uncertainty
Unsettled
Unsatisfactory
Controversy

Closely involved: 'Core-set'
Adopters
Potential adopters critics

Derived fr: Mackenzie 1990 Inventing Accuracy MIT; Brown & Michael 2003 TASM 15(3)
The “Certainty Trough”

Potential adopters & Critics & ...

Proteins don’t have a social life ...

“Lay” people
Q: Why don’t proteins have a social life?

Answer: Because lay publics don’t understand the science?

Question: Why is it that the DNA / gene does have a social life?
Biomolecules: DNA, proteins

Concept: 1953 DNA/Gene

Human Genome Project

End of the DNA / Gene dream team?
Shifts on the conceptual (geno) side of the DNA/gene duplex

“De-geneticisation” of the life sciences

- Systems Biology; Bioinformatics

Demotion of genomics (just one omic discovery science among equals)

- Transcriptomics
- Proteomics
- Metabolomics
Shifts on the biomolecular (DNA) side of the DNA/gene duplex

“Re-geneticisation” through the biomolecular “pluralisation” of genomics; = more than the study of DNA

• Functional genomics

“Proteinisation” of the gene

• Genomics as including the study of proteins characterised as gene products
Proteins start to get a social life by association with the gene ...

DNA (Protein) Gene

ELSIification of HUPO?