RES-350-27-0001 (Wainwright)
Spaces of Stem Cell Science: Exploring Processes of Translational Research

This two year project focused on the prospects and problems of stem cell research and cell transplantation in the fields of diabetes and neuroscience, particularly the interactions between 'the bench and the bedside' (i.e., translational research). The project thus explores how a new medical technology might be encouraged or prevented from diffusing from the lab to the clinic. The main aims of my Fellowship were to write papers based on both new interviews and on data from our previous ESRC SCI project (*Mapping stem cell innovation in action*, 2004-2006) and to develop my career as a social scientist. I have published 12 articles and submitted two more. Our papers explore a variety of issues and are aimed at different of audiences, including users, practitioners and academics. In this short summary I highlight two main sets of findings from our papers on disease in a dish and iPS cells, and on sociology and bioethics.

Will human embryonic stem (hES) cells lead to a revolutionary new regenerative medicine? We answered this question in a paper exploring the views of UK and US scientists and clinicians working on the bench-bedside interface in the fields of hES cells, neuroscience and diabetes. We highlighted the emergence of what some scientists describe as 'a new paradigm of stem cell research', the 'disease in a dish' approach, where hES cells will be used as tools for unravelling the mechanisms of disease to enable the development of new drugs, rather than directly in 'stem cell transplant therapies'. We discussed the contested nature of three different approaches to creating 'disease in a dish models' and we demonstrated how translational research inevitably entails a struggle for power between the variegated social worlds of 'rigorous science' and 'relevant medicine'. This work led to research and a paper on a related area that emerged from new interviews – the transformation of the stem cell field by Induced Pluripotent Stem Cells (iPS cells). These iPS cells have recently been heralded as the scientific breakthrough of the year (*Science*, 2008). I am one of the first social scientists to interview leading iPS cell scientists and to analyse the promise and problems of this new field eg the ways in which iPS cells may contribute to the development of 'disease in a dish' models.

We also examined the construction of ethical positions in stem cell translational research, in particular how the role positions of translational researchers are shaped by the 'ethical structures' of science and medicine. Our interview data illuminated three overlapping themes in this paper: what matters in stem cell research, experimental treatments, and responsible claim making (as contrasted with 'hype'). We argued that ethical reasoning in philosophical bioethics lacks the voice of scientists. In contrast, our sociological research examines the views of laboratory scientists and transplant clinicians on the ethics of biomedical science research using hES cells, and the ethics of translational research. In a related publication we discussed some of the ethical issues raised in two key areas at the interface between research and experimental treatments: the creation of 'interspecies embryos'; and experimental neuroscience (particularly for Parkinson's Disease and Motor Neuron Disease, and the use of animal and 'disease in a dish' models in research) – all of which are central to our new Wellcome Trust 'translational ethics Centre' grant (2009-2014).