



the social science stem cell initiative

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Processes, Dynamics and Problems in Translation A Comparative Study of Stem Cell Innovation in the UK

Stem cell therapies are widely seen as having the potential to combat a range of prevalent and debilitating diseases. Such therapies can only be developed, however, if advances in stem cell science can be brought into the clinic. Although the UK has a history of excellence and leadership in stem cell science, turning those scientific achievements into stem cell therapies raises important challenges. Here, the UK's track-record of difficulties in translating scientific advances into clinical utility and/or commercial success is making itself felt. This general problem of translation is particularly marked in the field of stem cell innovation, where scientific and technical difficulties are accompanied by the challenges that attend interdisciplinary collaboration and of creating an infrastructure conducive to translation. At the same time, the need for effective translation in this field is all the more pressing given the high levels of investment in stem cell science and the expectations associated with its clinical potential. The social sciences have a vital role to play in identifying, analysing and helping to resolve the difficulties involved in translating stem cell science into clinical practice, and where appropriate and possible commercial success. This project responds to this need, and works towards developing a conceptual and empirical framework for understanding the processes, dynamics and problems of translation. The overall aim is to gain insights that can be applied.

At one level, the project seeks to shed light on the translation process generally. Translation involves complex and evolving interactions between scientific, clinical, commercial and other groups, in which science and the clinic, biology and medicine, mutually shape and influence each other in a process that is neither linear nor unidirectional. Translational activities tend typically to take place at the 'periphery' of established disciplines, in the overlap between academic, clinical and commercial spheres, and/or at the public/private interface. Within these borderlands, different sets of actors – scientists, clinicians, policy-makers – are brought together in new formations and circuits of communication that constitute novel 'networks of translation'. Some of the difficulties that surround translation arise because it challenges workplace practices and cultures, and entails new professional, disciplinary and institutional formations.

The project also seeks to identify the particular obstacles to stem cell innovation. The project focuses on the haematopoietic stem cell (HSC), which remains the only stem cell routinely used in the clinic. The established place of the HSC in transplantation/cancer medicine, together with its emerging position in the vanguard of regenerative medicine as a potential therapy for a range of degenerative diseases, renders the HSC a compelling subject for the study of translation. The processes, dynamics and problems of translation in these two settings differ markedly. Current research suggests two patterns: the HSC in transplantation/cancer medicine is characterized by continual and incremental change within an established therapeutic paradigm and is driven largely by the public sector. In contrast, the HSC within regenerative medicine is highly novel, risk-laden and fraught with uncertainty; it is creating new interfaces between a range of clinical and scientific specialisms, and is being driven in part by the private sector, engendering novel forms of public/private collaboration. In providing a window into the dynamics and characteristics of translation and innovation in markedly different contexts, this comparative study will, it is envisaged, yield crucial insights into the processes and problems in translating stem cell science into clinical practice. By capturing translation 'in action', the analysis will form the basis for evidence-based models that can contribute to future policy by identifying best practice and organizational factors conducive to effective translation.

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