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Experimental Standards: evaluating success in stem cell biology

Fagan, Melinda (2010) *Experimental Standards: evaluating success in stem cell biology*. In: [2009] EPSA09: 2nd Conference of the European Philosophy of Science Association (Amsterdam, 21-24 October, 2009) > EPSA 2009 Contributed Papers.



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Abstract

This paper aims to bring the epistemic dimensions of stem cell experiments out of the background, and show that they can be critically evaluated. After introducing some basic concepts of stem cell biology, I set out the current "gold standard" for experimental success in that field (§ 2). I then trace the origin of this standard to a 1988 controversy over blood stem cells (§ 3). Understanding the outcome of this controversy requires attention to the details of experimental techniques, the organization of epistemic communities, and relations between the two (§ 4). With its resolution, a standard for experimental success was established for HSC research, which in turn serves as an exemplar for studies of other stem cells. This historical case study reveals a robust standard for experimental success in stem cell biology: to trace processes of development at the single-cell level, in the form of cell lineage hierarchies. Experiments conforming to this standard can be further critically assessed as means to the therapeutic end of stem cell research: use of stem cells to repair human organs and tissues.

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