

Evan Snyder

July 22, 2009

Summary

Dr. Snyder's presentation provided an detailed overview of the current state of stem cell research, including how both the science and the ethical questions have changed over the past five or so years.

Snyder, a neurobiologist, emphasized the crucial importance of human embryonic stem cells as models of embryogenesis. We want to understand how human development occurs so we can control and direct the plasticity of stem cells to restore balance to a perturbed system as in disease or injury. The analogy here is with rebooting the computer or reseeding the lawn. Scientifically, the ability to reprogram ordinary somatic cells (iPS) has opened the door to new models of human disease, replacing old models using Somatic Cell Nuclear Transfer (SCNT). Other developments of note include a greater understanding of the importance of "cross talk" or signals between recipient (patient) and graft (implanted cells), the role of stem cells in inhibiting scarring in spinal chord injury, their use as a delivery system for targeting or blocking tumor cells. In each of these areas much remains to be learned before moving to medical use.

As the science has advanced, so has the ethical discussion. Debates over the moral status of the embryo, while still alive, have moved from the headlines. With FDA approval of the first clinical trial of an embryonic stem cell therapy, the Geron Spinal Chord Injury trial, concerns about patient safety and adequate informed consent and have come to the fore. More generally, when is it appropriate to attempt a therapy in the face of imperfect and incomplete knowledge? As Dr. Snyder pointed out, we have the illusion that we know "what needs fixing." But stem cells are not, in his words, "pixie dust." This isn't magic. We need to know what are the best cells to use and in what patient population. In this connection Snyder mentioned the problem of childhood diseases, e.g., are children ethically "off limits" in early clinical trials? Is it ethical to exclude them, if we can meet conditions of rigorously scrutinized data without jeopardizing proven options for treatment?

A second area of ethical interest involves when and if large animal models are necessary. May we simply go from mice to men? Answering this question raises a number of issues: the greater expense and difficulty of working with large animals; the relevance of animal suffering; the varying biology between rodents and humans. Chimera research, particularly with primates, e.g., putting neural stem cells in the brains of primates, raises its own anxieties.

A very large audience provided lively discussion. In addition to the above issues, the issue of reproductive cloning emerged as interest to many.

(Summary prepared by Mary Devereaux 7/24/2009)