

Will Companies Hold Control of Life Made in a Petri Dish?

By JEREMY RIFKIN

A debate has been raging for months around a tiny human cell called the stem cell.

Stem cells are the progenitor cells that differentiate into specific cells, tissues and organs during the process of fetal development. A few years ago, scientists isolated these cells for the first time and now researchers are busy experimenting in the hope that one day they will be able to produce spare body parts and therapies for Alzheimer's disease, Parkinson's dis-

■ First of two parts.

ease, strokes, heart attacks, spinal cord regeneration, cancer and diabetes.

There is another side to this newfound power. Because we can seriously entertain the idea of manufacturing all of the various parts that make up a human being, with whom should we entrust the power over the production process? Already, companies involved in the research are laying claims to what researchers call the immortal cells that give rise to human life. Stem cell research brings us face to face with the prospect of fashioning a commercially driven eugenics society in the 21st century. This possibility, thus far, has been virtually unexamined in the public discussion.

The moral dilemma with stem cell research is that there are only two ways to harvest the precious cells, either from embryos or from individuals after birth. While the latter approach has shown promise in experimental trials on animals, a growing number of researchers favor using the former approach, arguing that cells harvested from embryos might produce better results.

There are three ways to secure stem cells from embryos: use discarded embryos left over from in vitro fertilization procedures, create embryos in a Petri dish using donated sperm and eggs or clone a human embryo from an adult human cell.

The Catholic Church and right-to-life advocates argue that using embryos to harvest stem cells would mean taking the life of a human being and therefore the procedure should be banned. Scientists argue that banning use of embryos could mean that millions of people will die needlessly.

While political leaders wrestle with the escalating struggle between right-to-life advocates and scientists, a far more menacing tale is unfolding behind the scenes. U.S. and British scientists and biotech companies are using embryo and stem cell technology to develop the framework for a commercial version of Aldous Huxley's "Brave New World." Ironically, the discussion over federal funding of this research has provided them with a convenient cover.

The truth is, even if the United States and other countries prohibit the use of government funds for this research, it will make little difference. Private companies are determined to exert control over what some are calling the ultimate human frontier, the design and manufacture of human embryos, cells, tissues and organs. Few governments have been willing to even suggest that private research be banned. The result is that the door is wide open for commercial exploitation of embryos and stem cell research.

We are on the cusp of a commercial Eugenics Era.

Eugenics is a term coined by Sir Francis Galton, the 19th century British philosopher. It means to use breeding to both eliminate undesirable genetic traits and to add desirable traits to improve the characteristics of an organism or species. When we think of eugenics, we think of Adolf Hitler's ghoulish plan to create the master race.

Today, however, in corporate boardrooms and far away from public scrutiny, a new eugenics movement is being meticulously prepared—a commercial eugenics, far different from Hitler's eugenics.

Our story begins with a small biotech company, Roslin Bio-Med. The company was created in April 1998 by the Roslin Institute, a government-funded research institution outside Edinburgh, Scotland, where Dr. Ian Wilmut cloned Dolly the sheep. The company was given an exclusive license to all the institute's cloning technology for biomedical research. A year later, Roslin Bio-Med was sold to Geron, headquartered in Menlo Park, Calif.

In January 2000, the British Patent Office granted a patent to Wilmut for his cloning technology. The patent, now owned by Geron, covers the cloning process and all the animals that are produced by it. What most people don't know is that the Geron patent also covers all cloned human embryos up to the blastocyst stage of development. That's the stage where stem cells emerge.

The British government, in effect, became the first in the world to recognize a human embryo as a form of intellectual property.

Even before securing the embryo patent, Geron had been financing stem cell research by Dr. James A. Thomson of the University of Wisconsin and Dr. John Gearhart of Johns Hopkins University. In November 1998, both scientists announced that they had independently isolated and identified human stem cells.

The breakthrough opened the door to the era of stem cell experimentation in medicine. The researchers' academic institutions immediately applied for patents and sold the exclusive licenses to use the patents to Geron.

Geron, once all alone in the field, is now being challenged. Geron's founder, Michael West, broke away from the company and now heads up Advanced Cell Technology in Massachusetts. West's new company has secured its own patents on nonhuman embryo cloning and is experimenting on alternative ways to create human stem cells.

By securing patents on the cloning process as well as on cloned human embryos and stem cells, companies like Geron and Advanced Cell Technology can dictate the terms for further advances in medical research using stem cells. The mass production of cloned human embryos provides an unlimited source of stem cells. The stem cells, in turn, are the progenitors of all of the 200 or so differentiated cell types that make up the biology of human life. Researchers, institutes and other companies from around the world will have to pay Geron and Advanced Cell Technology to access the embryos or the stem cells.

What does this portend for the future?

To begin with, the granting of a patent for cloned human embryos raises a formidable political question. In the 19th century, we fought over the question of whether human beings after birth could be held as commercial property; eventually, every nation abolished slavery.

Now, however, we have technology that allows companies like Geron to claim human beings as intellectual property between conception and birth. The question of whether commercial enterprises would be allowed to own human beings as property before birth will likely be one of the seminal political issues of the Biotech Century.

Second, should companies be allowed to own the primary human cells that are the gateway to the entire biological composition of human life? Do we risk a new era where the creation of life itself will fall under the control of commercial forces?

Failure to examine the commercial implications of embryo and stem cell research could trap us in a commercial eugenics future that we neither anticipated nor chose.

Tuesday: Strange political bed-fellows

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