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Britain decides boundaries of stem-cell tech

A ruling is expected Wednesday on creating human-animal embryos.

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LONDON

Britain is poised to make a landmark ruling Wednesday on whether scientists can fuse human cells with animal eggs to develop stem cells for therapeutic purposes, a contentious process hitherto conducted only in China.

The Human Fertilisation and Embryology Authority (HFEA) will rule on applications by two teams of scientists for licenses to create human-animal embryos, sometimes known as hybrids or chimeras, from which stem cells could be extracted to help understand and treat genetic disorders.

Whatever the outcome, the decision is likely to generate fresh controversy toward stem-cell research – the science of utilizing embryos for therapeutic purposes. Critics argue this is "playing God," and say the idea of going still further and mixing human and animal material is ethically repugnant and probably of limited practical value. The US, Canada, and Australia have all specifically banned the creation of hybrids.

But stem-cell researchers say they desperately need the animal matter because not enough human eggs are available. Britain has adopted an accommodating attitude toward stem-cell science, fostering a favorable environment that scientists argue would be undermined if this latest experimentation is rejected.

"We pride ourselves here on working in a pro-science environment," says Stephen Minger, director of stem-cell biology at King's College London, one of two scientists who have applied for the HFEA license. "It would be viewed as a depressing turn of events" if the application were turned down.

Stem-cell research involves harvesting embryos within the first two weeks of their creation, when young cells have the potential to develop into any organ. The cells can be used to identify genetic imperfections that lead to illnesses.

Britain has one of the most permissive approaches in the world, alongside the likes of China and South Korea. British scientists have already won permission to clone new embryos, using spare eggs harvested during in vitro fertilization treatment (IVF).

But scientists say there are not nearly enough fresh human eggs. Many hundreds may be needed to generate a single stem-cell line. Donation rates are low (infertile women must increasingly go overseas for IVF) and few women will undergo a complicated, risky procedure for the sake of science.

Dr. Minger's idea is to remove the genetic material from an animal egg so that it is just a shell and insert the DNA from a human cell. He says eggs could be taken from the ovaries of thousands of cows that are slaughtered every day.

And, he adds: "If you take an egg and remove the DNA, you have an empty shell that no longer has a species identity. By using cow eggs, we are availing ourselves of a source of a very large number of eggs without the need to put women through an invasive procedure from which we will never get very many eggs."

The result, he predicts, will be a greater ability to generate stem cells that will be useful "in trying to understand the basic disease mechanism behind catastrophic neurological disorders where we haven't been very good at developing therapies."

Some experts point out that tiny amounts of animal matter known as mitochondria, which control energy generation within a cell, will remain in the animal egg. Still, Minger appears to have broad support from the scientific community.

More than 40 ethicists, biologists, and scientists wrote an open letter earlier this year calling for the HFEA to approve the research.

Religious groups and pro-life organizations have voiced their disapproval, however, and a study published by the HFEA itself on Monday showed that they enjoy wider public support than might otherwise have been expected in deeply secular Britain.

According to the survey of 2,000 people, while 56 percent of people agreed that scientists should be allowed to use human embryos in research, only 35 percent agreed with the idea of mixing human and animal matter to create an embryo for research purposes; 48 percent disagreed.

"There is religious opposition to it, there is concern from animal rights activists, and there is also opposition from scientists who consider it unnecessary," says Josephine Quintavalle, director of CORE, a not-for-profit public-interest group devoted to reproductive ethics, which among other things defends the embryo's right to life.

She argues that the process is deeply impractical, noting that the science has thus far produced very few stem cells from cloning.

"If hybridization is difficult and cloning is even more difficult, is this the most sensible way forward?" she asks.

Evan Harris thinks so. As a lawmaker on a parliamentary committee that has oversight in this field, he says that although some scientists say it might not work, "you can only know by trying.

"No scientist I have found has provided scientific reasons as opposed to religiously based ethical reasons for not proceeding," he adds, even though his committee "looked high and low for such scientists."

An HFEA spokeswoman refused to predict the outcome of Wednesday's decision.

"The authority doesn't want to hamper scientific research," she says, "but it is our job to make sure it's safe and appropriate."

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