

Sperm Cells Can be Grown Artificially

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Sample of Content:

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Content:

Researchers at the European Society of Human Reproduction and Embryology in Britain have shown that stem cells extracted from human embryos can develop in the laboratory into the early forms of cells that become eggs or sperm, raising the possibility that one day eggs and sperm needed for infertility treatment could be grown in a dish.

It also suggests that scientists may eventually be able to use the technique to create a supply of eggs for cloning.

The work can also help in understanding why some men and women do not create their own sperm or eggs and whether toxic chemicals in the environment play a role or not.

"It may allow us to investigate the very earliest processes of how a human's reproductive organs develop," said Harry Moore, a professor of reproductive and developmental medicine at Sheffield University in England.

Many scientists believe that chemical pollutants, such as pesticides, might interfere with human development at the stage where eggs and sperm are forming and that this disruption may cause birth abnormalities, infertility and possibly cancer.

"By developing suitable tests with embryonic stem cells as they differentiate into germ cells we can investigate the action of these chemicals in the laboratory," Moore said.

Stem cells are the master cells of the body, appearing when embryos are just a few days old and developing into every type of cell and tissue in the body, including sperm and eggs. Scientists can study the stem cells by extracting them from the embryo. If the researchers create the embryo by cloning a cell from a patient, any resulting cells would be a genetic match to the patient.

The cloning technique, called cell nuclear replacement, involves emptying out the genetic material in an egg and replacing it with the genetic material of another cell, say a skin cell taken from an adult. Instead of being fertilized by sperm, the new reconstituted egg is then bathed in chemical nutrients and electrocuted to help it to divide. It then evolves into an embryo, from which stem cells can be extracted.

For infertile couples, this approach would eliminate the need for donor sperm or eggs.

But any treatment using eggs and sperm grown from stem cells, let alone from stem cells extracted from a cloned embryo, may be many years away, Moore said.

"We would need to prove that sperm or eggs produced in this way were safe before we could contemplate using them to treat patients," he said.

Other experts said that such techniques could also raise some ethical issues.

"Because the technique can be used to generate eggs from an adult man's cells, gay couples could have children genetically related to both," said Anna Smajdor, a medical ethicist at Imperial College in London.

"Single men could even produce a child using their own sperm and an engineered egg, opening the way to a new form of cloning. Women's fertility would no longer need to be curtailed at the menopause," she said. "These possibilities raise new questions about how we define parenthood and about how we decide who has access to these new technologies."

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