

First synthetic human embryo to live past 14 days was made from stem cells



Cambridge University scientist says her research lab has used stem cells to create a human embryo that developed past day 14. If confirmed, the technique could lead to breakthroughs for treating everything from fertility problems to genetic disorders.

The challenge:

We can't see what's happening in the [womb](#) during the earliest stages of pregnancy, but by studying donated [embryos](#) in the lab, scientists have made valuable discoveries into [infertility](#), the [causes of miscarriages](#), and more.

There aren't enough donor embryos to meet the demand, though, so researchers have started making human embryo *models*, usually from stem cells, to help close the gap. These aren't identical to "natural" embryos, though, and they can't develop indefinitely — a model created at Monash University, for example, could only mimic the first [10 days](#) after fertilization.

As for how long scientists could develop donor embryos in the lab, we don't actually know — [until recently](#), ethical guidelines have strictly forbidden cultivation past day 14. That has left the important developmental period between days 14 and 28 largely a mystery.

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Faux human embryo:

Developmental biologist Magdalena ?ernicka-Goetz has now announced that her Cambridge-Caltech lab has used stem cells to create human embryo models that survived just past what would be day 14 for a natural embryo, according to a [report by the Guardian](#).

"It's beautiful and created entirely from embryonic stem cells," ?ernicka-Goetz told the Guardian before announcing the breakthrough during a plenary address at the International Society for Stem Cell Research's annual meeting in Boston on June 14.

The big picture:

?ernicka-Goetz's team has yet to publish anything on their research, which makes it hard to say just how scientifically significant it may be — we still don't know exactly how closely the embryo models mimic a natural human embryo, for example.

If the team has found a way to create embryo models that are identical (or close) to a natural human embryo and can develop for up to 14 days, they could potentially supply breakthrough scientific research.

If the embryo models can continue maturing in the lab *beyond* 14 days, they could give researchers an opportunity to see into that important stage of development — but whether they'd be able to take advantage of that opportunity isn't yet clear.

“Unlike human embryos arising from [IVF], where there is an established legal framework, there are currently no clear regulations governing stem cell-derived models of human embryos,” [said](#) James Briscoe, a senior group leader at the Francis Crick Institute, who wasn't involved in the research.

According to Briscoe, there is now an “urgent need” for such a framework.

“It is important that research and researchers in this area proceed cautiously, carefully, and transparently,” he continued. “The danger is that missteps or unjustified claims will have a chilling effect on the public and policymakers. This would be a major setback for the field.”

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