# Research gives new insight into formation of the human embryo

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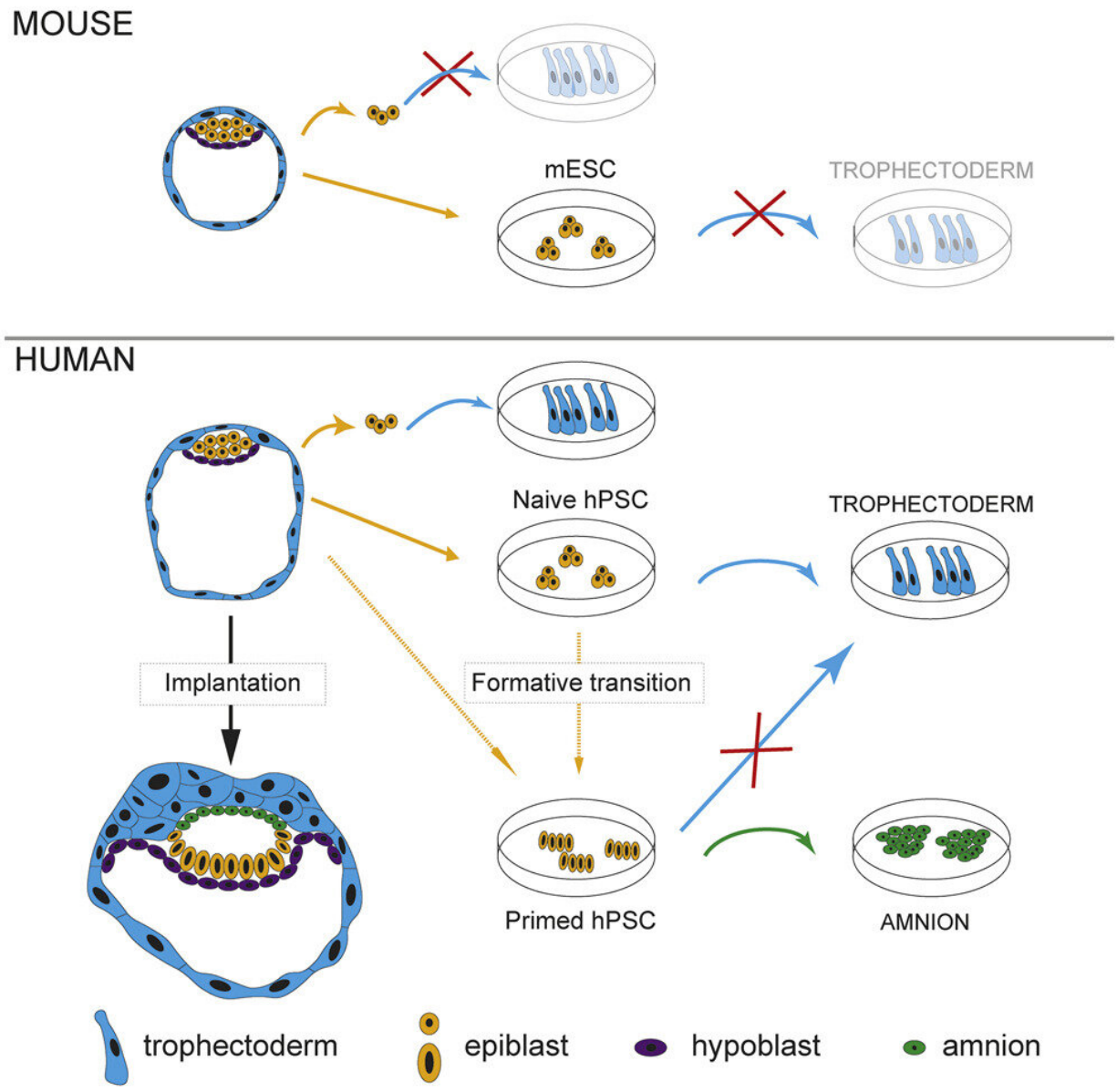

Graphical abstract. Credit: *Cell Stem Cell* (2021). DOI: 10.1016/j.stem.2021.02.025

Pioneering research led by experts from the University of Exeter's Living Systems Institute has provided new insight into formation of the human embryo.

The team of researchers discovered an unique regenerative property of cells in the early human embryo.

The first tissue to form in the embryo of mammals is the trophectoderm, which goes on to connect with the uterus and make the placenta. Previous research in mice found that trophectoderm is only made once.

In the new study, however, the research team found that human early embryos are able to regenerate trophectoderm. They also showed that human embryonic stem cells grown in the laboratory can similarly continue to produce trophectoderm and placental cell types.

These findings show unexpected flexibility in human embryo development and may directly benefit assisted conception (IVF) treatments. In addition, being able to produce early human placental tissue opens a door to finding causes of infertility and miscarriage.

The study is published in the leading international peer-review journal *Cell Stem Cell*..

Dr. Ge Guo, lead author of the study from the Living Systems Institute said: "We are very excited to discover that human embryonic stem cells can make every type of cell required to produce a new embryo."

Professor Austin Smith, director of the Living Systems Institute and co-author of the study added, said: "Before Dr. Guo showed me her results, I did not imagine this should be possible. Her discovery changes our understanding of how the human embryo is made and what we may be able do with human embryonic stem cells"

Human naïve epiblast cells possess unrestricted lineage potential is published in *Cell Stem Cell*.

**More information:** Ge Guo et al. Human naive epiblast cells possess unrestricted lineage potential, *Cell Stem Cell* (2021). DOI: 10.1016/j.stem.2021.02.025

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