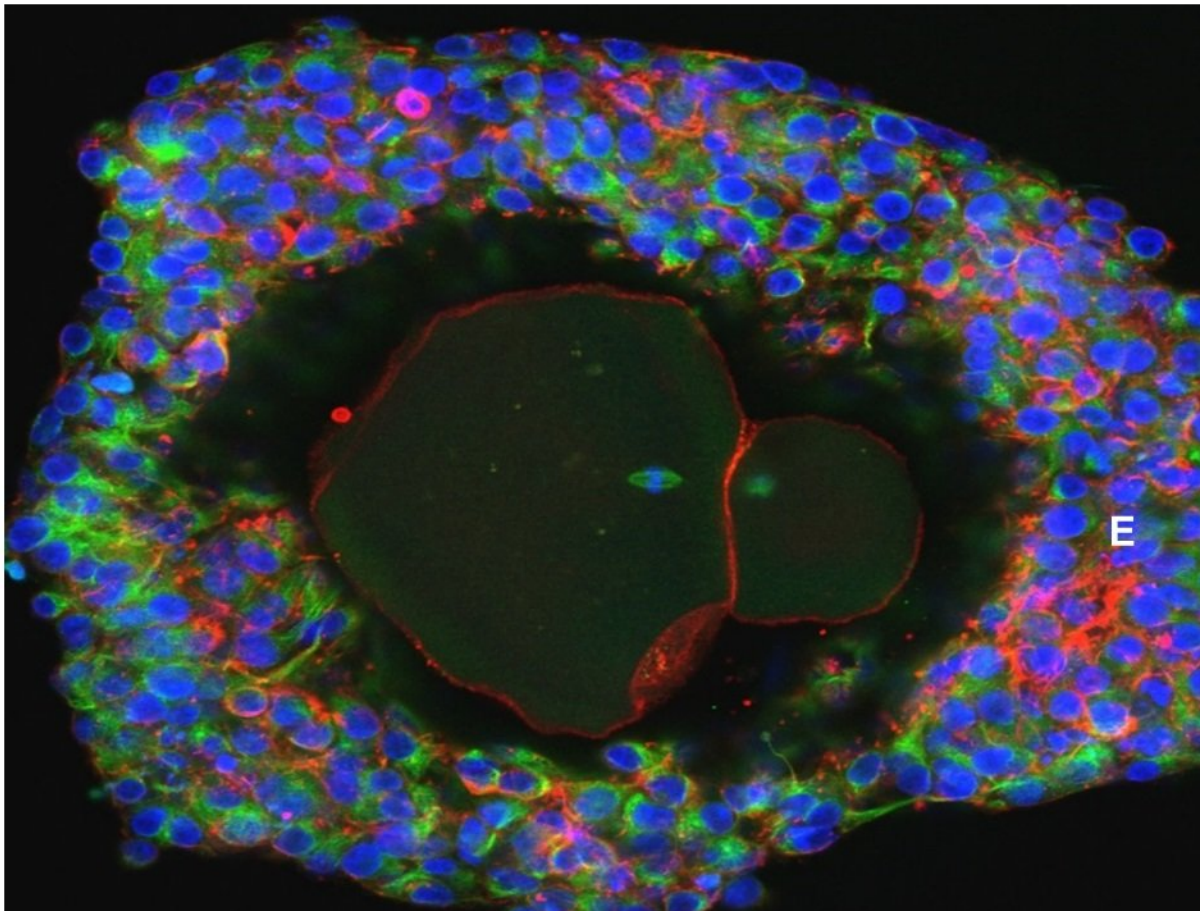


Lab-grown eggs could pave way towards new fertility treatments

February 8 2018



Magnification of a lab-grown, fully matured human egg ready for fertilisation.
Credit: Prof David Albertini

Human eggs have been fully grown in a laboratory, in a move that could lead to improved fertility treatments.

Scientists have grown egg cells, which were removed from ovary tissue at their earliest stage of development, to the point at which they are ready to be fertilised.

The advance could safeguard the fertility of girls with cancer ahead of potentially harmful medical [treatment](#), such as chemotherapy. Immature eggs recovered from patients' [ovarian tissue](#) could be matured in the lab and stored for later fertilisation.

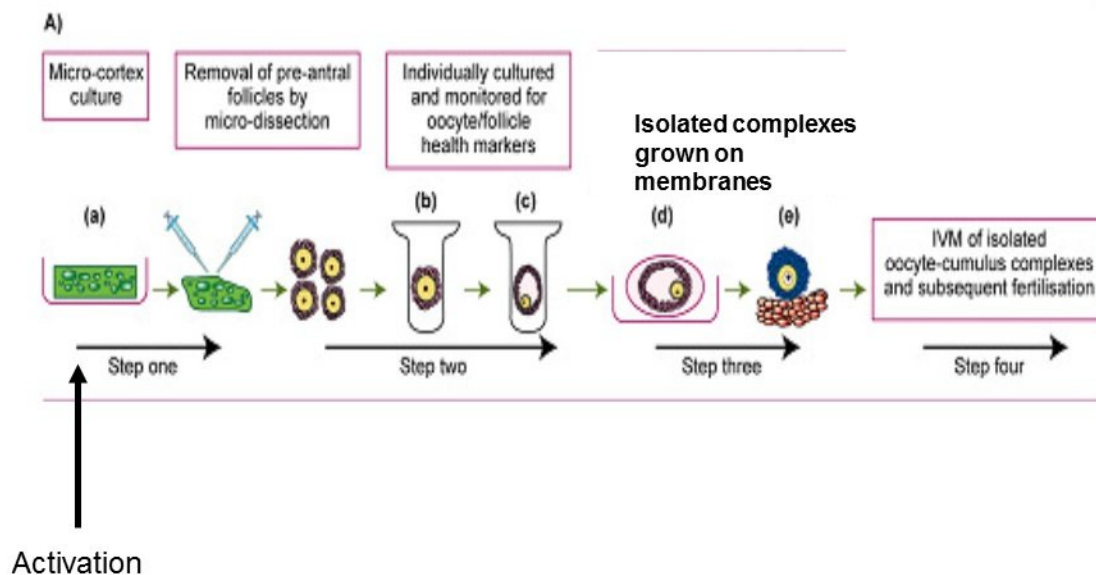
Conventionally, cancer patients can have a piece of ovary removed before treatment, but reimplanting this tissue can risk reintroducing cancer.

The study has also given insight into how [human eggs](#) develop at various stages, which could aid research into other infertility treatments and regenerative medicine.

Scientists and medical experts worked together to develop suitable substances in which eggs could be grown - known as culture mediums - to support each stage of cell development. Their findings, using tissue donated by women who were undergoing routine surgery, build on 30 years of research.

In previous studies, scientists had developed mouse eggs to produce live offspring, and had matured human eggs from a relatively late stage of development. The latest study is the first time a human egg has been developed in the lab from its earliest stage to full maturity.

Multi-step Culture system to support human oocyte development

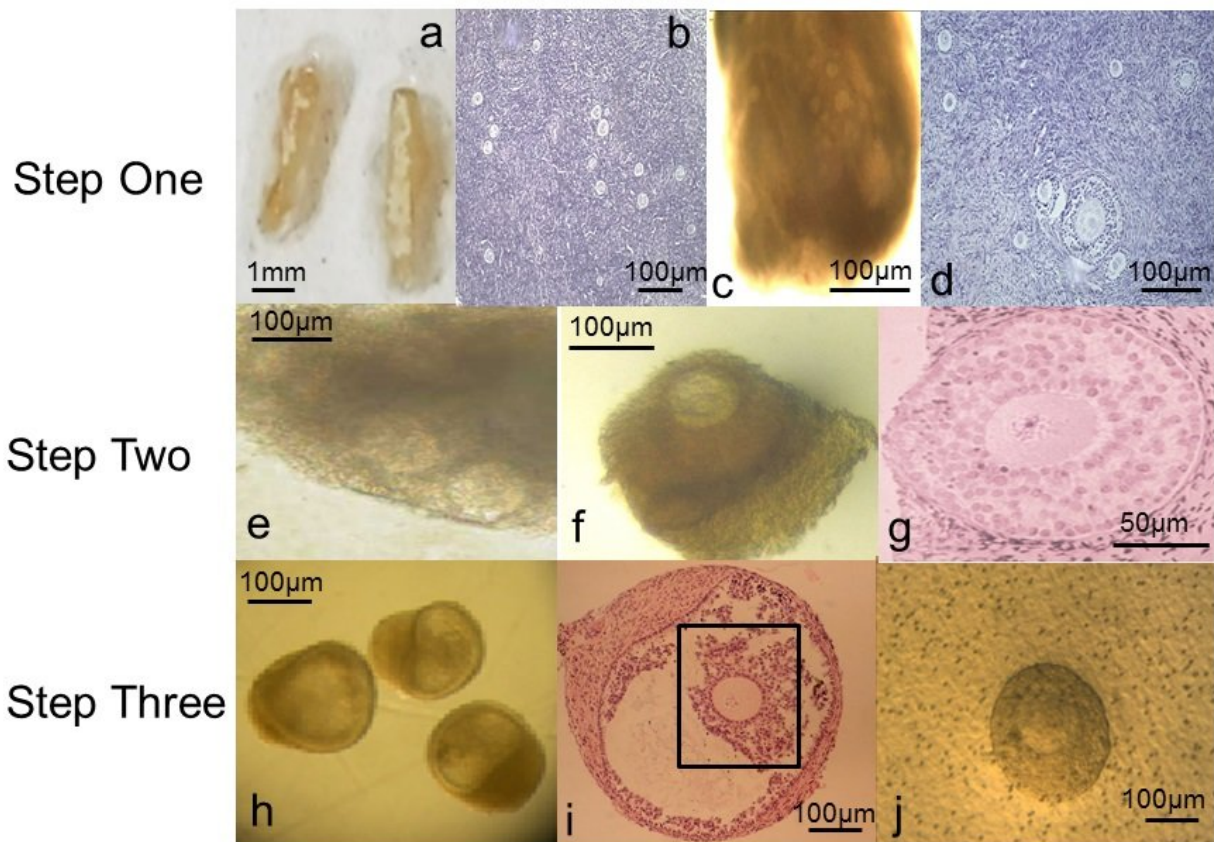


Step one: very small, immature human eggs within ovarian tissue are placed in culture in the lab, and begin to develop
 Step two: after initial development, eggs have grown and are more than double their initial size. The ovarian follicles that contain the eggs are separated before further growth and monitoring
 Step three: eggs and their surrounding cells are removed from liquid culture to undergo further development in a nutrient-rich membrane
 Step four: well-developed, mature eggs are ready for fertilisation
 Credit: Prof Evelyn Telfer and Dr Marie McLaughlin, the University of Edinburgh

The study, carried out in collaboration with the Royal Infirmary Edinburgh, The Center for Human Reproduction in New York and the Royal Hospital for Sick Children in Edinburgh, was supported by the

Medical Research Council. It was published in *Molecular Human Reproduction*.

Professor Evelyn Telfer, of the School of Biological Sciences, who led the research, said: "Being able to fully develop human [eggs](#) in the lab could widen the scope of available fertility treatments. We are now working on optimising the conditions that support egg [development](#) in this way and studying how healthy they are. We also hope to find out, subject to regulatory approval, whether they can be fertilised."



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Provided by University of Edinburgh

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