

Fresh insights help unlock mysteries of the first stages of life

October 3 2018



Credit: CC0 Public Domain

Key insights into how sperm and egg cells are formed have been discovered by scientists, shedding light on the earliest stages of their development.

The research shows for the first time how molecules influence the fate of the cells that define the DNA profile of [future generations](#), experts

say.

The findings focus on the development of germ cells—which give rise to sperm and eggs. During reproduction, these germ cells join with one from the opposite sex to form a new individual.

Research led by the University of Edinburgh carried out studies with mice to investigate the first stages of germ cell formation.

They focused on a molecule known as BMP4 and found that it blocks the activity of Otx2, a gene regulator that directs the development of non-germ cells, known as [somatic cells](#).

The scientists showed that reducing Otx2 activity by BMP4 is crucial to the development of germ cells.

The study is published in *Nature* and was funded by the Medical Research Council (MRC) and the Biotechnology and Biological Sciences Research Council.

Professor Ian Chambers from the University of Edinburgh's MRC Centre for Regenerative Medicine, who led the study, said: "Until now, studies of germ cell identity have focused on activity much later down the chain of events.

"We can now begin to see the early events occurring as cells commit to germ cell development. These exciting findings open the door towards a better understanding of the processes governing the very earliest stages in the separation of [germ cells](#) from all other cells."

More information: OTX2 restricts entry to the mouse germline, *Nature* (2018). [DOI: 10.1038/s41586-018-0581-5](https://doi.org/10.1038/s41586-018-0581-5) , www.nature.com/articles/s41586-018-0581-5

Provided by University of Edinburgh

Citation: Fresh insights help unlock mysteries of the first stages of life (2018, October 3)
retrieved 18 June 2024 from <https://phys.org/news/2018-10-fresh-insights-mysteries-stages-life.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.