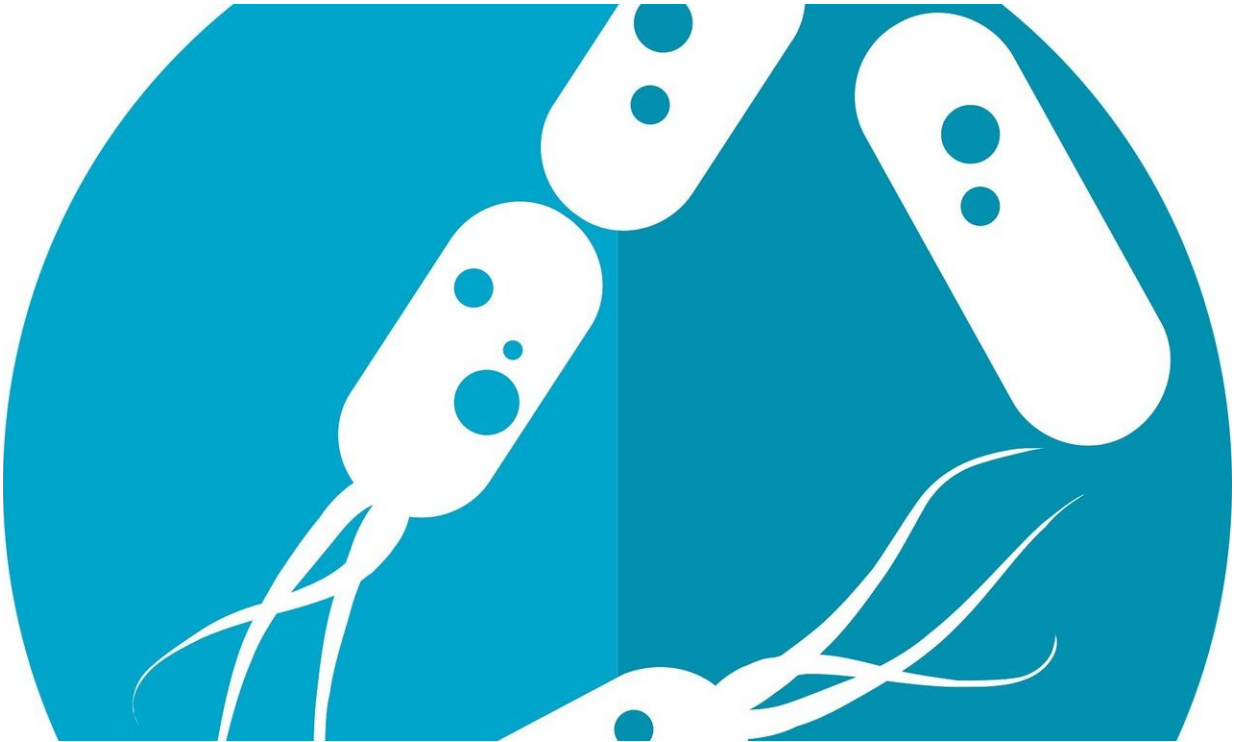


Parents' guts tell tales to their children

November 9 2018, by Ingrid Söderbergh



Credit: CC0 Public Domain

Researchers at Umeå university in Sweden have published a new study showing that the gut bacteria can carry information of past experiences of an altered environment from parents to offspring. Eggs and sperm are not the only information carriers from one generation to the next.

Eggs and [sperm](#) transmit genetic [information](#) from one generation to the

next. The genetic information contains the blueprint for how to assemble a functional offspring. Most of this information is hardcoded in DNA and cannot be altered by experiences such as changes to the environment.

However, in the last decades, it has been shown that some effects of various lifestyles can be transmitted from [parents](#) to offspring through both the egg and the sperm. This study shows for the first time that also the [gut bacteria](#), which are in general also transmitted from parents to offspring, are capable of transmitting information about what environment the parents were exposed to, to the offspring.

Like so many times before, this new ground breaking knowledge comes from studies of model organisms. In this case the fruit fly.

"Transferring gut [bacteria](#) from a healthy donor to a patient are already being used to treat some gut problems. It has been reported that sometimes the recipient receives unwanted traits, such as, weight problems from the donor. We also know that the bacteria that lives in our guts are commonly transferred from one generation to the next. By combining this information with previous studies showing that effects of parent's lifestyles can be transmitted to the offspring, we started to think that maybe the bacteria themselves could carry information of past experiences from one generation to the next," says Per Stenberg, researcher at the Department of Ecology and Environmental Science at Umeå University.

Per Stenberg's team at Umeå University exposed fruit flies to different temperatures and studied how the offspring, that was all exposed to the same temperature behaved. By controlling from which parents the [offspring](#) inherited their genes as well as their gut bacteria they could separate the effects transmitted through the germline, eggs and sperm, from the effects transmitted via the gut bacteria.

"Although, the results were not completely unexpected for us, me, my Ph.D. student Aman Zare and Anna-Mia Johansson who performed the experiments, were really excited when we first looked at the data," says Per Stenberg.

The new insights have been published in the journal *FEBS letters*, and describes a whole new route for inheritance, apart from eggs and sperm.

More information: A Zare et al. The gut microbiome participates in transgenerational inheritance of low temperature responses in *Drosophila melanogaster*, *FEBS Letters* (2018). [DOI: 10.1002/1873-3468.13278](https://doi.org/10.1002/1873-3468.13278)

Provided by Umea University

Citation: Parents' guts tell tales to their children (2018, November 9) retrieved 25 April 2024 from <https://phys.org/news/2018-11-parents-guts-ales-children.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.