

Mouse study suggests natural birth may strengthen the immune system

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A number of studies suggest that children delivered by Caesarean section have a different intestinal flora than children delivered by natural birth. But it is still unknown why this is the case and what it means for the immune system. University of Copenhagen researchers decided to scrutinise the impact of birth on the development of the immune system in a study of newborn mouse pups.

The study shows that pups delivered by Caesarean section had developed a lower number of cells that strengthen the immune system, says Camilla Hartmann Friis Hansen, Assistant Professor at the Department of Veterinary Disease Biology. The findings have recently been published in *Journal of Immunology*.

Mother's bacteria may be important

Newborns delivered by natural birth are exposed to more bacteria from the mother than those delivered by Caesarean section. According to a research hypothesis called the hygiene hypothesis, the [newborn baby's](#) immune system in this way learns to distinguish between its own harmless molecules and foreign molecules. In the experiment, pups delivered by Caesarean section showed a lower number of cells of a type that plays an important role in preventing reactive immune cells from responding to molecules from the body itself, from the diet and from harmless intestinal bacteria. Autoimmune diseases such as type 1 diabetes, Crohn's disease and allergy are precisely characterised by an

over-reaction by the immune system.

The researchers then looked for signs of development of type 1 diabetes in pups delivered by Caesarean section, but found none. The next step is therefore to study whether the pups are predisposed to other [autoimmune diseases](#) and then to test the theses in [clinical trials](#).

The experiments on mice may give us an idea of what would be interesting to study in more detail in clinical trials, so that in the long term, we may be able to develop methods for strengthening the [immune system](#) in newborns who are predisposed to autoimmune diseases, says Professor Axel Kornerup Hansen, Department of Veterinary Disease Biology.

Provided by University of Copenhagen

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