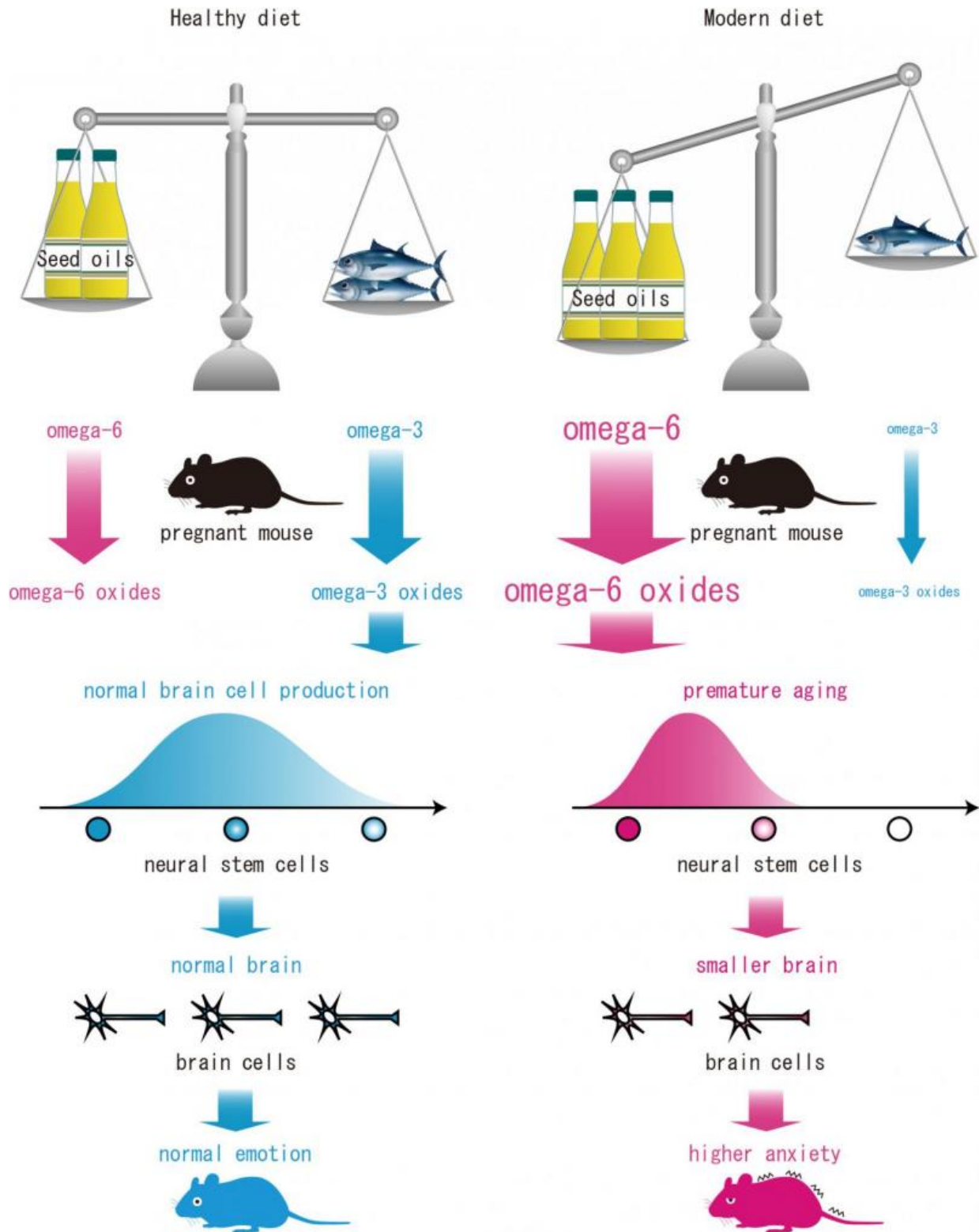


# **Why fish intake by pregnant women improves the growth of a child's brain**

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Dietary lipid contains fatty acids such as omega-6 and omega-3, which are essential nutrients for many animals and humans. We found from an animal

study the underlying mechanism of how an imbalance of omega-6 and omega-3 affects brain development and causes anxiety in the offspring. This may imply that a balanced intake of lipids (such as the regular intake of fish) during pregnancy is good for the healthy development of the brain of the unborn child. Credit: Noriko Osumi

Researchers at Tohoku University's School of Medicine have found an explanation for the correlation between eating fish during pregnancy, and the health of the baby's brain.

Dietary lipid contains fatty acids such as omega-6 and omega-3, which are essential nutrients for many animals and humans. The research group, led by Professor Noriko Osumi, found that a balanced intake of lipids by pregnant women is necessary for the normal brain formation of the unborn child.

In an animal study, the researchers noticed that when female mice were fed an omega-6-rich/omega-3-poor diet, their offsprings were born with a smaller brain and showed abnormal emotional behavior in adulthood.

This is significant because people in many countries these days have similarly poor dietary patterns and tend to consume more seed oils that are rich in omega-6 fatty acids and less fish rich in [omega-3 fatty acids](#).

According to Professor Osumi, the brain abnormality found in the offsprings of mice used in the study, was caused by a [premature aging](#) of fetal neural stem cells that produce brain cells. The premature aging was promoted by an imbalance of oxides of omega-6 and omega-3 fatty acids. The offsprings also showed higher anxiety levels, even though they were raised on nutritionally optimized diets from an early lactation period.

A diet that contains a good balance of omega-6 and omega-3 [fatty acids](#) is known to improve the development of brain functions; this is based on earlier researches that evaluated the effects of maternal intake of an omega-3-poor diet on brain function in children.

The new study took this premise further and focused on the effects of dietary lipids on the brain formation. The results reveal why omega-6 and omega-3 balance is important for future [brain](#) function, and reinforces earlier suggestions that more fish intake by women during pregnancy can advantageously affect the child's health.

**More information:** Nobuyuki Sakayori et al. Maternal dietary imbalance between omega-6 and omega-3 polyunsaturated fatty acids impairs neocortical development via epoxy metabolites, *STEM CELLS* (2015). [DOI: 10.1002/stem.2246](https://doi.org/10.1002/stem.2246)

Provided by Tohoku University

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