

Abnormal brain development in fetuses of obese women

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In a study to be presented on February 15 at the Society for Maternal-Fetal Medicine's annual meeting, The Pregnancy Meeting, in San Francisco, California, researchers from Tufts Medical Center will present findings showing the effects of maternal obesity on a fetus, specifically in the development of the brain.

The study, conducted at the Mother Infant Research Institute (MIRI) at Tufts Medical Center in Boston, Mass., looked at the [fetal development](#) of 16 pregnant women, eight obese and eight lean, to see what effects maternal obesity had on fetal gene expression. Researchers have found that fetuses of [obese women](#) had differences in gene expression as early as the second trimester, compared to fetuses of women who were a healthy weight.. Of particular note were patterns of gene expression suggestive of [abnormal brain development](#) in fetuses of obese women.

During gestation, fetuses go through apoptosis, a developmental process of [programmed cell death](#). However, fetuses of the obese women were observed to have decreased apoptosis, which is an important part of normal fetal [neurodevelopment](#). Dr. Diana Bianchi, senior author of the study and executive director of MIRI, describes apoptosis as a pruning process, clearing out space for new growth.

"Women won't be surprised to hear being obese while pregnant can lead to obesity in the child," said Dr. Andrea Edlow, lead author of the study and fellow in Maternal-Fetal Medicine at Tufts Medical Center. "But what might surprise them is the potential effect it has on the brain

development of their [unborn child](#)."

It is too early to know the implications of their findings, but maternal obesity is a rapidly growing problem in the U.S., with one in three women being obese at conception. The conclusion of the study points to the role of gene expression studies such as this one in helping elucidate possible mechanisms for recently-described postnatal neurodevelopmental abnormalities in children of obese women, including increased rates of autism and altered hypothalamic appetite regulation.

The research team hopes their findings and any future data will push women looking to become pregnant to be healthier, minimizing risk to their child.

Drs. Bianchi and Edlow, say the next step in their research will be to use a mouse model to examine the genes that are differentially expressed in [fetuses](#) of obese women, genes that may be involved in abnormal fetal neurodevelopment.

Provided by Society for Maternal-Fetal Medicine

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