

Are offspring of obese moms pre-programmed for obesity and metabolic disease?

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This is an image of a weight scale. Credit: CDC/Debora Cartagena

The evidence is clear that the children of obese parents are prone to obesity themselves, placing them at higher risk for type 2 diabetes, but how and why this occurs remains under investigation. A study being presented at the American Diabetes Association's 75th Scientific Sessions found evidence suggesting that the in utero environment in

obese mothers may program a child's cells to accumulate extra fat or develop differences in metabolism that could lead to insulin resistance.

"One of the questions that needs to be explored is how children of [obese mothers](#) may be at risk for becoming obese as a result of factors that occur even before they are born," said Kristen E. Boyle, PhD, Assistant Professor at the University of Colorado School of Medicine. "Our study looked at the mechanism by which children may be preprogrammed for increased obesity risk, because of changes occurring in utero."

Boyle and her team took stem [cells](#) from donated umbilical cords of the babies of normal-weight and obese mothers and grew them into fat and [muscle cells](#) in the lab. They found a 30 percent higher fat content in both types of cells in the offspring of mothers who were obese at their first prenatal visit, compared to the cells of offspring of normal-weight moms. They are continuing to evaluate the data to determine if these cells likewise show evidence of altered metabolism.

"At this point, because this is fairly preliminary, we don't know how these differences in cells grown in the lab correspond to the physiology of these children after birth," Boyle said. "But it's clear that there is an inherent propensity toward more fat content in the cells from offspring of obese moms, in culture. We also know that the fat accumulation in these cells corresponded to the baby's fat mass at birth. The next step is to follow these offspring to see if there is a lasting change into adulthood."

Boyle and her team expect to soon have additional information on how the cells use fat for energy production and whether this contributes to the greater fat accumulation in the cells from the offspring of obese mothers. They are continuing to conduct a full, metabolic assessment of the cells to determine whether the cells in the offspring of obese moms display inflammation, [insulin resistance](#) or other metabolic differences.

Provided by American Diabetes Association

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