

The biggest loser: Maternal obesity puts a load on her offspring that lasts a lifetime

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As if there are not enough reasons for obese people to lose weight, a new research report published online in The FASEB Journal, adds several more. In a study involving rats, researchers from Duke University found that obesity in mothers causes cellular programming in utero that predisposes offspring to inflammation-related disorders (such as Alzheimer's, Parkinson's, type 2 diabetes, stroke, heart disease, and more) from the day that they are born, regardless of whether or not the offspring are obese themselves.

"We hope these data will eventually lead to treatments for obesity-associated problems, by the identification of novel targets within the immune system," said Staci D. Bilbo, Ph.D., co-author of the study, from the Department of Psychology and Neuroscience at Duke University in Durham, N.C. "Our hope is also that these data will lead people to consider the consequences of their dietary intakes not only for their own health, but also for their children's health, and potentially even their grandchildren's health."

To make this discovery, Bilbo and colleagues placed rats on one of three diets (low-fat, high-saturated fat, and high-trans fat) four weeks prior to mating and throughout pregnancy and lactation. The high-fat diets rendered the mice clinically obese. Researchers analyzed the brains of the newborn pups after challenge by inflammatory stimuli. [Offspring](#) born to mothers on the high-fat diets showed increased immune cell activation and release of injurious products (cytokines). This overshoot was already apparent on the day after birth. When the scientists continued to analyze the pup brains through their juvenile and adult years, and even after the rats were put on healthy low-fat diets, this hyper-response to inflammation remained dramatically increased compared to rats born to normal-weight mothers.

"If there ever was a maternal hex, obesity might be it," said Gerald Weissmann, M.D., Editor-in-Chief

of The FASEB Journal, "and as it turns out, even after the weight comes off, the biggest loser isn't a mother, but her child."

More information: Staci D. Bilbo and Verne Tsang. Enduring consequences of maternal obesity for brain inflammation and behavior of offspring. FASEB J. [doi:10.1096/fj.09-144014](https://doi.org/10.1096/fj.09-144014) ; www.fasebj.org/cgi/content/abstract/fj.09-144014v1

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