

# High-fat diet during pregnancy compromises offspring's lung health

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Women who follow a high-fat diet during pregnancy may increase their children's risk for asthma. A mouse study by Oregon Health and Science University researchers suggests that consistent consumption of fat-laden

foods may change the immune response of the offsprings' respiratory system. The article is published in *Physiological Reports*.

Researchers studied four groups of mice pups: Two groups were born to mothers who were fed a [high-fat diet](#) ("high-fat maternal") and then either continued a high-fat diet or switched to a normal-fat diet at weaning. The other two groups were born to mothers that followed a normal-fat diet ("normal maternal") during pregnancy and lactation. After weaning, those pups were fed either a high-fat diet or a normal diet.

The research team examined lung structure from both groups, as well as several markers of inflammation and allergy response, including:

- airway resistance (how easily air flows through the respiratory tract), a hallmark feature of asthma;
- the amount and composition of the cells in the airways; and
- the concentration of inflammatory chemicals in the lungs.

All of the pups whose moms consumed a high-fat diet had increased airway resistance, even those who weaned to a normal-fat diet. Higher airway resistance is commonly seen in asthma attacks when the airways constrict. This observation suggests [maternal diet](#) alone can affect airway reactivity in the offspring.

The lungs of all mice whose mothers were fed a high-fat diet had an increased concentration of inflammation-causing chemicals, higher cell counts (a marker of inflammation) and more [white blood cells](#) ([cells](#) that fight infection). The pups that began a normal diet after weaning did not show as much inflammation as those that were exposed to the high-fat diet.

"Our results demonstrate that maternal [high-fat diet] programs

increased [airway resistance] in the offspring," the researchers wrote. These findings suggest that exposure to a high-fat diet during pregnancy and nursing creates immune cell variances that increase the risk of asthma and allergies. Reducing fat in the offspring's [diet](#) may help offset the health risks associated with the mother's lifestyle, but some of the damage may already be done.

**More information:** Kelvin D. MacDonald et al. Maternal high-fat diet in mice leads to innate airway hyperresponsiveness in the adult offspring, *Physiological Reports* (2017). [DOI: 10.14814/phy2.13082](https://doi.org/10.14814/phy2.13082)

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