

Genetic link to gestational diabetes

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New Northwestern Medicine research on the genetics of diabetes could one day help women know their risk for developing gestational diabetes before they become pregnant—and lead to preventive measures to protect the health of offspring.

Gestational diabetes affects 18 percent of pregnancies but usually disappears when a pregnancy is over. Babies born to women with [gestational diabetes](#) are typically larger at birth, which can lead to complications during delivery. They are at an increased risk of developing [metabolic diseases](#), such as diabetes, in childhood and adulthood.

This is the first study to suggest differences between the underlying [genetic architecture](#) of diabetes in and outside of pregnancy.

The findings were published online July 31 in *Diabetes*, a journal of the American Diabetes Association.

Gestational diabetes has been associated with type 2 diabetes, because, during pregnancy, resistance to insulin increases, similar to the effect of weight gain during a lifetime in a non-pregnant state.

But researchers found variants in two genes—HKDC1 and BACE2—that were associated with measures of glucose and [insulin levels](#) of pregnant women but not associated with these measures in the rest of the population, including people with type 2 diabetes.

"With additional study and verification of these and other risk genes, we could one day have genetic risk profiles to identify individuals at elevated risk for developing gestational diabetes," said M. Geoffrey Hayes, first author of the study.

Hayes is an assistant professor of medicine-endocrinology at Northwestern University Feinberg School of Medicine and assistant professor of anthropology at Northwestern's Weinberg College of Arts and Sciences.

The findings suggest that the roles of the gene HKDC1 in [glucose metabolism](#) and BACE2 in [insulin secretion](#) are more important during pregnancy versus the non-pregnant state—across all ethnicities studied.

Researchers used DNA and phenotype data of more than 4,000 participants of four different ancestry backgrounds (Hispanic, Thai, Afro-Caribbean and European) from the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study. HAPO is a multicenter, international study of pregnant women of varied geographic, ethnic and socio-demographic backgrounds.

This study's findings could one day help pinpoint quantitative genetic traits that predict which women may develop gestational diabetes.

"By knowing your risk when going into a pregnancy or early on during pregnancy, you might be screened for evidence of high glucose levels test sooner rather than later and begin preventive measures to protect the health of your offspring," said William L. Lowe, Jr., M.D., professor of medicine-endocrinology at Feinberg and senior author of the study.

Provided by Northwestern University

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