

Diabetes during pregnancy may increase baby's heart disease risk

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Gestational diabetes may increase the risk of blood vessel dysfunction and heart disease in offspring by altering a smooth muscle protein responsible for blood vessel network formation. Understanding of the protein's function in fetal cells may improve early detection of disease in children. The study is published ahead of print in the *American Journal of Physiology—Cell Physiology*.

Gestational diabetes, a state of prolonged [high blood sugar](#) during pregnancy, affects approximately 7 percent of pregnant women. Uncontrolled [gestational diabetes](#) may result in [high blood pressure](#) during pregnancy or in premature birth or stillbirth. Previous research has found that levels of a protein called transgelin are higher in offspring of women with gestational diabetes. Transgelin is found in the endothelial colony forming cells (ECFCs) that line the walls of [blood vessels](#). Transgelin regulates cell migration, a process involved in wound healing and building blood vessel networks. A baby's umbilical cord blood is rich in ECFCs; dysfunction of these cells that occurs in the womb may play a role in long-term blood vessel health and increase the risk of children developing heart disease later in life.

Researchers from Indiana University School of Medicine studied the effects of elevated transgelin levels on cord blood ECFCs. Cord blood samples taken at the time of birth from women with gestational diabetes were compared to a control group without pregnancy complications. Cord blood ECFCs do not typically contain high levels of transgelin. However, the samples taken from the [umbilical cord blood](#) of the

gestational diabetes group showed higher protein levels and increased dysfunction of the blood vessels during formation. Decreasing transgelin in the diabetes-exposed cells "significantly improved initial [blood vessel] network formation, ongoing network stabilization and cell migration," the research team wrote.

Improving the tools that measure an infant's diabetes exposure—and relevant protein fluctuations—at the time of birth "would increase the accuracy of health assessments to enable more informed predictions of long-term health outcomes," the researchers wrote. "Unfortunately, these [conditions] often go undiagnosed until children present with disease later in life, at which time the opportunity for prevention has ended."

More information: Kaela M Varberg et al, Transgelin induces dysfunction of fetal endothelial colony forming cells from gestational diabetic pregnancies, *American Journal of Physiology-Cell Physiology* (2018). [DOI: 10.1152/ajpcell.00137.2018](https://doi.org/10.1152/ajpcell.00137.2018)

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