Title: The discovery of a more accurate means to predict future type 2 diabetes: Preventing the onset and consequences of diabetes

Researchers:

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Research area: Type 2 diabetes

Award: End Diabetes 100 Award, 2021-2024

Summary:

Purpose and Rationale: Gestational diabetes mellitus (GDM) is a common condition characterized by high blood sugar during pregnancy that resolves after childbirth. Unfortunately, GDM also increases the risk of clinical complications to mothers and their babies before and after birth, as well as the risk of developing future type 2 diabetes (T2D) within 10 years of delivery. T2D, in turn, often leads to more severe health problems and shorter life expectancy. For these reasons, we need an ability to accurately predict who will develop GDM and who will then later progress to T2D. This would greatly improve the health care of these mothers and their children.

Main Goal and Methods: We are planning to develop a new diagnostic test to easily and accurately predict who will develop GDM and who will later transition to T2D. To develop this test, we will use state-ofthe-art analytical machines and a new method called 'targeted metabolomics' that can accurately measure thousands of biochemicals in a single blood sample. We have access to blood samples taken from over 25,000 women, before they develop disease, and know who will go on to develop GDM, and later in life who will develop T2D. We will compare the complex biochemical patterns in the blood of these women using advanced artificial intelligence methods and identify specific biochemical signatures that can be used to predict future GDM and T2D with high accuracy.

Significance: This research will lead to improved methods to accurately assess the risk of developing GDM and later in life, T2D.