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Interaction between Glucose, Extracellular Vesicles and Placenta Function in Gestational Diabetes

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Pregnancies affected by gestational diabetes (GDM) commonly result in large-for-gestational-age (LGA) infants; these infants have an increased risk of stillbirth and developing cardiometabolic complications in later life. Women with GDM who deliver LGA infants have subtle (1-1.5mM) differences in temporal maternal glucose control detectable by continuous glucose monitoring (CGM), compared to women who deliver AGA infants. It is unclear how these subtle changes contribute to LGA.

This talk will present several data sets using blood and placental samples collected from women with GDM; novel in-vitro and ex-vivo models of human placenta; and in-vivo models of pregnancy in mice, that begin to unravel the complex link between maternal glucose and LGA in pregnancies complicated by GDM. Our data provides evidence that pathological fetal growth in pregnancies complicated by GDM, may be attributed to both the direct -and indirect- (via extracellular vesicles) actions of temporal changes in maternal glucose levels on placental growth, metabolism, inflammatory and angiogenic processes.