

## GLYCOCALYX ENGINEERING TO IMPROVE THE METABOLISM AND GLUCOSE CLEARANCE CAPACITY OF ADIPOCYTES

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Glycocalyx engineering with synthetic heparan sulfate (HS) mimetics has been emerging as an approach to tune cellular interactions with HS-dependent growth factors to influence downstream signalling pathways and, ultimately, differentiation. This presentation will describe our recent discovery of a crucial role for cell-surface HS during adipogenesis in establishing glucose uptake capacity and metabolic utilization in differentiated adipocytes. Specifically, we uncovered that HS attenuates Wnt signaling during the first three days of adipogenesis by limiting Wnt ligand availability and primes adipocytes after differentiation toward glycolysis and away from fatty acid metabolism. Augmenting the glycocalyx of preadipocytes with synthetic HS mimetics further enhanced basal levels of glucose uptake in adipocytes, thus paving a new possible strategy for managing plasma glucose levels in Type 2 Diabetic patients with limited insulin sensitivity.