

# Blood Glucose Regulation: Putting the Pieces Together

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The human body has a complex biological system in place to regulate blood glucose levels. The liver and the pancreas are the two major organs involved keeping a person's blood glucose in a narrow range. There have been many mathematical models that focus on the pancreatic cells involved in glucose regulation, particularly the  $\beta$ -cells which are responsible for secreting the hormone insulin. There have also been models of insulin receptor activity and glycogenesis in the liver. Our model combines all of these major pieces in glucose regulation into a whole body model. We will look at the model's response to a meal and investigate the reports that pulsatile insulin is beneficial to glucose regulation. Antisynchronous oscillations in glucagon and insulin have also been reported. We investigate if these oscillations provide a benefit to glucose regulation.