Modelling of postprandial glucose and insulin dynamics

Propositions

Accompanying the thesis

Modelling of postprandial glucose and insulin dynamics: the role of amino acids

Bart van Sloun, 27 October 2023

Propositions

1. Incorporating the postprandial effects of amino acids and protein in computational models of the glucose homeostasis is essential, given their significant impact on postprandial glucose metabolism. *This Thesis*

2. Computational models offer a comprehensive framework to unravel the intricate physiological processes underlying blood glucose regulation. *This Thesis*

3. The move towards personalized nutrition requires characterization of the large heterogeneity in individuals' glucose responses. *This Thesis*

4. Future studies should use metabolic flux data (i.e. tracer data derived from clamp studies) to validate computational models of the glucose homeostasis. *This Thesis*

5. Computational modelling is an art of simplification, where the challenge lies in capturing the most important aspects of a system without losing sight of its complexity. *Field of expertise*

6. It is important to actively promote open (experimental) data repositories to enable reproducibility of scientific findings, and advancement of computational models. *Field of expertise*

7. Establishing standardized computational pipelines, such as the model parameter selection pipeline, is essential to ensure reproducibility and comparability of outcomes across various studies. *Field of expertise*

8. Computational models allow researchers to simulate their own experiments, leading to cost reduction and minimizing reliance on animal testing. *Impact of Research*

9. The ability to quantify difficult to measure physiological processes from time-series of glucose and insulin using a computational model may prove incredibly useful for personalized nutrition. *Impact of Research*