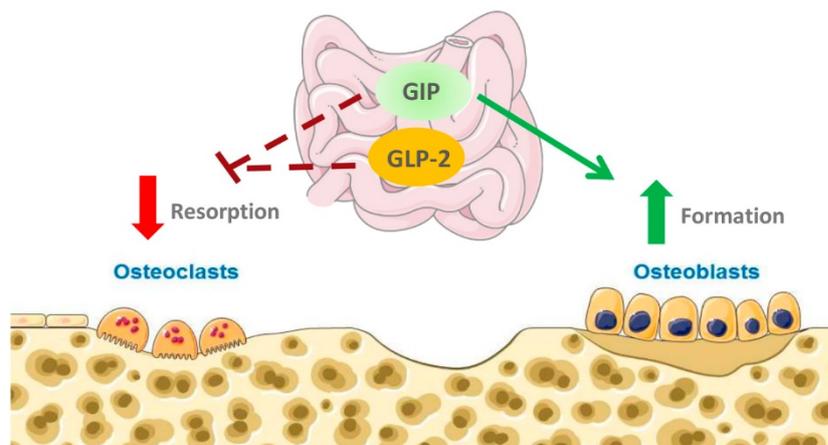


Investigating the direct impact of gut hormones on bone metabolism

Master thesis project at Department of Biomedical Sciences

Background

Bone remodelling is the continuous process of bone resorption by osteoclasts and bone formation by osteoblasts. Bone resorption is characterized by a marked circadian variation and is suppressed by about 50-60% upon nutrient ingestion. This has led to the proposal of a “gut-bone axis” in which two nutrient stimuli secreted gut hormones, GIP and GLP-2, may be the main mediators. Bone metabolism is regulated in a minute-to-minute timeframe by paracrine and endocrine factors. So far, acute effects have been investigated in vitro using isolated bone cells, which have limited physiological relevance, as they are not ideal for studies of secretion and do not provide much information about the integrated communication between cells.



The project

We have recently developed a physiologically relevant experimental model, the perfused bone, for measuring acute changes in bone turnover. With this new model, we can explore the acute and direct effects of the gut hormones and the cell-to-cell interplay under physiological circumstances while simultaneously monitoring the processes of bone turnover by measurement of relevant markers. This master thesis project will focus specifically on investigation of the two gut hormones, GIP and GLP-2, and their acute physiological impact on bone metabolism. The methods applied during this project includes mainly animal surgery, bone perfusion, ELISA and RIA.

The student

We are seeking a motivated MSc student in Human Biology, Molecular Biomedicine, Biology or similar. Laboratory experience is advantageous. The student must take/have taken the course “Laboratory Animal Science” as soon as possible. Start date will be after summer or during the fall 2020.

Contact

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The project will be performed in the group Gut Hormones and Bone Remodeling in the section Translational Metabolic Physiology under Jens Juul Holst.