

Endocrine Role of the Stomach in the Regulation of Bone and Fat Metabolism

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- Project Description:** A large proportion of all endocrine cells in the body are located within the gastrointestinal tract, and it is quite possible that endocrine signals from the stomach are of importance for the regulation of bone and fat metabolism. This view is supported by recent findings regarding ghrelin, which is produced by the stomach and thought to regulate food intake and fat mass via an endocrine mechanism. The aim of the present research is to identify previously unknown factors produced in the stomach and of functional importance for the regulation of bone and fat metabolism. To achieve this, we will by correlation studies combine the power of modern microarray expression analysis with thorough phenotype analysis performed on individual mice in a large cohort. Gene expression in the stomach (22,000 genes) will be correlated to phenotypes associated with the metabolic syndrome (body composition, body weight, metabolic serum parameters, and blood pressure) and/or osteoporosis (trabecular and cortical bone mineral density). An increased understanding of the role of the stomach as an endocrine organ may result in new strategies for the treatment of patients with obesity and osteoporosis.
- Each individual in the cohort will be subjected to a thorough phenotyping combined with an individual quantitative gene expression analysis of the stomach. Thereby, we think we will be able to find some genes with strong correlations between gene expression in the stomach and various phenotypic parameters which are risk factors for the development of disease. In particular, we will try to focus our initial analysis on genes, resulting in secreted products such as hormones, growth factors and cytokines which directly or indirectly may be involved in the regulation of metabolic processes in other organs in an endocrine manner. We think that by our suggested approach we will increase the understanding of the molecular mechanisms by which the stomach regulates and/or influences the metabolism of other tissues. The ultimate goal is to identify new potential targets for drug development.