Universität Basel

Research Project

# Immune-mediated response to nutrition in physiology and pathology

**Third-party funded project**

**Project title** Immune-mediated response to nutrition in physiology and pathology
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**Department**
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We and others have demonstrated a pathologic role of chronic inflammation in metabolism. More recently, other studies point to a physiological role of the immune system in the regulation of metabolism. Indeed, we have shown that IL-6 enhances insulin secretion via GLP-1, that macrophage-derived IL-1ß potentiates postprandial insulin secretion, and that IL-33-activated islet-resident innate lymphoid cells promote insulin secretion. These processes hint towards a role of the immune system in the endocrine regulation of metabolism. Overall objectives: While the role of the immune system in metabolism has been extensively investigated in pancreatic islets and insulin sensitive tissues, little attention has been given to a potential role of the innate immune system in 3 additional circumstances influencing metabolism, namely (i) the cephalic phase of insulin secretion, which enhances insulin secretion not only while anticipating food, but also during its resorption; (ii) pregnancy, which often leads to gestational diabetes; and (iii) the immune cell infiltration of the exocrine pancreas which occurs in patients with type 2 diabetes.Impact: Understanding the physiology and pathophysiology of the role of the immune system in metabolism is critical for guiding the clinical development of immune treatment of type 2 diabetes and its complications.

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