Special Issue

Molecular Mechanism of Rectal Insulin Signalling in Inflammatory Bowel Disease

Message from the Guest Editor

Intestinal epithelial cells harbor insulin receptors on their basolateral membranes. The physiological role of signaling through the insulin receptor in the intestinal epithelium remains elusive (if it exists at all). Mouse inactivation experiments have demonstrated that these insulin receptors do not play a role in intestinal development. However, under specific conditions, such as during high-fat diet-induced obesity, a phenotype can be elicited. Intriguingly, this phenotype includes changes in the number of certain enteroendocrine cells. In Ulcerative Colitis, insulin receptor mRNA can be upregulated in mucosal biopsies. Furthermore, immunohistochemistry revealed a correlation between this upregulation and increased amounts of insulin receptor immunoreactivity on the basolateral membranes of colonocytes. Subsequent experiments showed that rectally instilled insulin in mice with chemically induced colitis attenuated the inflammation. Collectively, these findings allow pharmacological targeting of epithelial insulin receptors using a local administration approach to treat inflammatory bowel diseases.

Guest Editor

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