Type 2 diabetes is serious economic and social problem and the number of people with type 2 diabetes is increasing every year. Type 2 diabetes belongs to the most commonly diagnosed lifestyle diseases; in many cases it is associated with obesity and physical inactivity.

Diabetes occurs when cells cannot properly use insulin, a blood glucose-lowering hormone facilitating cellular glucose intake and produced by pancreatic beta cells In the further course of disease pancreas does not produce enough insulin and then blood glucose level increases. Insulin production and secretion disorders are often associated with abnormal functions of pancreatic beta cells and/or their loss. Beta cell insulin secretion is closely related to the glucagon release by alpha cells. In patients with type 2 diabetes it comes to altered secretion of both these hormones.

Recent research indicates that many neuropeptides, proteins produced mainly in nervous system, may regulate beta-cell activity and growth and also stimulate insulin secretion. We suspect that phoenixin also belongs to neuropeptides influencing beta cell activitiess. Phoenixin, a protein discovered in 2013, is produced mainly in brain. Centrally it regulates physiological processes of reproduction, memory and anxiolytic behavior. Apparently it is also present in other tissues and in the blood. However, the role of phoenixin in peripheral tissues is unknown. The aim of this project is to characterize the role of phoenixin in alpha and beta pancreatic cell functions and its role type 2 diabetes. Furthermore, we will try to find intracellular mechanisms involved in the observed phoenixin effects. Finally, we will measure metabolic and lipid parameters important for energy balance, and also insulin and glucagon levels in healthy and type 2 diabetic rats treated with phoenixin.

This project should answer the question whether phoenixin regulates functions of pancreatic alfa and beta cells. We expect that the obtained results will clear phoenixin significance for alpha and beta cell physiology. Possibly our findings will allow introducing new treatments of type 2 diabetes.