

Innate immune system is the first line of antimicrobial defense. It is responsible for the immediate detection of the so called 'danger signal' and initiation of cascade reaction that leads to elimination of the threat. Cytosolic DNA-sensing system is a vital part of the innate immune system. It stimulates the production of different proinflammatory cytokines and interferons in response to pathogen-derived or self DNA in the cytoplasm of the cell. Stimulator of interferon genes (STING) is an adaptor protein in this system. It turned out that it can be activated not only by microbial DNA but also by tumor-derived nucleic acids. Now more and more research focuses on the role of STING in the antitumor immune response. The reaction of the immune system against tumors is often not efficient, thus scientists are trying to come up with novel methods of the immune system stimulation to attack and eliminate cancer cells. We aim to investigate the application of STING activation in anticancer therapy.

During our research we will perform several experiments that will provide new insight into the influence of STING pathway activation on cancer cells function. We also plan to evaluate if expression of STING in cancer cells has any impact on progression of the disease and efficacy of the treatment. Furthermore, we intent to examine if activation of STING pathway will potentiate the antitumor effects of targeted therapy using inhibition of intracellular protein degradation.

We hope that our research will result in establishment of novel, more effective antitumor therapies.