

Despite enormous progress in research on cancer biology, tumors still are second cause of people's death Worldwide. New forms of cancer therapy are based on stimulation of our own cells from immune system. This type of treatment is named immunotherapy and have become a breakthrough in medicine. Treatment of cancers so far considered as a mortal e.g. melanoma or lung cancer become possible. Nevertheless, there are still cancer in which present treatment is ineffective. One of these tumors are triple-negative breast cancer (TNBC) and pancreatic cancer. It seems that in this kind of cancer, immunotherapy focus on non-specific component of immunological respond, can be a good alternative for current methods. Group of proteins that our research are focused on are interferons. Anti-viral effects of interferons are very well known, however recently these proteins have been shown to possess anti-tumoral properties.

Our research have shown that interferon-lambda increase forming blood vessels in tumor tissue, what have impact on tumor survival and ability to cell migration, leading to metastasis. Our recent data showed, that interferon-lambda can activates process of autophagy in tumor cells. Autophagy is a process responsible for cell surveillance in bad environmental conditions. Cancer cells induce this process when there is lack of nutrients, oxygen or during chemotherapy. Interestingly, overexpression of this process can lead to suicide death.

In our project we plan to investigate what are the mechanism responsible for activation of autophagy in tumor cells and does interferon have protective influence on cancer cells, promotes or inhibits abilities of tumor cells to survive and metastasis. In addition, we will try to discover if manipulation within this process can give therapeutic effect.

Results of our research deepens knowledge on the role of interferon-lambda in tumor biology and can be useful in create a new strategy in treatment of oncological patients.