

Exocytosis is a complex phenomenon of intercellular communication that occurs commonly in living organisms, which results in the transport of the relevant molecules through vesicles surrounded by a lipid bilayer. These vesicles can transport also cell metabolism regulating proteins.

Exocytosis is thought also to play a significant role in the pathogenesis of cancer.

Colorectal cancer (CRC) is a tumor whose carcinogenesis is usually a chronic and extremely slow progressing process. Recent scientific findings suggest the important role of immunosuppressive proteins and their superior importance in the pathogenesis of CRC.

Interleukin 10 (IL10), as one of the immunosuppressive cytokines, acts on TH1 cells, inhibiting the release of proinflammatory proteins, and its ability to silencing of expression of MHC class II antigens reduce the activity and proliferation of phagocytic cells. The pleiotropic effect of IL10 on the cell biology is enabled by interaction with the membrane receptor complex. IL10R is a structural tetramer composed of two α and two β subunits. Alpha subunit (IL10R α /IL10RA) is characterized by a stronger affinity to IL10, and its occurrence is unique to the entire receptor complex, while IL10RB is simultaneously an integral component of other IL10 receptors family. Biological effects of IL10RA activation remain poorly understood and the aforementioned immunosuppressive theory does not explain the exact mechanism of immune suppression during the ongoing cancerogenesis.

The guiding concept of the study is to find out whether the exocytosis process is involved in inducing an immunosuppressive effect during an active neoplastic process, using the intravesicular transport of Interleukin 10 receptor α subunit. An important project goal is the comparison of IL10R α expression and exosomes, together with the clinical progression of CRC.

In the project, we will analyze the correlation of exocytosis intensity and IL10RA expression in different stages of CRC clinical stage, in addition, simultaneously immunophenotype of lymphocytes will be determined in the direction of cellular anergy. Comprehensive evaluation of these relationships will allow us to better understand the genesis of immunosuppression in the active tumor process, and providing of such analysis will further establish the importance of the IL10RA receptor in the generalized neoplastic process.