

## **The significance of FGF1/2 interaction with p53 for their antiapoptotic activity**

All cells in our body have highly complex mechanisms regulating their cell cycle. Under stress conditions such as lack of nutritional ingredients, oxidative stress, DNA damage or presence of toxic compounds, these mechanisms decide whether a cell survives or undergoes a programmed cell death called apoptosis. One of the key factors in this regulation is p53 suppressor protein, that under stress conditions triggers cell cycle arrest and DNA repair or leads to apoptosis process. Any disturbances in the regulation of p53 activity may result in different diseases such as atherosclerosis, Alzheimer's disease and Parkinson's disease. Mutations leading to loss or alterations in the p53 function have been found in most human cancers. Regulation of p53 activity involves changes in p53 protein level, its subcellular localization and a series of modifications which are a result of its interactions with p53-regulating proteins. In our previous study we identified fibroblast growth factor 1 (FGF1) as one of p53-interacting proteins.

Fibroblast growth factors 1 and 2 affect many types of cells that possess specific receptors on their surface. The FGF-receptor interaction results in cell proliferation, angiogenesis, neurogenesis and wound healing. Unique feature of FGF1 and FGF2 among other growth factors is their ability to translocate into a cell under stress conditions to protect it from apoptosis. Thus, we postulate that anti-apoptotic activity of intracellular FGF1 and FGF2 is associated with interaction with p53 and regulation of its activity.

The aim of this project is to recognize the importance of p53-FGF1/2 interaction for their protective abilities and explain the mechanism of regulation of p53 activity in response to FGF1 and FGF2 treatment. In the frame of the project, detailed analysis of p53-FGF1/2 interaction in cancer cells under different stress conditions will be performed. Detailed characterization of molecular interrelationships between proteins affecting cell's survival will be significant for understanding cancer diseases and elucidation of chemoresistance mechanisms.