Understanding the function of proteins is a key task of biological sciences, allowing to understand the basis of many diseases and methods for their diagnosis and therapy. Fibroblast growth factor homologous factors (FHFs) belong to the fibroblast growth factor (FGF) family. FHFs, unlike other proteins in the FGF family, **have been considered to be intracellular proteins, not involved in cell signaling**. To date, FHFs have only been shown to be responsible for the regulation of ion channels in nerve and heart cells. **Importantly, our recent studies have shown that FGF12 protein**, a major representative of FHF subfamily proteins, **is capable of transducing cellular signals by interacting with FGF receptors, leading to an anti-apoptotic cellular response**. Our recent findings have significantly changed the previous view of FHF proteins. However, the biological functions of FHFs and their mechanism of action are very poorly understood.

A common feature of canonical FGFs is their ability to form dimers. Dimerization of FGF family proteins has been shown to be a mechanism regulating their biological activity. **Our preliminary data indicate that FGF12 is capable of homodimerization, but the mechanism of FGF12 homodimer formation and its biological significance are completely unknown**. Therefore, within the project we will verify the ability of FGF12 protein to dimerize, discover the mechanism of this process and the effect of the oligomeric state on its various biological activities. In the project we will use a variety of research techniques, such as genetic engineering, proteomic techniques, protein-protein interactions and advanced methods of cell biology and microscopy. **The results of the project will contribute to a better characterization of FHF subfamily, whose dysfunction leads to many neurological diseases and cancers.**