

The primary cilium is a tiny organelle found on the surface of most mammalian cells. We know that proteins responsible for transmission of signal that the cell receives are transported to the cilium. For this reason, the primary cilium is considered to be a specific cellular antenna. Interestingly, in response to the signal, soluble proteins are very efficiently transported into the primary cilium. Unfortunately, the mechanism of transport from cytoplasm to the base of primary cilium, which is the first crucial step for signal transmission, is still poorly understood.

Preliminary attempts to find the molecules interacting with a known ciliary protein indicated that it interacts strongly with the exocyst, a protein complex that plays an important role in the transport of proteins to the cell membrane. Based on our preliminary data and recently published studies describing the structure of the exocyst, we suspect that this **complex is also involved in the transport of soluble cytoplasmic proteins into cilia**. We will test this hypothesis by performing biochemical studies of interactions between selected proteins, as well as using microscopic observations and genetic engineering.

The results of our project will fill the gap in the understanding of the mechanism of transport of soluble proteins to cilia, which is crucial for the proper functioning of the cell, and as a result of the whole organism. In the future, our achievements may contribute to the design of targeted therapies in cancer and diseases associated with dysfunctions of primary cilia.