

The Hedgehog signalling pathway (Hh) controls several biological processes like embryonic development, cell division and differentiation. Improper regulation of the pathway results in disrupted embryonic development, and skin, muscle, prostate or brain cancers. Transcription factors from Glioma Associated Oncogene family Gli1 and Gli2 act as pathway activators whereas Gli3 functions as a transcriptional repressor (Gli3R). To date little is known about the mechanisms involved in Hh-pathway repression.

In recent years much attention is paid to the role of epigenetic modifications, that may impact gene expression by change of genes promoter accessibility. During Hh-pathway activation and repression processes we can observe this type of modification. In our project, we are going to identify modifications involved in Hh-target gene repression. What is more, we will investigate their role in Hh-dependent cancers.

The results of our studies will significantly broaden the current state of knowledge about gene expression regulation mechanisms. In addition, they may pave the way for new solutions in anti-cancer therapies and embryonic development disorders treatment.