

In this project we are going to describe the role that BDH1/2 proteins play in regulating chromatin structure in plants. These proteins are part of SWI/SNF complexes that remodel the way DNA is packaged in cell nuclei. Such complexes are present in various eukaryotic organisms, from yeasts to mammals and plants. They are responsible for regulating key developmental processes as well as responses to the environment. Mutations in human BCL7 that are counterparts to plant BDH proteins are found in a variety of cancers.

In plants, SWI/SNF are involved in regulating the activity of genes involved in many important processes, including the development of leaves, roots, and flowers, as well as in responses to various biotic stresses. Accordingly, we have recently found that BDH proteins regulate processes necessary for proper growth of plants and their flowering. However, their exact role in the regulation of the chromatin structure as SWI/SNF components is still unknown. Previous research has shown that different SWI/SNF subunits are responsible for proper assembly and stability of the complexes, their activity, recruiting them to proper places in the genome, or direct interaction with DNA and proteins that are part of chromatin. In this project we are going to check which of these roles are played by BDH proteins. The project will be conducted using *Arabidopsis thaliana* – a model organism for plant research, which allows use of various methods in genetics and molecular biology. This project will help us better understand the regulation of various processes necessary for the development of plants and their survival in a changing environment. Since SWI/SNF are present in all eukaryotic organisms, the knowledge acquired thanks to this project may be useful for other researchers studying the regulation of gene expression, for example in humans.