Formins are proteins facilitating formation of actin filaments. They affect structure of cytoskeleton and participate in cytokinesis and tip growth. There are 2 classes of formins in Arabidopsis thaliana, which include FH1 and FH2 (Formin Homology 1 and 2) domain. Formins of the class I have usually a transmembrane domain on N-terminus. Due to this fact they can interact with membranes. Some formins from the class II include PTEN domain (Phosphatase and Tensin Homolog) derived from sequences of PTEN proteins which has lost the function of phosphatase. It is assumed this domain can bind on a membrane via the phosphatase section or C2 domain.

This thesis was focused on the formin AtFH13 from the class II in Arabidopsis thaliana and on its PTEN domain. There were analyzed differences between mutants and wild-types in length of roots in seedlings and in size of seeds and seed coats, and observed the effect of dexamethasone on the length of roots on AtFH13. PTEN domain of the formin was isolated from cDNA, cloned to a vector and fused with YFP. The tagged protein was visualized by the method of transient expression in epidermal cells in the leaves of Nicotiana benthamiana.

No big differences were observed between plants mutant in the gene AtFH13 and wild-type in choice parameters. Dexamethasone did´t influence root length of mutant plants. Semi-quantitative RT-PCR documented that dexamethasone does not noticeably affect transcription of AtFH13 (affirmed by data from Genevestigator). In databases TAIR and UniProt, differences in predicted sequences of AtFH13 were found, including various starts of translation. Match of 5´-terminus mRNA with the database TAIR was confirmed due to special designed primers. 2 different splicing alternatives were found after sequencing of isolated PTEN domain. Isolation of whole gene AtFH13 failed.

Marked PTEN domain was localized in cytoplasm, in some cells formed clusters suggested binding to membranes of endosomes or Golgi complex.