ABSTRACT

Because of their sessile nature, plants are unable to change their location and thus they are forced to adapt as much as possible to the environment they grow in. Plants evolved the ability to sense many environmental cues, which enables them to perceive the conditions in their surroundings. One class of these stimuli are mechanical forces - from wind sways to contact with obstacles, herbivores or other plants - other mechanical stimuli are *e.g.* gravity or sound waves. Carnivorous or climbing plants have structures specialised for perception and rapid response to mechanical stimuli. Intriguingly, there is a less spectacular but maybe even more interesting and important response to mechanical perturbation in non-specialized plants. This thesis tries to summarize ubiquity of mechanoperception in plant kingdom and its adaptive importance for the plant life - from activation of traps, to morphological adaptation for growth at windy sites, tendril coiling in climbing plants and root navigation through obstacles in soil. In the following part, the thesis summarizes the recent knowledge of molecular processes accompanied with mechanoreception, signal transduction and integration, and response to mechanostimulation. In the last part I proppose a scheme of mechanosensing workflow from initial mechanical stimulus to phenotypic changes in perturbed plants.