SEMINAR V

HOW PLANT RECOGNIZE TO CHALLENGES IN THE ENVIRONMENT

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Summary

A plant can sense different changes in the environment such as salinity, cold, drought and light, and start different reactions to combat with the special stress and, if possible, acclimate to it. Both endogenous signals from different plant growth regulators like auxin, aba, ethylene and jasmonic acid, and exogenous ones from the environment can be sensed in plant cells and start an enormous amount of reactions in the plant.

A primary mechanism induced by stress is an elevation of the cytosolic calcium concentration, often combined with a change in cytosolic pH of the cell. It is likely that the stress first is sensed by a trans-membrane protein in the external membrane of a plant cell. The perception causes a molecular change and a transduction of the signal to the cell interior. The calcium signal can be transient, stable, or oscillating and differs with respect to amplitude, frequency and duration. The different signals lead to a cascade reaction, including ion transport activity, phosphorylations, dephoshorylations and gene activations.

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