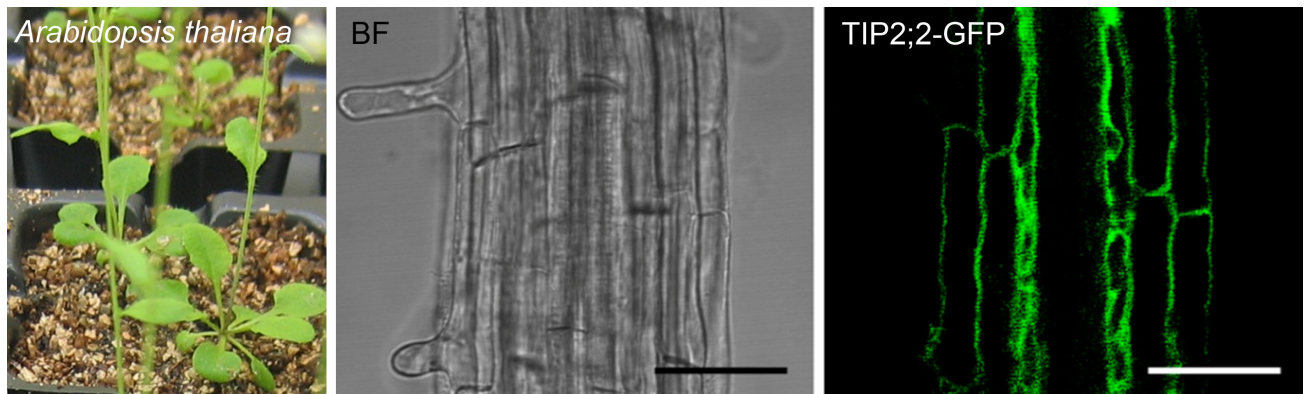


Molecular biological studies on water transport and morphogenesis in plants

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Tissue-specific expression of the tonoplast intrinsic protein TIP2;2 in the root of *Arabidopsis thaliana*

Plant growth and development are regulated by environmental factors such as light and water. Light alters transport efficiencies and destinations of water through plant tissues, i. e. water is mainly used for elongation of hypocotyl cells in the dark-grown seedling while for cotyledon expansion, new organ developments, and transpiration in the light-grown seedling. We aim at revealing the mechanism of light regulation of water transport in a model plant, *Arabidopsis thaliana*. Mainly, we are focusing on aquaporins which facilitate water transport across biological membranes and studying the mechanism of light modification of gene expression and functions of aquaporins using molecular and cellular biological techniques. We are also grappling with the study of the light-promoted development of root hairs that are efficient in increasing root surface area, and absorption of water and minerals.

Keywords : *Arabidopsis thaliana*, aquaporin, light response, root hair formation