



Just RALF receptors? The function of LRR-extensins in cell wall integrity sensing



Christoph Ringli
University of Zurich, Switzerland

LRR-extensins are plant extracellular proteins that serve as high-affinity binding sites of RALF (Rapid Alkalinization Factor) peptide hormones. RALFs affect diverse physiological processes such as calcium fluxes and the pH in the extracellular matrix, by which they strongly impact cell growth processes. LRRs of *Arabidopsis thaliana* are expressed in a tissue-specific manner, with all *LRX* genes covering all cell types. Their function in RALF perception and signaling has been identified in pollen-expressed LRX8-LRX11. In vegetative tissue, LRX4 revealed to bind RALFs but also to interact with the transmembrane receptor kinase FERONIA, establishing a link between the cell wall and the plasma membrane. A more detailed analysis of the interactome of LRR of vegetative tissue revealed that they all interact with FERONIA, and a quintuple *lrx* mutant develops a phenotype comparable to a *feronia* mutant.

LRX1 of *Arabidopsis* is predominantly expressed in root hairs and the *lrx1* mutant develops a severe defect in root hair development. This mutant phenotype was used for the identification of *rol16*, a suppressor of the *lrx1*-induced root hair defect. Analysis of the *rol16* mutant will be presented, which suggests that ROL16 encodes a downstream component of the LRX1-RALF-FER signaling module involved in monitoring and regulating cell wall integrity and cell growth.

Contact : isabelle.boulogne@univ-rouen.fr

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UFR Sciences et Techniques
Mont-Saint-Aignan
CURIB Salle 66