

# Séminaire de Biologie des Plantes

Les séminaires ont lieu sur le Campus Montpellier SupAgro/INRA de La Gaillarde  
(2, place P. Viala Montpellier)

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Jeudi 09 octobre 2008  
Salle 106 (Cœur d'Ecole) à 14h00

**Florian Frugier**  
(ISV-CNRS Gif/Yvette)

## **New pathways regulating *Medicago truncatula* root architecture**

Legumes are characterized by their ability to develop two lateral organs from primary roots depending on environmental conditions, lateral roots (common to all plants) and nitrogen-fixing nodules. Physiological and genetic data indicate that development of these organs is coordinated and involves common regulatory pathways, including phytohormonal controls.

Based on available mutant populations in the model legume *M. truncatula* (notably thanks to the Noble Foundation, USA), we identified mutants affected in their root architecture (named *cra* for *compact root architecture*), and initiated their physiological, transcriptomic and genetic characterisation.

In parallel, we developed a reverse genetic approach on cytokinin signalling. The receptor *MtCRE1* has been identified as crucial for both lateral root and nodule formation in *Medicago* (1). We characterized symbiotic and non-symbiotic root phenotypes of mutants recently obtained through the TILLING platform developed in the frame of the Grain Legumes EEC project. This, coupled with molecular and cellular approaches on cytokinin signalling genes, allowed the identification of cross-talk elements between nodulation and cytokinin signalling pathways.

Regulation of transcript stability mediated by microRNAs has been associated to various plant developmental processes. We notably showed that *MtmiR166* regulation,

which targets type III HD ZIP transcription factors, is crucial for patterning of root vascular bundles, and formation of both lateral roots and nodules. In addition, we recently developed small RNA libraries from *M. truncatula* roots and nodules to extend our knowledge on the role of miRNA-mediated riboregulation in symbiotic interactions.

Altogether, we characterized several new pathways integrating symbiotic and non-symbiotic root architectures in legumes.

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SEMINAIRE A VENIR

Jeuudi 23 octobre : Edith LAUGIER, post-doc Intégration, (contact Marc Lepetit, [lepetit@supagro.inra.fr](mailto:lepetit@supagro.inra.fr))