Séminaire de Biologie des Plantes

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

Contact IBIP :

Sabine Zimmermann (zimmerma@supagro.inra.fr)
Marc Lepetit (lepetit@supagro.inra.fr)
Christine Granier (granier@supagro.inra.fr)
Corinne Dasen (dasen@ supagro.inra.fr)
Chantal Baracco (baracco@ supagro.inra.fr)

Jeudi 18 mars 2010
Amphi 208 (Cœur d'Ecole) à 14 h00

Anne Krapp
(Institut Jean-Pierre Bourgin (IJPB), INRA Versailles)

Adaptation of *Arabidopsis thaliana* to Nitrogen availability

N is an essential macroelement for plant growth. To cope with large variations in nitrate concentrations in soils, two uptake systems coexist within plants, a low-affinity nitrate transport system (LATS) and a high affinity transport system (HATS). Nitrate transporters are encoded by the *NRT1* and *NRT2* gene families. In *Arabidopsis*, the *NRT2* family contains 7 genes, which are differentially regulated at the level of organ specificity or in response to environmental conditions. *NRT2.1* acts as the main component of high affinity nitrate uptake through root plasma membranes. More recently, we showed that the *NRT2.7* gene is predominantly expressed during seed maturation and controls seed nitrate content. Work is in progress to elucidate the role of other members of the family, NRT2.4, NRT2.5 and NRT2.6.

Nitrate, beside its role as nutrient, acts as a signal molecule for triggering many adaptative responses to changes in N availability. How such nitrate specific mechanisms are regulated at the molecular level is poorly understood. Our approach, aiming on the description of new regulatory *Arabidopsis* proteins, exploits knowledge from other species. Legume-specific symbiotic nitrogen fixation is under the control of the putative transcription factor, NIN, A homologous gene family NLP (NIN Like Protein) was found in the *Arabidopsis* genome. *nlp7* knockout mutants constitutively display several traits of nitrogen starved plants. Nitrate resupply experiments show an altered response of several nitrate

inducible genes for the *nlp7* mutants. *NLP7* expression pattern is consistent with a function in the sensing of N and translational fusions with the green fluorescent protein (GFP) show a nuclear localization for NLP7. Altogether, we propose NLP7 as an important element of the nitrate signal transduction pathway. However, the *NLP* gene family contains 9 members, including *NLP6* which is very closely related to *NLP7*. Double mutants *nlp7nlp6* give new insights in the role of NLP proteins for the regulation of N related traits.

Contact

Marc Lepetit

Biochimie et Physiologie Moléculaire des Plantes
Institut de Biologie Intégrative des Plantes
UMR 5004 INRA-CNRS-SupAgro-UM2
Place Viala
34060 Montpellier cedex 1
France

Office
Tel : 33 (0)4 99 61 29 37
Fax : 33 (0)4 67 52 57 37

http://www1.montpellier.inra.fr/ibip/bpmp/

Séminaires à venir :

Jeudi 25 mars : Ravi Valluru (postdoc LEPSE, thèse Hohenheim), contact Christine Granier
Jeudi 8 avril : Stefanie Wege, Gif-sur-Yvette, contact Michael Wudick wudick@supagro.inra.fr
Jeudi 29 avril : Gerhard Obermeyer, Salzburg, contact Christophe Maurel maurel@supagro.inra.fr