

Séminaire 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 29 septembre 2011
Salle 104 (Château) à 14h00

Gonzalez Nathalie

(Plant System Biology – VIB, Ghent University, Belgium)

Molecular networks regulating leaf growth

Final leaf size is tightly controlled by genes that spatially and temporally coordinate cell proliferation and cell expansion. By combining genetic and molecular approaches, we aim at understanding the regulatory network controlling leaf size in *Arabidopsis*.

We first performed a comparative analysis of five transgenic lines that produce enlarged leaves under standardized environmental conditions. We showed that the increase in leaf area in these plants depends on leaf position and growth conditions, and that all five lines affect leaf size differently. However, in all cases, an increase in cell number is responsible for the size enlargement. By analyzing hormone levels, transcriptome and metabolome, we provide deeper insight in the molecular basis of the growth phenotype for the individual lines. A comparative analysis between these datasets indicates that enhanced organ growth is governed by different, seemingly independent pathways, however possibly interconnected.

In order to build a more complete growth regulatory network, we aim at identifying new regulators of leaf development by applying different approaches. For example, as cell cycle has been shown to have an important role in the determination of final leaf size, we are analysing the effect on leaf growth of the mis-expression of genes encoding cell cycle interactors.

Many more genes have been identified that enhance leaf size when over-expressed or down-regulated. By analysing transgenic lines simultaneously overexpressing two growth-enhancing genes, we aim at determining the interactions between the multiple pathways converging on organ size control in *Arabidopsis*.

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Nom du document : Gonzalez Nathalie-29-09-2011.doc
Dossier : C:\data\Chantal\COMMUNICATION\seminaires\SEMINAIRES-
B&PMP\Résumés\SEM-2011\Sept-11
Modèle : C:\Documents and Settings\Chantal Baracco\Application
Data\Microsoft\Modèles\Normal.dot
Titre : Séminaire de Biologie des Plantes
Sujet :
Auteur : Jean-Pierre Grouzis
Mots clés :
Commentaires :
Date de création : 16/09/2011 14:45
N° de révision : 3
Dernier enregistr. le : 16/09/2011 14:47
Dernier enregistrement par : Chantal Baracco
Temps total d'édition : 2 Minutes
Dernière impression sur : 16/09/2011 14:47
Tel qu'à la dernière impression
Nombre de pages : 2
Nombre de mots : 374 (approx.)
Nombre de caractères : 2 136 (approx.)