

# 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 12 mai 2011**  
**Amphi 208 (Cœur d'Ecole) à 14h00**

**Eva Zažímalová**

(Institute of Experimental Botany, Academy of Sciences of the Czech Republic-Prague)

## **Auxin homeostasis in plants: How can a cell handle auxin?**

Plant hormone auxin and its asymmetrical distribution within cells, tissues and organs control various growth and developmental processes in plants. A guided movement of auxin along plant body underlies spatial and temporal coordination of these physiological events. Generally, two basic processes - i.e. auxin metabolism and auxin transport - are involved in regulation of auxin levels (and auxin homeostasis) in cells and their compartments. Auxin transport machinery consists of a sophisticated system of passive diffusion into cells of non-dissociated auxin molecules, as well as of activities of auxin transporters (influx and efflux carriers). For physical-chemical reasons, the activity and subcellular localization of auxin efflux carriers determine both quantity and direction of auxin flow, respectively. In *Arabidopsis thaliana*, two main protein families of auxin exporters are known – plant-specific PIN-FORMED proteins (PINs) and multidrug-resistance-like P-glycoprotein transporters of B-type of the ABC-superfamily (MDR/PGP/ABCBs), as well as one family for auxin importers (influx carriers) – permease-like AUX1/LAX proteins. Moreover, auxin transporters can facilitate not only intercellular but also intracellular auxin flow, and they undergo fine regulation on many levels, including feed-back regulation of intracellular auxin content by auxin itself. Quantitative characterization of auxin transport in suspension-grown tobacco BY-2 cells (*Nicotiana tabacum* L., cv. Bright-Yellow 2) was performed using various auxins and their structurally-related analogues. Results pointed to the preferential affinity of the auxin transport machinery to those compounds which were able to induce DR5rev::GFP reporter and which showed other auxin-like physiological properties.

On the basis of data obtained by auxin-accumulation assays and metabolic profiling in BY-2 cells, a preliminary version of mathematical model of auxin movement was designed; such model has a potential to complement the already existing models of auxin flow on the tissue and organ levels, and to point to so far unknown components and processes involved.

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Séminaires à venir :

Jeudi 19 mai : Catherine Perrot-Rechenmann (Contact : [curie@supagro.inra.fr](mailto:curie@supagro.inra.fr))

Jeudi 26 mai : Tracey Ann Cuin (contact : [cuin@supagro.inra.fr](mailto:cuin@supagro.inra.fr))

Jeudi 16 juin : Laurent Nussaume (contact : [maurel@supagro.inra.fr](mailto:maurel@supagro.inra.fr))

Jeudi 23 juin : Sandrine Ruffel (contact : [sandrine.ruffel@supagro.inra.fr](mailto:sandrine.ruffel@supagro.inra.fr))

Jeudi 30 juin : Fabrice Roux (contact : [gosti@supagro.inra.fr](mailto:gosti@supagro.inra.fr))