

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

**Catherine Perrot-Rechenmann**  
(Institut des Sciences Végétales-CNRS-Gif sur Yvette)

## **The auxin receptor ABP1 is modulating the TIR1/AFB- Aux/IAA auxin signalling pathway**

Auxin is a major plant hormone that controls most aspects of plant growth and development. Auxin is perceived by two distinct classes of receptors. The first class corresponds to nuclear auxin co-receptors resulting from the interaction of Transport Inhibitor Response 1 (TIR1) or related Auxin-signaling F-Box (AFBs) F-box proteins with Aux/IAA transcriptional repressors. The other is the Auxin Binding Protein 1 (ABP1) that perceives extracellular auxin, activates a transduction cascade at the plasma membrane, and was recently shown to be involved in a wide variety of auxin-dependent responses including regulation of clathrin-dependent endocytosis, activation of rho-GTPases and modulation of gene expression. The mode of action of ABP1 in the fine tuning of auxin-regulated transcription is however not understood. Here, we show that reducing the function of ABP1 leads to an increased degradation of Aux/IAA protein reporter in plant roots via the SCF<sup>TIR1/AFB</sup> ubiquitin ligase pathway. We also found that multiple *tir1,afb* null mutations are epistatic on ABP1 inactivation, thus placing ABP1 genetically upstream of TIR1/AFB. Our results demonstrate that an exaggerated degradation of Aux/IAA repressors is deleterious for root growth and development and that regulation of their half-life requires a negative regulation of the SCF<sup>TIR1/AFB</sup> signaling pathway. This negative regulation is mediated by an ABP1-dependent signalling cascade that counterbalances promotion of Aux/IAA degradation. We propose that such dual control of protein turn-over is essential to control the homeostasis of Aux/IAA repressors that defines the threshold and the time scale of cell responsiveness to auxin. Control of protein turn-over is central for various plant hormone signalling pathways and combining positive and negative regulations of SCF ubiquitin-proteasome pathways might be a common trait conferring a tight control of hormone-mediated responses.

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## Séminaires à venir :

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))