

Séminaire de Biologie des Plantes

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

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Jeudi 29 mai 2008
Amphi 208 (Cœur d'Ecole) à 14h00

Jörg Kudla

(Universität Münster, Institut für Botanik und Botanischer Garten, Schlossplatz 4, 48149 Münster, Germany)

A calcium sensor / protein kinase network for decoding calcium signals in plants.

Intracellular release of calcium ions belongs to the earliest events in signal perception. Calcium-binding proteins are involved in sensing and relaying these signals to downstream signalling and adaptation responses. Calcineurin B-like proteins (CBLs) represent a group of calcium sensor proteins that are closely related to Calcineurin B and Neuronal Calcium Sensors (NCS). CBLs exclusively interact with a group of serine-threonine kinases designated as CBL-interacting protein kinases (CIPKs). In Arabidopsis, 10 CBL-type calcium sensor proteins form an interaction network with 25 CIPKs. Preferential complex formation of individual CBLs with defined subsets of CIPKs appears to be one of the mechanisms generating the temporal and spatial specificity of calcium signals in plant cells.

Reverse genetics and cell biological approaches have begun to unravel the functional principles of this signalling network. I will present results of our characterization of *cb1* and *cipk* loss-of-function mutants and of our investigation of the sub-cellular localization of all CBLs from Arabidopsis. These studies suggest that CBL/CIPK complexes function predominantly at cellular membranes and can decode Ca²⁺ signals in different compartments. In this context, dual lipid modification by myristoylation and palmitoylation appears to play an important role in determining the membrane targeting of CBL/CIPK complexes. Our reverse genetics analyses indicate that alternative complex formation of CIPK-type kinases with different CBLs enables the simultaneous regulation of ion transport processes in different compartments of the plant cell. In this

way CBL/CIPK complexes contribute to regulating the extrusion of Na⁺ ions in root tissues and in addition regulate the sequestration of Na⁺ in the vacuole in green tissues.

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SEMINAIRES A VENIR :

- Jeudi 5 juin : J. Fabre et M. Dauzat (Présentation de la plate-forme "Phenopsis" : applications expérimentales et base de donnée) contact Christine Granier (granier@supagro.inra.fr)
- Jeudi 12 juin : Laurent Chatre (présentation sur les mécanismes de transport entre membrane et rôle des SNAREs), contact Nadine Paris (paris@supagro.inra.fr)