

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 05 janvier 2012
Amphi 2 (Bâtiment 2 Bis) à 14h00

Alexandre Martinière-Delaunay
(Post-doctorant B&PMP – équipe *Dynamique intracellulaire des protéines*)

Lateral Diffusion of Membrane Protein, a major role for the cell wall

Cell membranes are composed of phospholipid bilayer in which proteins are embedded. According to the fluid mosaic model, a cell membrane can be considered a two dimensional liquid that lipids and proteins are free to diffuse within. Recently, however, several reports have described the presence of membrane structures which constrain the diffusion of proteins and lipids. For instance, in animal cells, we know that the actin cytoskeleton can corral proteins thus limiting their lateral mobility. Surprisingly very little is known about protein lateral diffusion within plant plasma membrane: do proteins behave like their counterparts in animal cell membrane? We use Fluorescence Recovery After Photobleaching (FRAP) to monitor the lateral diffusion of plant cell membrane proteins. In contrast to expectation, we are finding that the vast majority of membrane proteins are very immobile. To avoid the confounding effects that would result from protein-protein interactions, we have designed artificial membrane insertion constructs fused to GFP. These might be protein transmembrane domains or lipid insertion-motif modifications. Interestingly, some of these constructs still not diffuse freely within the plasma membrane and neither cytoskeleton nor lipid rafts seems responsible for the constraint. Cell wall integrity strongly influences lateral mobility, however. Our results suggest that, unlike animal cells, in plants, plasma membrane proteins are in general very immobile due to an as yet unknown interaction with the cell wall.

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