

Séminaire de 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 04 mars 2010
Amphi 206 (Cœur d'Ecole) à 14h00

Manuel González-Guerrero

(Post-doctorant B&PMP – équipe TSF)

Cu⁺-ATPases: Structure-function and mechanism of transport

Copper homeostasis is the result of the coordinated action of transcription factors, Cu chelators and Cu influx and efflux transporters. Cu⁺-ATPases play an essential role in driving Cu efflux from the cell cytoplasm in all three domains of life. Paramount to this function is the binding of Cu⁺ within the transmembrane region and the subsequent ATP dependent translocation across the permeability barrier. However, unlike Ca²⁺, K⁺ and similar ions, Cu⁺ is never free in the cell, but complexed to Cu⁺-chaperones. This implies that Cu⁺ efflux is the result of the physical interaction of the Cu⁺-ATPase and the Cu⁺-chaperone. Using the archaeobacteria *Archaeoglobus fulgidus* as a model, we have characterized the structure-function of a typical Cu⁺-ATPase and the mechanism of Cu⁺ delivery by its associated chaperone. Our results revealed that Cu⁺-ATPases have regulatory cytosolic Cu⁺-binding domains that interact with the catalytic domains of the Cu⁺-ATPase in a ligand dependent fashion. This interaction results in a reduction of the turnover rate of the enzyme. We also showed that the Cu⁺-chaperone transfers the metal both to the cytosolic Cu⁺-binding sites and to the transmembrane metal binding sites. However, only the later is necessary for ion transport across the membrane. Finally, we explored the role of ATP in driving the transfer of Cu⁺ between the chaperone and the ATPase.

Contact :

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Séminaires à venir :

Jeudi 11 mars : Manuel Nieves Cordones (post-docorant B&PMP équipe *Canaux ioniques*)

Jeudi 18 mars : Anne KRAPP, INRA Versailles, contact Marc Lepetit