

Phoenix 2009 – Protein Complexes in Plant Signalling and Development Programme

Thursday 25th June

15:00 - 19:00 Registration (also open Friday 08:30-12:00, 15:00-17:00), Bower Foyer

17:30 - 19:30 Welcome Buffet (Bower Tea Room)

19:45 - 22:00 Session I (Bower Seminar Room)

Julian Schroeder (La Jolla) - Early Guard Cell CO₂ and Abscisic Acid Signaling Mechanisms

Binding proteins that transduce CO₂ signals remain unknown, but recent advances are beginning to trace the associated signalling pathways. We are now employing a proteomic interaction approach to work 'upstream' to these and early abscisic acid signal transduction elements.

Offered presentation:

Jeffrey Leung (Gif-sur-Yvette) Open STomata proteins are components of an abscisic acid signalling complex in guard cells

Bert de Boer (Amsterdam) - 14-3-3 proteins - key elements in hormonal signalling and ion transport

Changes in phosphorylation status of proteins is often subject to the binding of members of the 14-3-3 protein family. 14-3-3 action influences ABA and GA signalling and regulation of Shaker and TPK families of ion channels, among others.

Offered presentation:

Anja Fuglsang (Copenhagen) – The receptor kinase PIRK controls root cell elongation in concert with the plasma membrane proton pump

Friday 26th June

9:00 - 12:30 Session II (Bower Seminar Room)

Tony Miller (Rothamsted) - Two-component nitrate transport.

Some nitrate transport systems are encoded by two gene products, the transporter itself and a second, much smaller peptide, that is required for targeting to the plasma membrane. This nitrate transport system occurs widely in plants and the functional role of this type of regulation will be discussed in relation to nitrogen supply and pH.

Offered presentations:

Uwe Ludewig (Darmstadt) – H⁺-coupled and channel-like NH₃ flux by plant ammonium transporters reveals the importance of oligomerization

Ingo Dreyer (Potsdam) – Regulation of the gating mode of the Arabidopsis K⁺ channel AKT2 is important for adaptation to abiotic stress

Jon Pitmann (Manchester) – Analysis of interactions between Arabidopsis Ca²⁺/H⁺ antiporters

10:45-11:15 Coffee/Tea

Markus Geisler (Zurich) - Regulation of the auxin export complex

Cellular efflux is the rate-limiting step of polar auxin transport. Recent progress on the regulation of ABCB/PGP- and PIN-mediated auxin efflux activities suggests a protein-protein interaction feedback loop building the basis for the establishment and control of plastic asymmetric auxin fluxes.

Offered presentation:

Wendy Peer (West Lafayette) – Mutation of the membrane-associated M1 protease APM1 results in distinct embryonic and seedling developmental defects

12:30 - 14:30 Lunch/Poster Session (Bower Tea Room and L3 Laboratory)

13:30 - 14:00 SEB Plant Transport Group AGM (Bower Meeting Room)

14:30 - 18:00 Session III (Bower Seminar Room)

John Christie (Glasgow) - Regulation of phototropin kinase activity and localization by blue light

Light drives the endocytosis of blue-light photoreceptors, phototropins, as part of a photoreceptor-signalling complex. Early steps in endocytosis follow on autophosphorylation of the photoreceptor kinase loop and depend on clathrin.

Offered presentations:

Noni Franklin-Tong (Birmingham) – The pollen self-incompatibility determinant for *Papaver* and early self-incompatibility signalling

Urszula Micielica (Louvain-la-Neuve) – Effect of maize plasma membrane aquaporin phosphorylation on the channel activity, trafficking and hetero-oligomerisation

15:50 - 16:20 Coffee/Tea

Scott C. Peck (Columbia) - From Signaling to Secretion: Proteomics Reveals Novel Aspects of Host-Pathogen Interactions

Phosphoproteomic analysis has uncovered a number of differentially-phosphorylated proteins following bacterial pathogenesis, among these a plasma membrane syntaxin required for secretory defence against invasion. A surprisingly complex manipulation of host secretion, including a non-classical secretion mechanism targeted by bacterial effectors.

Offered presentations

A. Grondin (Montpellier) – Structure-function analysis of plant aquaporin AtPIP2;1 gating by divalent cations and protons

Melanie Mikosch (Darmstadt) – Functional analysis of the triacidic ER export motif of KAT1

Evening free

Saturday 27th June

9:00 - 12:30 Session IV (Bower Seminar Room)

Nico von Wiren (Hohenheim) - A role of autophagocytosis in intracellular iron efficiency in Arabidopsis

We have adapted a yeast complementation approach to iron mineral nutrition and have uncovered a SNARE protein previously shown to mediate the trafficking of vesicles and autophagosomes to vacuoles. Additional evidence supports a role for this SNARE protein in intracellular iron recycling via autophagy.

Offered presentations:

Annegret Honsbein (Glasgow) – A tripartite SNARE-K⁺ channel complex essential for channel-mediated K⁺ nutrition in Arabidopsis

Matthew Paul (Rothamsted) – Inhibition of SNF1-related protein kinase 1 activity and regulation of metabolic pathways by trehalose 6-phosphate

10:20 - 10:50 Coffee/Tea

Karin Schumacher (Heidelberg) - The V-ATPase - a protein complex for cellular logistics

Acidification of endomembrane compartments by the V-ATPase, an ancient multisubunit proton-pump, is a common feature of all eukaryotic cells. Our studies highlight its assembly and importance for cellular logistics.

Offered presentations:

Tripti Sharma (Potsdam) – Strategies revealing assembly status of TPK channels in plants

Petr Obrdlik (Frankfurt) – Electrical characterization of mitochondrial transporters and respiratory chain complexes in their native environment

12:30 - 14:00 Lunch (Bower Tea Room) and close

Whiskey and Walk

14:00 - 18:00 Dumgoyne walk and tour of Glengoyne Distillery
(coach collects from outside Bower Building)