Seminar/Talk

Evolutionarily-Conserved and Plant-Specific Trafficking Machinery Required for Cytokinesis and Cell Expansion

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Plant morphogenesis is highly dependent upon vesicular trafficking for the localization and function of proteins, lipids and polysaccharides involved in various processes including cytokinesis, cell wall biosynthesis, hormone signaling, nutrient uptake and pathogen defense. In all eukaryotes, exocytosis, the process by which vesicles transport protein and other cargo from the Golgi apparatus to the plasma membrane, requires conserved members of the Sec4/Rab8/RabE1 GTPase family. However, the Rab guanine nucleotide exchange factors (GEFs), responsible for the regulation of exocytosis in plants and the Opisthokonta (yeast and metazoans) are evolutionarily distinct, having likely arisen independently due to the increased complexity of membrane trafficking pathways necessary for cytokinesis and polarized cell expansion in these organisms relative to their common eukaryotic ancestors. Understanding the functions of Rab GEFs involved in exocytosis and how they are regulated is therefore of central importance. Our recent work has identified a multisubunit complex, the SCD complex, which is required for the activation of plant RabE1 GTPases and exocytic vesicle trafficking to the cell plate and plasma membrane in dividing and non-dividing cells, respectively. Biochemical, genetic and imaging studies aimed at understanding the network of interactions between SCD subunits that govern complex assembly, GEF activity, and interaction with downstream effectors required for exocytic trafficking during cytokinesis and cell expansion will be presented.

Friday, January 17, 2020 02:00pm - 03:00pm
Mondi Seminar Room 2, Central Building

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