

SEMINAR

Thurs, 23 May 2024 | 3 pm | DBS Conference Room 1

Hosted by Assist. Prof Long Yuchen

# Order and disorder in clathrin-mediated endocytosis in plants

Endocytosis is essential to maintain plasma membrane proteome homeostasis. It largely does so by vesicle-mediated internalization using the scaffolding molecule clathrin. Throughout eukaryotic evolution, the machinery that mediates endocytosis is marked by losses, multiplications and innovations. Endocytosis employs a limited number of conserved structural domains and folds, which are assembled and connected differently depending on the species. In plants, many of the domains are grouped into an ancient octameric protein complex, the TPLATE complex (TPC). This complex has been established as crucial for the execution of endocytosis in Arabidopsis. How this complex mechanistically functions to execute plant endocytosis and how its function is connected to that of the other endocytic adaptor complex, AP-2, are active areas of research. Over the last couple of years, a multidisciplinary approach has provided us with insight into the structural composition as well as functional insight on some of the conserved domains that are grouped by this complex. Moreover, we recently characterized some of its evolutionary adaptations and found that these subunits modulate endocytic dynamics as well as clathrin recruitment via the material properties of their intrinsically disordered domains that drive condensate formation of the TPC.



By **Daniel Van Damme**

Ghent University and VIB Center for Plant  
Systems Biology

## About the Speaker

*My research career started in 2001 at Ghent University. The fluorescence-based localization screen that I performed in tobacco BY-2 cells revealed several new proteins that were specifically recruited to the forming cell plate.*

*After my PhD in 2006, I joined the newly established lab of Eugenia Russinova at the Department of Plant Systems Biology (PSB VIB/UGent) as a postdoctoral fellow of the Research Foundation of Flanders (FWO), working on the role of aurora kinases in lateral root primordia formation.*

*After my second postdoctoral term, I became expert scientist for live cell imaging at the VIB Center for Plant Systems Biology. This position served to provide expertise, experimental design, acquisition and maintenance as well as practical assistance to the researchers at PSB for all aspects of fluorescence-based live cell imaging.*

*The structural and functional elucidation of endocytosis in plants was the topic of my LS3 ERC Consolidator Grant that I obtained in 2016. That year, I also became associate professor at Ghent University as well as Principle Investigator of the advanced live cell imaging group at VIB. In 2018, I became full professor.*

*My current research focuses on the mechanistic regulation of how endocytosis modulates cellular communication. We do this by combining interactomics as well as structural and cell biology on the endocytic machinery. Next to this, I continue to provide assistance and maintenance of the light microscopy infrastructure of the Center.*