

# 6<sup>th</sup> Global Summit on Plant Science

October 29-30, 2018 | Valencia, Spain



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### AP-MS and organ growth in plants: From cells to tissues

At the very basis of cellular structure and function lie networks of short- and long-term molecular interactions. The author's research team develops interactomic tools for plants and runs a state of the art Affinity Purification Mass Spectrometry (AP-MS) platform for protein complex isolation. Through its high specificity and explanatory power, our platform steadily became a central-omics tool in our research department. Complexes got isolated for hundreds of proteins involved in cell growth and proliferation control leading towards protein discovery, functional analysis of protein complexes, and the mapping of protein networks involved in plant organ growth. They started in cell cultures, but steadily moved towards *Arabidopsis* seedlings, to finally end up into crop plants. Their bigger organs make them particularly suitable for the study of the complex regulation of organ growth in a developmental context. They obtained proof of concept for the study of protein complex dynamics during leaf growth and demonstrate its use for organ growth engineering.

### Recent Publications

1. Besbrugge N, Van Leene J, Eeckhout D, Cannoot B, Kulkarni S R et al. (2018) GS yellow, a swiss-knife tag for functional protein analysis in monocot and dicot plants. *Plant Physiology* 177(2):447-464.
2. Nelissen H, Eeckhout D, Demuyneck K, Persiau G, Walton A, Van Bel M, et. al., (2015) Dynamic changes in ANGUSTIFOLIA3 complex composition reveal a growth regulatory mechanism in the maize leaf. *Plant cell* 27(6):1605-1019.
3. Gadeyne A, Sánchez-Rodríguez C, Vanneste S, Di Rubbo S, Zauber H, et. al., (2014) The TPLATE adaptor complex drives clathrin-mediated endocytosis in plants. *Cell* 156(4):691-704.
4. Van Leene J, Hollunder J, Eeckhout D, Persiau G, Van De Slijke E, et. al., (2010) Targeted interactomics reveals a complex core cell cycle machinery in *Arabidopsis thaliana*. *Molecular Systems Biology* 6:397.
5. Van Leene J, Stals H, Eeckhout D, Persiau G, Van De Slijke E, et al. (2007) A tandem affinity purification-based technology platform to study the cell cycle interactome in *Arabidopsis thaliana*. *Molecular & Cellular Proteomics* 6(7):1226-1238.

### Biography

Geert De Jaeger is Associate Professor at Ghent University - Department of Plant Biotechnology and Bioinformatics, and Adjunct Director of the VIB Center for Plant Systems Biology (Ghent, Belgium). His main research interest is the development and application of interactomics technology in Plant Research to study the regulation of plant growth at the molecular and biochemical level. His research team obtained high international visibility with their state of the art AP-MS platform that maps protein interaction networks in plants. In the past 5 years this technology generated data for 42 TIER 25% manuscripts, holding 12 TIER 1%, and 33 TIER 5% manuscripts. He currently authored 82 A1 publications with more than 3200 life time citations, H-index of 33, and he holds 7 patents.

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