10th biennial PSEPB Conference

“Experimental plant biology at various scales: from molecules to environment”

Editors
Jolanta Kwaśniewska and Justyna Wróbel-Marek

September 20–23, 2021
Katowice, Poland
**Session 2: Cell structure, function and bioimaging**
Chairs: Magdalena Krzesłowska, Marta Lenartowska

**10:20–12:35 Invited lectures**
   *Jordi Chan*

   *Juan de Dios Alchê*

11:20–11:50 Plasmodesmata: new insights and tools to dissect their function in plant development.
   *Yoselin Benitez-Alfonso*

11:50–12:20 Live cell and deep tissue imaging during plant-microbe interactions and plant development.
   *Ton Timmers*

12:20–12:35 In-depth TEM characterization of male sterile mutants in barley (*Hordeum vulgare*).
   *Ulla Neumann*

**12:35–13:00 Break**

**13:00–15:00 Oral presentation session**
13:00–13:15 Mapping the regions of PLASTID MOVEMENT IMPAIRED 1 protein responsible for the regulation of chloroplast movement.
   *Olga Sztatelman*

13:15–13:30 Molecular architecture of wood: from sugars to trees.
   *Jan Łyczakowski*

   *Michał Bykowski*

13:45–14:00 Topology of ER PINs: PIN5 versus PIN8 “the Heads and Tails” of Auxin Flux?
   *Yewubnesh Seifu*

**14:00–14:15 Break**

14:15–14:30 Cell-to-cell communication via endomembrane system in wood of angiosperm tree species.
   *Katarzyna Sokolowska*

14:30–14:45 Nuclear retention of mRNAs as post-transcriptional regulation of gene expression in plants.
   *Agnieszka Kołowerzo-Lubnau*

14:45–15:00 The nuclear spatial arrangement of maize chromosome introgressions into oat.
   *Dominika Idziak-Helmcke*

**Session 2: Invited lecture**
15:00–15:30 The role of plasmodesmata in plant development and during biotic and abiotic stress.
   *Jung-Youn Lee*

**15:30–15:35 Session summary**

**15:35–16:05 Break**

**16:05–17:05 Poster Session 2**

**Session 3: Plant epigenetics**
Chairs: Piotr Ziolkowski, Szymon Świeżewski

**17:05–18:05 Invited lectures**
17:05–17:35 Genetic conflicts and seed development.
   *Mary Gehring*

17:35–18:05 Linker histones - their roles beyond the chromatin architecture.
   *Kinga Rutowicz*

**18:15–20:00 Executive Committee and Board Members Meeting**
Imaging ROS/NO production and homeostasis in plant reproductive biology

IL2.01

Juan de Dios Alché*, Adoración Zafra, Maria José Jiménez-Quesada, Elena Lima-Cabello, Jose Carlos Jimenez-Lopez, Antonio Jesús Castro

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Abstract:
Reactive oxygen species (ROS) and nitric oxide (NO) are widely present in plant reproductive tissues, and are involved in the signalling processes taking place during the numerous interactions occurring at different levels in this process. We have used flowers of Olea europaea L. (olive tree) at different stages, and identified the localization of hydrogen peroxide (H$_2$O$_2$), superoxide (O$_2^-$) and nitric oxide (NO) in the developing anthers, pollen grains and stigmatic surface with the aid of histochemical stains and DCFH$_2$-DA, DHE and DAF-2DA fluorochromes for CLSM localization, as well as treatment with ROS and NO scavengers and a NO donor [1]. Moreover, we used the NO fluorescent probe DAF-2DA to image NO production in situ, which was correlated to pollen viability by using propidium iodide in double-labelling experiments [2].

The results obtained clearly demonstrate that both ROS and NO are produced in the olive reproductive organs in a stage- and tissue- specific manner, with enhanced production of NO by pollen grains and tubes during the receptive phase, and a decrease in the presence of ROS over the stigmatic surface when NO is actively produced.

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Keywords:
gynoecium; NO; pollen; ROS; signaling