



Contribution ID : 36

Type : **Poster**

Insights into flowering induction and reproductive development in duckweeds

martedì 29 settembre 2026 17:55 (20)

Duckweeds (Lemnaceae) are the smallest flowering plants and reproduce predominantly through vegetative propagation, while flowering occurs only rarely under natural and laboratory conditions, limiting breeding and germplasm conservation. Although salicylic acid (SA) efficiently induces flowering in several duckweed species, the molecular mechanisms regulating floral transition remain largely unknown. Following the identification of the Mediterranean hybrid *Lemna* × *mediterranea* (*L. minor* × *L. gibba*; Braglia et al., 2024), we investigated SA-induced flowering competence in parental (*L. minor* and *L. gibba*) and hybrid *L. minor* × *mediterranea* clones. Plants were grown in natural mineral water supplemented with 20 µM SA, and flowering frequency, vegetative growth, and developmental traits were quantified. To identify molecular determinants associated with flowering competence, the expression of key components of the florigen activation complex such as FLOWERING LOCUS T (FT) protein and transcription factor FD protein, was compared among the different genotypes. To further dissect the molecular basis of floral induction, *L. minor* strain 5500 was selected for transcriptomic analysis. RNA sequencing of fronds collected at key developmental stages following SA treatment was used to characterize temporal transcriptional responses. This integrated phenotypic and transcriptomic approach provides new insights into genotype-dependent flowering competence and SA-mediated floral transition in duckweeds, advancing our understanding of reproductive development in *L. minor* and *L. minor* × *mediterranea* and providing a foundation for improved flowering induction, breeding, and germplasm conservation.

Corresponding author email

mariaadelaide.iannelli@cnr.it

Scientific Session

Cell Biology, Physiology, Metabolisms

Keywords

Lemna, Flowering, Salicylic-acid, Phenotypic analysis

References

Braglia et al., 2024. Characterization of the cryptic interspecific hybrid *Lemna* × *mediterranea* by an integrated approach provides new insights into duckweed diversity, *Journal of Experimental Botany* <https://doi.org/10.1093/jxb/erae059>

Primary author(s) : Dr. IANNELLI, MARIA ADELAIDE (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti); Dr. FABRIANI, MARCO (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti); Dr. VALENTINA, IORI (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti); Dr. SCIARRETTA, GIOVANNI (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti); Dr. MORELLO, LAURA (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Milano); Dr. BRAGLIA, LUCA (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Milano); Dr. LEE, Yuri (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Milano); Dr. PERNA, Cristian (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Milano); Dr. FRUGIS, Giovanna (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti)

Presenter(s) : Dr. IANNELLI, MARIA ADELAIDE (Istituto di Biologia e Biotecnologia Agraria (IBBA-CNR) - Montelibretti)

Session Classification : Poster Session I