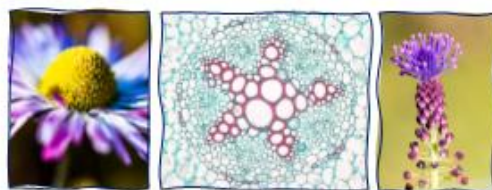


ITALIAN BOTANICAL SOCIETY WORKING GROUPS
CELLULAR AND MOLECULAR BIOLOGY &
BIOTECHNOLOGIES AND DIFFERENTIATION

FROM PLANT MORPHOLOGY TO SUSTAINABILITY

INTERNATIONAL MEETING



JUNE 11-13, 2025

BARI

**SALA «A. LEOGRANDE», CENTRO
POLIFUNZIONALE STUDENTI,
PIAZZA C. BATTISTI, 1**



**Photo Contest
sponsored by UNIBA,
AFNI and SBI Puglia**

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Contributions marked with  are considered for the selection of two papers that will be published free of charge in Plant Biosystems

JUNE 11th

12:00-14:00 Registration

(14:00-16:30) Session 1 - NEW PERSPECTIVES IN PLANT BIOLOGY

Chair: Mario De Tullio

Understanding chloroplast gene expression for rational engineering of plastid genomes and biotechnological applications

LOIACONO, F.V.

Invited Speaker, Charles University, Prague

Inducible expression of trichome-associated transcription factors in *Cannabis sativa* suspension cultures

ARMELLIN, M., Corazza, F., Bellan, A., Dal Monte, R., Carpi, A., Trainotti, L.

Auxin response factors in reproductive development: a comparative study of OsARF1 and its orthologs AtARF11/AtARF18

NARDI, C., Spanò, M., Camperio, A., Vignati, E., Greco, E., Bruno, L., Di Marzo, M., Colombo, L.

Pollen-mediated control of ovule development in *Ginkgo biloba*: insights into auxin regulation and epigenetic mechanisms

TALARICO, E., Greco, E., Camoli, M., Guarasci, F., Araniti, F., Muto, A., Di Marzo, M., Offer, E., Moschin, S., Chiappetta, A., Baldan, B., Colombo, L., Bruno, L.

Unravelling reproductive mechanisms in *Ginkgo biloba*: from male cone development to pollen-ovule cross-talk 

OFFER, E., Moschin, S., Talarico, E., Colombo L., Bruno, L., Baldan, B.

Plant responses to vibrational and acoustic stimuli: biochemical and molecular responses in *Arabidopsis*

PLACÌ, R., Albano, A., Renna, L., Schioppa, E., Salerno, G., Masi, E., Spagnolo, B., Marsella, G., Viscardi, M., Rizzi, F., Nicassio, F., Maffezzoli, A., Scarselli, G., Tufariello, M., Lenucci, M. S.

New insights into tomato P4H3 function: a key regulator of plant architecture, fruit development, and seed resilience 

LOPERFIDO, D., Mizzotti, C., Zumajo-Cardona, C., Araniti, F., Panagiotis, K., Ezquer, I.

CrAT-seq: a novel reduced representation sequencing technique targeting protein-coding regions in plant genomes

DegliAlberti M., Abbruscato, P., Ravasi, G., Silvestri A., Mucciarelli M., Lanfranco L., Adamo M., **CHIALVA M.**

The endoplasmic reticulum quality control of glycoproteins is involved in cadmium stress perception and response in *Arabidopsis thaliana* through the brassinosteroid signaling pathway

DE BENEDICTIS, M., Gallo, A. & Santino, A.

16:10-16:30 COFFEE BREAK

(16:30-19:00) Session 2 - BIOACTIVE COMPOUNDS

Chair: Lorenzo Ferroni

Selection of plant species with anti-inflammatory and/or antimicrobial properties and *in vitro* callus production

FRISONE, L., Tassoni, A., Ferri, M.

Marine diatom extract as sustainable tools for enhancing plant resistance against fungal pathogens

BELLINI, E., Savio, S., Lorrai, R., De Santis, S., Frezza, C., Sciubba, F., Patriarca, A., Capobianco, G., Serranti, S., Congestri, R., Ferrari, S.

Optimized extraction of bioactive compounds from brazilian green *Coffea arabica* L. beans using conventional methods and natural deep eutectic solvents

Benati, G., **PETTAZZONI, I.**, Navarini, L., Ferri, M., Tassoni, A.

Exploring the function of rice florigenic proteins during inflorescence development

BONO, G. A., Giaume, F., Mineri, L., Mirone, F., Betti, C., Brambilla, V., Fornara, F.

Sorghum bicolor subsp. *bicolor* as a source of bioactive compounds with a cholesterol lowering effect: first data on its lipid-derived extracts

CARONNI, S., Sabatini, F., Lonati, E., La Ferla, B., Palestini, P., Bulbarelli, A., Russo, C., Lange, H., Citterio, S.

Evaluation of phytotoxicity of essential oils derived from by-products of aromatic and medicinal plants

MALASPINA, P., Polito, F., De Feo, V., Cornara, L.

Engineering biocompatible nanosystems to improve delivery of plant biostimulants

GUARNERI, G., Magnabosco, P., Marcato, S., Calliku, I., Di Vizio, B., Lupinelli, S., Agnoli, S., Baldan, B., Carletti, P., Navazio, L.

The chemical composition and biological activity of *Nigella sativa*

DENTATO, M., Postiglione, A., Badalamenti, N., Bruno, M., Basile, A., Maresca, V.,

In depth metabolomic characterization of autochthonous legume landraces from Apennine Italian regions

RENELLA, A., Falcione, M., Boutet, S., Corso, M., Sferra, G. Scippa, G.S., & Trupiano, D.

Sustainable production of betanin-rich extracts from *Beta vulgaris* leaves in SETIS® Bioreactor

BAROZZI, F. Placi, R., Capaci, P., Lenucci, M.S., Ciccarella, G., Di Sansebastiano, G.P.

June 12th

(8:45-11:00) Session 3 - DEVELOPMENT AND DIFFERENTIATION

Chair: Lorella Navazio

Functional characterization of the AUXIN RESPONSE FACTOR 11/MONOPTEROS (OsARF11/MP) in *Oryza sativa* during reproductive phase

SPANÒ M., Di Marzo M., Disbudak C., Vignati, E., Nicolai, N.A., Kater, M., Greco, E., Bruno, L., Colombo, L.

Peptide hormones in fruit development: insights from tomato

FRANCESE, C., Boschin, M., Armellin, M., Pavanello, A., Salvagnin, U., Trainotti, L.

New insights into the role of CLE peptides in fruit ripening

BOSCHIN, M., Francese, C., Armellin, M., Pavanello, A., Bellan, A., Trainotti, L.

Plant sensitivity to inorganic arsenic exposure: a comparison between two rice (*Oryza sativa* L.) genotypes, Carnaroli and Zhonghua 11

LANNI, F., Piacentini, D., Giorgione, R., Astolfi, M.L., Altamura, M.M., Falasca, G., Fattorini, L.

Sorghum bicolor salt-sensitive genotype grown in saline soil benefitted the eBL seed-priming treatment

PEDUZZI A., Piacentini D., Speranza E., Della Rovere F., Iozia, L.M., Varone, L., Altamura, M.M., Falasca, G.

GERAS a regulator of Arabidopsis silique senescence

DRAGISIC, M.S., Bacchetta, M., Braidà, C., Rotasperti, L., Mizzotti, C., Masiero, S.

Regulatory roles of NAC genes in fruit elongation, senescence, and xylem formation in *Arabidopsis thaliana*

MIZZOTTI C., Bacchetta M., Dragisic M. S., Braidà, C., Cavalleri, A., Rotasperti, L., Colombo, L. Masiero, S.

Maternal regulation of nutrient availability plays a pivotal role during ovule and seed development in Arabidopsis

Banfi, C., Babolin, N., Astori, C., Mizzotti, C., Gabrieli, F., Vega-Léon, R., Leo, G., Grossniklaus, U., Tucker, M., Araniti, F., Ezquer, I., Muino, J. M., Kauffman, K., **DI MARZO, M.**, Colombo, L.

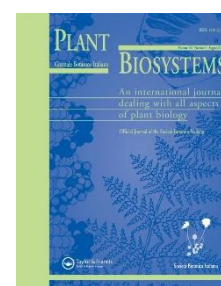
Unveiling transcriptional networks governing seed coat control of endosperm development in *Arabidopsis thaliana*

GABRIELI, F., Zumajo-Cardona, C., Cavalleri, A., Albertini, E., Ezquer, I., Colombo, L.

HEATSTOP: Understanding the impact of heat stress on pollen-pistil communication in crops

RUGGIRELLO, F., Suanno, C., Del Duca, S.

Communication from the Editor-in-Chief of PLANT BIOSYSTEMS – An Official Journal of the Italian Botanical Society **Prof. LUIGI SANITÀ DI TOPPI**



11:00-11:30 COFFEE BREAK

(11:30-12:45) Session 4 - STRESS RESPONSES AND ENVIRONMENTAL BIOTECHNOLOGIES (I)

Chair: Franca Tommasi

Plant responses to micro- and nanoplastic contamination under short- and long-term exposure: a case study on *Ocimum basilicum* L.

DI GENNARO, G., Ceccanti, C., Spanò, C., Bottega, S., Lauria, G., D'Asaro, L., Giorgetti, L., Landi, M., Ruffini Castiglione, M.

Populus alba (white poplar) thiol-peptide compounds allow intracellular and extracellular cadmium detoxification

VITELLI, V., Bellini, E., Sorce, C., Saba, A., Andreucci, A., Sanità di Toppi, L.

Response to heat stress of different microalgae

CARROZZO, S., De Pascali, M., Negro, C., De Bellis, L., Basset, A., Canini, A., Lenucci M.S., Piro, G., De Caroli, M.

Targeting gene expression and culture conditions to enhance Fucoxanthin production in *Thalassiosira rotula*

MADEO, M.L., Orefice, I., Ferrari, M., Greca, T., Bruno, L., Romano, G., Cozza, R.

The microalga *Neochloris oleoabundans* for the re-use of fruit by-products

Demaria, S., Pancaldi, S., Sorbolev, A., Scioli, G., Di Prodi, K., **BALDISSEROTTO, C.**

Enhancing *Emiliania huxleyi* growth with recycled calcium from oyster shells

GIACÒ, P., Baldisserotto, C., Chenet, T., Pasti, L. & Pancaldi, S.

12:45-13:15 PHOTO CONTEST AWARDS CEREMONY

13:15-14:30 LUNCH

(14:30-18:00) Session 5 - THE HIDDEN HALF

Chair: Mattia Terzaghi

Root meristem organization is associated with an auxin-related determination of redox status

Jiang, K., **FELDMAN, L.** Invited Speaker, University of California, Berkeley

Some Responses of the maize root to mechanical stress

Potocka, I., Śróbka, J., Karczewski, J., **SZYMANOWSKA-PULKA, J.** Invited Speaker, University of Silesia, Katowice

Vascular Cambium: The key to lifelong adaptability in woody plant roots

CHIATANTE, D., Montagnoli, A., Terzaghi, M., Trupiano, D., Scippa, G.S. Invited Speaker, University of Insubria

16:00-16:30 COFFEE BREAK

The role of the *DEEPER ROOTING 1 (DRO1)* gene family in tomato (*Solanum lycopersicum* L.) organ development and response to drought stress

GRECO, E., Talarico, E., Kouhen, M., Manicone, F., Sofo, A., Chiappetta, A.A., Trupiano, D., Bruno, L.

SIDRO1 as a candidate regulator of root adaptation under drought stress in tomato

KOUHEN, M., Greco, E., Manicone, F., Bruno, L., Sofo, A., Trupiano, D.

A symbiotic MLO gene regulates root development via RALF-triggered Ca²⁺ signalling in *Lotus japonicus*

BINCI, F., Guarneri, G., Somoza, S.C., Capparotto, A., Vascon, F., Cendron, L., Navazio, L., Giovannetti, M.

New insight into the role of microRNAs on wheat (*Triticum aestivum* L.) seminal root development

TONIELLI, G., D'Agostino, A., Di Marco, G., Pepe, G., Teofani, A., Pontecorvi, C., Helmer Citterich, M., Canini, A., Gismondi, A.

A novel dual-compartment hydroponic system for investigating inter-plant root signaling responses to water stress

LASORELLA, C., Pazienza, G., Cardinale, D., Perrella, G. Sofo, A., De Tullio, M., Terzaghi, M.

Effect of an urbanisation gradient on the root microbiota of *Celtis australis*

MASSON, S., Chialva, M., Votta, C., Ferratini, C., Polidori, N., Tagliaferri, E., Biino, U., Lanfranco L.

Brassinosteroids and jasmonates counteract arsenic stress in *Arabidopsis thaliana* differently modulating root system plasticity

DELLA ROVERE, F., Fernando Malimage, S.A., D'Angeli, S., Peduzzi, A., Piacentini, D., Altamura, M.M., Falasca, G.

18:00 ADMINISTRATIVE MEETING OF THE WORKING GROUPS “CELLULAR AND MOLECULAR BIOLOGY” – BIOTECHNOLOGIES AND DIFFERENTIATION” OF THE ITALIAN BOTANICAL SOCIETY

20,00 SOCIAL DINNER Restaurant “Polvere di Stelle”, Grande Albergo delle Nazioni, Lungomare Nazario Sauro, 7



JUNE 13th

(8:45-11:00) Session 6 - STRESS RESPONSES AND ENVIRONMENTAL BIOTECHNOLOGIES (II)

Chair: Francesco Guarino

An emerging approach on plant-microbe interaction under abiotic stress conditions

GILLINI, A., Zuzolo, D., Tartaglia, M., Prigioniero, A., Guarino, C., Trupiano, D. 

Bio-activated biochar for recovering degraded soils: response of forest and agri-food species

PAZIENZA, G., Lasorella, C., Piccolo P., Guarino F., Terzaghi M.

Aquatic moss as new multipurpose live biomass: from biofiltration to bioproduction

DI SANSEBASTIANO, G.P., Anglana, C., Letizia, F., Del Piano, I., Barozzi, F.

Monitoring microbial communities in urban soils: insights into biodiversity and antibiotic resistance between bulk soil and plant rhizosphere

GENTILE, A., Di Stasio, L., Oliva, G., Piccolo, P., Tangredi, D.N., Guarino, F., Cicatelli, A., Vigliotta, G., Castiglione, S.

Adaptive responses of *Triticum dicoccoides* and *Triticum durum* to natural CO₂ enrichment: a leaf anatomical and physiological perspective

CINTI E., Carli A., Haworth M., Cerri M., Centritto M., Onofri A., Atzori G., Zuluaga D., Reale L.

Modifications of traits of the Ni hyperaccumulator *Odontarrhena chalcidica* in relation to different plant provenience and cultivation regimes

MONTANARINI, B., Salinitro, M., Randi, M.R., Cavalletti, D., Monari, S., Echevarria, G., Tassoni, A.

Agrovoltaics as a sustainable strategy to enhance food security under water scarcity

SEMERARO, T., Scarano, A., Curci, M.L., Calisi, A., Lenucci, M.S., Santino, A., Basset, A., De Caroli, M.

Evaluation of gadolinium effects on *Solanum lycopersicum* L. cultivated in a hydroponic system

GIULIANO, F., Petta, G., Terzaghi, M., Castiglione, S., Cicatelli, A.

Developmental dynamics of *Arbutus unedo* L. flower: morphological and molecular evidence

D'AGOSTINO, A., Di Marco, G., Canini, A., & Gismondi, A.

Sulfur metabolism and chromium tolerance in *Scenedesmus acutus*: the role of OAS-TL and Cysteine Desulfhydrase activities

MOLINARI G., Marieschi M., Ferrari M., Torelli A.

11:00-11:30 COFFEE BREAK

(11:30-14:00) Session 7 – SYMBIOSES, INTERACTIONS AND BIODIVERSITY

Chair: Marcello Salvatore Lenucci

Influence of endophytic fungi isolated from mint on the growth of tomato seedlings

DOVANA, F., MUCCIARELLI, M.

Plants and bacteria interaction in the soil: analysis of the emitted volatile compounds

RUSSO, C., Rizzi, C., Termopoli, V., Sabatini, F., Caronni, S., Lange, H., Citterio, S.

Specificity of elementomic profiles and photosynthetic efficiency in two red chicory (*Cichorium intybus* L.) cultivars in a coastal environment

MARTINA, A., Marrocchino, E., Ballestriero, M., Mattia, N., Ferroni, L.

Assessment of genetic and morphological diversity in *Tilia* spp. inside the Campus of the University of Salerno (Italy)

TANGREDI, D. N., Giuliano, F., Cicatelli, A., Castiglione, S.

Bioprospecting the Italian flora for the discovery of new bioactive phytochemicals and the exploration of chemodiversity in different plant clades

NEGRI, S., Bisson, L., Pietrolucci, F., Zorzi, G., Commisso, M., Dusi, V., Avesani, L., Guzzo, F.

Engineering of *Synechocystis* sp. PCC 6803 and *Synechococcus* sp. PCC 7002 for the photocatalytic production of hydrogen

FERRARI, M., Marieschi, M., Ceresini, D., Molinari, G., Milan, L., Bolchi, A., Spagnoli, G., Torelli, A.

A nature-based tool to design vegetation barriers along road infrastructure to contain anthropogenic atmospheric particulate matter: characterization of leaf functional traits

POSTIGLIONE, A.

Biochar and compost amendments reshape the rhizosphere microbiome in a mature olive orchard

PICCOLO, P., Guarino, F., Cicatelli, A., Terzaghi, M., Castiglione, S.

Metabolomics, melatonin regulation, and microbial interactions in lettuce under phosphate stress

VENCO, A., Capparotto, A., Ciampanelli, A., Sudiro, C., Vuolo, F., Giovannetti, M., Commisso, M.

Light-drive modulation of antioxidant systems and growth in lentil seedlings under red and blue LEDs

BOTTIGLIONE, B., Villani, A., De Leonardis, S., Paciolla, C.

14:00 AWARD CEREMONY - APC WAIVERS FOR THE PUBLICATION OF TWO PAPERS IN PLANT BIOSYSTEMS

Closing of the Meeting

***SIDROI* as a Candidate Regulator of Root Adaptation Under Drought Stress in Tomato**

¹**Kouhen, M.**, ²Greco, E., ³Manicone, F., ²Bruno, L., ³Sofo, A., ^{1*}Trupiano, D.

¹ Department of Biosciences and Territory, University of Molise, Pesche (IS), Italy

² Department of Biology, Ecology and Earth Science, University of Calabria, Cosenza, Italy

³ Department of European and Mediterranean Cultures: Architecture, Environment, Cultural Heritage, University of Basilicata, Matera, Italy

* dalila.trupiano@unimol.it

Drought stress poses a critical constraint on crop productivity, emphasizing the need for improved water-use efficiency without yield compromise. Modifying root system architecture through genes such as Deeper Rooting 1 (*DROI*) offers a promising strategy for enhancing drought resilience. This study evaluates the role of *SIDROI* in shaping root architecture and conferring drought tolerance in *Solanum lycopersicum* (cv. Micro-Tom).

Morphological and high-throughput phenotyping under drought revealed reduced total root length and fine root fraction, coupled with increased root mass ratio, indicating a shift in resource allocation. Despite prolonged drought (30 days), root surface area and fineness remained stable, as assessed by WinRHIZO and scanning imaging. Near-infrared (NIR) imaging via LemnaTec 3D Scanalyzer confirmed reduced water content, evidenced by elevated reflectance, underscoring the utility of spectral indices for drought assessment.

qPCR analyses showed that *SIDROI* expression in roots remained stable early but was significantly upregulated at 30 days of drought, while stem expression declined. This tissue-specific expression pattern suggests differential regulation under drought, with potential functional relevance in adaptive responses. In situ hybridization confirmed *SIDROI* localization in both tissues.

Ongoing development of knockout and overexpression lines aims to further elucidate *SIDROI* function in tomato, marking the first such effort in this species. These findings provide novel insights into genetic determinants of root plasticity and lay the groundwork for breeding drought-resilient cultivars.