Napoli 2019

12-14 Giugn

Riunione annuale dei gruppi di lavoro SBI

Biologia Cellulare e Molecolare

Biotecnologie e Differenziamento

Comitato scientifico

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Dott. Sergio SORBO (personale tecnico C.I.S.M.E. Centro Interdipartimentale di Servizio per la Microscopia Elettronica, Università degli Studi di Napoli, Federico II)

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Dott.ssa Donata CAFASSO (Università degli Studi di Napoli, Federico II)
Dott. Aldo Antonio COBIANCHI

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Programma

Mercoledì 12 Giugno 2019

Dalle 10.30 Registrazione partecipanti e caffè di benvenuto
11.00 Breve visita guidata del Palazzo Serra di Cassano (per i primi 30 congressisti registrati)
11.45 Arturo Martorelli: Istituto Italiano per gli Studi Filosofici crocevia di culture!
12.30 Professoressa Rosa Castaldo Cobianchi. 50 anni di Citologia Vegetale a Napoli
Saluti di Benvenuto del sindaco della città metropolitana di Napoli Luigi De Magistris e del vice direttore del dipartimento di Biologia dell'Università di Napoli Federico II

14.30 Apertura dei lavori

Invited lecture

Moderatore: Adriana Basile

14.30 **The unexpected role of nitrate transporters on nodular activity of symbiotic nitrogen fixation.** Vladimir Totev Valkov, Alessandra Rogato, Stefano Sol, Mélanie Noguero, Benoit Lacombe, Maurizio Chiurazzi

Session 1: Symbiosis and Biodiversity

Moderatore: Silvia Perotto

15.00 **From authorship to editorial activity: the fun (and reward) of being on the other side.** Mario C. De Tullio

15.15 **Dynamic interactions between host plant and its symbiotic endophytic bacteria: the olive tree as a holobiont.** Adriano Sofo, Catia Fausto, Alba Nicoletta Mininni, Bartolomeo Dichio

15.30 **Morphological and photosynthetic responses of tomato during the early stages of arbuscular mycorrhizal symbiosis.** Nadia Massa, Patrizia Cesaro, Valeria Todeschini, Simone Cantamessa, Elisa Bona, Roberto Barbato, Guido Lingua

15.45 **Arbuscular mycorrhizal fungal inoculation impact in two different rootstock genotypes with opposite attitude.** Raffaella Balestrini, Luca Nerva, Gabriela Quiroga, Diego Tomasi, Federica Gaiotti, Nicola Belfiore, Walter Chitarra

16.00 *Coffee break*

Moderatore: Guido Lingua

16.20 **Arbuscular mycorrhizal community associated to *Vitis vinifera* in a Piedmont vineyard treated with integrated pest management at two different phenological stages.** Patrizia Cesaro, Elisa Bona, Nadia Massa, Giorgia Novello, Valeria Todeschini, Lara Boatti, Flavio Mignone, Elisa Gamalero, Guido Lingua, Graziella Berta

16.35 **Epigenetic aspects involved in plant invasiveness**. Francesco Guarino, Angela Cicatelli, Giuseppe Brundu, Stefano Castiglione

16.50 **Plant cell cycle reactivation for fungal accommodation in arbuscular mycorrhizas.** Gennaro Carotenuto, Veronica Volpe, Giulia Russo, Valentina Fiorilli, Marco Chiapello, Mara Politi, Ivan Sciascia, Janice de Almeida-Engler, Daniel Van Damme, Andrea Genre

17.05 **Transcriptomic profiling of peach and nectarine cultivars in post-harvest storage conditions.** Antonella Muto, Ernesto Picardi, Leonardo Bruno, Hilary J. Rogers, Antonio Ferrante, Adriana Chiappetta, Maria Beatrice Bitonti, Natasha Damiana Spadafora

Moderatore: Lorella Navazio

17.20 **What's the meaning of XTH33 final localization in the plasma membrane?** Monica De Caroli, Elisa Manno, Marcello Lenucci, Gabriella Piro

17.35 **The importance of molecular analysis of ancient fungal type specimens for a correct taxonomic reclassification.** Niccolò Forin, Sebastiano Nigris, Samuele Voyron, Mariangela Girlanda, Alfredo Vizzini, Barbara Baldan

17.50 **CRISPR/Cas9 mutagenesis of florigen targets at the shoot apical meristem of rice.** Martina Cerise, Damiano Martignago, Matteo Chiara, Francesca Galbiati, Lorenzo Mineri, Lorenzo Coppini, Jorge Gomez-Ariza, Alberto Spada, David Horner, Fabio Fornara, Vittoria Brambilla

18.05 **Intracellular detoxification mechanisms in *Leptodictyum riparium* exposed to different cadmium concentrations.** Federica Funaro, Viviana Maresca, Sergio Sorbo, Davide Del Prete, Adriana Basile

18.15 **Facilities for Industrial Research and Experimental Development projects.** Tommaso Castaldo.

19.30 Pizza di Benvenuto sul lungomare Caracciolo con vista sul Castel dell'Ovo

Giovedì 13 Giugno 2019

Invited lecture

Moderatore: Salvatore Cozzolino

09.30 **Physiological response and phytoextraction capacity of trees (willow, poplar and black locust) in environment contaminated by heavy metals**. Slobodanka Pajević, Danijela Arsenov, Milan Župunski, Nataša Nikolić, Milan Borišev

Session 2: Stress Response and Environmental Biotechnology

Moderatore: Luigi Sanità di Toppi

10.00 **Environmental monitoring: responses of model organisms.** Marco Trifuoggi, Giovanni Pagano, Rahime Oral, Petra Burić, Daniel M. Lyons, Philippe J. Thomas, Antonietta Siciliano, Marco Guida, Maria Alessandra Zicari, Franca Tommasi

10.15 **Unlocking the contribution of chloroplasts and the endoplasmic reticulum to Ca^{2+} homeostasis and signalling in the plant cell.** Enrico Cortese, Roberto Moscatiello, Simone Sello, Luca Carraretto, Enrico Teardo, Francesca Pettiti, Ute C. Vothknecht, Laura Cendron, Marisa Brini, Ildiko Szabo, Lorella Navazio

10.30 **From cyanobacteria to land plants: is the phytochelatin synthase enzyme necessary both for detoxification and homeostasis of metals?** Erika Bellini, Lorenza Rugnini, Viviana Maresca, Camilla Betti, Sergio Sorbo, Adriana Basile, Andrea Andreucci, Monica Ruffini Castiglione, Laura Bruno, Luigi Sanità di Toppi

10.45 **The effect of pH on Zinc and Nickel absorption in *Stellaria media* (L.) Vill. grown in hydroponic.** Mirko Salinitro, Alice Tognacchini, Annalisa Tassoni, Antony van der Ent

11.00 *Coffee break*

Moderatore: Franca Tommasi

11.20 **Different roles of heat shock proteins (70kDa) during abiotic stresses in barley genotypes.** Simone Landi, Giorgia Capasso, Fatma Zahari Azzaiz, Sawsen Ayadi, Youssef Trifa, Sergio Esposito

11.35 **Transcriptomic analysis reveals a higher expression of genes involved in pre-formed defences in American grapevine *Vitis rupestris* compared to Eurasian grapevine *Vitis vinifera*.** Elisa Brasili, Livia Donati, Alessio Valletta, Luca Ferretti, Gabriella Pasqua

11.50 **Chemical and microbiologial tools to improve salt tolerance in *Brassica napus* L.** Panaiotis Mario Stassinos, Massimiliano Rossi, Concetta Capo, Cinzia Forni

12.05 **Unveiling the molecular basis of responses to light and nutrient in marine diatoms.** Monia T Russo, Carmela Borzacchiello, Luigi Caputi, Greta Busseni, Maurizio Ribera D'Alcalà, Maurizio Chiurazzi, Angela Falciatore, Maria I. Ferrante, Alessandra Rogato

Moderatore: Adriana Basile

12.20 **Heterologous expression of the *Oidiodendron maius* FCR1 gene in yeast suggests an important role of PLAC8 proteins in Cd-tolerance in ericoid mycorrhizal fungi.** Stefania Daghino, Luigi Di Vietro, Elena Martino, Silvia Perotto

12.35 **Early results from a biomonitoring study on a water stream using the liverwort *Conocephalum conicum* L. (Dum.).** Sergio Sorbo, Marilena Insolvibile, Viviana Maresca, Federica Funaro, Davide Del Prete, Adriana Basile

12.50 **Effects of soil compost amendment on reclamation capacity of quinoa grown on salinized soils and selection of salt tolerant rhizobacteria.** Francesco Guarino, Angela Cicatelli, Guido Lingua, Giovanni Vigliotta, Stefano Castiglione

13.05 **Biological response to heavy metal pollution in *Lunularia cruciata* L. Dum gametophyte**. Viviana Maresca, Maria Valeria D'Auria, Luciana Tartaglione, Claudia Finamore, Salvatore Viglietti, Eugenio Notomista, Sergio Sorbo, Adriana Basile.

13.20 Intervallo pranzo

Session 3: Bioactive Compounds and Applications

Moderatore: Gabriella Pasqua

14.30 ***Nannochloropsis salina* for water reuse from clam hatchery plant: biological aspects in a biotechnological perspective.** Costanza Baldisserotto, Linda Lupi, Annalisa Maietti, Leonardo Aguiari, Roberta Marchesini, Paola Tedeschi, Simonetta Pancaldi

14.45 **Co-cultivation of *Tisochrysis lutea* and *Nannochloropsis oculata* for biotechnological purposes.** Michele Maglie, Costanza Baldisserotto, Alessandra Guerrini, Simonetta Pancaldi

15.00 **Application of RSM for the optimization of supercritical CO_2 extraction of oil from olive paste: yield, content of bioactive molecules and biological effects.** Marcello Salvatore Lenucci, Miriana Durante, Alessandra Ferramosca, Vincenzo Zara, Gabriella Piro, Paolo Bergamo, Lucia Treppiccione, Giovanni Mita

15.15 **Waste and wild as resource of bioactive compounds in the agricultural industry: a new artichoke supply chain.** Sofia Cavini, Francesca Givoia, Lorenzo Guzzetti, Ilaria Bruni, Chiara Magoni, Radiana Cozza, Leonardo Bruno, Adriana Chiappetta, Clara De Sio, Massimo Labra

Moderatore: Simonetta Pancaldi

15.30 **Secondary metabolites of edible fruits and vegetables display MAO-B inhibitory activity.** Sofia Gambini, Stefania Poletti, Claudio Marcello Marzo, Flavia Guzzo

15.45 **Small peptides for protein interference.** Stefano Rosa, Chiara Mizzotti, Luca Tadini, Lucia Colombo, Simona Masiero

16.00 *Coffee break*

16.20 **Comparison of extraction protocols for the recovery of bioactive molecules from white grape pomace.** Stefania Monari, Maura Ferri, Maria Ehrnell, Epameinondas Xanthakis, Annalisa Tassoni

16.35 ***Vigna unguiculata*: a promising leguminose to contrast climatic changes.** Davide Panzeri, Lorenzo Guzzetti, Nicola Tommasi, Aidana Nurtaza, Andrea Galimberti, Massimo Labra

16.50 **Antimicrobial and antioxidant activity of proteins from *Feijoa sellowiana* Berg. fruit before and after *in vitro* gastrointestinal digestion.** Marina Piscopo, Rosaria Notariale, Elena Montana, Gian Carlo Tenore, Viviana Maresca, Maria Maisto, Francesca de Ruberto, Adriana Basile

17.05 **Phycocyanin from extremophilic microalgae. Advantages and application features.** Giovanna Salbitani, Simona Carfagna

17.20 *Riunione dei gruppi*
20.00 *Cena Sociale*

Venerdì 14 Giugno 2019

Session 4: Development and Differentiation

Moderatore: Lucia Colombo

9.30 **Limitations of photosynthesis in *Selaginella martensii* acclimated to different light regimes.** Lorenzo Ferroni, Marian Brestic, Riccardo Cantelli, Alex Zeri, Simonetta Pancaldi

9.45 **MADS-box genes expressed in floral buds of *Trithuria submersa*.** Silvia Moschin, Sebastiano Nigris, Leonardo Bruno, Adriana Chiappetta, Maria Beatrice Bitonti, Giorgio Casadoro, Barbara Baldan

10.00 **Genetic and molecular pathways regulating *Ginkgo biloba* ovule development: preliminary results.** Sebastiano Nigris, Chiara Tessari, Cheyenne Dell'Aquila, Silvia Moschin, Giorgio Casadoro, Barbara Baldan

10.15 **Deep insights on woody roots response to mechanical constraints.** Dalila Trupiano, Elena De Zio, Antonio Montagnoli, Donato Chiatante, Karin Ljung, Andrea Rossi, Gabriella Stefania Scippa

Moderatore: Stefano Castiglione

10.30 **GUN1 controls the accumulation of NEP-dependent transcripts and chloroplast protein import in *Arabidopsis* cotyledons.** Luca Tadini, Carlotta Peracchio, Andrea Trotta, Monica Colombo, Ilaria Mancini, Nicolaj Jeran, Franco Faoro, Milena Marsoni, Candida Vannini, Eva-Mari Aro, Paolo Pesaresi

10.45 **The MADS-box transcription factor SEEDSTICK (STK) acts through CYTOKININ OXIDASE/DEHYDROGENASE 7 (CKX7) to guide fruit elongation.** Maurizio Di Marzo, Humberto Herrera-Ubaldo, Elisabetta Caporali, Ondrej Novak, Ignacio Ezquer, Marta A. Mendes, Stefan de Folter, Lucia Colombo

11.00 **Vacuolinos coexist with the central vacuole and contribute to the shape of conical epidermal cells.** Martina Cerri, Shuangjiang Li, Yanbang Li, Cornelis Spelt, Mattijs Bliek, Michiel Vandenbussche, Enric Martínez Calvó, Biao Lai, Ronald Koes, Francesca M. Quattrocchio, Lara Reale

11.15 **Effect of cytokinins on adventitious shoot regeneration from leaves of peach cultivars growing *in vitro*.** Gaia Urbinati, Adele Gentile, Emilia Caboni

11.30 *Coffee break*

Moderatore: Flavia Guzzo

11.50 **In search of tryptamine and serotonin biological roles in tomato.** Mauro Commisso, Stefano Negri, Linda Avesani, Martino Bianconi, Stefania Ceoldo, Flavia Guzzo

12.05 **Transcriptional control of fruit development.** Chiara Mizzotti, Carolina Cozzi, Sara Forlani, Simona Masiero

12.20 **VACUOLAR SORTING PROTEIN 13 (VPS13) interacts with AGO1 and AMP1 to control translational repression mediated by miRNA during reproductive development.** Mara Cucinotta, Riccardo Brioschi, Vicente Balanzà, Grégoire Denay, Simon Rudiger, Diana Rigola, Peter Van Dijk, Stefania Oliveto, Stefano Biffo, Lucia Colombo

12.35 **Effect of iron, light and vitamin B12 co-limitation on phytoplankton key species of the Ross Sea (Antarctica).** Francesco Bolinesi, Maria Saggiomo, Angelina Cordone, Olga Mangoni

12.50 **The pollen allergenicity in the *Ambrosia* genus: similarities and differences among *A. artemisiifolia*, *A. trifida* and *A. psilostachya.*** Chiara Montagnani, Sarah Caronni, Riccardo Asero, Milena Marsoni, Marcella Bracale, Elisabetta Onelli, Rodolfo Gentili, Sandra Citterio

13.05 ***Chiusura dei lavori e ringraziamenti***

14.30 Visita al Palazzo Reale di Napoli

18.00 Escursione in Kayak dell'Area Marina protetta della Gaiola

Dynamic interactions between host plant and its symbiontic endophytic bacteria: the olive tree as a holobiont

Adriano Sofo[1], Catia Fausto[1], Alba Nicoletta Mininni[1], Bartolomeo Dichio[1]

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Beneficial bacteria-plant interactions play an important role in plants, as bacterial endophytes do not cause apparent damage and contribute to host plant protection and survival. The first part of this study was aimed to characterise the bacterial communities present in soil, leaf surface (phyllosphere) and xylem sap (XS) of olive trees. The XS was extracted from olive shoots using Sholander pressure chambers. The experimental orchard has been divided in two plots that have been managed for 18 years with two different systems: a) 'sustainable management' (S_{mng}), with no-tillage, fertigation and internal C-inputs (spontaneous weeds and pruning residues), and b) an adjacent rainfed 'conventional management' (C_{mng}), that included soil tillage and mineral fertilization. A metagenomic approach was used to detect microorganisms, in order to estimate bacterial diversity and abundance, and to identify the bacterial taxa of the three analysed compartments in plants subjected to the two systems. The abundance and diversity of bacterial taxa in soil was higher compared to those found in the phyllosphere and XS. Bacterial communities generally came from the soil and reached the aerial plant parts through the XS. The application of different agronomic practices strongly influenced the composition of soil, phyllosphere and XS bacterial communities. As an example, the S_{mng} system caused an improvement in the abundance of soil N-cycling bacteria and the presence of plant protective bacterial species in the phyllosphere. In the second part of the study, in order to examine the chemical changes due to XS bacterial colonization under the two different management systems, XS metabolome was analyzed in two sampling times (ST1: May; ST2: October) by ultra-high performance liquid chromatography (UHPLC) coupled to a hybrid quadrupole-time-of-flight mass spectrometer (QTOF-MS). The discriminating compounds were 94 at ST1 and 119 at ST2, and 35 of them were in common between the two sampling times. The majority of the discriminating metabolites (73 on 94 at ST1, and 109 on 119 at ST2) were found at higher concentration in the XS of S_{mng} plants, compared to that of C_{mng} ones. Most of the discriminating metabolites found in the XS (about 80%, both at ST1 and ST2) were involved in plant secondary metabolism, mainly for plant chemical defense, growth regulation and signal transduction. The most prevailing class of compounds included terpenoids, phytohormones, alkaloids, sterols/steroids, retinols/retinoids, tocopherols and carotenoids. The potential agronomic benefits of the specific bacterial taxa detected under the S_{mng} system could improve plant growth protection and provide a higher crop quality in olive plants and similar fruit species. For the first time, we have demonstrated that the endophytes and the XS metabolome of a tree crop significantly respond to the agronomic practices adopted. On this basis, we can assert that the host plant and its microbiota can be considered as a halobiont, and that this ecological unit is not constant but depends on external conditions. From a practical point of view, the results of our study encourage the use of a set of sustainable agricultural practices in a productive orchard, in order to enhance plant physiological status, increase yield quantity/quality, safeguard the environment and ameliorate human health.