

Serbian Plant Physiology Society

Institute for Biological Research „Siniša Stanković”, University of Belgrade

2nd International Conference on Plant Biology

21th Symposium of the Serbian Plant Physiology Society

COST ACTION FA1106 QUALITYFRUIT Workshop



Petnica Science Center, June 17-20, 2015

2nd International Conference on Plant Biology • 21th Symposium of the Serbian Plant Physiology Society • COST ACTION FA1106 QUALITYFRUIT Workshop
PETNICA SCIENCE CENTER 17-20 JUNE, 2015

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PROGRAMME

2nd International Conference on Plant Biology • 21th Symposium of the Serbian Plant Physiology Society • COST ACTION FA1106 QUALITYFRUIT Workshop PETNICA SCIENCE CENTER 17-20 JUNE, 2015

Wednesday 17th June, 2015

09:00-14:00 *Registration*
14:00-15:00 *Lunch*

Section I: **Plant Biotechnology**

15:00-15:30	<i>Opening Ceremony</i>	
15:30-16:00	(Invited talk) Alain Tissier	Systems biology of a plant cell factory, the tomato glandular trichomes
16:00-16:20	(Invited talk) Jules Beekwilder	Biotechnological production of plant compounds
16:20-16:40	(Invited talk) Milen Georgiev	Metabolomics, lead, discovery and plant biotechnology: perfect holistic match?
16:40-17:00	(Invited talk) Dragana Božić	Exploring the secondary metabolism in trichomes of <i>Salvia fruticosa</i> and <i>Rosmarinus officinalis</i> : the case of carnosic acid
17:00-17:30	<i>Coffee break</i>	
17:30-17:45	(Selected talk) Milica Bogdanović	Problems in detecting activity of fluorescent reporter genes – case of DsRED and GFP
17:45-18:00	(Selected talk) Stevan Jeknić	Alteration of flower color in <i>Solanum lycopersicum</i> through ectopic expression of a gene for capsanthin-capsorubin synthase from <i>Lilium lancifolium</i>
18:00-18:15	(Selected talk) Miloš Prokopijević	Characterization of soybean hull peroxidase immobilized on glycidyl methacrylate copolymers
18:30-19:30	<i>Poster session: Plant Biotechnology</i>	
20:00-21:00	<i>Dinner</i>	
21:00-	<i>Wine tasting</i>	

Wednesday 17th June, 2015

08:00-09:00 *Breakfast*

Section II: **Plant Growth, Development, Metabolism and Nutrition**

09:00-09:30	(Invited talk) James Giovannoni	Harnessing genetic diversity to better understand regulation of tomato fruit ripening and nutritional quality
09:30-09:50	(Invited talk) Christian Fankhasuer	Photosensory receptor-mediated growth responses in Arabidopsis
09:50-10:10	(Invited talk) David Honys	Male germline development: lesson from the -omics
10:10-10:30	(Invited talk) Dragan Vinterhalter	Acid growth theory, auxin and potato phototropism
10:30-10:50	(Invited talk) Bojana Banović	How to avoid self-fertilization in plants- a buckwheat story
10:50-11:20	<i>Coffee break</i>	

11:20-11:50	(Invited talk) Hrvoje Fulgosi	Revisiting alternative electron partitioning pathways in photosynthesis
11:50-12:10	(Invited talk) Miroslav Nikolić	The rhizosphere: perspective and challenges for plant nutrition
12:10-12:30	(Invited talk) Jelena Samardžić	Silicon alleviates oxidative stress in cucumber plants grown under copper excess
12:30-12:45	(Selected talk) Lidija Begović	Lignin deposition and synthesis in the internodes during barley (<i>Hordeum vulgare</i> L.) development
12:45-13:00	(Selected talk) Milan Dragičević	DUF1070 is a conserved signature domain of some arabinogalactan peptides
13:00-13:15	(Selected talk) Jan Fíla	Phosphoproteomics profiling of tobacco mature pollen and pollen activated <i>in vitro</i>
13:15-13:30	(Selected talk) Václav Motyka	New findings about the role of <i>cis</i> -zeatin-type cytokinins in plant physiology and evolution
14:00-15:00	<i>Lunch</i>	

Section III: Plant and Fungal Natural Products in Human Nutrition and Medicine

15:00-15:30	(Invited talk) Autar Mattoo	Functional Foods & Nutrition: Facts, Fiction, and Needs
15:30-15:50	(Invited talk) Nataša Simin	Wild-growing <i>Allium</i> species (sect. <i>Codonoprasum</i>) as promising sources of novel herbal drugs
15:50-16:10	(Invited talk) Marina Soković	Alternative sources of natural products: mystery of mushrooms and beyond
16:10-16:25	(Selected talk) Miloš Đorđević	<i>Centaurium erythraea</i> extract improves redox-status and antioxidant enzyme activity of STZ-treated pancreatic β -cells and diabetic rat liver and kidney
16:25-16:40	(Selected talk) Bojan Jevtić	Effects of cucumber extracts on cytokine production in encephalitogenic cells
16:40-16:55	(Selected talk) Filis Morina	Quercetin 7- <i>O</i> -glucoside inhibits the formation of dinitrosocatechins and their quinones in catechin/nitrite systems under stomach simulating conditions
16:55-17:10	(Selected talk) Milica Pešić	Development of natural product drugs in a sustainable manner
17:10-17:30	<i>Coffee break</i>	

Section IV: Phytochemistry

17:30-18:00	(Invited talk) Roque Bru Martínez	Early and late molecular mechanisms involved in the biosynthesis and accumulation of stilbenoids in elicited grapevine cell cultures established from berries
18:00-18:20	(Invited talk) Sokol Abazi	Chemical analysis of secondary metabolites isolated from endemic Albanian plants with subcritical CO ₂
18:20-18:40	(Invited talk) Vuk Maksimović	Composition and therapeutic values of berry wines - bitter truth about sweet product
18:40-19:00	(Invited talk) Maja Natić	Phenolic profiles of wild fruits grown in Serbia
19:00-19:15	(Selected talk) Dorisa Cela	NMR structure elucidation of a new alkaloid isolated from <i>Gymnospermium maloi</i>
19:15-19:30	(Selected talk) Đura Nakarada	Thapsic acid, a rarely found natural product among bryophyte species
19:30-20:30	Poster sessions: <i>Plant Growth, Development, Metabolism and Nutrition; Plant and Fungal Natural Products in Human Nutrition and Medicine; Phytochemistry</i>	

20:30-21:00	Dinner
21:00-21:30	Presentation of Petnica Science Center
21:30-22:30	Tour around Petnica Science Center

Friday 19th June, 2015

08:00-09:00 Breakfast

Section V: Biodiversity and Conservation

09:00-09:30	(Invited talk) Goran Anačkov	Phenotypic plasticity or new taxa?
09:30-09:50	(Invited talk) Jelena Aleksić	What does Balkan Peninsula has to offer to conservation biologists?
09:50-10:10	(Invited talk) Maja Lazarević	Plant diversity drivers in the Balkans: ploidization, hybridization and cryptic speciation
10:10-10:25	(Selected talk) Zora Dajić Stevanović	Conservation of floristic and vegetation diversity in Southeast Europe: sustainable use and ecosystem services approach
10:25-10:40	(Selected talk) Mihailo Jelić	Assessment of genetic integrity and diversity of <i>Populus nigra</i> in protected areas along the Danube River
10:40-10:55	(Selected talk) Marko Sabovljević	Conservation biology of European bryophytes
11:10-11:30	Coffee break	

Section VI: Evolutionary Plant Biology

11:30-12:00	(Invited talk) Petr Smýkal	Past legume crop domestication and agriculture of tomorrow
12:00-12:20	(Invited talk) Stevan Avramov	Comparative approach in evolutionary ecology of plants
12:20-12:40	(Invited talk) Yuval Sapir	Population divergence and speciation within a species: ecology and the Royal Irises
12:40-12:55	(Selected talk) Aleksej Tarasjev	Population scale multi-year monitoring of <i>Iris pumila</i> in Deliblato Sand: flowering phenology
12:55-13:10	(Selected talk) Vukica Vujić	Light induces variation in size and shape of <i>Iris pumila</i> flower parts in two natural habitats
13:10-13:25	(Selected talk) Sanja Manitašević Jovanović	How do <i>Iris pumila</i> plants respond to photo-oxidative stress in the wild: the variation of leaf functional traits?
13:30-13:45	Group photo	
14:00-15:00	Lunch	

Section VII: Molecular mechanisms underlying health compounds biosynthesis in fruits (COST ACTION FA1106)

11:50-15:40	(Invited talk) Angelos Kanellis	Introduction to Session Genetic improvement of fruits and vegetables for health
15:40-16:10	(Invited talk) Mondher Bouzayen	Cross-talk between multiple hormone signaling pathways associated with the ripening of tomato fruit
16:10-16:40	(Invited talk) Julia T Vrebalov	The role of transcription factors in regulation of tomato fruit ripening and quality

16:40-17:10	(Invited talk) Cathie Martin	Engineering the production of health-promoting metabolites in tomato for studies of comparative nutrition
17:10-17:40	(Invited talk) Giovanni Giuliano	Tomato fruit carotenoid biosynthesis: regulation and evolutionary aspects
17:40-18:10	(Invited talk) Panagiotis Kalaitzis	Suppression of a tomato prolyl 4 hydroxylase results in multiple alterations on fruit development, ripening and health components
18:10-18:30	<i>Coffee break</i>	
18:30-19:30	Poster sessions: <i>Biodiversity and Conservation; Evolutionary Plant Biology</i>	
21:00-	<i>Gala dinner</i>	

Saturday 20th June

08:00-09:00 *Breakfast*

Section VIII: Abiotic and Biotic Stress and Ecophysiology

09:00-09:30	(Invited talk) Harro Bouwmeester	Strigolactones. Key players in the adaptation of plants to the abiotic environment
09:30-09:50	(Invited talk) Miroslav Lisjak	H ₂ S and NO signalling in plants
09:50-10:10	(Invited talk) Jelena Savić	Essential oils elicit defense genes in potato: Can volatiles released from damaged plants prime defense in their undamaged neighbours?
10:10-10:30	(Invited talk) Živko Jovanović	<i>Alyssum markgrafii</i> as a model organism to study metal hyperaccumulation
10:30-10:45	<i>Coffee break</i>	
10:45-11:00	(Selected talk) Dejana Panković	The influence of <i>Trichoderma</i> spp. treatment on water regime, ABA content and gene expression in leaves and roots of tomato in drought conditions
11:00-11:15	(Selected talk) Zorana Katanić	Effect of dynamic changes of vegetative compatibility types in <i>Cryphonectria parasitica</i> populations on biological control of chestnut blight in Croatia
11:15-11:30	(Selected talk) Nevena Nagl	Effect of <i>in vitro</i> induced water deficit on lipid peroxidation intensity and antioxidant capacity of sugar beet
11:30-11:45	(Selected talk) Marija Vidović	High PAR and UV-B radiation-induced differential responses in green and white leaf sectors of <i>Pelargonium zonale</i> in relation to sugar, antioxidative and phenolic metabolism
12:00-13:00	Poster session: <i>Abiotic and Biotic Stress and Ecophysiology</i>	
13:00-13:30	<i>Closing Ceremony</i>	
13:30-14:30	<i>Meeting of the Serbian Plant Physiology Society/Cost Action FA1106</i>	
14:30-15:30	<i>Lunch</i>	
16:00-19:30	<i>Excursion (Gradac Canyon and "Čelije" Monastery)</i>	
19:30	<i>Departure</i>	
21:00	<i>Arrival in Belgrade</i>	

of the fungus, consequently causing healing of cankers and recovery of infected trees. Transmission of CHV1 occurs horizontally via hyphal anastomosis and vertically into conidia, but not into ascospores. However, horizontal transmission of CHV1 is limited by the vegetative (in)compatibility system of the fungal host. Research conducted over a period of ten years revealed qualitative and quantitative changes of the vegetative compatibility (vc) types of *C. parasitica* populations in Croatia. Formally dominant vc types are becoming less frequent over time, some vc types are no longer present, and some novel vc types emerged in the studied populations. This could be the result of sexual reproduction and/or migrations from adjacent areas and it could, at least partially, account for decrease in percentage of hypovirulent (virus-infected) fungal isolates detected in these populations. Due to these changes of *C. parasitica* populations in Croatia, naturally present virus-induced hypovirulence may not be sufficient for the protection of the chestnut forests and human-mediated biocontrol using carefully selected CHV1 isolates might become necessary.

Keywords: chestnut blight, *Cryphonectria parasitica*, vc type diversity, biological control

Effect of *in vitro* induced water deficit on lipid peroxidation intensity and antioxidant capacity of sugar beet

OP8-3

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Accompanied by oxidative stress as a signal to activate defense mechanisms, various abiotic factors induce peroxidation of membrane lipids. The aim of this research was to analyse changes in lipid peroxidation (LP) intensity and antioxidant capacity of selected sugar beet genotypes during micropropagation under the conditions of water deficit. Performed research represents a part of a more comprehensive study, the purpose of which is understanding the difference in acclimation to drought as the major abiotic factor limiting sugar beet production in Serbia. The best solution for overcoming this obstacle in successful sugar beet growing is breeding for drought tolerance. Tested sugar beet genotypes were grown and multiplied *in vitro* on standard nutrient medium. Axillary shoots were placed on the micropropagation media with 3% and 5% PEG for 28 days, which caused physiological drought stress. All genotypes could be divided into three groups according to the level of LP, however only two of eight genotypes had significantly higher LP intensity during drought conditions when compared to their controls (10.1-29.1%), as well as significantly reduced antioxidant activity (22.2-59.9%). A slight decrease in LP intensity and enhanced antioxidant capacity (up to 92.9%) in comparison to control were recorded in treatments of the rest of investigated genotypes. As for correlation between tested biochemical parameters and growth conditions, all genotypes differed in their response to PEG concentration. Obtained results showed that LP intensity and antioxidant capacity could be used as biochemical parameters in assessing drought tolerance of individual genotypes in further selection of sugar beet.

Keywords: antioxidant activity, biochemical markers, micropropagation, sugar beet