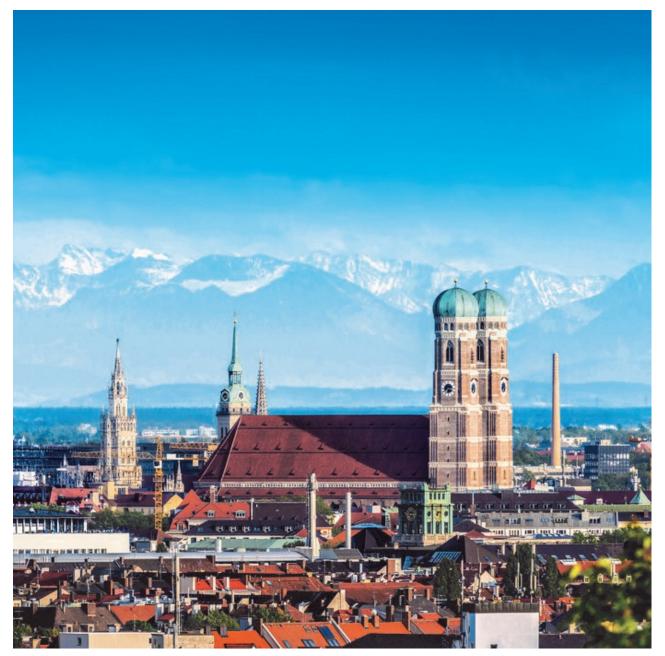
HelmholtzZentrum münchen

German Research Center for Environmental Health

14th International Conference on

Reactive Oxygen and Nitrogen Species in Plants

July 10 - 12, 2019 | Munich, Germany



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Plant Oxygen Group (POG)



Society for Free Radical Research Europe (SFRRE)



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POG 2019

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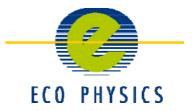
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Conference Language

The official conference language is English.

Conference Dinner on Thursday, July 11

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Conference Program

Wednesday, July 1	0, 2019	
8:30 - 9:15	Registration	
9:15 - 9:30	Welcome address, opening remarks	
9: 30 - 12:45	Session I: Concepts and Directions in Redox Signaling Research Chairs: Ilse Kranner & Karl-Josef Dietz	
9:30 - 10:00	FERROPTOSIS, A METABOLIC DEATH PATHWAY Conrad, Marcus	T 1 p. 13
10:00 - 10:30	CONCEPTS AND DIRECTIONS IN REDOX SIGNALLING IN PLANTS Foyer, Christine	Т 2 p. 14
10:30 - 10:45	Discussion	
10:45 - 11:20	Coffee Break	
11:20 - 11:40	THE EVOLUTION OF NITRIC OXIDE SIGNALLING DIVERGES BETWEEN THE ANIMAL AND THE GREEN LINEAGES Astier, Jeremy	Т 3 p. 15
11:40 - 12:00	CHLOROPLASTS REQUIRE GLUTATHIONE REDUCTASE TO BALANCE REACTIVE OXYGEN SPECIES AND MAINTAIN EFFICIENT PHOTOSYNTHESIS Müller-Schüssele, Stefanie	T 4 p. 16
12:00 - 12:20	S-NITROSOTHIOLS AS ARCHITECTS OF THE HISTONE PTM PATTERN AND DNA-METHYLATION IN <i>ARABIDOPSIS THALIANA</i> Lindermayr, Christian	T 5 p. 17
12:20 - 12:45	Elevator Pitch I - uneven numbers (see page 50)	
12:45 - 14:30	Lunch Break & Poster Session I (uneven numbers)	
14:30 - 17:40	Session II: New Tools for Redox Signaling Research Chairs: Sabine Lüthje & Frank van Breusegem	
14:30 - 15:00	YES TO NO? BIOSENSORS Waldeck-Weiermair, Markus	Т6 р. 18
15:00 – 15:30	THE JANUS FACE OF PLANT HYPOXIA Licausi, Francesco	Т 7 р. 19
15:30 - 15:50	THE ROS WAVE: ITS REAL-TIME WHOLE-PLANT DETECTION, FUNCTION AND CHARACTERIZATION Mittler, Ron	Т 8 р. 20
15:50 - 16:20	Coffee Break	
16:20 - 16:40	MINING FOR PROTEIN S-SULFENYLATION IN <i>ARABIDOPSIS THALIANA</i> UNCOVERS NEW REDOX-SENSITIVE SITES Messens, Joris	Т 9 p. 21
16:40 - 17:00	INTEGRATED PROTEOGENOMIC, QUANTITATIVE REDOX PROTEOMIC AND METABOLOMIC APPROACHES REVEAL SIGNATURES OF SEED DORMANCY CONTROL IN WHEAT Bykova, Natalia	T 10 p. 22
17:00 - 17:20	NEW ANALYTICAL METHOD ENABLING REAL-TIME H ₂ O ₂ DETECTION IN THYLAKOIDS SHOWS THAT PSI UNIQUELY GENERATES CHLOROPLASTIC H ₂ O ₂ SIGNAL Fitzpatrick, Duncan	T 11 p. 23
17:20 - 17:40	PITFALLS IN ACCURATE ANALYSIS OF REACTIVE CARBONYL COMPOUNDS FROM BIOLOGICAL SAMPLES Birkemeyer, Claudia	T 12 p. 24
	Plant Oxygen Group Meeting	

Thursday, July 11, 2019			
9:00 - 12:15	Session III: ROS and redox-active Gases in Development and Plant Physiology Chairs: Elizabeth Vierling & Ismail Turkan		
9:00 - 9:30	NITRIC OXIDE SYNTHASE IN PLANTS: WHERE DO WE STAND? Wendehenne, David	T 13 p. 25	
9:30 - 10:00	COORDINATION OF CHLOROPLASTIC AND MITOCHONDRIAL ROS SIGNALING Kangasjärvi, Jaakko	T 14 p. 26	
10:00 - 10:20	THE INVOLVEMENT OF MITOCHONDRIAL ELECTRON TRANSPORT CHAIN COMPONENTS IN NITRIC OXIDE METABOLISM IN PLANTS Igamberdiev, Abir	T 15 p. 27	
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14:00 - 14:30	ELEVATED TEMPERATURES AND DROUGHT DURING SEED MATURATION AFFECT REDOX SIGNALING Kranner, llse	T 19 p. 31	
14:30 - 15:00	MEDIATOR AND ELONGATOR SUBUNITS REGULATE H_2O_2 SIGNALING AND RESPONSES TO OXIDATIVE STRESS Mhamdi, Amna	T 20 p. 32	
15:00 - 15:20	SINGLET OXYGEN MEDIATED STRESS RESPONSES ARE GOVERNED BY RNA OXIDATION AND ATTENUATION OF CELLULAR TRANSLATION Koh, Eugene	T 21 p. 33	
15:20 - 15:50	Coffee Break		
15:50 – 16:10	FAST REDOX RESPONSE OF IRON-SULFUR GLUTAREDOXIN GRXS17 ACTIVATES ITS HOLDASE ACTIVITY AND PROTECTS PLANTS FROM HEAT STRESS Martins, Laura	T 22 p. 34	
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	HISTORY IS BUNK Mullineaux, Philip	p. 36	
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	Moderator: Karl-Josef Dietz		
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Friday, July 12, 2019		
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9:00 - 9:30	ADAPTATION TO ENVIRONMENTAL STRESS BY A DYNAMIC CHROMATIN-BASED STRESS MEMORY Bäurle, Isabel	T 25 p. 37
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11:30 - 11:50	THE RESPONSE OF UNCOUPLING PROTEINS TO BACTERIAL ELICITOR INDUCED OXIDATIVE BURST Szarka, András	T 30 p. 42
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12:10 - 13:15	Lunch Break	
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13:15 – 13:40	MITOCHONDRIAL MTERF PROTEINS AND STRESS TOLERANCE Vierling, Elizabeth	T 32 p. 44
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14:25 – 14:45	FUNCTION AND REGULATION OF THE PLASTID PEROXIREDOXIN II E Dreyer, Anna	T 35 p. 47
14:45 – 15:05	THE MOONLIGHTING FUNCTION OF SUPEROXIDE DISMUTASE DEPENDS ON A NOVEL CLASS OF TRANSCRIPTIONAL CO-ACTIVATORS Schippers, Jos	T 36 p. 48
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DEVELOPMENTAL MONITORING OF GLUTATHIONE REDUCTASE ACTIVITY, EXPRESSION, CELL LOCALIZATION AND MOLECULAR VARIABILITY REVEALS ITS RELEVANCE IN THE MAINTENANCE OF REDOX HOMEOSTASIS IN MALE GAMETOPHYTE OF THE OLIVE TREE (*OLEA EUROPAEA* L.)

E. Lima-Cabello, E. García-Quirós, I.M. Martínez-Beas, J.C. Jimenez-Lopez & J.D. Alché

Plant Reproductive Biology and Advanced Microscopy Laboratory, Department of Biochemistry, Cellular and Molecular Biology of Plants, Estación Experimental del Zaidín (CSIC), Profesor Albareda 1, 18008 Granada, Spain

Glutathione is a tripeptide of low molecular weight present in most plant cells, determining correct development and physiology throughout its antioxidant character, concomitant with additional roles in Sulphur assimilation, heavy metal detoxification, gene expression, signaling etc. Glutathione can be present in both its oxidized (GSSG) and reduced (GSH) forms, with natural predominance of the later under non-stressing conditions. Glutathione reductase (GR; E.C. 1.8.1.7) represents the major enzyme activity converting GSSG into GSH by using NADPH. The key importance of this enzyme in maintaining redox homeostasis of plant tissues under different conditions has been widely reported. However, our knowledge on the presence, activity, localization and variability of this enzyme in the plant reproductive tissues is rather limited. In the present work we have determined the presence of numerous GR transcripts in the reproductive transcriptome of the olive tree (ReprOlive), which have been deeply analysed by using bioinformatics tools to determine phylogenetic relationships with other plant GR sequences, predict their physic-chemical properties, their potential post-translational modification, putative cell localization, and predicted 3-D structure.

In addition to predictive tools, a broad panel of biochemical analyses has been performed to assess and quantify overall GR activity in the developing anther, the mature olive pollen and the growing pollen tube *in vitro* at different developmental stages. Presence of specific variants of GR has also been assessed by means of *in gel* activity assays. The activity of the enzyme was differentially inhibited in the presence of the GR inhibitors L-carmustinine, 2-AAPA acetylamine and BSO in the reproductive e tissues. Heterologous antibodies from *A. thaliana* were used to identify and quantify the different forms of the protein present in pollen extracts. Moreover, immunocytochemical analyses using the same set of antibodies confirmed cell localization of the enzyme over the bioinformatic prediction. Finally, the expression of the GR forms detected in the reproductive tissues was assessed by q-PCR. The mRNAs corresponding to the enzyme displayed conspicuous changes along development, and in the different tissues analysed, thus providing evidence of the importance of the enzyme in the reproductive process.

This work was made in the frame of ERDF co-funded projects BFU2016-77243-P and RTC2017-6654-2