

# S<sup>2018</sup>

## 11<sup>th</sup> International Plant Sulfur Workshop

*Impact of sulfur on plant metabolism, development and yield*

September 16-20, 2018      Conegliano, Italy

### Final Programme

**DAFNAE**

Department of Agronomy Food  
Natural resources Animals Environment



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# PROGRAMME

## Sunday, September 16, 2018

- 18.00 Welcome reception and registration
- 20.00 **Opening of the 11<sup>th</sup> International Plant Sulfur Workshop meeting**  
*Mario Malagoli, Padova, Italy, Stan Kopriva, Cologne, Germany*
- 20.15 **Plenary lecture**  
Convergence Mechanism of CO<sub>2</sub>- and Abscisic Acid-triggered Stomatal Closure and Identification of an Intracellular CO<sub>2</sub> Sensing Mechanism in Guard cells.  
*Julian Schroeder, University of California, San Diego, USA*

## Monday, September 17, 2018

### ***Session I - Sulfur uptake and allocation***

***Chair: Rudiger Hell, Centre for Organismal Studies, Heidelberg University, Heidelberg, Germany***

- 09.00 Epigenetic control of sulfur homeostasis in *Arabidopsis thaliana*.  
*Xinyuan Huang, Nanjing Agricultural University, Nanjing, China*
- 09.45 Molecular networks of sulfate transport, signaling and regulation.  
*Hideki Takahashi, Michigan State University, East Lansing, USA*
- 10.15 SDI protein function in controlling plant sulphur metabolism.  
*Rainer Hoefgen, Max Planck Institute of Molecular Plant Physiology, Potsdam, Germany*
- 10.30 *Arabidopsis* EILs regulate the sulfate assimilation pathway and response to sulfur deficiency.  
*Christof Dietzen, University of Cologne, Cologne, Germany*
- 10.45 Coffee break

**Chair: Rainer Hoefgen**, Max Planck Institute of Molecular Plant Physiology, Postdam, Germany

- 11.15 Natural variation in sulfate content in *Arabidopsis* and beyond.  
*Stan Kopriva, University of Cologne, Cologne, Germany*
- 11.45 Sulfur metabolism in C4 dicots and monocots.  
*Timothy Jobe, University of Cologne, Cologne, Germany*
- 12.00 Regulation of sulfur metabolism in C4 plants.  
*Ties Ausma, University of Groningen, Groningen - The Netherlands*
- 12.15 Human Sulfation Pathways and Protein Stability.  
*Jonathan W. Mueller, University of Birmingham, Birmingham-UK*
- 12.30 Lunch break
- 14.00 Poster Session

## **Session II – Sulfur reduction and aminoacid biosynthesis.**

**Chair: Moshe Sagi**, Ben-Gurion University of the Negev, Ben-Gurion, Israel

- 14.30 Sulfur switches and redox controls.  
*Joseph Jez, Washington University, St. Louis, USA*
- 15.15 The target of rapamycin is a crucial component of the sulfur deficiency response.  
*Markus Wirtz, Heidelberg University, Heidelberg, Germany*
- 15.45 Keeping a balance between biosynthesis and degradation of glutathione controls vegetative growth.  
*Andreas Meyer, University of Bonn - Bonn, Germany*
- 16.00 New roles for cysteine synthase OAS-TL a and energy sensor kinase SnRK1 in the sulfur deficiency response.  
*David Schiel, Heidelberg University, Heidelberg, Germany*
- 16.15 Coffee break

**Chair: Agnieszka Sirko**, Polish Academy of Sciences, Warsaw, Poland

- 16.45 Hydrogen sulfide acts as a signaling molecule regulating autophagy.  
*Cecilia Gotor, Spanish National Research Council, Seville, Spain*
- 17.15 Does the enzyme methionine  $\gamma$ -lyase play a role in the metabolism of methionine during *Arabidopsis* seed development and germination?  
*Rachel Amir, Migal, Israel*

- 17.30 Sulfur availability alters the localization of the RNA degradation initiation enzyme AtPARN.  
*Laura Armbruster, Heidelberg University, Heidelberg, Germany*
- 17.45 *Arabidopsis* O-acetylserine-(thiol) lyase can act as desulfhydrase of L-Cysteine and deselenohydrase of SelenoCysteine.  
*Assylay Kurmanbayeva, Ben-Gurion University of the Negev, Ben-Gurion, Israel*
- 18.00 General Discussion – Summary of the day  
**Facilitators: Hideki Takahashi, Markus Wirtz**

## Tuesday, September 18, 2018

### **Session III – Sulfur in abiotic and biotic stress response.**

**Chair: Dimitris Bouranis, Agricultural University of Athens, Athens, Greece**

- 09.00 Nitric oxide signaling in deconvolution.  
*Gary Loake, University of Edinburgh, Edinburgh, UK*
- 09.45 Intersection of hormonal regulation and intracellular signalling via the sulfur metabolism by-product, 3'-phosphoadenosine 5'-phosphate.  
*Kai Xun Chan, The Australian National University, Acton, Australia*
- 10.15 Suppressor of gamma response 1, glutathione and ethylene: partners in crime during the cadmium-induced stress response in *Arabidopsis thaliana*  
*Ann Cuypers, Hasselt University, Diepenbeek, Belgium*
- 10.30 Sulfite application results in sulfite self-amplification that leads to stomata opening and water loss.  
*Aizat Bekturova, Ben-Gurion University of the Negev, Ben-Gurion, Israel*
- 10.45 Coffee break  
**Chair: Karine Gallardo, Université Bourgogne Franche-Comté, Dijon, France**
- 11.15 Redox signaling in the chloroplast is linked to oxylipin and sulfur metabolism.  
*Karl-Joseph Dietz, Bielefeld University, Bielefeld, Germany*
- 11.45 AtNBR1, a selective autophagy cargo receptor as a possible factor adjusting *Arabidopsis* response to growth in sulfur deficit.  
*Agnieszka Sirko, Polish Academy of Sciences, Warsaw, Poland*
- 12.00 How does sulfur deficiency modulate pea response to water stress? Impact on early developing and mature seeds  
*Charlotte Henriët, INRA, Univ. Bourgogne Franche-Comté, Dijon, France*
- 12.15 An integrative approach of investigating natural variation in the accumulation of aliphatic glucosinolates in *Arabidopsis thaliana*.

*Suraj Sharma, Humboldt University, Berlin, Germany*

12.30 Lunch break

14.00 Poster Session

### **Session IV – Interaction with other nutrients and metabolic networks**

**Chair: Rachel Amir, Migal, Israel**

14.30 Regulation of plant growth and nutrient metabolism by the conserved TOR signaling pathway.

*Christian Meyer, Université Paris-Saclay, INRA Versailles, Versailles, France*

15.15 Phytosulfokine signaling of growth and drought stress response.

*Margret Sauter, University of Kiel, Kiel, Germany*

15.45 Sulphur supply alleviates cesium and sodium stress in *Arabidopsis*

*Eri Adams, RIKEN Center for Sustainable Resource Science, Kanagawa, Japan*

16.00 Silicon transcriptionally regulates sulfur and aba metabolism and delays leaf senescence in barley under combined sulfur deficiency and osmotic stress.

*Seyed A. Hosseini, Agro Innovation International Roullier, Saint Malo, France*

16.15 Coffee break

**Chair: Stefania Astolfi, University of Tuscia, Viterbo, Italy**

16.45 Understanding the crosstalk between iron sensing and sulfur metabolism.

*David Mendoza Cozatl, University of Missouri, USA.*

17.15 Mitochondria dysfunctions under Fe and S deficiency: is citric acid involved in the regulation of adaptive responses?

*Gianpiero Vigani, University of Torino - Italy*

17.30 Expression profile patterns of ferric iron chelation-strategy components in leaves of S-deprived maize plants.

*Styliani Chorianopoulou, Agricultural University of Athens, Athens, Greece*

17.45 General Discussion – Summary of the day

**Facilitators: Karine Gallardo, Rachel Amir**

**Wednesday, September 19, 2018**

### **Session V – Sulfur in specialized metabolism and storage.**

**Chair: Naoko Yoshimoto, Chiba University, Chiba, Japan**

09.00 Mapping transcriptional networks, to proving causal effects in plant metabolism illuminates a conditional genome at work.

*Daniel Kliebenstein, University of California, Davis, USA*

09.45 S-cells in the phloem cap of *Arabidopsis thaliana* accumulate glucosinolates for vascular protection.

*Barbara Halkier, University of Copenhagen, Frederiksberg c, Denmark*

10.15 Glutathione S-transferases in indole glucosinolate metabolism

*Pawel Bednarek, Polish Academy of Sciences, Poznań, Poland*

10.30 Novel role of camalexine in plant microbe interactions.

*Anna Koprivova, University of Cologne, Cologne, Germany*

10.45 Coffee break

**Chair: Luis Romero, Spanish National Research Council, Seville, Spain**

11.15 Nutraceuticals containing glucosinolates: extraction and advanced analytical tools.

*Stefano Dall'Acqua, University of Padova, Padova, Italy*

11.45 An asparagus blood pressure-lowering agent discovered by ultrahigh-resolution metabolomics

*Ryo Nakabayashi, RIKEN Center for Sustainable Resource Science, Yokohama, Japan*

12.00 Transcriptome-based approach for elucidation of secondary sulfur metabolism in garlic

*Naoko Yoshimoto, Chiba University, Chiba, Japan*

12.15 Mutational analysis of the thiocyanate-forming protein from *Thlaspi arvense* (TaTFP) for insights into catalytic mechanisms of specifier proteins.

*Nicola Schneegans, Technische Universität Braunschweig, Braunschweig, Germany*

12.30 Lunch break

14.00 Poster Session

## **Session VI – Sulfur in agriculture and ecophysiology**

**Chair: Michael Kertesz, University of Sydney, Sydney, Australia**

14.30 Disentangling the complexity and diversity of crosstalks between S and other mineral nutrients in cultivated plants.

*Alain Oury, Normandie Université, INRA, Caen, France*

15.15 Improvement of sulphur amino acid concentration in common bean.

*Frédéric Marsolais, London Research and Development Centre, London, Ontario, Canada*

15.45 Seed storage proteins quality and mineral profiles in seeds of oilseed rape are impacted by the level of sulfur fertilization.

*Jean-Christophe Avice, Normandie Université, INRA, Caen, France*

16.00 POLYHALITE - A prolonged release sulphate fertiliser.

*Garnett Scott, ICL Fertilisers, Saltburn-by-the-Sea, UK*

16.15 Coffee break

**Chair: Frédéric Marsolais**, *London Research and Development Centre, London, Canada*

16.45 Volatile thiol precursors in grapes: origin and factors modulating their concentration.

*Simone Vincenzi, University of Padova, Conegliano, Italy.*

17.15 Genetic diversity of organic sulfur utilization in canola and wheat rhizospheres.

*Michael Kertesz, University of Sydney, Sydney, Australia*

17.30 Germinative and post-germinative behaviours of *Brassica napus* seeds are impacted by the severity of S limitation applied to the parent plants.

*Jacques Trouverie, Normandie Université, INRA, Caen, France*

17.45 Best Poster Award

18.00 General Discussion – Final remarks

**Facilitator: Stan Kopriva**