



3rd Workshop - Carbon Allocation in Plants

Scientific Program

Monday 27th October

08:00 - 10:00 **Workshop registration – Installation of posters**

08:00 - 10:00 Welcome Coffee

10:10 - 10:30 **Welcome and opening remarks**

Helen North (Head of Institute Jean-Pierre Bourgin for Plant Sciences, Versailles, France).

Sylvie Dinant, John Lunn, Ekkehard Neuhaus, Ruth Stadler, Nathalie Pourtau

SESSION 1 – Plant metabolic responses to its environment

(How Environmental Factors Shape Carbon Allocation)

Moderators: Frédéric Rees, Fabien Chardon

10:30 - 11:00 **Thomas Nägele**, Ludwig-Maximilians University of Munich, Munich, Germany. «*Plasticity of plant carbon metabolism in a changing environment*»

11:00 - 11:20 **Victoria Acker**, Unité Prairies et Plantes Fourragères, Lusignan, France. «*CNW-Wheat: a functional-structural plant model integrating metabolic and hydraulic interactions in grasses*»

11:20 - 11:40 **Liesel Gamarra Reinoso**, Biological Resources Department, Budapest, Hungary. «*Barley responses to inorganic carbon supplementation reveal parallels with waterlogging-induced stress adaptation*»

11:40 - 12:10 **Corentin Dourmap**, IRHS, Beaucouze, France. «*How does metabolism adjust to changes in photosynthetic rate? A multi-omics study in sunflower leaves*»

12:10 - 13:40 Lunch break

SESSION 1 (continued)

13:40 - 14:00 **Rozenn Le Hir**, IJPB, Versailles, France. «*How perturbations of SWEET sugar transporters affect plant response to eCO₂?*»

14:00 - 14:20 **Dani Eshel**, Postharvest Science, Rishon LeZion, Israel. «*Rewiring carbon allocation via vacuolar invertase loss reveals an ABA-independent drought tolerance pathway in potato*»

SESSION 2 – Source-sink dynamics

(Unveiling the Genetic and Molecular Secrets of Carbon Partitioning)

Moderators: Fabien Chardon, Rozenn Le Hir

14:20 – 14:50 **Rubén Vicente**, Institute of Natural Resources and Agrobiology of Salamanca - CSIC Salamanca – Spain. «*Source-sink dynamics in wheat: non-foliar photosynthesis during grain filling under stress conditions*»

14:50 – 15:10 **Astrid Wingler**, School of Biological, Earth & Environmental Sciences, Cork, Ireland. «*Inflorescence photosynthesis determines carbon allocation, seed production and senescence in an agricultural weed*»

15:10 – 15:30 **Ander Yoldi-Achalandabaso**, Department of Plant Physiology and Ecology, Leioa, Spain. «*Can cereals benefit from vegetative drought events to cope with subsequent drought constrains at the reproductive stage? Exploring the priming effect*»

15:30 - 16:00 Coffee break

16:00 - 16:20 **Totte Niittylä**, Swedish University of Agricultural Sciences, Umeå, Sweden. «*Daytime leaf starch turnover supports tree growth*»

16:20 – 16:40 **Christopher Vincent**, Horticultural Sciences Departement and Citrus Research and Education Center, IFAS, Lake Alfred, United States. «*When photosynthetic capacity exceeds carbon transport capacity*»

16:40 - 17:00 **Nishadi M.N. Liyanage**, Kiwifruit New cultivars, Auckland, New Zealand. «*One gene, two fates: SHY GIRL (SYGL) shapes flower number through resource allocation*»

17:00 - 18:30 1st Poster Session

19:00 - 21:00 Cocktail at the Versailles Center

Tuesday 28th October

SESSION 3 – Regulation and signaling

(Decoding the Complex Regulation of Carbon Allocation in Plants)

Moderators: Catherine Bellini, Michael Hodges

09:00 - 09:30 **Elena Baena-González**, Oxford, United Kingdom. «*Regulation of plant growth by the SnRK1 protein kinase*»

09:30 – 09:50 **Wolfgang Dröge-Laser**, Julius-von-Sachs-Institute, Würzburg, Germany. «*Chloroplasts orchestrate a two-phasic activation mechanism of the central metabolic kinase SnRK1*»

09:50 – 10:10 **Moritz Göbel**, Institute of Plant Biochemistry, Düsseldorf, Germany. «*Trehalose 6-phosphate regulates root growth by nutrient allocation towards sink tissues*»

10:10 - 10:40 **Wenjia Xu**, Institute Jean Pierre Bourgin of Plant Sciences, Versailles, France. «*Plant-style 'pregnancy' recognition: maternal sucrose signals fertilization in Arabidopsis seeds*»

10:40 - 11:10 Coffee break

11:10 - 11:30 **Jakub Hajny**, Laboratory of Growth Regulators, Olomouc, Czech Republic. «*CANAR: a receptor regulating source-to-sink transport*»

11:30 – 11:50 **Andreas S. Richter**, Institute for Biosciences and Physiology of Plant Metabolism, Rostock, Germany. «*Spliceosomal complex components are critical for adjusting the C:N balance during high-light acclimation*»

11:50 - 12:10 **George Malcolm Woodward**, Faculty of Biological and Environmental Sciences, Helsinki, Finland. «*Manipulating carbon sink capacity to assess how cambium dynamics and within-tree feedbacks coordinate the regulation of wood growth and vascular continuity in hybrid Aspen*»

12:10 - 12:30 **Luisa Wittemeier**, Max Planck Institute of Molecular Plant Physiology, Potsdam, Germany. «*¹³C-positional enrichment analyses to investigate photosynthetic carbon fixation in the model species Synechocystis sp. PCC 6803*»

12:30 - 13:45 Lunch break

13:45 - 15:30 2nd Poster Session

15:30 - 16:00 Coffee break

SESSION 4 – Sugar partitioning and allocation in biotic interactions

(Fueling Interactions: The Role Of Sugar Allocation And Partitioning In Biotic Interactions)

Moderators: Rozenn Le Hir, Nathalie Pourtau

16:00 - 16:30 **Yves Gibon**, UMR Biologie du Fruit et Pathologie, INRAE Bordeaux - France.
«Carbon allocation and growth-resistance trade-offs»

16:30 - 16:50 **Robert Koller**, Institute for Bio- and Geosciences, Plant Sciences (IBG-2), Jülich, Germany. *«In vivo quantification of temporal transport velocities and allocation of photoassimilates within sugar beet taproot by tomographic imaging»*

16:50 - 17:10 **Olivier Dayou**, Institute für Evolution und Biodiversität, Muenster, Germany. *«Carbon heist: Haustorial parasitism reshapes source–sink dynamics in crop hosts»*

17:10 - 17:30 **Julia Leman**, Institute for Biology, Berlin, Germany. *«Metabolic compartmentalisation along the stem axis of Striga and Alectra reflects distinct zones of carbohydrate acquisition and utilisation»*

19:30 - 21:30 Dinner at Versailles - SOHO – Place Charost, Versailles

(bus transfer from the INRAE's center to the restaurant)

Wednesday 29th October

SESSION 5 - Innovative Biotech Solutions

(To Boost Carbon Allocation Efficiency)

Moderators: Michael Hodges, Sylvie Dinant

09:00 – 09:30 **John Lunn**, Max Planck Institute, Golm, Germany. *“International C4 Rice project and progress towards introducing the C4 pathway into rice”*

09:30 - 10:00 **Wolfgang Zierer**, Division of Biochemistry, Friedrich-Alexander-Universität, Erlangen, Germany. *«Engineering Vascular Potassium Transport Increases Yield and Drought Resilience of Cassava»*

SESSION 6 – Phloem and Transport of Photoassimilates

(The Fascinating World of Phloem Biology: Transporting Sugar and Photoassimilates)

Moderator: Catherine Bellini

10:00 – 10:20 **Gertrud Lohaus**, Molecular Plant Science/Plant Biochemistry, Wuppertal, Germany. *«Sugar partitioning and phloem loading in deciduous trees»*

10:20 - 10:40 **Christina Kühn**, Institute of Biologie- Plant Physiology Department, Berlin, Germany. «*Isolation and characterization of new sugar transporters from Mesembryanthemum crystallinum*»

10:40 – 11:10 **Wolf Frommer**, Heinrich-Heine University, Düsseldorf, Germany. «*Mysteries of the plant vasculature and the pathways and mechanisms for the translocation of molecules*»

11:10 - 11:40 Coffee break

11:40 - 12:10 **Ji-Yun Kim**, Sungkyunkwan University, Suwon - Korea. «*Dissecting the phloem from multiple angles*»

12:10 - 12:30 **Jean-Baptiste Salmon**, CNRS - Laboratoire du Futur, Pessac, France. «*Modeling sap transport using microfluidics and hydrogel membranes*»

12:30 - 14:00 Lunch break - End of Poster Session

Prizes

14:00 - 14:20 **Junior Prize Jeanne Marie Al Frenn**, Institute of Plants Sciences Paris-Saclay, Gif-Sur-Yvette, France. «*Chloroplast nucleoid-associated regulatory mechanisms behind the C4 photosynthetic differentiation in Zea mays*»

14:20 - 14:40 **Best Poster Prizes & Best Communication Prizes**

14:40 – 15:00 **Conclusions and Final Remarks**

Posters sessions

P1 - Cannelle Armengaud, Institute for Plant Sciences of Montpellier, Montpellier, France. *«Understanding the plasticity of the root nitrate transport and development to heterogeneous nitrate supply»*

P2 - Meerim Arystanbek Kyzy, Plant Physiology Department, Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau, Kaiserslautern, Germany. *«Early-Response to Dehydration 14 is a vacuolar sugar importer required for proper acclimation to fluctuating light»*

P3 - Antonia Chlubek, Institute for Plant Sciences IBG-2, Jülich, Germany. *«Uncovering Plant Carbon Dynamics with PET and Complementary Sensors»*

P4 - Lisa Couturier, Ecology and Biology of Interactions Unit, Poitiers, France. *«Establishment of a pathosystem between pea and the necrotrophic fungus Botrytis cinerea with a focus on STP13-like sugar transporter»*

P5 - Zhongting Deng, Institute Jean-Pierre Bourgin for Plant Sciences, Versailles, France. *«Role of sugar transporters in root development»*

P6 - Joan Doidy, Ecology and Biology of Interactions Unit, Poitiers, France. *«A transcriptomic atlas in Pisum sativum, facilitating systems biology approach of sugar transporters»*

P7 - Kaotar Elhazzime, Organismal and Evolutionary Biology research program, Helsinki, Finland. *«Of Sugar and Salt: A Sugar Transporter's Role in Stomatal Plasticity Under Osmotic Stress»*

P8 - Sara Forlani, Faculty of Biological and Environmental Sciences, Helsinki, Finland. *«Control of stomatal plasticity across leaf layers in changing CO₂ conditions»*

P9 - Andrew Friend, Department of Geography and Conservation Research Institute, Cambridge, UK *«Implications of source-sink feedbacks for modelling tree carbon assimilation and growth»*

P10 - Michelle Fritzler, Plant Physiology Department, Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau, Kaiserslautern, Germany. *«From greenhouse to field trials: How a modified potassium channel (AKT2var) can improve cassava yield»*

P11 - Clara Gilloteau, Institute Jean-Pierre Bourgin for Plant Sciences, Versailles, France. *«Investigation of the role of chlorophyll in carbon and nitrogen management in response to darkness in barley»*

P12 - Gregor Huber, Plant Sciences, Forschungszentrum Jülich, Germany. *«Spatio-temporal dynamics of carbon tracer transport in plants investigated by 11C-PET»*

P13 - Lucas Müller, Institute of Plant Biochemistry - Sugar Lab, Düsseldorf, Germany. *«The tissue-specific functions of trehalose 6-phosphate in Arabidopsis thaliana»*

P14 - Satoru Naganawa Kinoshita, Institute for Plant Biology and Biotechnology, Münster, Germany. «*A novel second-site mutation rescues *SUC2* dysfunction and sucrose allocation in *Arabidopsis**»

P15 - Jesús Praena, Max Planck Institute for Plant Breeding Research, Cologne, Germany. «*TPS1 dosage tunes *Tre6P*-dependent development in the *Pajares* accession of *Arabis alpina**»

P16 - Blanca Jazmin Reyes-Hernandez, Department of Plant and environmental sciences, University of Copenhagen, Copenhagen, Denmark. «*How plants win the race for light: regulating sucrose synthesis and transport*»

P17 - Khadija Rombi, Heinrich-Heine University, Düsseldorf, Germany. «*SWEET Secrets: Unveiling Sugar Translocation Pathways in Developing Seeds with Single-Cell RNA Sequencing*»

P18 - Claire Scheid, Plant Physiology Department, Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau, Kaiserslautern, Germany. «*The crucial role of *MEX1* in cold acclimation and freezing tolerance of *Arabidopsis thaliana**»

P19 - Ruth Stadler, Molecular Plant Physiology, Friedrich-Alexander-Universität, Erlangen, Germany. «*Phloem loading and assimilate partitioning in conifers: *Picea abies* and *Pinus sylvestris**»

P20 - Paula Teper Bamnolker, Postharvest, Mazkeret Batia, Israel. «*Utilizing Vacuolar Invertase Mutants in Potato as a Platform for Advanced Genome Editing*»

P21 - Marie-Noëlle Vaultier, UMR1434 Silva, Université de Lorraine-AgroParisTech-INRAE, Nancy, France. «*Ectomycorrhizal symbiosis prepares its host locally and systemically for abiotic cue signaling*»

P22 - Brigid Wong, Department of Plant Sciences, University of Cambridge, United Kingdom. «*The impact of carbon availability on whole-plant carbon partitioning during arbuscular mycorrhizal symbiosis*»

