



International Conference  
**Photosynthesis Research  
for Sustainability**

*in honor of Dr. George C. Papageorgiou*

September 21–26 2015  
Crete, Greece

PROGRAMME



International Conference

**“Photosynthesis Research  
for Sustainability-2015”**

*in honor of Dr. George C. Papageorgiou*

September 21–26, 2015  
Crete, Greece

Programme

**Crete – 2015**



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## WELCOME!

You are most welcome to the International conference “Photosynthesis Research for Sustainability-2015: in honor of Dr. George C. Papageorgiou” held in Greece.

This Meeting is a great occasion for discussions of previous, present, and future research on photosynthesis, from molecular to global, and to meet researchers of photosynthesis from around the world. This Meeting provides a forum for students, postdoctoral fellows and scientists from different countries to deepen their knowledge and understanding, widen professional contacts and create new opportunities, including establishing new collaborations. The topics of this conference range widely, including primary processes of photosynthesis, structure, function and biogenesis of the photosynthetic apparatus, photosystem I, and II, as well as water oxidation mechanism, artificial photosynthesis, regulation of photosynthesis and environmental stress, applied aspects of photosynthesis and emerging techniques for studying photosynthesis.

The multidisciplinary nature of this conference is obvious from the list of topics and presented lectures. In total, 120 lectures and posters will be presented.

Together with all of you, we look forward to a most interesting week with fascinating presentations and inspiring discussions within all aspects of photosynthesis research.

*James Barber,*

*Kostas Stamatakis,*

*Suleyman Allakhverdiev.*

## SECTIONS

1. Primary Processes of Photosynthesis
2. Structure, Function and Biogenesis of the Photosynthetic Apparatus
3. Photosystem II and Water Oxidation Mechanism
4. Energy Transfer and Trapping in Photosystems
5. Photosystem I and Bacterial Photosynthesis
6. Carbon Fixation (C3 and C4) and Photorespiration
7. Artificial and Applied Aspects of Photosynthesis
8. Regulation of Photosynthesis and Environmental Stress
9. Systems Biology of Photosynthesis: Integration of Genomic, Proteomic, Metabolomic and Bioinformatic Studies
10. Photosynthesis Education
11. Emerging Techniques for Studying Photosynthesis





## SCHEDULE: PHOTOSYNTHESIS RESEARCH FOR SUSTAINABILITY-2015

### 21 SEPTEMBER, 2015 (1<sup>ST</sup> DAY)

ARRIVAL AND REGISTRATION.

14:00 – OPENING CEREMONY:

SPECIAL EVENTS IN HONOR OF DR. GEORGE C. PAPAGEORGIOU

James Barber (UK), Govindjee (USA), Anastasios Melis (USA),  
Norio Murata (Japan), Eva-Mari Aro (Finland), Kimiyuki Satoh (Japan),  
Tingyun Kuang (China), Kostas Stamatakis (Greece)

INVITED PLENARY LECTURES:

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Chairpersons: Nathan Nelson (Israel), Bruce Barry (USA),  
Masahiko Ikeuchi (Japan)

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15:00–15:50 (50 min)

**James Barber** (Imperial College London, London, UK)  
Artificial Photosynthesis and Global Climate Change

15:50–16:40 (50 min)

**Jian-Ren Shen** (Photosynthesis Research Center, Graduate School of  
Natural Science and Technology, Okayama University, Okayama, Japan;  
Institute of Botany, Chinese Academy of Sciences, Beijing, China)  
Mechanism of photosynthetic water oxidation based on atomic structure  
of photosystem II

16:40–17:00 COFFEE BREAK

INVITED PLENARY LECTURES:

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Chairpersons: Jian-Ren Shen (Japan), Eva-Mari Aro (Finland),  
Suleyman Allakhverdiev (Russia)

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17:00–17:30 (30 min)

**Peter J. Nixon** (Department of Life Sciences, Sir Ernst Chain Building-  
Wolfson Laboratories, Imperial College London, London, UK)  
Early steps of photosystem II assembly

17:30–18:00 (30 min)

**Govindjee** (University of Illinois at Urbana-Champaign, Urbana, IL, USA)

Adventures with the green *Chlamydomonas reinhardtii*: in honor of George C. Papageorgiou

19:00 – WELCOME PARTY

## **22 SEPTEMBER**

INVITED PLENARY LECTURES:

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Chairpersons: James Barber (UK), Govindjee (USA), John F. Allen (UK)

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9:00–9:30 (30 min)

**Anastasios Melis** (Plant and Microbial Biology, University of California, Berkeley, USA)

Photosynthesis for fuel and chemicals production

9:30–10:00 (30 min)

**Eva-Mari Aro** (Molecular Plant Biology, Department of Biochemistry, University of Turku, Turku, Finland)

Photoprotection and Photodamage of Photosystems I and II – consequences on short-term thylakoid dynamics and long-term retrograde signaling

10:00–10:30 COFFEE BREAK

INVITED PLENARY LECTURES:

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Chairpersons: Jian-Ren Shen (Japan), Gyozo Garab (Hungary), Tatsuya Tomo (Japan)

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10:30–11:00 (30 min)

**Norio Murata** (National Institute for Basic Biology, Okazaki, Japan)

George Papageorgiou, glycinebetaine, and protection against photoinhibition

11:00–11:30 (30 min)

**Nathan Nelson** (Department of Biochemistry, The George S. Wise Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel)  
High-resolution structures of plant and cyanobacterial photosystem I. implications for sustainable hydrogen production

11:30–12:00 (30 min)

**Xiaochun Qin, Michihiro Suga, Tingyun Kuang, Jian-Ren Shen** (Key Laboratory of Photobiology, Institute of Botany, CAS, Beijing, China; Photosynthesis Research Center, Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan)  
Structural basis for energy transfer pathways in the plant PSI-LHCI supercomplex

12:00–14:00 LUNCH

INVITED LECTURES:

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Chairpersons: Toshiharu Shikanai (Japan), Peter J. Nixon (UK),  
Anjana Jajoo (India)

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14:00–14:25 (25 min)

**Arvi Freiberg** (Institute of Physics, Tartu University, Estonia; Institute of Molecular and Cell Biology, Tartu University, Estonia)  
Do we comprehend the *in vivo* fluorescence of photosynthetic pigments well enough?

14:25–14:50 (25 min)

**Yuichiro Takahashi** (Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan)  
Functional and structural roles of Asn268 of D1 of photosystem II reaction center

14:50–15:15 (25 min)

**Győző Garab** (Institute of Plant Biology, Biological Research Center, Hungarian Academy of Sciences, Szeged, Hungary)  
The molecular architecture and functioning of LHCII *in vivo* and *in vitro*

15:15–15:40 COFFEE BREAK

## INVITED LECTURES:

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Chairpersons: Anastasios Melis (USA), Seiji Akimoto (Japan),  
Alex Ivanov (Canada)

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15:40–16:05 (25 min)

**John F. Allen** (Research Department of Genetics, Evolution and Environment, University College London, Gower Street, London, UK)  
Evolution of two light reactions. Cooperation and inter-dependence in photosynthesis, science, and society

16:05–16:25 (20 min)

**Anjana Jajoo** (School of Life Science, Devi Ahilya University, Indore, India)

Low pH induced changes in thylakoid membranes

16:25–16:45 (20 min)

**Kiriakos Kotzabasis** (Department of Biology, University of Crete, Voutes University Campus, GR-70013 Heraklion, Crete, Greece)  
High yield H<sub>2</sub>-production through a combinational system of photosynthetic electron flow and dichlorophenol biodegradation by green algae

16:45–17:15 COFFEE BREAK

## INVITED LECTURES:

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Chairpersons: Vladimir Sukhov (Russia), Paula Mulo (Finland),  
Elena Tyutereva (Russia)

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17:15–17:35 (20 min)

**Natalya E. Belyaeva** (Department of Biophysics, Biology Faculty of the M.V. Lomonosov Moscow State University, Moscow, Russia)  
Analysis of charge fluxes in thylakoid based on the photosystem II electron transfer modeling

17:35–17:55 (20 min)

**Kostas Stamatakis** (Institute of Biosciences and Applications, NCSR “Demokritos”, Aghia Paraskevi Attikis, Greece)

Kleptoplasts: longevity in a new Ross Sea dinoflagellate host cell

18:00–21:00 POSTER VIEWING/DISCUSSION (SECTIONS 1–11)

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Chairpersons: Marian Brestic (Slovak Republic),  
Alex Ivanov (Canada), Vasiliy Goltsev (Bulgaria),  
Tatsuya Tomo (Japan), Yiola Petropoulou (Greece), Hazem Kalaji (Poland),  
Ivelina Zaharieva (Germany), Takaya Tanabe (Japan)

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## **23 SEPTEMBER (FREE TIME, TOURS)**

TOURS:

A. KNOSSOS-MUSEUM OF HERAKLION-RETHYMNO

B. ELAFONISSI-MILIA

## **24 SEPTEMBER**

INVITED LECTURES:

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Chairpersons: Yuichiro Takahashi (Japan), Kostas Stamatakis (Greece),  
Anatoly A. Tsygankov (Russia)

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9:00–9:25 (25 min),

**Barry D. Bruce** (Departments of Microbiology & Biochemistry and Cellular and Molecular Biology University of Tennessee at Knoxville, USA)

- i) Origin and evolution of PS I in cyanobacteria and chloroplasts;
- ii) ‘Travels of a transit peptide’ or ‘It takes two to translocate’

9:25–9:50 (25 min)

**Masahiko Ikeuchi** (Department of Life Sciences (Biology), University of Tokyo, Komaba, Meguro, Tokyo; Core Research for Evolutional Science and Technology (CREST), Japan Science and Technology Agency (JST), Saitama, Japan)

Photosystem I assembly compensates the photodamage of photosystem I

9:50–10:15 (25 min)

**Seiji Akimoto** (Molecular Photoscience Research Center, Kobe University, Kobe, Japan)

Excitation relaxation dynamics and energy transfer in pigment-protein complexes containing keto-carotenoids

10:15–10:40 COFFEE BREAK

INVITED LECTURES:

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Chairpersons: Toshiharu Shikanai (Japan), Kiriakos Kotzabasis (Greece), Oxana Masyagina (Russia)

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10:40–11:05 (25 min)

**Tatsuya Tomo** (Tokyo University of Science, Tokyo, Japan; PRESTO, Japan Science and Technology Agency (JST), Saitama, Japan)

Characterization of unique photosystem I complexes and its application

11:05–11:30 (25 min)

**Anatoly A. Tsygankov** (Institute of Basic Biological Problems, RAS, Pushchino, Moscow Region, Russia)

Hydrogen production by marine microalgae under P-deprivation

11:30–11:55 (25 min)

**Yuki Kato** (Division of Material Science, Graduate School of Science, Nagoya University, Nagoya, Japan)

Redox potential of the secondary quinone electron acceptor  $Q_B$  in photosystem II as revealed by FTIR spectroelectrochemistry

11:55–12:20 (25 min)

**Ryo Nagao** (Division of Material Science, Graduate School of Science, Nagoya University, Nagoya, Japan)

Role of the hydrogen bond network around  $Y_z$  in photosynthetic water oxidation

12:20–14:00 LUNCH

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 INVITED LECTURES:
 

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Chairpersons: Esa Tyystjarvi (Finland), Yuki Kato (Japan),  
Rajagopal Subramanyam (India)

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14:00–14:25 (25 min)

**Tsuyosho Endo** (Graduate School of Biostudies, Kyoto University,  
Sakyo, Kyoto, Japan)

Chloroplastic NAD(P)H dehydrogenase complex in C<sub>4</sub> photosynthesis

14:25–14:50 (25 min)

**Jörg Pieper** (Institute of Physics, University of Tartu, Tartu, Estonia)

Protein structure and dynamics in photosystem II investigated by  
neutron scattering

14:50–15:10 (20 min)

**Ivelina Zaharieva** (Freie Universität Berlin, Arnimallee 14, Berlin,  
Germany)

Structural and functional parallels between the biological water  
oxidation site and a synthetic manganese-oxide catalyst

15:10–15:30 (20 min)

**Rajagopal Subramanyam** (Department of Plant Sciences, School of  
Life Sciences, University of Hyderabad, Hyderabad, India)

Long and short term acclimatization and organization of photosynthetic  
apparatus under salt grown *Chlamydomonas reinhardtii*

15:30–16:00 COFFEE BREAK

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 INVITED LECTURES:
 

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Chairpersons: Arvi Freiberg (Estonia), Alexandrina Stirbet (USA),  
George Grammatikopoulos (Greece)

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16:00–16:20 (20 min)

**Georgios Liakopoulos** (Laboratory of Plant Physiology and  
Morphology, Department of Crop Science, Agricultural University of  
Athens, Athens, Greece)

Why anthocyanic leaves show lower risk of photoinhibition: Let the  
stomata speak



16:20–16:40 (20 min)

**Merope Tsimilli-Michael** (3, Ath. Phylactou str., Nicosia, CY-1100, Cyprus)

Sustainability of photosynthesis research

16:40–17:00 (20 min)

**Suleyman I. Allakhverdiev** (Controlled Photobiosynthesis Laboratory, Institute of Plant Physiology, RAS, Moscow, Russia; Institute of Basic Biological Problems, RAS, Pushchino, Moscow Region, Russia; Department of Plant Physiology, M.V. Lomonosov Moscow State University, Moscow, Russia)

Nanostructured manganese oxide on silica aerogel toward water oxidation

17:00–20:00 POSTER VIEWING/DISCUSSION (SECTIONS 1–11)

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Chairpersons: Marian Brestic (Slovak Republic),  
 Alex Ivanov (Canada), Vasilij Goltsev (Bulgaria),  
 Tatsuya Tomo (Japan), Yiola Petropoulou (Greece), Hazem Kalaji (Poland),  
 Ivelina Zaharieva (Germany), Takaya Tanabe (Japan)

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## 25 SEPTEMBER

INVITED LECTURES:

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Chairpersons: Tsuyosho Endo (Japan), Jörg Pieper (Estonia),  
 Ryo Nagao (Japan)

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9:00–9:25 (25 min)

**Toshiharu Shikanai** (Graduate School of Science, Kyoto University, Kyoto, Japan)

Regulation of photosynthesis by cyclic and pseudocyclic electron flow

9:25–9:50 (25 min)

**Esa Tyystjärvi** (Molecular Plant Biology, Department of Biochemistry, University of Turku, Turku, Finland)

Redox state of the plastoquinone pool depends both on wavelength distribution and intensity of incident light

9:50–10:15 (25 min)

**Alexandrina Stirbet** (204 Anne Burras Lane, Newport News, Virginia, USA)

Modeling the slow smt phase of chlorophyll *a* fluorescence induction in green alga *Chlamydomonas reinhardtii*

10:15–10:40 (25 min)

**Iwane Suzuki** (University of Tsukuba, Tsukuba, Japan)

Development of chimeric sensor to analyze function of histidine kinases in the cyanobacterium *Synechocystis* sp. PCC 6803

10:40–11:10 COFFEE BREAK

INVITED LECTURES:

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Chairpersons: Iwane Suzuki (Japan), Vasiliy Goltsev (Bulgaria),  
Georgios Liakopoulos (Greece)

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11:10–11:35 (25 min)

**Marc M. Nowaczyk** (Plant Biochemistry, Ruhr University Bochum, Bochum, Germany)

Localization of auxiliary proteins on photosystem II by surface plasmon resonance spectroscopy and chemical cross-linking in combination with mass-spectrometry

11:35–12:00 (25 min)

**Marek Zivcak** (Department of Plant Physiology, Slovak Agricultural University, Nitra, Slovak Republic)

Physiological significance of photosystem I photoinhibition in wheat leaves

12:00–12:20 (20 min)

**Eugene G. Maksimov** (Department of Biophysics, Faculty of Biology, M.V. Lomonosov Moscow State University, 119992, Moscow, Russia)

The signaling state of orange carotenoid protein

12:20–14:00 LUNCH

## INVITED LECTURES:

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Chairperson: Marc Nowaczyk (Germany), Eugene G. Maksimov (Russia),  
Merope Tsimilli-Michael (Greece)

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14:00–14:20 (20 min)

**Ginga Shimakawa** (Graduate School of Agricultural Science, Kobe University, Nada-ku, Kobe, Japan)

Flavodiiron 2 and 4 proteins mediate an O<sub>2</sub>-dependent alternative electron flow in *Synechocystis* sp. PCC 6803 under CO<sub>2</sub>-limited conditions

14:20–14:40 (20 min)

**Hazem M. Kalaji** (Department of Plant Physiology, Warsaw University of Life Sciences WULS-SGGW, 159 Nowoursynowska Street, 02-776 Warsaw, Poland)

Which technique is better for studying photosynthetic apparatus?  
Modulated, prompt or delayed chlorophyll fluorescence

14:40–15:00 (20 min)

**Georgia Zahariou** (Institute of Advanced Materials, Physicochemical Processes, Nanotechnology & Microsystems, NCSR “Demokritos”, Athens, Greece)

Theoretical study of the EPR signal of the S<sub>3</sub>TyrZ• metalloradical intermediate state

15:00–15:20 (20 min)

**Nikolaos E. Ioannidis** (Department of Biology, University of Crete, Crete, Greece)

Polyamines in chemiosmosis: A cunning mechanism for the regulation of photosynthetic ATP synthesis during growth and stress

15:45 – TAKING PHOTOS (ALL TOGETHER)

16:00 SPECIAL EVENTS:

- i) YOUNG TALENTS (5 AWARDS/PRIZES)
- ii) BEST POSTERS (5 AWARDS/PRIZES)

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Committee: James Barber (UK), Jian-Ren Shen (Japan),  
Govindjee (USA), Eva-Mari Aro (Finland), Gyözö Garab (Hungary),  
Tatsuya Tomo (Japan), Barry Bruce (USA), Kostas Stamatakis (Greece),  
Suleyman Allakhverdiev (Russia)

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CLOSING CEREMONY

James Barber (UK); Govindjee (USA),  
Eva-Mari Aro (Finland), Gyözö Garab (Hungary), Nathan Nelson (Israel),  
Norio Murata (Japan), Kimiyuki Satoh (Japan), Tingyun Kuang (China),  
Kostas Stamatakis (Greece), Suleyman Allakhverdiev (Russia)

19:00 BANQUET

**26 SEPTEMBER (DEPARTURE)**

## LIST OF POSTERS

### SECTION 1: PRIMARY PROCESSES OF PHOTOSYNTHESIS

**S1.5** Detection of both monovinyl chlorophyll *b* and divinyl chlorophyll *b* in a picoplankton *Prochlorococcus sp.* NIES-2086  
Hirohisa Komatsu, Masanobu Kawachi, Mayumi Sato, Tadashi Watanabe, Yutaka Hanawa, Yoshihiro Shiraiwa, Masami Kobayashi

**S1.6** The LIR1 protein regulates membrane tethering of ferredoxin-NADP<sup>+</sup> oxidoreductase (FNR)

Paula Mulo, Chao Yang, Hongtao Hu, Hongyan Ren, Yuzhu Kong, Hongwei Lin, Lingling Wang, Yi He, Xiaomeng Ding, Magda Grabsztunowicz, Yu Liu, Zhongchang Wu, Yunrong Wu, Chuanzao Mao, Ping Wu, Xiaorong Mo

**S1.7** The  $F_0$  level of chlorophyll *a* fluorescence induction: Does it reflect a standard and reproducible physiological state?

George C. Papageorgiou, Kostas Stamatakis, Govindjee

**S1.8** Slow phase signal enhancement method using convolution for chlorophyll fluorescence

Takaya Tanabe, Tomohiro Tsunoda, Takeshi Hiyama, Mitsuo Fukuda

**S1.9** Carotenoid composition determines the structural and functional properties of the phycobilisomes and photosystems

Sindhujaa Vajravel, Tamas Zakar, Ildikó Domonkos, Josef Komenda, Mihály Kis, László Kovács, Herbert van Amerongen, Zoltán Gombos, Tünde Tóth

### SECTION 2: STRUCTURE, FUNCTION AND BIOGENESIS OF THE PHOTOSYNTHETIC APPARATUS

**S2.6** Narrow-band red and blue light affect chloroplast ATP-synthase structure and function in barley seedlings

Olga Avercheva, Daria Gorshkova, Elizaveta Bassarskaya, Galina Kochetova, Tatiana Zhigalova, Eugene Lysenko

**S2.7** The soluble carbonic anhydrase in thylakoids of higher plants

Tatyana Fedorchuk, Natalia Rudenko, Lyudmila Ignatova, Boris Ivanov

**S2.8** Heterologous expression of genes for thermophilic phycocyanin in the mesophilic cyanobacteria *Synechococcus elongates* PCC 7942

Shiori Funatsu, Wattana Chetkul, Fumihiro Itoh,  
Wipawan Siangdung, Supapon Cheevadhanarak, Yoshihiro Shiraiwa,  
Kalyanee Paithoonrangsarid, Iwane Suzuki

**S2.9** Interactions of photosynthetic core complexes with light harvesting antenna proteins in centric diatom *Cyclotella meneghiniana*

Zdenko Gardian, David Bina, Frantisek Vacha, Radek Litvin

**S2.10** The cyanobacterial PsbP orthologue assists the assembly of photosystem II

Jana Knoppová, Jiangfeng Yu, Peter J. Nixon, Josef Komenda

**S2.11** Post-translational modifications of ferredoxin-NADP<sup>+</sup> oxidoreductase in *Arabidopsis* chloroplast

Nina Lehtimäki, Minna M. Koskela, Käthe M. Dahlström, Eveliina Pakula,  
Minna Lintala, Martin Schloz, Michael Hippler, Guy T. Hanke,  
Anne Rokka, Natalia Battchikova, Tiina A. Salminen, Paula Mulo

**S2.12** Application of the TwinStrep-tag/Streptactin system for the analysis of Photosystem II assembly intermediates from *T. elongatus*

Pasqual Liauw, Marc M. Nowaczyk

**S2.13** Architecture of light harvesting apparatus of eustigmatophyte algae

Radek Litvin, David Bina, Miroslava Herbstova, Zdenko Gardian

**S2.14** The antarctic psychrophile, *Chlamydomonas* sp. UWO241, preferentially phosphorylates a psi-cytochrome b6/f supercomplex

Beth Szyszka-Mroz, Paula Pittock, Alexander G. Ivanov, Gilles Lajoie,  
Norman P. A. Hüner

**S2.15** Specific Lhcb4 and Lhcb5 phosphorylation sites are absent in the psychrophilic state transition variant, *Chlamydomonas* sp. UWO241

Beth Szyszka-Mroz, Marc Possmayer, Denis P. Maxwell,  
Norman P. A. Hüner

**S2.16** *In vitro* enzymatic assay for <sup>13</sup>C<sup>2</sup>-demethoxycarbonylation in chlorosomal bacteriochlorophyll biosynthesis

Misato Teramura, Jiro Harada, Tadashi Mizoguchi, Hitoshi Tamiaki

**S2.17** Truncated chlorophyll *b*-less antenna of *chlorina* f2 3613 barley mutant can provide light-tolerance and wild type level productivity

Elena V. Tyutereva, Wolfram G. Brenner, Alexandra N. Ivanova, Katharina Pawlowski, Olga V. Voitsekhovskaja

### SECTION 3: PHOTOSYSTEM II AND WATER OXIDATION MECHANISM

**S3.7** Trapping Tyr<sub>Z</sub>• during S<sub>2</sub>→S<sub>3</sub> and S<sub>3</sub>→S<sub>0</sub> transitions of the water oxidizing complex of Photosystem II

Maria Chrysinia, Georgia Zahariou, Nikolaos Ioannidis, Yiannis Sanakis, Vasili Petrouleas

**S3.8** PsbO protein isoforms in angiosperms: parallel subfunctionalisation revealed by phylogenetic analysis and mapping of sequence variability onto protein structure

Miloš Duchoslav, Lukáš Fischer

**S3.9** Temperature dependence of photoinhibition

Heta Mattila, Sujata Mishra, Vesa Havurinne, Kumud B. Mishra, Esa Tyystjärvi

**S3.10** FTIR evidence for proton release into the bulk upon photooxidation of tyrosine D in photosystem II

Shin Nakamura, Takumi Noguchi

**S3.11** High-field EPR characterization of the redox centers of photosystem II

Nadia Seibel, Eiri Heyno, Wolfgang Lubitz, Matthias Rögner, Marc M. Nowaczyk, Nicholas Cox

**S3.12** Tracking structural, energetic and kinetic properties of cyanobacterial Photosystem II variants

Zhiyong Liang, Rebecca Christiana, Holger Dau, Yvonne Zilliges

### SECTION 5: PHOTOSYSTEM I AND BACTERIAL PHOTOSYNTHESIS

**S5.8** A comparative study of *Rhodobacter sphaeroides* mutants without peripheral light harvesting antenna

Zinaida Eltsova, Anatoly A. Tsygankov

**S5.9** Ferredoxin-binding modulates the redox reaction rates between NADP<sup>+</sup>/H and ferredoxin-NAD(P)<sup>+</sup> reductase from the green sulfur bacterium *Chlorobaculum tepidum*

Daisuke Seo, Ken Okado, Takeshi Sakurai

**S5.10** Analysis of energy transfer system in chlorophyll *f* containing cyanobacterium

Toshiyuki Shinoda, Seiji Akimoto, Daisuke Nii, Hisataka Ohta, Min Chen, Suleyman I. Allakhverdiev, Tatsuya Tomo

SECTION 7: ARTIFICIAL AND APPLIED ASPECTS OF PHOTOSYNTHESIS

**S7.6** Heterologous production of monoterpene hydrocarbons in cyanobacteria (*Synechocystis*)

Cinzia Formighieri, Anastasios Melis

**S7.7** The study of genetic diversity and determination of the heritability in promising lines of bread wheat in the Moghan – Iran

Khazadeh Hassan, Zeynab Teadadi Ajirlou

**S7.8** Probing the photosynthetic efficiency of green microalgae used for bioremediation and valorization of anaerobic digestion effluents

Eleni Koutra, George Grammatikopoulos, Michael Kornaros

**S7.9** Evaluation of antibacterial activity of a novel anionic hyperbranched dendritic polymer and its effect on photosynthesis

Katerina Panagiotaki, Zili Sideratou, Kostas Stamatakis

**S7.10** Potassium deficiency, a “smart” cellular switch for sustained high yield photosynthetic hydrogen production by green algae

Aikaterini Papazi, Armida-Irene Gjindali, Elizabeth Kastanaki, Konstantinos Assimakopoulos, Konstantinos Stamatakis, Kiriakos Kotzabasis

**S7.11** Sucrose production: *Synechococcus* sp. PCC 7942, an ideal candidate

Dimitris Vayenos, Kostas Stamatakis

SECTION 8: REGULATION OF PHOTOSYNTHESIS AND ENVIRONMENTAL STRESS

**S8.13** Spectrally resolved fluorescent signatures of light treated *Synechocystis* PCC 6803

Alonso M. Acuña, Joris J. Snellenburg, Michal Gwizdala, Bart van Oort, Rienk van Grondelle, Ivo H. M. van Stokkum



- S8.14** The effect of ionising radiation on pigment production, photochemical efficiency, protein level and generation of reactive oxygen species in plants  
Saftar Suleymanov, Konul Qasimova, Irada Huseynova, Jalal Aliyev
- S8.15** Drought-induced changes in photosynthetic apparatus and antioxidant components of wheat (*Triticum durum* Desf.) varieties  
Irada Huseynova, Samira Rustamova, Saftar Suleymanov, Durna Aliyeva, Jalal Aliyev
- S8.16** Impact of soil water deficit on morphophysiological parameters of durum (*Triticum durum* Desf.) and bread (*Triticum aestivum* L.) wheat genotypes  
Tofig Allahverdiyev
- S8.17** Photochemistry of Photosystem II: Is it a reliable tool for selecting cotton (*Gossypium hirsutum* L.) with improved flooding tolerance?  
Habib-ur-Rehman Athar, Altaf Hussain, Javed Iqbal, Muhammad Iqbal, Zafar Ullah Zafar, Saghir Ahmad, M. Ashraf
- S8.18** Adjustment of photosynthetic electron transport in wheat under drought stress  
Marian Brestic, Marek Zivcak, Kristyna Kunderlikova, Oksana Sytar, Katarína Olšovská, Pavol Slamka, Suleyman I. Allakhverdiev
- S8.19** Early response of photosynthetic apparatus efficiency to nitrogen deficiency in radish plants  
Magdalena D. Cetner, Katarzyna Kowalczyk, Wojciech Borucki, Aritra R. Choudhury, Tanmay Tanna, Hazem M. Kalaji
- S8.20** Photosynthesis in juveniles and adults of three mediterranean species with different life forms during leaf developmental period  
Christos Chondrogiannis, George Grammatikopoulos
- S8.21** Chlorophyll catabolism under light deficiency in *Datura suaveolens*  
Nina Djapic
- S8.22** Effect of silver nanoparticles on *Arthrospira platensis*  
Ildikó Domonkos, Zsuzsanna Deák, Tomas Zakar, Mihály Kis, Zoltán Gombos

**S8.23** Diurnal changes in photosynthetic enzyme activities and their regulation in some C4 species of Chenopodiaceae family

Shahnaiyar Bayramov, Taliya Orujova, Ulduza Gurbanova, Hasan Babayev, Minakhanyam Aliyeva, Novruz Guliyev, Yashar Feyziyev

**S8.24** Photosynthetic activity in degradation of xenobiotics, a possible connection with organochlorine formation?

Sándor T. Forczek, Pavla Štangelová, Ivona Blažková, Tereza Jišová

**S8.25** *In vivo* phenotyping of photosynthetic light reactions in leaves of two ecotypes of *Platanus orientalis* L. during water stress and after re-watering

Momchil Paunov, Kolyo Dankov, Stella Dimitrova, Violeta Velikova, Tsonko Tsonev, Reto J. Strasser, Hazem M. Kalaji, Vasilij Goltsev

**S8.26** An alternative approximation of the ABS/CS parameter when the JIP-test is applied in the field

George Grammatikopoulos, Christos Chondrogiannis, Marouso-Nikoleta Batistatou, Elissabet Papadatou

**S8.27** Effect of terminal drought stress on yield, yield components and morphological traits of bread wheat in Moghan

Khanzadeh Hassan, Ahad Karami

**S8.28** Alternating functions of terminal oxidases under light and dark conditions in *Synechocystis* sp. PCC 6803

T. Huokko, M. Ermakova, P. Richaud, L. Bersanini, D. J. Lea-Smith, C. J. Howe, G. Peltier, E.-M. Aro, Y. Allahverdiyeva

**S8.29** Photosystem I rather than photosystem II is selectively inhibited under short term salinity stress in two halophyte species *Sulla carnosa* and *Atriplex halimus*

Amel Nouisri, Maya Velitchkova, Mokded Rabhi, Chedly Abdelly, Abderrazak Smaoui, Alexander G. Ivanov

**S8.30** Hydrogen peroxide signaling – implications for photosynthetic cold stress tolerance in *Zea mays* L.

Leonid V. Savitch, Alexander G. Ivanov, Loreta Gudynaite-Savitch, Leslie Cass, Norman P. A. Huner, John Simmonds

**S8.31** Strategies of *Chlamydomonas reinhardtii* to cope with fluctuating light

Martina Jokel, Gilles Peltier, Eva Mari Aro, Yagut Allahverdiyeva

**S8.32** Enhanced thermal and light stability of the thylakoid membranes from spruce

Václav Karlický, Irena Kurasová, Božena Ptáčková, Michal Štroch, Vladimír Špunda

**S8.33** Function of prenyllipids during photo-oxidative stress in plants

Jerzy Kruk, Renata Szymańska, Jolanta Dłużewska, Beatrycze Nowicka

**S8.34** Photosynthetic characteristics of contrasting european beech (*Fagus sylvatica* L.) Provenances

Alena Konôpková, Daniel Kurjak, Miroslava Macková, Dušan Gömöry, Jaroslav Kmet'

**S8.35** Screening 16 plant species by *in vivo* reflectance spectroscopy indicate a common photosynthetic pigment profile for green fruits, as a response to their distinct internal microenvironment

Alexandra Kyzeridou and Yiola Petropoulou

**S8.36** Foliar photosynthesis under non-perpendicular illumination: the contribution of leaf optical properties

Dimosthenis Nikolopoulos, Vassiliki Haghiou, Vassiliki Daliani, Nikoleta Darra, Maria Liati, Evita Mavrogianni, Antonia Papanastasiou, Theodora Porfyra, Varvara Psaroudi, Costas Fasseas, George Karabourniotis, Georgios Liakopoulos

**S8.37** Physiological traits and local adaptive potential of beech populations in the central europe

Jana Majerová, Ľubica Ditmarová, Marek Ježík, Daniel Kurjak, Gabriela Jammická, Eva Pšidová

**S8.38** Photosynthetic activity of *Larix* trees grown on permafrost soils

Oxana Masyagina, Anatoly Prokushkin

**S8.39** Photosynthesis and transpiration changes after wounding and perception of herbivore elicitors in *Nicotiana attenuata*: role of stomata regulators abscisic acid, OPDA and cytokinins

Ivan D. Meza-Canales, Stefan Meldau, Jorge Zavala, Ian T. Baldwin

**S8.40** Cell and chloroplast size related to long-term acclimation of barley to combined drought and low nitrogen

Vassiliki Stavroulaki, Demosthenis Nikolopoulos, Petros Vahamidis, Panagiota Bresta, George Aivalakis, Garifalia Economou, George Karabourniotis

**S8.41** Effect of progressive drought on mesophyll conductance to CO<sub>2</sub> flow in photosynthesizing leaves of wheat at different ploidy levels

Katarina Olsovska, Petra Drevenakova, Marian Brestic, Marek Kovar, Marek Zivcak, Pavol Slamka

**S8.42** Effect of nitrate stress on photosynthetic electron transport in *Chlorella saccharophila* grown under high light

Smita Patil, Reena Pandit, Arvind Lali

**S8.43** Foliar anthocyanin accumulation leads to adjustments in photosystem and chlorophyll ratios, compatible to the shade acclimation syndrome

Konstantina Zeliou, Alexandra Kyzeridou, Yiola Petropoulou

**S8.44** New insights into short-term light acclimation in plants – the role of high molecular mass protein complexes

Marjaana Rantala, Marjaana Suorsa, Sari Järvi, Eva-Mari Aro

**S8.45** Electron flow from PSII to PSI under high light is regulated by PGR5 but not by PsbS

Sanna Rantala, Mikko Tikkanen, Eva-Mari Aro

**S8.46** Initial disorder in structure and functions of Photosystem II in radish plants under magnesium deficiency

Izabela A. Samborska, Leszek Sieczko, Wojciech Borucki, Aritra R. Choudhury, Tanmay Tanna, Hazem M. Kalaji

**S8.47** Elevated temperatures facilitate rapid light-dependent accumulation of zeaxanthin in *Picea abies* needles but not in *Arabidopsis thaliana* leaves

Vladimír Špunda, Zuzana Materová, Jana Sestřenková, Iva Holubová, Kristýna Večeřová, Michal Oravec, Michal Štroch, Irena Kurasová, Otmar Urban

**S8.48** Non-photochemical fluorescence quenching in the pigment apparatus of cyanobacteria

Igor Stadnichuk, Dmitrii Zlenko, Pavel Krasilnikov

**S8.49** Electrical signals as potential mechanism of photosynthesis regulation in higher plants

Vladimir Sukhov, Lyubov Surova, Oxana Sherstneva, Lyubov Katicheva, Vladimir Vodeneev

**S8.50** Natural variation in tocochromanols content in *Arabidopsis thaliana* accessions – the effect of temperature and light intensity

Renata Szymańska, Michał Gabruk, Iwona Habina, Jerzy Kruk

**S8.51** Role of phosphatidylglycerol in cyanobacterial cells

Tímea Ottilia Kóbori, Uzumaki Tatsuya, Tatjana Talamantes, Mihály Kis, Saravanan G. Kuppusamy, Ildikó Domonkos, Itoh Shigeru, László Prokai, Zoltán Gombos, Bettina Ughy

**S8.52** The effect of lanthanides on photosynthesis and cell proliferation

Milada Vitova, Katrin Kaineder, Dana Mezricky

#### SECTION 9: SYSTEMS BIOLOGY OF PHOTOSYNTHESIS:

**S9.1** Proteome analysis of enriched heterocysts from three hydrogenase mutants from *Anabena* sp. PCC 7120

Eftychia Manarolaki, Antigoni Nikolaki, Dimitrios Dedoglou, Aikaterini Kourpa, Georgios Tsiotis

**S9.2** *In silico* modelling of photosynthetic electron transport

László Sass, Zsuzsanna Deák, Éva Kiss, Imre Vass

#### SECTION 10: PHOTOSYNTHESIS EDUCATION

**S10.2** Is chlorophyll *e* 15<sup>1</sup>-OH-lactone chlorophyll *a* or chlorophyllide *a*?

Yuhta Sorimachi, Masataka Nakazato, Hideaki Miyashita, Masami Kobayashi

#### SECTION 11: EMERGING TECHNIQUES FOR STUDYING PHOTOSYNTHESIS

**S11.3** Compartment Markers for Plant Science

Zakir Hossain, Joanna Porankiewicz-Asplund, Christopher M. Brown

**S11.4** Critical assessment of protein cross-linking – a modified model of the interaction between photosystem II and Psb27

Kai U. Cormann, Madeline Puschmann, Marc M. Nowaczyk







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