

International conference on “Photosynthesis research for sustainability-2015” in honor of George C. Papageorgiou”, September 21–26, 2015, Crete, Greece

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Abstract During September 21–26, 2015, an international conference entitled “Photosynthesis Research for Sustainability-2015” was held in honor of George C. Papageorgiou at the Conference Center of the Orthodox Academy of Crete, an exceptionally beautiful location right on the Mediterranean Sea coast, Kolymvari, Chania, Crete, (Greece) (see <http://photosynthesis2015.cellreg.org/>). The meeting was held under the auspices of the Greek “General Secretariat for Research and Technology” (GSRT). We first provide a brief introduction and key contributions of George C. Papageorgiou, the honored scientist, and then information on the conference, on the speakers, and the program. A special feature of this conference was awards given to 13 young investigators, who are recognized in this Report. Several photographs are also included; they show the pleasant ambience at this conference. We invite the readers to the next conference on “Photosynthesis Research for Sustainability-2016,” which will honor

Nathan Nelson and T. Nejat Veziroglu; it will be held during June 19–25, 2016, in Pushchino, Moscow Region, Russia (see <http://photosynthesis2016.cellreg.org/>).

Keywords Olga Avercheva · Cinzia Formighieri · Václav Karlický · Eleni Koutra · Pasqual Liauw · Paula Mulo · Ryo Nagao · Xiaochun Qin · Marjaana Rantala · Gingga Shimakawa · Bettina Ughy · Georgia Zahariou · Marek Zivcak

Introduction

The 2015 conference in Crete (Greece) followed earlier conferences held in 2004 (Canada), 2007 (Russia), 2011 and 2013 (Azerbaijan) and in 2014 (Russia). See Allakhverdiev et al. (2012, 2013, 2014) for reports on these conferences. It was a great pleasure for the hosts of the 2015 conference on “Photosynthesis Research for Sustainability” to welcome nearly 150 participants from 20

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Fig. 1 A group photograph of the participants in front of the conference building. Photo by Misato Teramura

countries. Figure 1 shows a group photograph of the participants at this conference that was held during September 21–26, 2015 in Crete. It was a great occasion for discussions of molecular to global aspects of research on photosynthesis (<http://photosynthesis2015.cellreg.org/Programme.php>).

George C. Papageorgiou

Before we provide information on the conference, we provide a brief introduction of George C. Papageorgiou. He is a graduate of Anatolia College of Thessaloniki, of the Aristotelian University of Thessaloniki (BS, Chemistry, 1958) and of the University of Illinois at Urbana-Champaign (UIUC), IL, USA (PhD, Biophysics, 1968). His thesis advisor was one of the present authors (Govindjee); the title of his thesis was: Fluorescence induction in *Chlorella pyrenoidosa* and *Anacystis nidulans* and its relation to photophosphorylation; it is available free of charge at <http://www.life.illinois.edu/govindjee/theses.html>.

George has served in the Greek Army (as a reserve officer) and taught chemistry to students and university candidates. After obtaining his PhD, he was a research scientist in the Photosynthesis Program of the Nuclear Research Center (NRC), Demokritos—then headed by George Akoyunoglou, the founder and director of that program—the first such program held in Greece (1969). Later Papageorgiou was the Head of the Program of Biophysics and Biotechnology of Membranes (which he had founded), and Director of the Institute of Biology. He also served as a member of the Executive Council of the National Center of Scientific Research (NCSR), Demokritos. He retired from Demokritos in 2001, but continues to work there almost every day.

George was a founding member and an Executive Board member of the Hellenic Biochemical and Biophysical Society, and a member of the American Chemical Society and of the American Biophysical Society. In addition, he was a member of the European Expert Committee on

Biomaterials of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the representative of Greece deputed to the Advanced Studies Institutes program of NATO (North Atlantic Treaty Organization), and a member of the Editorial Board of *Photosynthetica* (see Stamatakis et al. 2016).

George Papageorgiou has published more than 120 outstanding research papers, and reviews, in top journals in his field, and co-edited several books along with eminent research scientists in the areas of photosynthesis and bioenergetics: James (Jim) Barber, Govindjee, Lester Packer, Sergio Papa, and Achim Trebst. A complete list of his publications can be obtained by writing to Kostas Stamatakis (kstam@bio.demokritos.gr). His research interests centered on the theme of chlorophyll fluorescence, being a reporter of many partial photochemical and photophysical processes involved in photosynthesis. In this way, he made major contributions to the mechanism of how plants, algae, and cyanobacteria optimize the use of the light they absorb by diverting most of it to photosynthesis, and by discarding the remainder as heat and fluorescence. Thus, he studied how changes in the thylakoid membrane structure, both light induced and ion induced, regulate the dissipation of the unused energy of the absorbed photons (Papageorgiou and Govindjee 1967, 1968a, b; Mohanty et al. 1971; and Papageorgiou et al. 1998a, b; reviews by Govindjee and Papageorgiou 1971; Govindjee et al. 1967, 1973; and Papageorgiou and Govindjee 2014). A second area of his research, highly pertinent to the current global quest for alternative sources of storable and transportable energy, is related to the biotechnological utilization of photosynthesis for sustained production of reducing power and possibly of hydrogen gas (Fry et al. 1977; Packer et al. 1977). This research included also ways and means to prolong photosynthetic activity by immobilizing membranes with bifunctional crosslinkers (Papageorgiou and Isaakidou 1977; Isaakidou and Papageorgiou 1979; Papageorgiou and Lagoyanni 1983; Sofrova and Papageorgiou 1981; reviewed by Papageorgiou 1979, 1980), and cells in externally crosslinked matrices (Papageorgiou and Lagoyanni 1986;

Papageorgiou et al. 1989; reviewed by Papageorgiou 1987). Further, George has exploited the use of compatible osmolytes (especially glycine betaine) in stabilizing photosynthetic systems, against membrane structure-randomizing factors (see e.g., Papageorgiou et al. 1991; Mamedov et al. 1991; Kalosaka and Papageorgiou 1992; Mohanty et al. 1993; Allakhverdieva et al. 1999; Ladas and Papageorgiou 2000). Lastly, he developed a sensitive fluorometric method, which allows accurate determination of cytoplasm osmolality and of cell envelope permeability to water and solutes of cyanobacteria (Papageorgiou and Alygizaki-Zorba 1997; Papageorgiou et al. 1998a; Stamatakis and Papageorgiou 2001). This method allows also for the accurate determination of cell turgor pressure, and of the fractions of diffusional and of aquaporin-facilitated water transport across the cell membrane of cyanobacteria (Stamatakis et al. 2005; reviewed by Papageorgiou and Stamatakis 2004).

After his retirement in 2001, George pursued several research themes, including the analysis of the fast and slow kinetics of chlorophyll *a* fluorescence (Papageorgiou et al. 2007; Tsimilli-Michael et al. 2009; Kana et al. 2012); the different roles of β -carotene in Photosystem II and Photosystem I, namely, as singlet-excited oxygen and triplet-excited chlorophyll *a* quencher in the first, and as a light harvester in the second; and the uniqueness and durability of chlorophyll *a*, both as a light-harvesting-competent and as a redox-competent molecule throughout evolution (Björn et al. 2009; Stamatakis et al. 2014).

Chlorophyll *a* fluorescence is widely used in the basic and applied photosynthesis research. Roughly, one out of every four photosynthesis-related research publications relies on measurements of chlorophyll fluorescence (data from Google Scholar). George is one of the major leading world authorities on the exploitation of chlorophyll fluorescence as a sensitive and noninvasive signal of various photosynthetic reactions not only in cyanobacteria and algae, but in plants as well (see Papageorgiou and Govindjee 2004, reprinted in 2010).

During his scientific career, he was fortunate to have associated with many scientists, who are prominent not only in photosynthesis, bioenergetics, and biotechnology, but also in physics and physical chemistry. These scientists include Govindjee (his mentor; a lifelong association); Eugene Rabinowitch & Christiaan Sybesma (Biophysics, both of UIUC, USA); Lester Packer (Bioenergetics, University of California, Berkeley, CA, USA); George and Joan Akoyunoglou (Biochemistry, NCSR Demokritos); David Hall (Biotechnology; University of London, King's College); Thomas Dorfmueller (Physical Chemistry, University of Bielefeld, W. Germany); Prasanna Mohanty (Plant Physiology, Jawaharlal Nehru University, New Delhi, India); Sergio Papa (Bioenergetics, University of

Bari, Italy); Daniel Thomas (Enzyme Biotechnology, Université de Technologie, Compiègne, France); Danuta Fraçkowiak (Biophysics, Poznan, Poland); Laszlo Szalay (Biophysics, University of Szeged, Hungary), Dana Sofrova (Biochemistry, Charles University, Czechoslovakia); Algis Piskarkas (Photophysics, Vilnius University, Lithuania); Elisha Tel-Or (Algal Biotechnology, Hebrew University of Jerusalem, Rehovot, Israel); Sammy Boushiba (Algal Biotechnology, Ben Gurion University of the Negev, Israel); Sinerik Ayrapetyan, UNESCO Chair in Life Sciences, Yerevan, Armenia); Thanassis Kostikas, Thanassis Simopoulos, Vassilis Petrouleas, and Elsa Karaulani-Demosthenopoulou (Physics, NCSR Demokritos, Athens, Greece); and Norio Murata (Biophysics and Molecular Biology, National Institute for Basic Biology (NIBB), Okazaki, Japan). After retirement, Papageorgiou has collaborated with Ondrej Prášil (Institute of Microbiology; Czech Academy of Sciences).

We would be amiss if we did not mention those who have benefitted from his mentorship at Demokritos. These include, in alphabetical order, the late Joan Isaakidou, Katerina Alygizaki-Zorba, Katerina Kalosaka, Thoula Lagoyanni, Nectarios Ladas, Georgia Sotiropoulou, Kostas Stamatakis, currently the Head of the Membrane Biophysics and Biotechnology Program in Demokritos, and Merope Tsimilli-Michael.

Lastly, George has served the scientific community by organizing several Advanced Study Institutes, International Summer Schools and Conferences in Greece; he did this primarily with Lester Packer (USA) and Thanassis Evangelopoulos (Greece), but also with Achim Trebst (Germany), Martin Klingenberg (Germany), Peter Böger (Germany), Karel Wirtz (Netherlands), and James (Jim) Barber (UK).

The conference

The committees

The two organizing committees, international and local, are listed in Appendix 1; also see <http://photosynthesis2015.cellreg.org/Organizing-Committee.php>. The chairman of this conference was James (Jim) Barber (UK), one of the past presidents of International Society of Photosynthesis Research (ISPR) (<http://www.photosynthesisresearch.org/>); we were very fortunate that he delivered the keynote lecture at this conference. The first author (SIA) of this News Report was the coordinator, the second author (TT) was secretary of this conference, and the third and fourth authors (Stamatakis and Govindjee) were the members of the international organizing committee. Among several other members, Richard Cogdell (the co-chair, and

President of ISPR) was unfortunately unable to attend this conference. The chairman of the local organizing committee was Kostas Stamatakis (Greece).

The program

We had an exciting scientific program, which covered the breadth and depth of photosynthesis, and provided excellent opportunity for all of us to meet photosynthesis researchers from around the world. Also, this meeting provided a forum for students, postdoctoral fellows, and scientists from all over the world to broaden their knowledge and understanding of the field, widen professional contacts, and create new opportunities, including establishing new collaborations. This exciting international conference covered all the important aspects of photosynthesis, especially their relationship to global issues as well as hydrogen production and artificial photosynthesis.

Topics discussed at this conference included Primary Processes of Photosynthesis; Structure, Function, and Biogenesis of the Photosynthetic Apparatus; Photosystem II and Water Oxidation Mechanism; Excitation Energy Transfer and Trapping in the Photosystems; Photosystem I and Bacterial Photosynthesis; Carbon Fixation (C3 and C4) and Photorespiration; Artificial and Applied aspects of Photosynthesis; Regulation of Photosynthesis and Environmental Stress; Systems Biology of Photosynthesis: Integration of Genomic, Proteomic, Metabolomic, and Bioinformatic Studies; Photosynthesis Education; and Emerging Techniques for Studying Photosynthesis.

A pdf file of the program is available at: http://photosynthesis2015.cellreg.org/documents/2015_PRS_Programme.pdf.

The opening ceremony

James (Jim) Barber (UK) declared the conference open; he showed a nice photograph of George Papageorgiou (see Fig. 2). He as well as the others (listed in alphabetical order: Eva-Mari Aro (Finland); Govindjee (USA); Tingyun Kuang (China); Anastasios Melis (USA); Norio Murata (Japan); Kimiyuki Satoh (Japan); and Kostas Stamatakis (Greece)) briefed the audience about their past association as well as scientific and personal achievements of George; some brought greetings from scientists in their countries, and some (including Govindjee) showed photographs of George with other scientists. You may find these photographs at http://www.life.illinois.edu/govindjee/honors_from.html. This session ended with a personal and moving presentation on George by Lena and Katerina, daughters of George & Sophie Papageorgiou.

The speakers

There were 52 speakers and chairpersons. These included (in alphabetical order): Seiji Akimoto (Japan), John F. Allen (UK), Suleyman I. Allakhverdiev (Russia), Eva-Mari Aro (Finland), James Barber (UK), Natalya E. Belyaeva (Russia), Marian Brestic (Slovak Republic), Barry D. Bruce (USA), Tsuyoshi Endo (Japan), Arvi Freiberg (Estonia), Gyoza Garab (Hungary), Vasilij Goltsev (Bulgaria), Govindjee (USA), George Grammatikopoulos (Greece), Masahiko Ikeuchi (Japan), Nikolaos E. Ioannidis (Greece), Alex Ivanov (Canada), Anjana Jajoo (India), Yuki Kato (Japan), Kiriakos Kotzabasis (Greece), Tingyun Kuang (China), Georgios Liakopoulos (Greece), Eugene G. Maksimov (Russia), Oxana Masyagina (Russia), Anastasios Melis (USA), Paula Mulo (Finland), Norio Murata (Japan), Ryo Nagao (Japan), Nathan Nelson (Israel), Peter J. Nixon (UK), Marc M. Nowaczyk (Germany), Yiola Petropoulou (Greece), Jorg Pieper (Estonia), Xiaochun Qin (China), Jian-Ren Shen (Japan), Toshiharu Shikanai (Japan), Ginga Shimakawa (Japan), Kostas Stamatakis (Greece), Alexandrina Stirbet (USA), Rajagopal Subramanyam (India), Vladimir Sukhov (Russia), Iwane Suzuki (Japan), Yuichiro Takahashi (Japan), Takaya Tanabe (Japan), Tatsuya Tomo (Japan), Elena Tyutereva (Russia), Esa Tyystjärvi (Finland), Merope Tsimilli-Michael (Greece), Anatoly A. Tsygankov (Russia), Ivelina Zaharieva

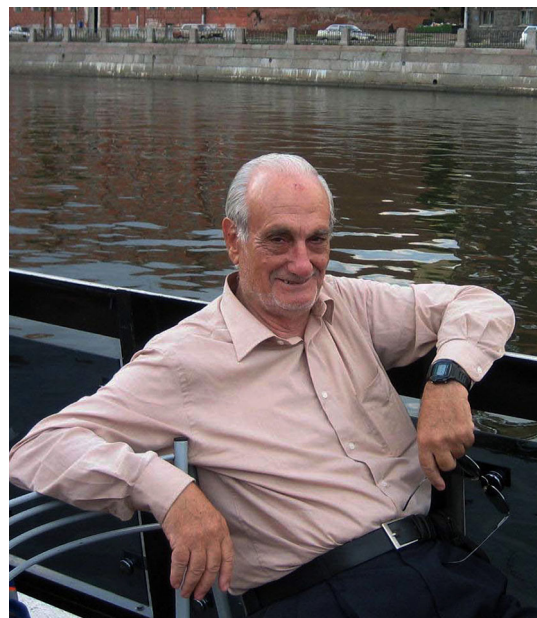


Fig. 2 A 2006 photograph of George C. Papageorgiou. Provided by James Barber

(Germany), Georgia Zahariou (Greece), and Marek Zivcak (Slovak Republic).

Most of the talks at this conference dealt with the state-of-the-art research, starting with a brief review of the current knowledge and the relevance of the topic to global issues, followed by a balanced presentation of the latest research results, concluding with views on the future course of research including the outstanding global issues and challenges facing us all. Further, the chairpersons emphasized the key points of the talks, steered the discussions by providing additional thoughts, and introduced related ideas.

Posters

There were about 80 posters, presented both by established as well as young scientists from 24 countries. Figure 3 shows a scene at a poster discussion session.

Social events

The conference included several social events; in particular, it included (1) a full day trip to Knossos, which is the largest archeological site in Crete from the Bronze age. Knossos is the site of the most important and better-known palace of Minoan civilization. According to tradition, it was the seat of the legendary king Minos. The Palace of Knossos is the largest of the preserved Minoan palatial centers. The Palace is also connected with thrilling legends, such as the myth of the Labyrinth with the Minotaur, and the story of Daidalos and Icaros, dated 2000–1350 B.C. (http://odysseus.culture.gr/h/3/eh351.jsp?obj_id=2369); and (2) an evening of folk dances from the island of Crete. We also had wonderful dinners (including a banquet) with live music and dancing.



Fig. 3 A scene from the poster session. Suleyman Allakhverdiev (2nd from right) already planning the 2016 conference in Russia. Photo by Toshiyuki Shinoda and Tatsuya Tomo

Figure 4 shows a photograph from the trip to Knossos, whereas Fig. 5 shows a scene from the dinner/banquet, and a group dance in the evening; other photographs may be obtained by writing to one of us (TT: tomo@rs.tus.ac.jp).

Young researchers and the awardees

A committee selected awardees from among the young scientists, who presented their research at this conference, either in a poster or in a talk. The awards/prizes were presented to these investigators who had done and presented outstanding work in the field of “Photosynthesis Research for Sustainability.”

The chairpersons of poster viewing and discussion were Marian Brestic (Slovak Republic), Vasilij Goltsev (Bulgaria), Alex Ivanov (Canada), Yiola Petropoulou (Greece), Takaya Tanabe (Japan), Tatsuya Tomo (Japan), and Ivelina Zaharieva (Germany), who selected and nominated the young researchers for the awards. Then the winners were selected by another committee which included Suleyman Allakhverdiev (Russia), Eva-Mari Aro (Finland), James Barber (UK), Barry Bruce (USA), Gyözö Garab (Hungary), Govindjee (USA), Jian-Ren Shen (Japan), Kostas Stamatakis (Greece), and Tatsuya Tomo (Japan).

The following received either a monetary award or a book award for their outstanding research. They are (in alphabetical order), with the titles of their presentations:

- **Olga Avercheva** (with 5 coauthors; Plant Physiology Department, Faculty of Biology, Lomonosov Moscow State University, Moscow, Russia): *Narrow-band red and blue light affect chloroplast ATP-synthase structure and function in barley seedlings.*
- **Cinzia Formighieri** (with 1 coauthor; Plant and Microbial Biology, University of California, Berkeley, CA, USA): *Heterologous production of monoterpene hydrocarbons in cyanobacteria (Synechocystis).*



Fig. 4 A scene at Knossos, an ancient archeological site; Norio Murata, wearing a hat, and two other participants all seem in awe by it. Photo by Toshiyuki Shinoda and Tatsuya Tomo



Fig. 5 *Left* Participants at a dinner party and banquet; Papageorgiou reciprocating the toast given in his honor. *Right* Participants dancing in celebration of the event. Photos by Toshiyuki Shinoda and Tatsuya Tomo

- **Václav Karlický** (with 4 authors; Department of Physics, Faculty of Science, University of Ostrava, Ostrava-Slezska Ostrava/Global Change Research Centre, Brno, The Czech Republic): *Enhanced thermal and light stability of the thylakoid membranes from spruce.*
- **Eleni Koutra** (with 2 coauthors; Laboratory of Biochemical Engineering & Environmental Technology, Department of Chemical Engineering, University of Patras, Patras, Greece): *Probing the photosynthetic efficiency of green microalgae used for bioremediation and valorization of anaerobic digestion effluents.*
- **Pasqual Liauw** (with 2 coauthors; Plant Biochemistry, Ruhr University Bochum, Bochum, Germany): *Application of the TwinStrep-tag/Streptavidin-his system for the analysis of Photosystem II assembly intermediates from *T. elongatus*.*
- **Paula Mulo** (with 15 coauthors; Molecular Plant Biology, Department of Biochemistry, University of Turku, Turku, Finland): *The LIR 1 protein regulates membrane tethering of ferredoxin-NADP⁺ oxido-reductase.*
- **Ryo Nagao** (Talk; 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.*
- **Xiaochun Qin** (Talk; with 3 coauthors; Key Laboratory of Photobiology, Institute of Botany, CAS, Beijing, China): *Structural basis for energy transfer pathways in the plant PSI-LHCI supercomplex.*
- **Marjaana Rantala** (with 3 coauthors; Department of Biochemistry/Molecular Plant Biology, University of Turku, Finland): *New insights into short-term light acclimation in plants—the role of high molecular mass protein complexes.*
- **Ginga Shimakawa** (Talk; Graduate School of Agricultural Science, Kobe University, Nada-ku, Kobe, Japan): *Flavodiiron 2 and 4 proteins mediate an O_2 -dependent alternative electron flow in *Synechocystis* sp. PCC 6803 under CO_2 -limited conditions.*
- **Bettina Ughy** (with 12 coauthors; Biological Research Centre, Hungarian Academy of Sciences, Szeged, Hungary): *Role of phosphatidylglycerol in cyanobacterial cells.*
- **Georgia Zahariou** (Talk; Institute of Advanced Materials, Physicochemical Processes, Nanotechnology & Microsystems, NCSR Demokritos, Athens, Greece): *Theoretical study of the EPR signal of the S_3 TyrZ* metalloradical intermediate state.*
- **Marek Zivcak** (Talk; Department of Plant Physiology, Slovak Agricultural University, Nitra, Slovak Republic): *Physiological significance of photosystem I photoinhibition in wheat leaves.*

Figure 6 shows a group photograph of these awardees, whereas Fig. 7 shows photographs of some of the awardees with Jim Barber (who presented certificates for the awards), or with Govindjee (who gave the awardees the monetary and book prizes). We note that these books were the most recent volumes of “Advances in Photosynthesis and Respiration Including Bioenergy and Related Processes” (Springer, Dordrecht) <http://www.springer.com/series/5599>. In Fig. 8, we show a photograph of the award certificate held by Eleni Koutra, with one of us (Kostas Stamatakis).

Concluding remarks

In the concluding vote-of-thanks session, Govindjee (USA), Suleyman Allakhverdiev (Russia), Eva-Mari Aro (Finland), James Barber (UK), Gyözö Garab (Hungary), Tingyun Kuang (China), Norio Murata (Japan), Nathan Nelson (Israel), Kimiyuki Satoh (Japan), and Kostas



Fig. 6 A group photograph of the awardees. *Bottom row (left to right):* Václav Karlický; Marek Zivcak; Paula Mulo; Paqual Liauw; Olga Avercheva; Cinzia Formighieri; Georgia Zahariou; Bettina Ughy; Marjaana Rantala; Xiaochun Qin; Ryo Nagao; and Ginga

Shimakawa. (Eleni Koutra, not here, is shown later with her certificate in Fig. 8). *Top row (left to right):* Jim Barber; Nathan Nelson; Suleyman Allakhverdiev; Tingyun Kuang; Govindjee; Eva-Mari Aro; and Gyozo Garab.. Photo by Toshiyuki Shinoda and Tatsuya Tomo



Fig. 7 Awardees either with Jim Barber (JB; who gave certificates) or with Govindjee (Gov; who gave monetary as well as book prizes). *Upper row (left to right)* Pasqual Liauw, with JB; Olga Avercheva, with JB; Cinzia Formighieri, with Gov; *Bottom row (left to right)*

Xiaochun Qin, with Gov; Ryo Nagao, with JB; and Georgia Zahariou, with JB Photo by Toshiyuki Shinoda and Tatsuya Tomo; other photos are available from Tatsuya Tomo

Stamatakis (Greece)) thanked all those who made this conference possible; further, thanks were given on behalf of all the international participants, and, were directed to many, including the local (Greek) organizers (see *Acknowledgments*).

In our view, the 2015 conference on photosynthesis in Crete (Greece) provided all of the participants an opportunity to present their latest research; further, it provided a

wonderful environment for socializing with colleagues both old and new.

“Photosynthesis Research for Sustainability-2016” will be held during June 19–25, 2016, in Pushchino, Russia. We wish all success to the persons who will serve as the chair and the co-chair, of both the international and local committees. We hope to see everyone at next conference.



Fig. 8 A photograph of Eleni Koutra, holding her certificate and her book, with one of us (Kostas Stamatakis)



Fig. 9 George and Sophie Papageorgiou, after the conference in Crete, in Athens. Photo by Rajni Govindjee

We end this *News Report* by paying special Tribute to George C. Papageorgiou for his contributions to the growth and support of Photosynthesis Research. After the conference, George was seen in a thoughtful and meditative mood, but relaxing, with his wife Sophie, in an open-air restaurant in Athens (Fig. 9).

Acknowledgments We express our appreciation to all the attendees for valuable discussions on various aspects of photosynthesis at the 2015 conference held in Crete. We thank all the members of the International organizing committee for their help with the various sections, and the committees, mentioned in this report for the selection of the Awardees; further, we are grateful to all the chairpersons of the poster sessions for their help; and thank all the sponsors: the International Society of Photosynthesis Research (*ISPR*), Springer;

part of Springer Science+Business Media; the National Center for Scientific Research “Demokritos,” *Agrisera*-Antibodies for Plant Sciences; Photon Systems Instruments (*PSI*); *Hellenic Botanical Society*, *Hansatech Instruments*: Instrumentation for Photosynthesis and Respiration Studies; and the *University of Patras*. We also thank *Ineke Ravesloot* of Springer, for mailing books to Kostas Stamatakis (Greece) for awards for the best posters. We thank all the members of local organizing committee for their wonderful work that led to a very smooth running of our conference. Our special thanks go to *Katerina Panagiotaki* and *Dimitris Vayenos* for their secretarial support for the conference, and to *Dmitry A. Los* for the creation and support for the conference Web site, and to *Toshiyuki Shinoda* for most of the photographs used here. *Misato Teramura* and *Rajni Govindjee* are thanked for Fig. 1 and 8, respectively. SIA is grateful for support by grants from the Russian Foundation for Basic Research and by the Molecular and Cell Biology Programs of the Russian Academy of Sciences. We thank the following, and several others, for sending additional messages to one of the authors (SIA): Anjana Jajoo (India), James Barber (UK), Marian Brestic (Slovakia), Norio Murata (Japan), Kimiyuki Satoh (Japan), Kostas Stamatakis (Greece), Rajagopal Subbramanyam (India), Oksana Sytar (Slovakia), Renata Szymanska (Poland), Tatsuya Tomo (Japan); they are available by writing to one of us (SIA) at: suleyman.allakhverdiev@gmail.com.

Appendix 1

1. **The International organizing committee**, in alphabetical order, included the following (those present at the conference have been italicized): *Suleyman I. Allakhverdiev* (**coordinator**; from Russia). *Eva-Mari Aro* (Finland); *James Barber* (**chairman**; from UK); *Barry D. Bruce* (USA); Robert Carpentier (Canada); Richard Cogdell (**co-chair**; also president of *ISPR*, from UK); *Gyözö Garab* (Hungary); *Govindjee* (USA); Demetrios Ghanotakis (Greece); Norman Huner (Canada); *Alexander Ivanov* (Canada); George Karabourniotis (Greece); Hazem M. Kalaji (Poland); *Kyriakos Kotzabasis* (Greece); Olaf Kruse (Germany); Dmitry A. Los (Russia); Yiannis Manetas (Greece); *Anastasios Melis* (USA); *Norio Murata* (Japan); Hong Gil Nam (Korea); *Nathan Nelson* (Israel); *Peter Nixon* (UK); Vasilis Petrouleas (Greece); Seeram Ramakrishna (Singapore); *Kimiyuki Satoh* (Japan); *Jian-Ren Shen* (Japan); *Kostas Stamatakis* (**co-chair**; from Greece); *Tatsuya Tomo* (**secretary**; from Japan); and *Merope Tsimilli-Michael* (Cyprus).

2. **The local organizing committee** (in alphabetical order) included: *George Grammatikopoulos*; Nikos Ioannidis; Aris Kyparissis; Efi Levizou; *George Liakopoulos*; *Dimosthenis Nikolopoulos*; Anastasia Prombona; *Yiola Petropoulou*; *Kostas Stamatakis* (*Chairman*); and *Dimitris Vayenos*.

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