Photosynth Res
DOI 10.1007/s11120-016-0311-5

NEWS REPORT

International conference on "Photosynthesis Research for Sustainability-2016"

In honor of Nathan Nelson and Turhan Nejat Veziroğlu

Anatoly A. Tsygankov[1] · Suleyman I. Allakhverdiev[1,2,3] · Tatsuya Tomo[4,5] · Govindjee[6]

Accepted: 11 September 2016

Abstract During June 19–26, 2016, an international conference (http://photosynthesis2016.cellreg.org/) on "Photosynthesis Research for Sustainability-2016" was held in honor of Nathan Nelson and Turhan Nejat Veziroğlu at the Institute of Basic Biological Problems, Russian Academy of Sciences, formerly Institute of Photosynthesis, Academy of Sciences of the USSR, Pushchino, Russia. Further, this conference celebrated the 50th anniversary of the Institute. We provide here a brief introduction and key contributions of the two honored scientists, and then information on the conference, on the speakers, and the program. A special feature of this conference was the awards given to several young investigators, who are recognized in this Report. Several photographs are included to show the excellent ambience at this conference. We invite the readers to the next conference on "Photosynthesis and Hydrogen Energy Research for Sustainability-2017", which will honor A.S. Raghavendra (of University of Hyderabad), William Cramer (of Purdue University) and Govindjee (of University of Illinois at Urbana-Champaign); it will be held during the Fall of 2017 (from October 30 to November 4), at the University of Hyderabad, Hyderabad, India. See <https://prs.science>.

Keywords Nathan Nelson · Photosynthesis · Sustainability · Young investigator awards · T. Nejat Veziroglu

This manuscript was read, edited, and approved for publication in Photosynthesis Research, on September 11, 2016, by Thomas D. Sharkey. The photographs in the paper were taken by Toshiyuki Shinoda (of Japan) and Alexander Shitov (of Russia) and were chosen by two of the authors (A. A. Tsygankov and T. Tomo).

Electronic supplementary material The online version of this article (doi:10.1007/s11120-016-0311-5) contains supplementary material, which is available to authorized users.

✉ Anatoly A. Tsygankov
ttt-00@mail.ru

Suleyman I. Allakhverdiev
suleyman.allakhverdiev@gmail.com

Tatsuya Tomo
tomo@rs.tus.ac.jp

Govindjee
gov@illinois.edu

[1] Institute of Basic Biological Problems, Russian Academy of Sciences, Pushchino, Moscow Region, Russia 142290

[2] Institute of Plant Physiology, Russian Academy of Sciences, Botanicheskaya Street 35, Moscow, Russia 127276

[3] Department of Plant Physiology, Faculty of Biology, M.V. Lomonosov Moscow State University, Leninskie Gory 1-12, Moscow, Russia 119991

[4] Department of Biology, Faculty of Science, Tokyo University of Science, Kagurazaka 1-3, Shinjuku-Ku, Tokyo 162-8601, Japan

[5] PRESTO, Japan Science and Technology Agency (JST), 4-1-8 Honcho Kawaguchi, Saitama 332-0012, Japan

[6] Department of Plant Biology, Department of Biochemistry, and Center of Biophysics & Quantitative Biology, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

Introduction

The International conference on "Photosynthesis Research for Sustainability-2016", held in honor of Nathan Nelson and T. Nejat Veziroğlu, was the seventh in the series; earlier

Published online: 10 October 2016

conferences were held in Canada (2004), Russia (2007 and 2014), Azerbaijan (2011 and 2013), and Greece (2015) (see e.g., Allakhverdiev et al. 2012, 2013, 2014, 2015). One hundred seventy scientists from 22 countries attended our 2016 conference held at the Institute of Basic Biological Problems–Russian Academy of Sciences (RAS), in the city of Pushchino, Moscow Region, Russia. It was unique since it coincided with the 50th anniversary of the Institute of Basic Biological Problems in Pushchino. Further, after this conference, a school on "Experimental Methods in Photosynthesis and Photobiotechnology" was organized for students in Russia (a pdf file of that program can be obtained by writing to ttt-00@mail.ru).

The main conference provided a wonderful chance for discussion, among all the participants, from molecular to global aspects of photosynthesis research, including artificial photosynthesis as well as biohydrogen production (http://photosynthesis2016.cellreg.org/Programme.php; further details are available from one of the organizers: suleyman.allakherdiev@gmail.com).

Figure 1 shows a group photograph of the participants and the organizers. Before we provide information on the committees and some of the participants, we provide below a brief introduction of our honored scientists: Nathan Nelson (of Israel) and T. Nejat Veziroğlu (of USA).

Nathan Nelson

Govindjee delivered a talk, with photographs, on the life and work of Nathan Nelson (also see "Events in honor of Nathan Nelson and T. Nejat Veziroğlu" as well as pdf file of presentation on Nelson at <http://www.life.illinois.edu/govindjee/honorsfrom.html>). Nathan Nelson was born in 1938, in Avihayil, Israel. He married his classmate Hannah, who worked with him in the laboratory. They have three children, Lee-Bath, Nirith, and Ben. Nathan Nelson received three degrees, including a Ph.D. under Professor J. Neuman, at the Tel Aviv University (TAU). In 1980, he himself became a full professor at TAU.

In addition to his research and teaching, Nathan was instrumental in starting the Daniella Rich Institute for Structural Biology; he served as its director during 2005–2011.

Nathan's work has earned him many awards, including: The Humboldt Award, European Molecular Biology Organization (EMBO) membership, Honorary Professorship at Sichuan University, Honorary Doctorate from the University of Bologna, the Ilanit-Katzir prize of the Federation of Israel Societies of Experimental Biology (FISEB), and the 2013 Israel Prize for Life Sciences.

In 2011, he was awarded a 5-year Advanced Grant from European Research Council (ERC), designed to allow exceptional established research leaders to pursue groundbreaking projects that open new directions in any domain. This research focuses on harnessing oxygenic photosynthesis in cyanobacteria for sustainable energy production.

Nathan's research encompasses many topics involving membrane proteins and membrane protein complexes, which includes: V-ATPase, neurotransmitter transporters, metal-ion transporters, and complexes involved in the process of photosynthesis. We mention below a few of his discoveries.

- V-ATPase is a necessary component for life. Nathan discovered that yeast can overcome the constraints of non-functional V-ATPase when living in high acidity; this finding has opened the door for research on proteins that include this complex and the genes coding for them, many of which were discovered in his lab.
- Neurotransmitter transporters are proteins in the neuronal cell membranes that enable the transport of a specific neurotransmitter from one side of the membrane to the other. Nelson took part in the discovery of

Fig. 1 A group photograph of the participants and the organizers of the 7th International Conference "Photosynthesis Research for Sustainability-2016: in honor of Nathan Nelson and T. Nejat Veziroğu"

the first gene for gamma amino butyric acid (GABA) transporter; GABA is a inhibitory neurotransmitter.

- Nelson's research on the metal-ion transporters in yeast has explained the mechanism of action of resistance and sensitivity towards mycobacteria in mice that causes leprosy and tuberculosis in humans.
- There are four large protein complexes that take part in the so-called "light stage of photosynthesis", and three out of these four have been studied in Nelson's lab: cytochrome b_6f complex, ATP synthase, and Photosystem I (PSI), the latter is the one which has attracted most of his attention.

Nelson has had several major discoveries on the above topics. However, his major contribution is in supervising the work that culminated in solving the crystal structure of plant PS I. Nelson and his coworkers showed that the PSI complex is composed of 18 proteins having altogether 46 transmembrane helices, and contains over 170 chlorophyll *a* and nearly 30 carotenoid molecules. In addition, Nelson has discovered that when the micrometer-sized dry crystals are illuminated by a laser in a medium without oxygen, they generate a potential of over 10V!

During more than four decades of research and teaching, Nathan Nelson has educated many students all over the globe, who continue their research and are making major contributions to the advancement of science.

Figure 2 shows Nathan and Hannah Nelson, with friends.

Turhan Nejat Veziroğlu

Govindjee delivered a talk, with photographs, on the life and work of T. Nejat Veziroğlu (see "Events in honor of Nathan Nelson and T. Nejat Veziroğlu", as well as a pdf file of a presentation on Veziroğlu at <http://www.life.illinois.edu/govindjee/honorsfrom.html>).

Fig. 2 Nathan and Hannah Nelson, with friends, enjoying dinner during the conference; Sitting: Nathan is first on the left, with Hannah (next to him)

Veziroğlu was born in Turkey in January, 1924. After attending Istanbul Technical University for one and a half years, he went to London, England (UK), where he received a Bachelor's degree from the University of London in 1946. In 1951, Veziroğlu completed his Ph.D. thesis also at the University of London.

After he finished his Ph.D., Veziroğlu (we will now refer to him as Dr. V.) returned to Turkey and worked as an engineer and a scientific advisor to the Office of Soil Products, as a nuclear engineer at the Electric Power Research Institute, and as an engineering consultant in his family's business, the Veziroğlu Construction Company.

In 1962, Dr. V. was appointed as an associate professor at the University of Miami in Coral Gables, Florida, USA, and in 1966, he was promoted to become a full professor of mechanical engineering, remaining in that position until 2009, when he became *Professor Emeritus*. Further, he became Associate Dean for Research in 1975, and maintained that role through 1979.

Dr. V. "created" the first engineering Ph.D program at the university there, and in 1974, he was the organizer of one of the earliest conferences on hydrogen energy. As a researcher in hydrogen energy and in two-phase flows, Veziroğlu co-authored over 300 scientific papers; further, he is the founding editor of the International Journal of Hydrogen Energy. In 1973, shortly after the energy crisis, Dr. V. established the Clean Energy Research Institute within the university, and was its director from 1974 onwards. Dr. V. is president of the International Association for Hydrogen Energy, initiator of the World Hydrogen Energy Conference, as well as the initiator of the World Hydrogen Technology Convention.

Among multiple awards, Dr. V. has received the Turkish Presidential Science Award (1975), Medal of the City of Paris (Paris, France, 1977), and the Kurchatov Medal from the Kurchatov Institute of Atomic Energy (Moscow, USSR, 1982).

Figure 3 shows Nejat Veziroğlu with family and friends at the conference, and Fig. 4 shows him greeting participants of the conference.

The conference

The committees

The two organizing committees, international and local, are listed at http://photosynthesis2016.cellreg.org/Organizing-Committee.php. The chairman of this conference was James (Jim) Barber (UK), one of the past presidents of the International Society of Photosynthesis Research (ISPR) (http://www.photosynthesisresearch.org/) (Fig. 5a). Suleyman I. Allakhverdiev (Fig. 5b) was the coordinator,

Fig. 3 Nejat Veziroğu (wearing sun glasses) with his brother (to his right), his daughter Lili, and his wife Ayfer, Govindjee, and Suleyman Allakhverdiev, near the entrance of the Institute where the conference was held

Fig. 4 Nejat Veziroğu greeting participants of the conference; also shown is Govindjee (chair of the session, with microphone), and Ayfer and Lili entering the auditorium where Veziroğu gave his talk

Tatsuya Tomo (Fig. 5c) was secretary, and Anatoly Tsygankov (Fig. 5d) was chairman of local organizing committee. Figure 5e–h show Anatoly I. Miroschnikov, Chairman of the Presidium of Pushchino Research Center, Vladimir (Vlad) A. Shuvalov, Andrey (Andrew) B. Rubin, and William (Bill) A.Cramer, respectively.

The program

The program of the conference covered all aspects (both basic and applied) of photosynthesis research, and provided an excellent opportunity to all to interact with researchers from around the world. Further, the second half of this conference focused on *biohydrogen*. We had a unique mix of these two areas, both being important in solving problems facing us all. It was a conference that allowed excellent communication between researchers of photosynthesis and scientists studying hydrogen production. Also, this meeting provided a forum for students, postdoctoral fellows and scientists from all over the world to widen their professional contacts, and to create new opportunities, including establishing new collaborations.

Topics for photosynthesis research included: primary processes of photosynthesis; structure, function and biogenesis of the photosynthetic apparatus; Photosystem II and water oxidation mechanism; energy transfer and trapping in the photosystems; Photosystem I and bacterial photosynthesis; carbon fixation (C_3 and C_4) 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; emerging techniques for studying photosynthesis including neutron scattering in photosynthesis research. Topics covering hydrogen energy for sustainability included: Energy for the future—hydrogen economy; climate change; biological hydrogen production; hydrogenases; proton reduction catalysts; reduction of carbon dioxide; artificial photosynthesis for hydrogen energy; hydrogen energy education; emerging techniques for studying "hydrogen energy".

The opening ceremony and celebration of 50th anniversary of the Institute of Basic Biological Problems RAS, (former Institute of Photosynthesis, Academy of Sciences of the USSR) in Pushchino, Moscow Region, Russia

Suleyman I. Allakhverdiev declared the conference open (Fig. 5b). The very first speaker of the conference was Academician Anatoly I. Miroschnikov, Chairman of the Presidium of Pushchino Research Center (Fig. 5e). He said: "Photosynthesis is a global process giving energy for the entire life of our Earth. It is great honor for Pushchino Research Center to host this traditional conference on photosynthesis research in our city".

Anatoly A. Tsygankov, President of the Russian Photobiological Society (Fig. 5d), followed with greetings from that society: "Photosynthesis is a very important part of all photo-biological processes. If we can understand the mechanisms which allow photosynthetic reaction centers to convert light energy into electrical energy, and its connection to produce hydrogen, using hydrogenase, we shall be able to construct efficient systems of light energy bioconversion into hydrogen."

Vladimir A. Shuvalov (Fig. 5f), academician of the RAS, Director of Institute of Basic Biological Problems of the RAS enlightened the participants on the great 50-year

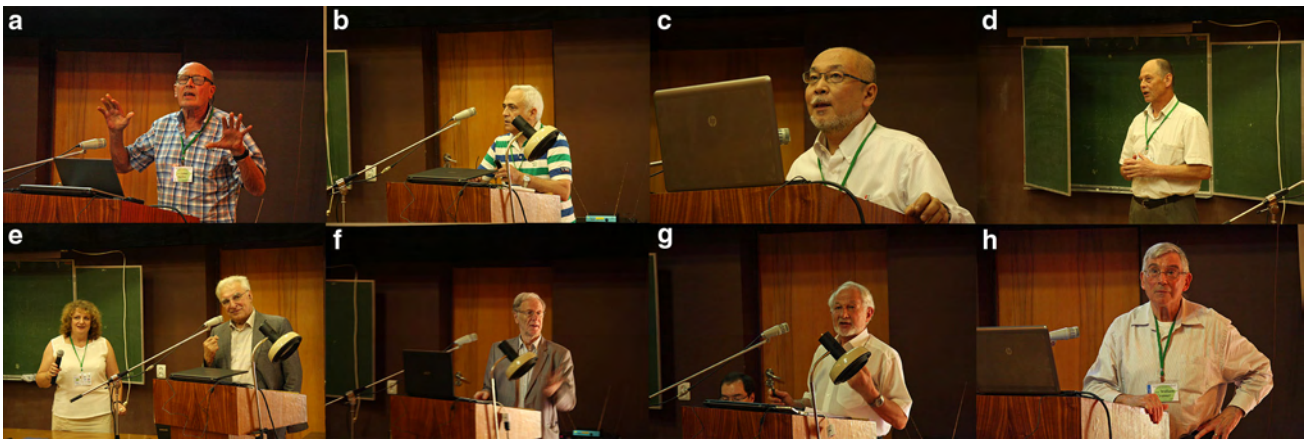

Fig. 5 **a** James Barber; **b** Suleyman I. Allakhverdiev; **c** Tatsuya Tomo; **d** Anatoly A. Tsygankov; **e** Anatoly I. Miroschnikov; **f** Vladimir A. Shuvalov; **g** Andrey (Andrew) B. Rubin; and **h** William Cramer

history of the institute, as well as about the history of photosynthesis research in Pushchino.

Finally, Andrey (Andrew) B. Rubin (Fig. 5g), corresponding member of the RAS, presented his lecture on the outstanding research in Photosynthesis in the world. He focused on the discoveries made in Russia (including those in Pushchino) on the primary reactions of photosynthesis, which is an important part of biophysics and biophysical chemistry.

Events in honor of Nathan Nelson and T. Nejat Veziroğlu

After a short introduction by James Barber, the chairman of the conference, Govindjee made interesting and exciting presentation on Nathan Nelson and T. Nejat Veziroğlu, as mentioned above. Figure 6 gives an impression on Govindjee's special style of lecturing when he brings life to the audience and those he is talking about.

Ada Yonath (2009 Nobel Prize winner in Chemistry, who had shared this prize with Venkatraman Ramakrishnan and Thomas A. Steitz) presented a brilliant lecture on the function of ribosomes (Fig. 7a). (See her life at: https://www.nobelprize.org/nobel_prizes/chemistry/laureates/2009/yonath-bio.html).

This lively Nobel laureate paid particular attention to Nathan Nelson and his personal contributions to the development of different methods in crystallographic studies. She finished her presentation with: "I love you, Nathan!" James Barber made a brief introduction to the history of photosynthesis research with particular attention to Nathan Nelson's discoveries.

Nathan Nelson presented a wonderful lecture, which traced his research career that has lasted half a century (Fig. 7b). We are in full agreement with him that life in science is a freedom, serendipity, and joy!

William Cramer (Fig. 5h) presented a lecture on the *Mechanism of State Transitions*, the phenomena that regulates "excitation energy distribution and redistribution between the two photosystems" Together with new scientific results, he paid tribute to Nelson's contribution to the study of cytochrome b_6f complex.

Rachel Nechushtai (Fig. 7c) presented a lecture on *Photosystem I (PSI): from protein composition to photo-bio-nano-electronics*. She showed perfect examples of personal scientific relationships and scientific achievements, bringing before all of us the greatness of Nathan Nelson as a person, as a friend, and as a mentor.

We have refrained, due to space restrictions, to discuss all the other presentations here. However, "Appendix 1" provides a list of all the speakers in alphabetical order. Figure 8 shows some of these speakers. Further, there were about 90 posters, presented by both established and young scientists from 22 countries. "Appendix 2" shows an alphabetical list of all the poster presenters.

Most of the talks at this conference dealt with the state-of- the-art research, starting with a brief review of the current knowledge, followed by a balanced presentation of latest research results, and concluding with views on the future course of research. Further, the chairpersons emphasized the key points of the talks, steered the discussions by providing additional thoughts, and introduced related ideas. We note that the discussions continued near the posters and after the lectures. Readers can obtain the program by going to the following web site:

Fig. 6 Several photographs of Govindjee during his lectures on Nathan Nelson and Nejat Veziroğu showing him in his usual animated style of lecturing

Fig. 7 **a** Ada Yonath, 2009 Nobel Prize winner in Chemistry; **b** Nathan Nelson; **c** Rachel Nechushtai, during their lectures

<http://photosynthesis2016.cellreg.org/documents/2016_PRS_Programme.pdf>.

Young researchers and the awardees

An awards committee selected several awardees from among the young researchers who presented their work at this conference, either as a poster or as a talk. Figure 9 shows a group photograph of the young talent awardees. The awards/prizes were presented to these researchers who had done and presented outstanding research in the field of "Photosynthesis and/or Hydrogen Energy Research for Sustainability". These young researchers included Ph.D. students as well as post-docs. Chairpersons of poster viewing and discussions, and members of the selection committee are listed in the electronic supplementary material. (See: doi:10.1007/s11120-016-0311-5)

Young Scientists who received awards at the Pushchino Meeting were as follows.

1. Photosynthesis

Kaichiro **Endo** (Japan); Marina **Kozuleva** (Russia); Pini ***Marcu*** (Israel); Sonal **Mathur** (India); Gergely **Nagy** (Switzerland); Eva **Psidova** (Slovakia); Margarita **Rodionova** (Russia); Lyubov **Surova** (Russia); Yoshifumi **Ueno** (Japan), and Arjun **Tiwari** (Finland).

2. Hydrogen

Azat **Abdullatypov** (Russia); Vinzenz Baryo **Kaiser** (Israel); Oren **Ben-Zvi** (Israel); Zinaida **Eltsova** (Russia);

Fig. 8 Some of the speakers during their presentations. **a** John Golbeck; **b** Norio Murata; **c** Olaf Kruse; **d** Sonoike Kintake; **e** Rajagopal Subramanyam; **f** Marina Kozuleva

Lilit **Hakobyan** (Armenia); Volker **Hartmann** (Germany); Anna **Smygalina** (Russia); and Milad **Yuval** (Israel).

"Appendix 3" shows a list of titles of research papers/posters of the above awardees.

Social events

The conference was not only talks and discussions, but included many social events. On the evening of the second day it was a "*Get together*". Figure 10 shows a few scenes from one of the parties. On the third day, we had excursions to different places; on the fourth day, the participants enjoyed chamber music in the evening, and on the fifth day we had a great Banquet. Additional photographs, chosen by two of us (AAT and TT), are shown in the Supplementary material (see Figures S1—S7; doi:10.1007/s11120-016-0311-5).

Concluding remarks

We end this News Report by paying special tribute to our honored and most distinguished guests: Nathan Nelson and T. Nejat Veziroğlu for their great contributions to Photosynthesis and Hydrogen Energy Research, respectively.

We all are happily awaiting our next meeting in India in 2017 (from October 30 to November 4). We wish all success to the chairs and the organizers of our 8th International conference "Photosynthesis and Hydrogen Energy Research for Sustainability-2017" in honor of *Agepati S. Raghavendra (from India), William A. Cramer (from USA), and Govindjee (also from USA)*. For further information, please contact Rajagopal Subramaniam (srgsl@uohyd.ernet.in or psrajagopal@yahoo.com).

Figure 11 shows a photograph of some of the participants celebrating the 7th Congress, and extending invitation to us all for the 8th Congress in India.

Fig. 9 A group photograph of winners of young talent awards, with others. *Front row, from left to right* Tatsuya Tomo, Oren Ben-Zvi, Suleyman I Allakhverdiev (wearing Robert Emerson's apron), Govindjee, Anna Smygalina, Eva Pšidová, Margarita V. Rodionova, Sonal Mathur, Lyubov Surova, and Gergely Nagy. *Back row, from left to right* Volker Hartmann, Lilit Hakobyan, Milrad Yuval, Azat V. Abdullatypov, Pini Marcu, Marina Kozuleva, Zinaida Eltsova, Kaichiro Endo, Yoshifumi Ueno, Arjun Tiwari and Anatoly A. Tsygankov; missing in the photograph is: Vinzenz Bayro Kaiser

Fig. 10 Selected scenes showing the spirit of celebration; second from left in the top right panel shows Vyacheslav (Slava) V. Klimov of the institute where the conference was held. For other photographs, see figures in the electronic supplementary material (doi:10.1007/s11120-016-0311-5)

Acknowledgments We express our appreciation to all the attendees for valuable discussions and interactions on various aspects of photosynthesis at the 2016 conference, presented here. 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. We thank the International Society of Photosynthesis Research (ISPR), International Association for Hydrogen Energy (IAHE), Agrisera-Antibodies for Plant Sciences, Russian Photobiological Society, and three Russian companies ("OOO Fitosila", "Pushchinskie laboratorii", and "Speclabproekt") for their support. We are thankful to T. Nejat Veziroğu and Ineke Ravesloot (on behalf of Govindjee and Tom Sharkey) for mailing books to the conference for the awards given to the young scientists. We thank all the members of the local organizing committee for their wonderful work that led to a very smooth running of our conference. Our special thanks go to Dmitry A. Los for the creation and support for the conference web site, and to Toshiyuki Shinoda and Alexander Shitov for most of the photographs used here. We thank many attendees and friends for sending additional messages to the organizers of the conference (see electronic supplementary material). This Conference, as well as the preparation of this News Report, was supported by the Russian Science Foundation (Grant #15-14-30007, AAT and SIA).

Appendix 1: List of all speakers (in alphabetical order by last name)

There were 78 speakers and chairpersons. These included (in alphabetical order): Azat Abdullatypov; Seiji Akimoto; Suleyman Allakhverdiev; James Barber; Vinzenz Bayro-Kaiser; Natalie Belyaeva; Barry Bruce; Dmitry Cherepanov; Robert Corkery; William Cramer; Dmitry Dunikov; Leslie Dutton; Julian Eaton-Rye, Zinaida Eltsova; Arvi Freiberg, Thomas Friedrich; Henrich Frielinghaus; Gyozo Garab; Christopher Garvey; John Golbeck; Vasiliy Goltsev; Maksym Golub; Govindjee; Patrick Hallenbeck; Peter Hegemann; Yukako Hihara; Michael Hippler; Hiroshi Ishikita, Kentaru Ifuku; Hisashi Ito; Alexey Kazakov; Ilya Kovalenko; Marina Kozuleva; Alexander Krasnovsky (Jr); Olaf Kruse; Jianguo Liu; Eugene Lysenko; Eugene Maksimov; Mahir Mamedov; Mariko Miyachi; Norio Murata; Viktor Nadtochenko; Gergely Nagy; Jose A, Navarro; Rachel Nechushtai; Nathan Nelson; Konstantin Neverov; Daisuke Nii; Marc Nowaczyk; Jorg Pieper; Roman Pishchalnikov; Agepati S. Raghavendra; Alexander Ramenskiy; Andrey (Andrew) B. Rubin; Keisuke Saito; Avigdor Scherz; Franz-Josef Schmitt; Gadi Schuster; Alexey Semenov; Daisuke Seo; Vladimir Shuvalov; Evelina Slavcheva; Alexey Solovchenko; Kintake Sonoike; Rajagopal Subramanyam; Miwa Sugiura; Vladimir Sukhov; George Sytchev; Alexander Tikhonov; Arjun Tiwari; Tatsuya Tomo; Giuseppe Torzillo; Lyudmila Vasilieva; T. Nejat Veziroğu; Martin Winkler; Iftach Yacoby; Ada Yonath; Adam Zach; and Dmitry Zlenko.

Fig. 11 Participants celebrating the 7th congress in Pushchino, and inviting us all to the 8th congress in Hyderabad (India) to be held during October 30–November 3, 2017. Left to right: Győző Garab; A.S. Raghavendra; Rajagopal Subramanyam; Michael Hippler; and John Golbeck

Appendix 2: List of all poster presenters (in alphabetical order by last name)

Azat V. Abdullatypov; Mina Agatsuma; Durna Aliyeva; Tofig Allahverdiyev; Alexander Ashikhmin; Alexey Baikov; Alexander S. Belov; Oren Ben-Zvi; Dmitry Blinov; Maksim Bolshakov; Yulia V. Bolychevtseva; Valentina Brailko; Marián Brestič; Gennadiy Bulatkin; Nadezhda I. Chernova; Nina Djapic; Olga Dymova; Haviva Eilenberg; Kaichiro Endo; Bulat Fatkhullin; Tatyana Fedorchuk; Vladimir Fedorov; Zoya Fetisova; Thomas Friedrich; Richard L. Garcia; Anastasia Gavrisheva; Irina Gette; Sergey Golovastov; Vasilij N. Goltsev; Daniil Gvozdev; Lilit Hakobyan; Volker Hartmann; Irada Huseynova; Lyudmila Ignatova; Maria Ivanova; Dainius Jakubauskas; Hazem M. Kalaji; Andrey Khorobrykh; Anton Khristin; Mikhail Khristin; Sergei S. Khruschev; Aleksandra Khudyakova; Konstantin Klementiev; Alena Konôpková; Liliya Koshkarova; Tatyana Laurinavichene; Vladimir Lavrenov; Ilya Kovalenko; Marina Kozuleva; Pini Marcu; Sonal Mathur; Ayumi Matsuhashi; Georgy Milanovsky; Maria Morgunova; Sigal Y. Netzer-El; Vladimir Z. Paschenko; Anastasia Petrova; Ekaterina P. Petushkova; Marina Pikulenko; Jörg Pieper; Tatiana Plyusnina; Eva Pšidová; Andrei Razjivin; Margarita Rodionova; Ivan Romanov; Natalia Rudenko; Tatyana Savchenko; Boris Semin; Toshiyuki Shinoda; Alexander Solov'ev; Lyubov Surova; George Sytchev; Yoshifumi Ueno; Daria Vetoshkina; Tatiana Vlasova; Roman Voloshin; Andrey Yakovlev; Denis Yanykin; Milrad Yuval; Aleksey Zabelin; Victor Zaitchenko; Marek Živčák; Elena Zhurikova; Nikolay A. Zorin.

Appendix 3: List of titles of presentations of the young scientist awardees

Photosynthesis:

Kaichiro Endo, Koichi Kobayashi, and Hajime Wada. **Roles of anionic lipids clarified with an SQDG-deficient mutant of *Thermosynechococcus elongatus* BP-1.**

Marina Kozuleva. **A new insight into mechanisms of oxygen photoreduction in the photosynthetic chain.**

Pini Marcu and Iftach Yacoby. **Characterization of the putative ferredoxin binding sites on photosystem I.**

Sonal Mathur and Anjana Jajoo. **Investigation of deleterious effects of chromium phytotoxicity on photosynthesis in wheat plant.**

Gergely Nagy. **Structure and dynamics of photosynthetic membranes as studied by neutron scattering.**

Eva Pšidová, Jana Majerová, Srdjan Stojnić, Ľubica Ditmarová, Marek Ježík, Katarína Střelcová, and Dušan Gömöry. **Physiological state of selected beech population during peak of growing season.**

Margarita V. Rodionova, Mehmet S. Karacan, Turgay Tunc, Kubra Venedik, Serhat Mamas, Aleksandr Shitov, Nurcan Karacan, Sergey K. Zharmukhamedov, Vyacheslav V. Klimov, and Suleyman I. Allakhverdiev. **New antimony(III) complexes as potent inhibitors of photosystem II, carbonic anhydrase, and glutathione reductase**.

Lyubov Surova, Vladimir Vodeneev, and Vladimir Sukhov. **Variation potential influences the resistance of photosynthetic machinery to the thermal stress in pea.**

Yoshifumi Ueno, Shimpei Aikawa, Akihiko Kondo, and Seiji Akimoto. **Excitation energy transfer processes among photosynthetic complexes in cyanobacterial cells.**

Arjun Tiwari. **Photosystem I in photochemical and non-photochemical quenching of excitation energy.**

Hydrogen:

Azat V. Abdullatypov. **Oxygen diffusion pathways through HydSL hydrogenase from *Thiocapsa roseopersicina.***

Vinzenz Bayro Kaiser. **Temperature-sensitive PSII: toward a sustainable bioreactor for photosynthetic hydrogen production.**

Oren Ben-Zvi and Iftach Yacoby. **The in vitro enhancement of [FeFe] hydrogenase activity by [Fe] superoxide dismutase.**

Zinaida Eltsova. **Hydrogen production by *Rhodobacter sphaeroides* mutants without LHII complex.**

Lilit Hakobyan, Lilit Gabrielyan, and Armen Trchounian. **Advantages of mixed carbon fermentation in biological hydrogen production by *Rhodobacter sphaeroides.***

Volker Hartmann, Tobias Vöpel, Fangyuan Zhao, Felipe Conzuelo, Simon Ebbinghaus, Marc M. Nowaczyk, Nicolas Plumeré, Wolfgang Schuhmann, and Matthias Rögner. **Optimization of a photosystem 1 and 2 based photovoltaic cell.**

Victor Zaitchenko, Mikhail Ivanov, and *Anna Smygalina*. **Detonation mitigation in hydrogen-fueled spark ignition engine by adding low-energetic components.**

Milrad Yuval and Yacoby Iftach. **Novel approaches to simultaneously combat the oxygen sensitivity of hydrogenase and its poor electron acceptance.**

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Supplementary material for the NEWS REPORT "International conference on"*Photosynthesis research for sustainability-2016*-- in honor of Nathan Nelson and TurhanNejat Veziroğlu", held on June 19-25, 2016, in Pushchino, Russia, by A. A. Tsygankov, S. I. Allakhverdiev, T. Tomo, and Govindjee

This supplementary material is divided into three sections: **A.** Chairpersons of poster viewing and discussions, and members of the selection committee; **B**. Messages received by Sulyeman Allakhverdiev & Anatoly Tsygankov; and **C**. Additional photographs

A. Chairpersons of poster viewing and discussions, and members of the selection committee

*The members (in alphabetical order) of the group that selected and nominated the names of young researchers for the awards were***:**

Seiji Akimoto (Japan), Marián Brestic (Slovakia), Vasiliy Goltsev (Bulgaria), Kentaro Ifuku (Japan), Olaf Kruse (Germany), Eugene Maksimov (Russia), Gadi Schuster (Israel), Kintake Sonoike (Japan), Rajagopal Subramanyam (India), Tatsuya Tomo (Japan), Iftach Yacoby (Israel), and Marek Živčák(Slovakia)

The following were members of the selection committee for the awardees (listed in alphabetical order):

Suleyman Allakhverdiev (Russia), James Barber (UK), Barry Bruce (USA), Julian Eaton-Rye (New Zealand), Gyozo Garab (Hungary), Govindjee(USA), Tatsuya Tomo (Japan) and Anatoly Tsygankov (Russia)

B. Messages received

After the congress was over, both Suleyman I. Allakhverdiev (SIA) and Anatoly A.Tsygankov (AAT) received several wonderful messages, which included those from the following (arranged alphabetically): James Barber (UK); Chris Garvey (Australia); Patrick Hallenbeck (Canada); Anjana Jajoo (India); Jianguo Liu (China); Sonal Mathur (India); Norio Murata (Japan); Jose A. Navarro (Spain); Hannah and Nathan Nelson (Israel); Marc Nowaczyk (Germany); Kimiyuki Satoh (Japan); Toshiyuki Shinoda (Japan); Rajagopal Subramanyam (India); Arjun Tiwari (Finland); Guiseppe Torsillo (Italy), Yoshifumi Ueno (Japan); T. Nejat Veziroglu (USA); - Ada Yonath (Israel). Two of the authors (Govindjee (G) & Tatsuya Tomo, TT) of this News Report also wrote to SIA and Anatoly A. Tsygankov, AAT (key organizers of the conference) thanking

them for a most wonderful and successful conference.

Excerpts (slightly edited by Govindjee) from some of the letters follow:

James Barber (UK): "Thank you for organizing an excellent conference and making it possible for me to attend. ….Please give my thanks to all your friends who helped you."

Nathan (and Hannah) Nelson (Israel): "We arrived home safely with enormous appreciation and gratitude for the Pushchino meeting you, with others, organized to honor me and Dr. NejatVeziroglu. You were the *mastermind* behind it all. *As a conductor, you chose wonderful people for this orchestra*. We were taken care of very well from the moment we arrived at the airport till the time we left. Our thanks to Anatoly and all the rest of the dedicated organizing staff headed by Marina."

T. Nejat Veziroglu (USA): "First I would like to thank you very much for honoring me at the International Conference Photosynthesis Research for Sustainability, and for all the courtesies you extended to me, to my family and to my brother. We all appreciate it very much. Again, we thank you very much for everything. "

Chris Garvey (Australia): "Thanks for the (memorable) experience at the conference in Pushchino. If you could send me some photographs of the conference, I will promote the 2017 meeting in Hyderabad, India, among my Australian colleagues."

P. Rajagopal Subramanyam (India): *"..Scientific talks at the Pushchino conference were very good and moreover, your local organizing committee team was fabulous. ... I will update you further regarding the 8th International Conference on "Sustainability" to be held in Hyderabad in 2017 –it will honor three outstanding scientists: William Cramer (Purdue University,Lafayette, IN, USA); Govindjee (University of Illinois at Urbana-Champaign, Urbana, IL, USA); and A.S. Raghavendra (University of Hyderabad, Hyderabad, India)"*

Kimiyuki Satoh (Japan): "My stay in Pushchino attending the 7th International Conference on Photosynthesis Research for Sustainability was very pleasant. ….The discussions I had with your colleagues and old friends were most enjoyable and stimulating. I would also like to express my appreciation for the many Russian scientists who helped us coordinate the scientific, social and logistical aspects of the Conference. Please convey my thanks to Dr. Anatoly Tsygankov and the other members of the Organizing Committee."

Toshiyuki Shinoda (Japan): "…At the PRS2016 conference, I discussed our research

with many participants and received a lot of wonderful advice, and new ideas; it was indeed very beneficial to me. To add to our pleasure, we also saw beautiful sights in Moscow, fantastic museums, and above all, a very enjoyable evening cruise in Moskva river; I had a great time during my stay in Russia."

Arjun Tiwari (Finland): "Thank you very much for your great hospitality and successfully organizing such a great event. Please thank all the others in Pushchino, especially Marina; Zinaida; and Maria."

Marc Nowaczyk (Germany): "…I greatly appreciated the kind assistance and support by you and your wonderful team that made this meeting an exceptional experience forme. You did aperfect job - thank you so much!"

Sonal Mathur (India): "Thanks for your generosity and help and special thanks for such a nicehospitality. Everything was really good and comfortable. It was such a nice experience meeting scientists from all over the world and sharing their experiences."

Jose A. Navarro (Spain): "Just to thank you again for organizing this fantastic meeting in Pushchino and for giving us all your attention. Of course, my appreciation extends to all your collaborators. I really want to attend future meetings in this series."

Ada Yonath (Israel) : Thanks for organizing such a great conference

See the following pages for the photographs (S1—S7)

C. Photographs

We show below additional photographs to cover the international character of this conference.

Fig. S1.Photographs taken at the banquet. **A**: *Left to right:* Eugene Lysenko (Russia), Tatyana Fedorchuk (Russia), Vasiliy Goltsev (Bulgaria), Eva Pšidová Slovakia) and Marián Brestick (Slovakia). **B**: *Front row (left to right):* Nataly Belyaeva (Russia), Franz-Josef Schmitt (Germany), Marc M. Nowaczyk (Germany), and Volker Hartmann (Germany). *Back row (left to right):* Jörg Pieper (Estonia), Maksym Golub (Estonia) and Thomas Friedrich (Germany). **C**: *Left to right*: Olaf Kruse (Germany), Giuseppe Torzillo (Italy), José A. Navarro (Spain) and Győző Garab (Hungary). **D**: *Front row (left to right)*: Sonal Mathur (India), and Anjana Jajoo (India); standing behind them is Konstantin Neverov(Russia)

Fig. S2. Photographs at banquet (continued). **A**: *Left to right*: Barry Bruce (USA), and Allakhverdiev I. Suleyman (Russia) . **B**: *Left to right*: Kimiyuki Satoh (Japan), and Rachel Nechustai (Israel). **C**: *Left to right*: Julian J. Eaton-Rye (New Zealand), and Norio Murata (Japan). **D**: The group dancing in a ring—it was fun

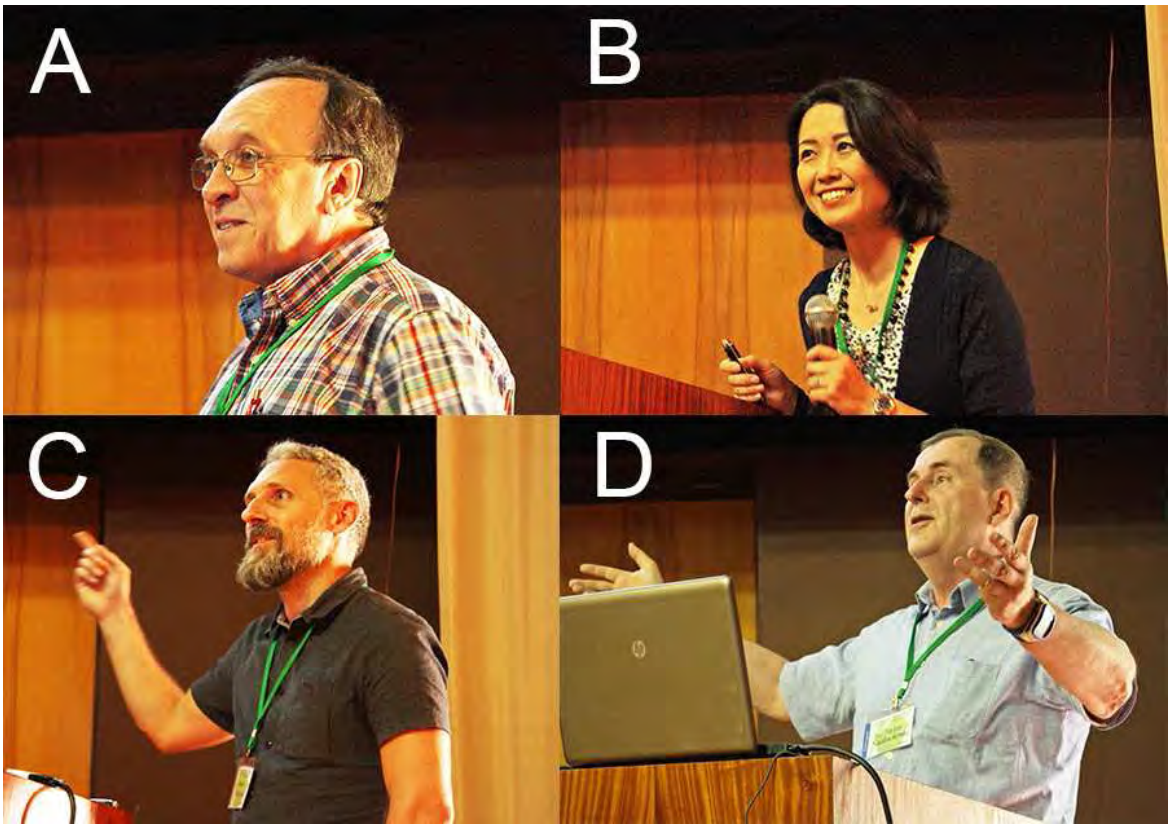

Fig. S3. Photographs of some of the speakers taken during their presentations. **A**: Alexey Semenov (Russia).**B**: Miwa Sugiura (Japan). **C**: Marc M. Nowaczyk (Germany). **D**: Victor Nadtochenko (Russia)

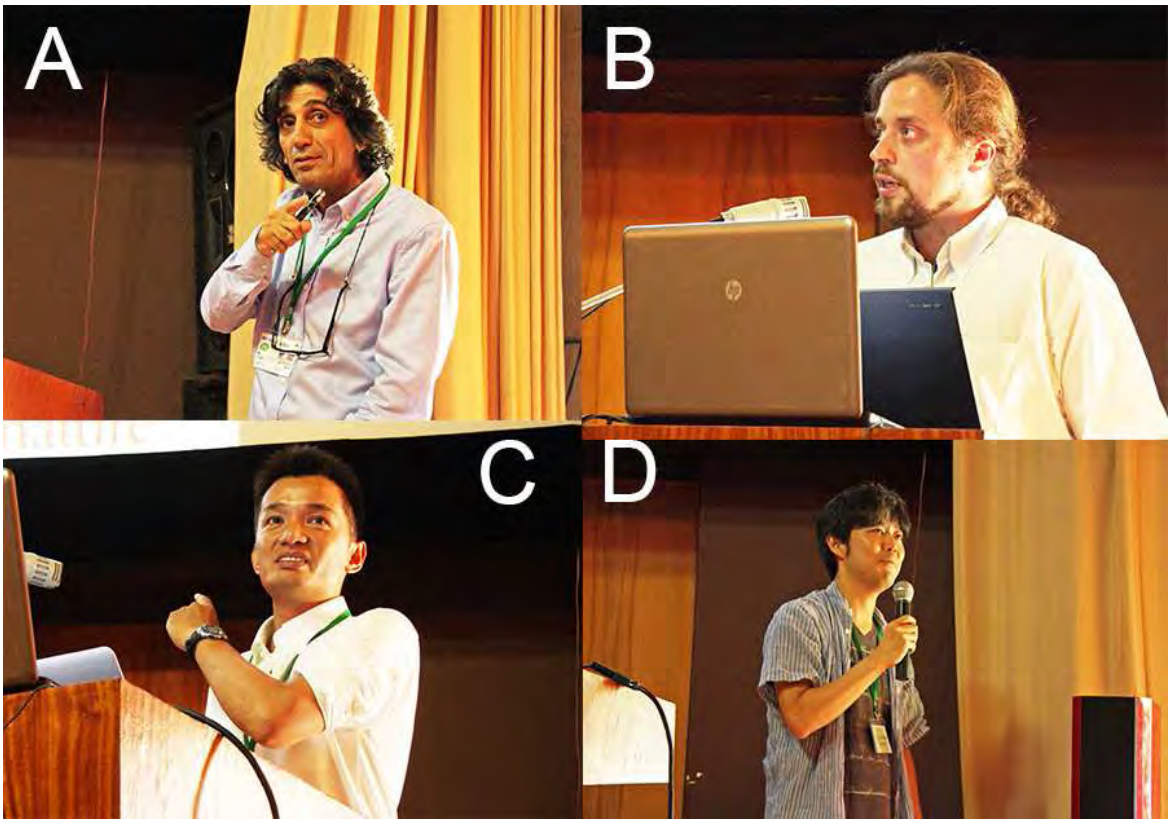

Fig. S4. Photographs of some of the speakers taken during their presentations (continued).**A**: Mahir Mamedov (Russia). **B**: Franz-Josef Schmitt (Germany). **C**: Kentaro Ifuku (Japan). **D**: Hiroshi Ishikita (Japan)

Fig. S5. Photographs of some participants during the conference. **A**: *Left to right*: Nejat Veziroğu's daughter Lili (who came with Dad and Mom), Nejat Veziroğu, Govindjee, and Allakverdiev I. Suleyman, when Veziroğu and Govindjee signed their name to the books given to the awardees (see the main text). **B**: *Left to right*: Nathan and Hannah Nelson. **C**: Govindjee with students in Russia. **D**: *Left to right*: Kentaro Ifuku (Japan), Seiji Akimoto (Japan), Daisuke Seo (Japan).

Fig. S6. Photographs of some participants during the conference (continued). At the reception desk, *Left to right*: Nataly Rudenko (Russia, Local organizing Committee), Nathan Nelson, Maria Leonova (Russia, Local organizing Committee), Hannah Nelson (Israel) and Anatoly A. Tsygankov (Russia). **B**: *Left to right*: Keisuke Saito (Japan) and Hiroshi Ishikita (Japan). **C**: *Left to right*: Anastasiya Petrova (Russia) and Govindjee. **D**: *Left to right*: Keisuke Saito (Japan), Hisashi Ito (Japan), Tatsuya Tomo (Japan) and Mariko Miyachi (Japan).

Fig. S7. A photograph taken at the conference, all are from Russia. Left to right: Maria Leonova; Anastasiya Petrova; Nataly Rudenko with her son Seva; Zinaida Eltsova; Marina Kozuleva; and Tatyana Fedorchuk