



ePS – 1

1st European Conference for Photosynthesis Research

A Marcus Wallenberg symposium

Detailed Lecture Program

Uppsala University Main Building

Monday, 25th June 2018

Afternoon (13.00-20:30)

13:00	Registration opens
16:00 - 16:20	Opening & Welcome addresses Johannes Messinger and Stenbjörn Styring Johan Tysk (Dean for Natural sciences and technology, Vice-rector Uppsala University) W. Vermaas (President of the International Society for Photosynthesis Research)
16:20 - 16:55	Opening Lectures <i>Chair T. Melis</i> University Aula PL:1 - The biosynthesis and function of chlorophylls <i>Neil Hunter</i> University of Sheffield, UK
16:55 - 17:30	PL:2 - Strategies for improving C4 photosynthesis <i>Susanne von Caemmerer</i> RSB, The Australian National University, AU
17:30 18:05	PL:3 - Using Lessons from Nature to Achieve Artificial Photosynthesis <i>Michael Wasielweski</i> Northwestern University, Evanston - IL, US
18:05	Practical information
18:15 20:30	Welcome reception Outside of University Aula

SLU-Swedish Agricultural University

Tuesday, 26th June 2018

Morning (9:00 – 12:15)

9:00 9:05	Welcome - Information		
9:05 – 9:45	Plenary <i>Chai: A. W. Rutherford</i> PL3 - Structures of the intermediates of Kok's photosynthetic oxygen clock <i>Junko Yano</i> Lawrence Berkeley National Laboratory, Berkeley - CA, US		SLU Main Hall
9:45 10:15	Coffee Break		
	Session A1 <i>PSII & Water Ox. Chair F. Mamedov</i> Main Hall	Session B <i>Adapt: Env. & Climate Chair A. Weber</i> Hall W	Session C <i>Metab. & Eng. Chair M. Stitt</i> Hall Loftet
10:15 – 10:45	A1:1 - <i>Keynote</i> Novel chlorophylls and new directions in photosynthesis research <i>Min Chen</i> University of Sydney, AU * Jan Anderson award lecture (ISPR)	B:1 - <i>Keynote</i> Within-canopy photosynthetic acclimation: importance for photosynthesis in current and future climates <i>Ü. Niinemets</i> Estonian University of Life Sciences, EE	C:1 - <i>Keynote</i> Fixing Carbon Dioxide Fixation: Design Pathways to Enhance Biological Carbon Capture <i>J. Zarzycki</i> Max Planck Institute for Terrestrial Microbiology, Marburg, DE
10:45 – 11:00	A1:2 - <i>Keynote</i> Photochemistry beyond the red-limit in chlorophyll f-containing photosystems <i>A. W. Rutherford</i> Imperial College, London, UK	B:2 - Simulated projections of boreal bog ecosystem productivity are sensitive to observed seasonality in leaf physiology <i>A. M. Jensen</i> Linnaeus University, Växjö, SE	C:2 - Revision of the central carbon metabolism in cyanobacteria and plants <i>K. Gutekunst</i> University of Kiel, Kiel, DE
11:00 – 11:15		B:3 - <i>Keynote</i> Drivers of Disease Emergence in Boreal coniferforests: Importance of phenotypic balance and climate change <i>J. Stenlid</i> Swedish University of Agricultural Sciences, Uppsala, SE	C:3 - Molecular basis of Calvin Cycle Regulation by CP12 <i>J. Murray</i> Imperial College, London, UK
11:15 – 11:30	A1:3 - Evidence for bicarbonate-induced redox tuning of PS II <i>in vivo</i>: glycolate binding in a photorespiration mutant <i>A. Krieger-Liszkay</i> CEA/CNRS, Universités Paris-Sud and Paris-Saclay, Gif-sur-Yvette, FR		C:4 - Overexpression of two Calvin Benson cycle enzymes lead to enhanced photosynthesis and global reprogramming of carbon metabolism in cyanobacteria <i>Y. Sakuragi</i> University of Copenhagen, DK
11:30 – 11:45	A1:4 - Mutation of D1 and D2 residues associated with bicarbonate and bound waters on the acceptor side of PS II impair the quinone-Fe-acceptor complex <i>J. J. Eaton-Rye</i> University of Otago, Dunedin, NZ	B:4 - <i>Keynote</i> Revisiting the role of flavodiiron proteins in oxygenic photosynthetic microorganisms <i>Y. Allahverdiyeva</i> University of Turku, Turku, FI	C:5 - Evolution of CAM photosynthesis can be predicted in arid environments <i>A. Rigueiro-Mesejo</i> Heinrich Heine Univ., Düsseldorf, DE
11:45 – 12:00	A1:5 - Time-resolved IR absorption spectroscopy tracking electron and proton transfer in photosystem II from spinach and cyanobacteria <i>P. Simon</i> Freie Universität, Berlin, DE		C:6 - Role of cytochrome cM in photomixotrophic bioenergetics of <i>Synechocystis</i> sp. PCC 6803 <i>D. Solymosi</i> University of Turku, Turku, FI
12:00 – 12:15	A1:6* - Identifying substrate binding sites of PSII by ¹⁸O isotope ratio <i>M. H. Cheah</i> Uppsala University, SE * ePS1 young organizer talk	B:5 - The heat shock response in the Antarctic polyextremophilic alga <i>Chlamydomonas</i> sp. UWO241, is not dependent on the accumulation of Heat Shock Proteins <i>M. Cvetkovska</i> University of Western Ontario, CA	C:7 - "Omics" analysis in the diatom <i>Phaeodactylum tricornutum</i> to follow cell fate during nitrogen limitation and light/dark cycles <i>S. D'Adamo</i> Wageningen Univ. and Research, NL
12:15 13:30	Lunch		

Tuesday, 26th June 2018

Afternoon (13:30-19:00)

	Session A2 <i>PSII & Water Ox.</i>	Main Hall <i>Chair H. Dau</i>	Session D <i>e- Transfer & Regul.</i>	Hall B <i>Ch. C. Spetea</i>	Session E <i>Microb. Solar Fuels</i>	Hall Loftet <i>Chair O. Kruse</i>
13:30 – 14:00	A2:1 - Keynote Modeling Intermediate States and Vibrational Fingerprints Along the Catalytic Cycle of Photosystem II <i>L. Guidoni</i> Universita de L'Aquila, IT		D:1 - Keynote Remodeling of photosynthetic electron transfer chain architecture and regulations modes in the complex green alga Euglena gracilis <i>P. Cardol</i> Université de Liège, BE		E:1 - Keynote Recent advances in the production of volatile biofuels by microalgae: case studies of hydrogen and hydrocarbon photoproduction CEA/CNRS, Aix-Marseille <i>G. Peltier</i> Université, St Paul-lez-Durance, FR	
14:00 – 14:15	A2:2 - The Mechanism of Delivery and Binding of Water and the Substrate Analog, Ammonia, in the Oxygen-evolving Complex of PSII <i>K. V. Lakshmi</i> Rensselaer Polytechnic Instit., Troy, US		D:2 - Unraveling the interplay of thylakoid transporters/channels for membrane energization and non-photochemical quenching (NPQ). <i>H. Kirchoff</i> Washington St. University, Pullman, US		E:2 - Resolving the in vivo mechanisms governing the inhibition of algal hydrogenase <i>I. Yacobi</i> Tel Aviv University, IL	
14:15 – 14:30	A2:3 - Large-scale QM/MM calculations of the CaMn₄O₅ clusters in the S_i (i=0-5) states of oxygen evolving complex of photosystem II <i>K. Yamagushi</i> Computational Science center, Riken, JP		D:3 - Keynote Evaluating the regulation and extent of cyclic electron flow around PSI in various microalgae <i>B. Bailleul</i> CNRS-Sorbonne Université, Paris, FR		E:3 - Keynote Substrate limitation of the Calvin-Benson-Bassham cycle is key to sustained, photoautotrophic H₂ production in green algae <i>S. Z. Tóth</i> Biological Research Centre, Szeged, HU	
14:30 – 14:45	A2:4 - Keynote Water Oxidation Catalysis by the OEC vs. Manganese Oxides: Similarities, Differences and a Fundamental Question <i>P. Kurz</i> Albert-Ludwigs-Universität Freiburg, DE					
14:30 – 15:00			D:4 - Keynote Photostability and Charge Recombination in Biophotoelectrodes <i>N. Plumeré</i> Ruhr Universität, Bochum, DE		E:4 - An advanced genetic engineering strategy enables sustainable photosynthetic bio-production from the green microalga C. reinhardtii <i>K. J. Lauersen</i> Bielefeld University, GE	
15:00 – 15:15	A2:5 - Identifying Mn^{VII}-oxo species during electrochemical water oxidation by manganese oxide. & A new proposal for O–O bond formation mechanism in PSII <i>B. Zhang</i> Royal Instit. of Technol., Stockholm, SE				E:5* - Isobutanol production in Synechocystis PCC 6803 <i>Rui Miao</i> Uppsala University, Uppsala SE * ePS1 young organizer talk	
15:15 – 15:30	A2:6 - Spectroscopic and computational investigations of high-valent non-heme iron oxo and peroxo species <i>A. Thapper</i> Uppsala University, Uppsala SE		D:5 - Modeling of PSII electron transport processes <i>I. Vass</i> Biological Research Center, Szeged, HU		E:6 - Photosynthetic antenna engineering to improve crop yields <i>H. Kirst</i> University of California Berkeley, US	
15:30 16:00	Coffee Break					
16:00 16:40 17:20	Plenary PL:5 - Mimicking photosynthesis: mol. approaches towards photoelectrochemical fuel-forming devices <i>Vincent Artero</i> PL:6 - Harvesting the sun, safely and efficiently <i>Roberta Croce</i>		<i>Chair L. Hammarström</i> CNRS/CEA and Université Grenoble-Alpes, Grenoble, FR Vrije Universiteit Amsterdam, NL		SLU Main Hall	
17:20 17:40	In memory of Lost Colleagues <i>Govindjee</i>					
18:00 19:00	Poster Session with refreshments					

Wednesday, 27th June 2018

Morning (9:00 – 12:15)

9:00 9:05	Welcome/Information					
9:05 9:45	Plenary PL:7 - Balancing the carbon budget in a fluctuating and often unpredictable world: can bankers and politicians learn a few tricks from a little weed? <u>Mark Stitt</u> Max Planck Institute of Molecular Plant Physiology, Potsdam-Golm, DE		Chair P. Lindberg		SLU Main Hall	
9:45 10:15	Coffee break					
Discussions I & II						
10:15 - 11:15	Discussion A1 PSII & Water Oxidation	Main Hall Chair F. Mamedov	Discussion B Adaptation: Env. & Climate	Hall W Chair S. Jansson	Discussion C Metabolism & Metabolic Engineering	Hall Loftet Chair M. Stitt
11:15 - 12:15	Discussion A2 PSII and Water Oxidation	Main Hall Chair H. Dau	Discussion D e ⁻ Transfer & Regulation	Hall W Chair C. Spetea	Discussion E Microbial Solar Fuels	Hall Loftet Chair O. Kruse
12:15 13:30	Lunch					

Wednesday, 27th June 2018

Afternoon (13:30-late)

	Session H1 <i>Light Harvesting</i>	Main Hall Chair P. Jahns	Session G <i>Improving Crops</i>	Hall W Chair I. Vass	Session F <i>PS Structures</i>	Hall Loftet Chair J. Murray
13:30 - 14:00	H1:1 - Keynote Imaging and understanding sun-induced fluorescence from the single leaf to the satellite - Technical and scientific status of the FLEX satellite <u>U. Rascher</u> Forschungszentrum Jülich, DE		G:1 - Keynote Improving yield through multigene manipulation of photosynthesis <u>C. Raines</u> University of Essex, UK		F:1 - Keynote Photosynthetic reaction centers Robustness with increased complexity <u>N. Nelson</u> Tel Aviv University, IL	
14:00 - 14:15	H1:2 - Conformational dynamics of Light-Harvesting Complex II in native thylakoid membranes <u>A. Pandit</u> Leiden University, NL		G:2 - Keynote Using the interplay between photoprotection and photosynthesis for new crop improvement strategies <u>J. Kromdijk</u> University of Illinois at Urbana-Champaign, US		F:2 - Keynote Biogenesis of cyanobacterial thylakoid membranes <u>J. Nickelsen</u> Ludwig Maximilian University of Munich, DE	
14:15 - 14:30	H1:3 - Observing plant Light-Harvesting Complex II within aggregates and lipid bilayers: correlated fluorescence quenching (FLIM) & topographic mapping (AFM) <u>P. Adams</u> University of Leeds, UK					
14:30 - 14:45	H1:4 - Comparative excitation-emission dependence of the F_v/F_m ratio in model green algae and cyanobacterial strains <u>S. Santabarbara</u> Photosynthesis Research Unit, CNR, Rome, IT		G:3 - Fine-tuning the photosynthetic light harvesting apparatus for improved efficiency and biomass yield <u>R. Sayre</u> New Mexico Consortium, Los Alamos, US		F:3 - Structural insights into the apo-photosystem II complex: assembly and disassembly of the inorganic water-oxidizing complex <u>A. Zouni</u> Humboldt-Universität zu Berlin, DE	

14:45 – 15:00	H1:5 - The function and spectroscopic properties of the red forms in the light harvesting complex LHCA4 <i>M. Tros</i> Vrije Universiteit Amsterdam, NL	G:4 - Strategies for improving photosynthetic electron transport in C4 plants <i>M. Ermakova</i> Australian National University, AU	F:4 - Keynote Macromolecular organization and dynamics of photosynthetic membranes <i>L. Liu</i> University of Liverpool, UK
15:00 – 15:15	H1:6 - Far red light induced photoacclimation in cyanobacteria: photosynthesis under the mat <i>L. Bersanini</i> Vrije Universiteit Amsterdam, NL	G:5 - Enhancing mitochondrial reductant-dissipating activity can boost photosynthesis and plant growth <i>C. P. Voon</i> University of Hong Kong, CN	
15:15 – 15:30	H1:7 - Decomposition of a giant pigment complex: Role of NblA in disassembly of the phycobilisome and of NblB in chromophore detachment <i>R. Schwarz</i> Bar-Ilan University, IL	G:6 - Photosynthesis 2.0, a European initiative to double global crop yield <i>J. Harbinson</i> Wageningen University & Research, NL	F:5 - Thylakoid membrane proteome remodelling in response to variation in plant growth irradiance <i>C. Pagliano</i> Politecnico di Torino, IT
15:30 16:00	<i>Coffee Break</i>		
16:00 – 17:00	Poster Session		
17:00 – 17:40	Plenary PL:8 - On the use of oxygenic photosynthesis for the sustainable production of commodity chemicals <i>Klaas J. Hellingwerf</i> University of Amsterdam, NL	<i>Chair K. Stensjö</i>	SLU Main Hall
17:40 – 18:00	Plenary PL:9 - Bioenergy and renewable fuels from an European Union research and innovation policy perspective <i>Thomas Schleker</i> European Commission, Directorate General Research and Innovation, Brussels, BE	<i>Chair L. Hammarström</i>	SLU Main Hall
18:00	Bus transfer to the city center		
19:30 – 23:00 – 01:00	Conference dinner (tickets required) Uppsala Castle Dancing – Photosynthesis band (open to all participants)		

SLU-Swedish Agricultural University

Thursday, 28th June 2018

Morning (9:00 – 12:15)

9:00 9:05	Welcome-Information					
9:05 - 9:45	Plenary PL:10 – A Complete Artificial Photosynthesis <i>Daniel Nocera</i> Harvard University, Cambridge-MA, US				Chair: A. Magnuson SLU Main Hall	
9:45 10:15	Coffee Break					
	Session H2 Light Harvesting Chair: D. Kirilovsky Main Hall	Session I Rubisco & CCM Chair: S. von Caemmerer Hall W	Session J Artif. Photosynthesis Chair: V. Artero Hall Loftet			
10:15 - 10:45	H2:1 - Keynote Adaptation of photosynthesis regulatory mechanisms upon land colonization <i>T. Morosinotto</i> University of Padova, IT	I:1 - Keynote Putting plant RuBisCO together in E. coli <i>M. Hayer-Hartl</i> Max Planck Institute of Biochemistry, DE	J:1 - Keynote Cubane-based water oxidation catalysts: between bio-inspired design and solid state mimics <i>G. R. Patzke</i> University of Zurich, CH			
10:45 - 11:00	H2:2 - Keynote Oxygen reduction network and STN7 kinase as the key regulators of plant acclimation to high light conditions <i>M. Borisova-Mubarakshina</i> Institute of Basic Biological Problems, RAS, RU	I:2 - Keynote Assembly-dependent regulation of LSU translation <i>K. Wostrikoff</i> Sorbonne Université, CNRS, FR	J:2 - Molecular surface coatings for applications in solar fuels and artificial photosynthesis <i>G. Moore</i> Arizona State University, US			
11:00 - 11:15			J:3 - PV-driven water oxidation at 13 % solar-to-fuel efficiency by a light-weight, earth-abundant bifunctional catalyst <i>T. Wågberg</i> Umeå University, SE			
11:15 - 11:30	H2:3 - The "negative side" of state transitions <i>J. Alric</i> CNRS/CEA Cadarache, FR	I:3 - The influence of differentially expressed A. thaliana small subunit isoforms on Rubisco structure-function <i>L. Gunn</i> Uppsala University, SE	J:4 - Unveiling the charge carrier dynamics in the WO₃/BiVO₄ junction during water oxidation <i>S. Selim</i> Imperial College London, UK			
11:30 - 11:45	H2:4 - New insights into the regulation and diversity of photoprotective strategies applied by microalgae <i>O. Kruse</i> Bielefeld University, DE	I:4 - Keynote Introducing the algal CO₂-concentrating mechanism into higher plants: getting into a sticky situation <i>A. Mc Cormick</i> University of Edinburgh, UK	J:5 - Artificial photosynthesis by light absorption, charge separation, and photoredox catalysis <i>H. S. Soo</i> Nanyang Technological Univ., SG			
11:45 - 12:00	H2:5 - Molecular mechanisms of photoadaptation in the extremophilic red algal photosynthetic apparatus <i>J. Kargul</i> University of Warsaw, PL		J:6 - Semi-artificial photosynthesis: a platform for studying and rewiring natural photosynthetic pathways <i>J. Zhang</i> University of Cambridge, UK			

12:00 - 12:15	H2:6 - On the role of Photosystem II subunit PsbS upon high light acclimation of <i>Chlamydomonas reinhardtii</i> <i>P. Jahns</i> Heinrich-Heine-University Düsseldorf, DE	I:5 - Structure-function studies of the mechanism of powered CO₂ uptake by NDH-1 complexes in cyanobacteria <i>R. Burnap</i> Oklahoma State University, US	J:7 - Organic polymer nano-dots photocatalysts for light driven hydrogen evolution <i>H. Tian</i> Uppsala University, SE
12:15 13:30	<i>Lunch</i>		
Discussions III & IV			
13:30 - 14:30	Discussion H1 <i>Light harvesting</i> Main Hall <i>Chair: P. Jahns</i>	Discussion G <i>Improving crops</i> Hall W <i>Chair: J. Harbinson</i>	Discussion F Loftet <i>PS structures</i> Hall <i>Chair: J. Murray</i>
14:30 - 15:30	Discussion H2 <i>Light harvesting</i> Main Hall <i>Chair: D. Kirilovsky</i>	Discussion I <i>Rubisco & CCM</i> Hall W <i>Chair: S. von Caemmerer</i>	Discussion J Loftet <i>Artif. Photosynthesis</i> Hall <i>Chair: V. Artero</i>
15:30 16:00	<i>Coffee Break</i>		
16:00 - 16:40	Plenary <i>Chair: E. M. Aro</i> SLU Main Hall		
16:00 - 16:40	PL:11 - Developing synthetic genetic circuits to regulate gene expression in microalgae for fundamental biological studies and biotechnology <i>Alison Smith</i> University of Cambridge, UK		
16:40 - 17:20	PL:12- Artificial photosynthesis and Photosystem II. A second charge separation pathway in PS II excited by far red light <i>Stenbjörn Styring</i> Uppsala University, SE		
17:20	Announcements Closing		