



# ePS – 1

## 1<sup>st</sup> European Conference for Photosynthesis Research

*A Marcus Wallenberg symposium*

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## Detailed Lecture Program

# Uppsala University Main Building

Monday, 25<sup>th</sup> June 2018

Afternoon (13.00-20:30)

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

# SLU-Swedish Agricultural University

Tuesday, 26<sup>th</sup> June 2018

Morning (9:00 – 12:15)

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

Tuesday, 26<sup>th</sup> June 2018

Afternoon (13:30-19:00)

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

Wednesday, 27<sup>th</sup> June 2018

Morning (9:00 – 12:15)

9:00 9:05	Welcome/Information					
9:05 9:45	<b>Plenary</b> PL:7 - <b>Balancing the carbon budget in a fluctuating and often unpredictable world: can bankers and politicians learn a few tricks from a little weed?</b> <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	<b>Discussion A1</b> PSII & Water Oxidation	<b>Main Hall</b> Chair F. Mamedov	<b>Discussion B</b> Adaptation: Env. & Climate	<b>Hall W</b> Chair S. Jansson	<b>Discussion C</b> Metabolism & Metabolic Engineering	<b>Hall Loftet</b> Chair M. Stitt
11:15 - 12:15	<b>Discussion A2</b> PSII and Water Oxidation	<b>Main Hall</b> Chair H. Dau	<b>Discussion D</b> e <sup>-</sup> Transfer & Regulation	<b>Hall W</b> Chair C. Spetea	<b>Discussion E</b> Microbial Solar Fuels	<b>Hall Loftet</b> Chair O. Kruse
12:15 13:30	Lunch					

Wednesday, 27<sup>th</sup> June 2018

Afternoon (13:30-late)

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

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

SLU-Swedish Agricultural University

Thursday, 28<sup>th</sup> June 2018

Morning (9:00 – 12:15)

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

12:00 - 12:15	<b>H2:6 - On the role of Photosystem II subunit PsbS upon high light acclimation of <i>Chlamydomonas reinhardtii</i></b> <i>P. Jahns</i> Heinrich-Heine-University Düsseldorf, DE	<b>I:5 - Structure-function studies of the mechanism of powered CO<sub>2</sub> uptake by NDH-1 complexes in cyanobacteria</b> <i>R. Burnap</i> Oklahoma State University, US	<b>J:7 - Organic polymer nano-dots photocatalysts for light driven hydrogen evolution</b> <i>H. Tian</i> Uppsala University, SE
12:15 13:30	<i>Lunch</i>		
Discussions III & IV			
13:30 - 14:30	<b>Discussion H1</b> <i>Light harvesting</i> <b>Main Hall</b> <i>Chair: P. Jahns</i>	<b>Discussion G</b> <i>Improving crops</i> <b>Hall W</b> <i>Chair: J. Harbinson</i>	<b>Discussion F</b> <b>Loftet</b> <i>PS structures</i> <b>Hall</b> <i>Chair: J. Murray</i>
14:30 - 15:30	<b>Discussion H2</b> <i>Light harvesting</i> <b>Main Hall</b> <i>Chair: D. Kirilovsky</i>	<b>Discussion I</b> <i>Rubisco &amp; CCM</i> <b>Hall W</b> <i>Chair: S. von Caemmerer</i>	<b>Discussion J</b> <b>Loftet</b> <i>Artif. Photosynthesis</i> <b>Hall</b> <i>Chair: V. Artero</i>
15:30 16:00	<i>Coffee Break</i>		
16:00 - 16:40	<b>Plenary</b> <i>Chair: E. M. Aro</i> <b>SLU Main Hall</b>		
16:00 - 16:40	<b>PL:11 - Developing synthetic genetic circuits to regulate gene expression in microalgae for fundamental biological studies and biotechnology</b> <i>Alison Smith</i> University of Cambridge, UK		
16:40 - 17:20	<b>PL:12- Artificial photosynthesis and Photosystem II. A second charge separation pathway in PS II excited by far red light</b> <i>Stenbjörn Styring</i> Uppsala University, SE		
17:20	<b>Announcements</b> <b>Closing</b>		