



ACCADEMIA NAZIONALE DEI LINCEI

and

SE2B – Solar Energy to Biomass EEC project



# International Congress on Biophysics of Photosynthesis: from molecules to the field



2-4 October 2019

Accademia dei Lincei

Palazzo Corsini, Sala delle Scienze Fisiche  
Via della Lungara 10, 00165, Rome, Italy

## Programme

### October 2<sup>nd</sup>, Wednesday

10.00-11.00 Registration

#### Opening lectures

Chair: Roberto Bassi, University of Verona, Italy

11.00-11.35 Welcome by the President of Accademia Nazionale dei Lincei, the Coordinator of SE2B and the Chair

11.35-12.00 **Giorgio Forti**, University of Milan, Italy

Why biophysics is crucial for research in photosynthesis and other fundamental life processes

12.00-13.00 **Stephen P. Long**, University of Illinois, USA

Engineering photosynthesis for global food security. From maths to field trials

13.00-14.30 **Lunch & Poster Vision**

#### Session 1: Photosynthetic Reaction Centre - Complexes

Chair: Gabriela Schlau-Cohen, MIT Cambridge, USA

14.30-15.00 **Robert Jennings**, University of Milan, Italy

Thermodynamics of plant photosystems and photosystem assembly: the entropy problem

15.00-15.30 **Bill Rutherford**, Imperial College London, UK

Low energy oxygenic photochemistry in chlorophyll *f*-containing photosystems

15.30-16.00 **Giulio Cerullo**, Polytechnic University of Milan, Italy

Ultrafast spectroscopy of light harvesting systems

16.00-16.45 **Coffee break & Poster Vision**

Chair: Robert Jennings, University of Milan, Italy

16.45-17.15 **Roberta Croce**, VU Amsterdam, The Netherlands

Non-photochemical quenching in plants and algae

17.15-17.35 **Selected talk: Minjung Son**, MIT Cambridge, USA

Controlling the dynamics of energy flow in plants with near-native model membrane

17.35-17.55 **Selected talk: Leonardo Guidoni**, University of L'Aquila, Italy

Modelling the molecular mechanisms of water splitting in Photosystem II

17.55-18.25 **Marcella Bonchio**, University of Padua, Italy

Bio-inspired nano-architectures for artificial photosynthesis

### October 3<sup>rd</sup>, Thursday

#### Session 2: Light Harvesting Systems & Regulation

Chair: Giuseppe Zucchelli, CNR-Milan, Italy

9.00-9.30 **Zhenfeng Liu**, CAS-Beijing, China

Light harvesting in plants: supramolecular insights from structural studies

9.30-9.50 **Selected talk: Rameez Arshad**, University of Groningen, The Netherlands

Structural variability of PSI and associated antennae complex in various photosynthetic organisms

9.50-10.20 **Gabriela Schlau-Cohen**, MIT Cambridge, USA

Single-molecule fluorescence spectroscopy reveals photoprotective conformational dynamics in LHCSR

10.20-10.40 **Selected talk: Benedetta Mennucci**, University of Pisa, Italy

A multiscale modeling of light harvesting regulation in LHCI

10.40-11.00 **Selected talk: Eduard Elias**, VU Amsterdam, The Netherlands

LHCII with far red absorption: yes, we can

11.00-11.30 **Coffee break**

Chair: Francis-André Wollman, IBPC-Paris, France

11.30-12.00 **Michel Havaux**, CEA-Cadarache, France

Photosystem II is a generator of metabolites controlling plant stress tolerance

12.00-12.30 **Michel Goldschmidt-Clermont**, University of Geneva, Switzerland

Thylakoid protein phosphorylation in *Chlamydomonas*: regulation and function

12.30-13.00 **Eva-Mari Aro**, University of Turku, Finland

Thylakoid dynamics by reversible protein phosphorylation: evolutionary view

13.00-14.00 **Lunch**

### October 3<sup>rd</sup>, Thursday

#### Session 3: Photoprotection

Chair: Francesco Loreto, CNR-Rome, Italy

14.00-14.30 **Tomáš Polívka**, University of South Bohemia, Czech Republic

Optimizing light-harvesting and photoprotective functions by tuning carotenoid-chlorophyll energy transfer

14.30-15.00 **Alexander Ruban**, Queen Mary University of London, UK

qE: the mechanism and effectiveness

15.00-15.20 **Selected talk: Pushan Bag**, University of Umeå, Sweden

Overwintering the boreal winter: from thylakoid ultrastructure to photosynthetic adaptations of conifers

15.20-15.50 **Luca Dall'Osto**, University of Verona, Italy

Complementary roles of LHCs in the rapid dissipative response to excess light

15.50-16.10 **Selected talk: Fernando Muzzopappa**, CEA Paris-Saclay, France

Molecular evolution of the OCP: inter-domain interaction and the role of the linker in carotenoid translocation

16.10-16.45 **Coffee break & Poster Vision**

#### Session 4: Photosynthetic Electron Transfer & Management reducing power

Chair: Michel Goldschmidt-Clermont, University of Geneva, Switzerland

16.45-17.15 **Francis-André Wollman**, IBPC-Paris, France

From chloroplasts back to cyanobacteria: probing the electric field across thylakoid membranes as a means to understand bioenergetics in photosynthetic cells

17.15-17.45 **Tomas Morosinotto**, University of Padua, Italy

Lessons from evolution to improve photosynthetic electron transport

17.45-18.15 **Giovanni Finazzi**, CEA-Grenoble, France

Structural bases of oceanic photosynthesis

18.15-18.35 **Francesco Loreto**, CNR-Rome, Italy

Isoprene and photosynthesis: some insights into an elusive and complex relationship

18.35-18.55 **Selected talk: Andrea Trotta**, University of Turku, Finland

The role of the phosphorylation dynamics of CURT1B in plant thylakoids under fluctuating light

### October 4<sup>th</sup>, Friday

#### Session 5: Improving photosynthetic efficiency and productivity in algae and plants

Chair: David Kramer, Michigan State University, USA

8.30-9.00 **Gilles Peltier**, CEA-Cadarache, France

Domesticating microalgal photosynthesis for improved biomass productivity and energy storage

9.00-9.30 **Roberto Bassi**, University of Verona, Italy

Engineering *Chlorella vulgaris* for enhanced resistance to oxidative stress

9.30-9.50 **Selected talk: Aaron Kaplan**, The Hebrew University of Jerusalem, Israel

Exploiting novel genes from *Chlorella oshadai*, highly resistant to photodamage, to reduce photoinhibition in plants

9.50-10.10 **Selected talk: Paolo Pesaresi**, University of Milan, Italy

Improving photosynthesis in barley for a dual purpose crop

10.10-10.40 **Andreas Weber**, University of Düsseldorf, Germany

Toward synthetic evolution of C4 photosynthesis in the *Brassicaceae*

10.40-11.15 **Coffee break & Poster Vision**

#### Session 6: Phenotyping of photosynthetic traits and plant productivity

Chair: Stephen P. Long, University of Illinois, USA

11.15-11.45 **David Kramer**, Michigan State University, USA

Harnessing natural variation and genetic diversity to understand robust and rapid regulation of photosynthesis

11.45-12.15 **Francesco Miglietta**, CNR-Florence, Italy

Chlorophyll-deficient crops: photosynthesis, yields and shortwave radiative forcing

12.15-12.45 **Ulrich Schurr**, Forschungszentrum Jülich, Germany

Photosynthesis across scales: from phenotypic analysis to global quantification

12.45-13.05 **Selected talk: Atsuko Kanazawa**, Michigan State University, USA

Bioprospecting for rapid photosynthetic regulation in the wild

13.05-13.20 **Francesco Salamini**, Max Planck Institute, Germany: Concluding Remarks

13.20-13.40 **Young Researchers' Award**

Under the patronage of:



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Scientific Committee:

**Alberta Pinnola**, University of Pavia, Italy

**Roberto Bassi**, University of Verona, Italy

**Giorgio Forti**, University of Milan, Italy

**Robert Jennings**, University of Milan, Italy

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