WED1 • Light Harvesting

Auditorium
8:30–10:15
WED1 • Light Harvesting
Chair: Wolfgang Zinth, Ludwig-Maximilians-Universität, Munich, Germany

WED1.1 • 8:30 •Invited•

Ultrafast Energy Transfer and Primary Processes in Photosynthesis, •*Richard J. Cogdell*; *Division of Biochemistry and Molecular Biology, IBLS. Glasgow Biomedical Research Centre, University of Glasgow, 126 University Place, Glasgow G12 8TA, Scotland, UK*.
This paper uses purple photosynthetic bacteria to present an overview of the primary reactions in photosynthesis, since there are both x-ray crystal structures of all the pigment-protein complexes involved and extensive ultrafast studies using them.

WED1.2 • 9:00
Mapping Parallel Pathways of Energy Flow in LHCII with Broadband 2D Electronic Spectroscopy, •*Gabriela S. Schlau-Cohen*[1,2], *Gregory S. Engel*[3], *Elizabeth L. Read*[1,2], *Donatas Zigmantas*[4], *Roberto Bassi*[5], and *Graham R. Fleming*[1,2]; [1]*Department of Chemistry, University of California, Berkeley, CA 94720-1460, USA,* [2]*Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA,* [3]*Current address: Department of Chemistry, University of Chicago, Chicago, IL 60637, USA,* [4]*Current address: Department of Chemical Physics, Lund University, P.O. Box 124, SE-22100, Lund, Sweden,* [5]*Dipartimento Scientifico e Tecnologico, Facoltá di Scienze, Universitá di Verona, Strada Le Grazie, I-37134, Verona, Italy*.
Two-dimensional femtosecond broadband electronic spectroscopy was used to observe two dominant parallel pathways of energy transfer in the major light harvesting complex of Photosystem II in plants.

WED1.3 • 9:15
Anti-Correlated Pigment Fluctuations of Allophycocyanin Can Impact Photosynthetic Light Harvesting in Cyanobacteria, *Andrew M. Moran*[1], *Rene A. Nome*[2], and •*Norbert F. Scherer*[2]; [1]*Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599 USA,* [2]*Department of Chemistry and James Franck Institute, The University of Chicago, 929 East 57th Street, Chicago, Illinois, 60637 USA.*
2-D photon echo measurements and simulations establish that the energy level fluctuations of the phycocyanobilin pigment dimer become anti-correlated after 100fs due to protein motions on the several nanometer scale.

WED1.4 • 9:30
Coherent Exciton Dynamics in Photosynthetic Complexes Revealed by Multidimensional Spectroscopy, •*Darius Abramavicius, Dmitri Voronine*, and *Shaul Mukamel*; *Chemistry department, University of California Irvine, USA.*
The photon-echo signal is invariant to certain permutation symmetries of optical pulses. These are used to unravel coherence and population energy transfer pathways and design chirality-induced techniques for probing coherent and dissipative dynamics.

WED1.5 • 9:45
Photoselection polarization experiments reveal ultrafast electron hopping between distinct aromatic residues in the flavoprotein DNA photolyase, •*Andras Lukacs*[1], *André P.M. Eker*[2], *Martin Byrdin*[3], *Klaus Brettel*[3], and *Marten H. Vos*[1]; [1]*Laboratoire d'Optique et Biosciences, Ecole Polytechnique, Palaiseau, France,* [2]*Dept. of Cell Biology and Genetics, Medical Genetics Centre, Erasmus University Medical Centre, Rotterdam, The Netherlands,* [3]*Sérvice de Bioénergétique, CEA, Saclay, France*.
Flavin-excitation initiated electron transfer along three tryptophan amino acids in DNA photolyase was studied. Combining ultrafast polarization and mutagenesis approaches the chain was shown to act as efficient nanowire allowing transprotein electron-transfer in <4 ps.

WED1.6 • 10:00
Quantum Coherence Accelerating Photosynthetic Energy Transfer, •*Hohjai Lee, Yuan-chung Cheng*, and *Graham Fleming*; *Department of Chemistry, University of California, Berkeley and Physical Bioscience Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA.*
We present how a long-lasting coherence enhances energy transfer efficiency in a photosynthetic complex based on an analysis of data collected by a newly developed two-color electronic coherence photon echo technique and theoretical simulations.