

2002 GORDON RESEARCH CONFERENCE
on PHOTOSYNTHESIS
FINAL PROGRESS REPORT

DEPARTMENT OF ENERGY
GRANT NO. DE-FG02-02ER15308

The Gordon Research Conference (GRC) on PHOTOSYNTHESIS was held at Roger Williams University from 6/16/02 thru 6/21/02. The Conference was well-attended with 136 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. Attached is a copy of the formal schedule and speaker program and the poster program. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field.

I want to personally thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Sincerely,



DONALD A BRYANT
PENN STATE UNIVERSITY

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Photosynthesis

June 16-21, 2002
Roger Williams University
Bristol, RI

Chair: Donald A. Bryant
Vice Chair: Marilyn Gunner

SUPPORT FOR THIS CONFERENCE WAS PROVIDED BY

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SUNDAY, JUNE 16

2-11 PM REGISTRATION - CONFERENCE OFFICE
6-7 Dinner

SESSION 1. **Type I Reaction Centers: Structure and Electron Transfer Dynamics**

7:30-7:45 PM **Petra Fromme** Session Chair
Introduction to PS I structure/function.
7:45-8:10 **Peter Heathcote**
Evidence for Bidirectional electron transfer in Photosystem I: characterisation of the cofactors involved in each pathway and their binding sites
8:15-8:40 **John H. Golbeck**
Forward and backward electron transfer in mutants surrounding the A_1 and A_0 sites in Photosystem I
8:45-9:35 **Art van der Est** Discussion Leader
RECEPTION

MONDAY, JUNE 17

8:30 am Group Photo

SESSION 2. **Antenna: Structure, Dynamics and Quenching**

8:45 AM **Mette Miller** Session Chair
Introduction to Light-harvesting Systems.
9:00-9:25 **R. van Grondelle**
Energy transfer in the core antennae of Photosystems 1 and 2
9:30-9:55 **Niels-Ulrik Frigaard**
Chlorosomes in *Chlorobium tepidum*: mutations in genes encoding bacteriochlorophyll c, carotenoids, and chlorosome proteins
10:00-10:30 Coffee Break
10:30-10:55 **Roberto Bassi**
Light stress signal transduction by xanthophylls in higher plant thylakoids
11:00-11:25 **Henrik Vibe Scheller**
Dynamic regulation of electron transport through PSI - the role of the minor subunits

11:30-12:30 **Robert E. Blankenship** Discussion Leader
12:30 Lunch
2:00-6:00 Free Time and Poster Viewing
6:00 Dinner

SESSION 3: **Type II Reaction Centers**

7:30-7:45 **Marilyn Gunner** Session Chair
Bacterial Reaction Centers
7:45-8:10 **Su Lin**
Blue Light Drives B-Side Electron Transfer in Bacterial Photosynthetic Reaction Centers
8:15- 8:40 **James Allen / JoAnn Williams**
Mimicking the properties of the oxygen-evolving complex in purple bacterial reaction centers.
8:45-9:30 **Christine Kirmaier** Discussion
Bacterial Reaction Centers

TUESDAY, JUNE 18

SESSION 4: **Photosystems: Biogenesis and Dynamics**

8:45-9:00 AM **Jim Barber** Session Chair
Overview of the structural organization and dynamics of PS II
9:00-9:25 **Eva-Mari Aro**
Biogenesis and assembly of chloroplast-encodedPhotosystem II subunits
9:30-10:00 **Wim Vermaas**
Synechocystis sp. PCC 6803 with high levels of chlorophyll b: effects on light harvesting, photosystem II charge separation, and chlorophyll synthesis
10:00-10:30 Coffee Break
10:30-10:55 **Francis-André Wollman**
Probing the physiology of photosynthesis with Chlamydomonas reinhardtii as an in vivo model system
11:00-11:25 **Sabeeha Merchant**
Function of Crd1, a diiron protein in chlorophyll biosynthesis, in PsaK-dependent adaptation of PSI to Fe-deficiency
11:25-12:30 **Jean-David Rochaix** Discussion
12:30 Lunch
2:00-6:00 Free Time and Poster Viewing
6:00 Dinner

SESSION 5: **PS II: Structure, Function, and Oxygen Evolution**

7:30-7:55 PM **J.-R. Shen** Session Chair
PS II Structure Overview.
7:55-8:20 **R. David Britt**
The PSII Manganese Cluster: Substrate and Inhibitor Binding and Proximity of Calcium and Chloride Cofactors
8:25-9:30 **Charles Yocum and William Rutherford** Discussion Leaders
PS II and Oxygen Evolution

WEDNESDAY, JUNE 19

SESSION 6: **Cofactor Biosynthesis: quinones, chlorophylls and carotenoids**

8:45-9:00 AM **Sam Beale** Session Chair
Introduction to cofactor biosynthesis
9:00-9:25 **Robert D. Willows**
The Structure and Mechanism of Magnesium Chelatase: An AAA+ molecular machine?
9:30-9:55 **C. Neil Hunter**
Spectroscopic studies of the light-driven enzyme protochlorophyllide reductase
10:00-10:30 Coffee Break
10:30-10:55 **Dean della Penna**
Dissecting Tocopherol Synthesis in Cyanobacteria and Plants

11:00-11:25 **Francis X. Cunningham, Jr**
Carotenoid Cyclase Structure and Function and Regulation of the Pathway in Plants

11:30-12:30 **Hugo Scheer** Discussion
Cofactors and their Biosynthesis

12:30 Lunch

2:00-6:00 Free Time and Poster Viewing

6:00 Dinner

SESSION 7. **Electron Transfer Complexes: Structure, Function and Biogenesis**

7:30-7:45 PM **John C. Gray** Session Chair
Introduction.

7:45-8:10 **Fevzi Daldal**
Modulation of the redox potential and the movement of the Rieske FeS Protein subunit of the cyt bc1 complex from Rhodobacter

8:15-8:40 **Teruo Ogawa**
Cyanobacterial NADPH dehydrogenases: essential components of inorganic carbon acquisition systems

8:45-9:30 **Toivo Kallas** Discussion leader
Electron Transfer Proteins and Complexes

THURSDAY, JUNE 20

SESSION 8: **Emerging Methodologies**

Don Bryant Session Chair

8:50-9:20 **Klaas J. van Wijk**
The chloroplast proteome: From protein identification to protein-protein interaction

9:25-9:55 **Arthur Grossman**
Chlamydomonas: Genetics to Genomics

10:00-10:30 Coffee Break

SESSION 8: **Proton Transfers and ATP Synthesis**

10:30-10:45 **Mark Richter** Session Chair
Introduction.

10:45-11:10 **David Kramer**
The relationship between photosynthetic electron transfer and its regulation (it's all about protons)

11:15-11:40 **Wolfgang Junge**
Torque and elastic power transmission in F_0F_1 -ATPase

11:45-12:30 **Wayne Frasch** Discussion
ATP Synthase, Proton Transfer

12:30 Lunch

2:00-6:00 Free Time and Poster Viewing

6:00 Dinner

SESSION 9

7:30 PM Business Meeting

8:00-8:05 Session Chair: **Richard Cogdell**

8:05-8:50 Young Investigator Talks/Selected Poster Presentations

8:50-9:35 Outside Perspective Speaker

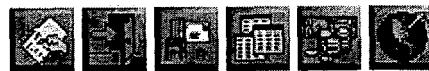
William Martin
How many genes in *Arabidopsis thaliana* come from cyanobacteria?

9:45 Reception

FRIDAY, JUNE 21

Breakfast

Departure



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PHOTOSYNTHESIS

Roger Williams University
Jun 16-21, 2002

NOTE: Receipt of Application does not guarantee acceptance to a Conference. Applications are reviewed by the Conference Chair. If the Chair approves your application, you become **Accepted** and you will be sent a personalized link to the GRC online registration site. When you complete the online registration, you become **Registered**.

Only those who have been **Accepted** or **Registered** will have their names listed below. Names of people who have only applied and have yet to be accepted will NOT appear.

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