

## Poster Presentations

### Poster 1

#### **Pigment Hunter: An Online Graphical Computational Tool for Excitonic Calculations on Chlorophyll Proteins**

Safa Ahad, Chientzu Lin and Mike Reppert

*Department of Chemistry, Purdue University, West Lafayette, Indiana.*

### Poster 2

#### **Probing the roles of the endogenous clock in synchronizing N<sub>2</sub>-fixation and photosynthesis in the unicellular diazotrophic cyanobacterium *Cyanothece* sp. ATCC 51142**

Anindita Bandyopadhyay, Michelle Liberton, Annesha Sengupta and Himadri B. Pakrasi

*Department of Biology, Washington University, St. Louis, MO.*

### Poster 3

#### **Introducing Cysteine-Mediated Quenching in CP43 Builds Resilience to High-Light Stress in the Cyanobacterium *Synechocystis* sp. PCC 6803**

Sandeep Biswas<sup>1</sup>, Dariusz M. Niedzwiedzki<sup>2,3</sup>, Himadri B. Pakrasi<sup>1</sup>

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### Poster 4

#### **Mapping the energy and vibrational landscape of the photosynthetic complexes using temperature-dependent spectroscopy**

Galina Grechishnikova, Amit Srivastava, Mike E. Reppert and Libai Huang

*Purdue University, Department of Chemistry, West Lafayette, Indiana.*

### Poster 5

#### **Exploring Cyanobacterial Carboxysome Activity as a Function of Carboxysome Lifecycle**

Clair A. Huffine<sup>1,2,3,4</sup>, Jeffrey C. Cameron<sup>2,3,5</sup>

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<sup>5</sup>*National Renewable Energy Laboratory, Golden, CO.*

## Poster 6

### **Structure function studies of the NDHD4 protein of the CO<sub>2</sub> uptake mechanism in *Synechococcus elongatus* (PCC 7942)**

Clark K. Jett, Anton P. Avramov, Minquan Zhang, Ross Walker, Robert L. Burnap  
*Department of Microbiology and Molecular Genetics, Oklahoma State University*

## Poster 7

### **Communicating Global Cyanobacterial Impact Through Film**

Evan Johnson<sup>1</sup>, Erin Espelie<sup>2</sup> and Jeffrey Cameron<sup>1,3,4</sup>

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<sup>4</sup>*Biological Science Center, National Renewable Energy Laboratory. Golden, CO.*

## Poster 8

### **Psb27, a Photosystem II assembly protein, enables quenching of excess light energy during its participation in the PSII lifecycle**

Virginia M. Johnson<sup>1</sup>, Sandeep Biswas<sup>1</sup>, Johnna L. Roose<sup>2</sup>, Himadri B. Pakrasi<sup>1,\*</sup>, Haijun Liu<sup>1</sup>

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## Poster 9

### **Mapping ultrafast energy transfer in engineered chlorophyll *f* containing photosystem I complexes via two-dimensional electronic spectroscopy**

Dabin Kim<sup>1</sup>, Gaozhong Shen<sup>2</sup>, Donald A. Bryant<sup>2</sup>, John H. Golbeck<sup>2,3</sup>, and Jessica M. Anna<sup>1</sup>

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## Poster 10

### **Exploring new functions for the Ferric Uptake Regulator FurA in the cyanobacterium *Anabaena* sp. PCC 7120**

Jorge Guío<sup>1</sup>, Emma Sevilla<sup>1</sup>, Deng Liu<sup>2</sup>, Anindita Bandyopadhyay<sup>2</sup>, M. Teresa Bes<sup>1</sup>, M. Luisa Peleato<sup>1</sup>, Himadri B. Pakrasi<sup>2</sup> and María F. Fillat<sup>1</sup>

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#### **Poster 11**

**Adaptation and stress acclimation in Antarctic alga, *Chlamydomonas priscuii* alters short-term light stress response**

Devon Popson and Rachael Morgan-Kiss

*Department of Microbiology, Miami University, Oxford, OH.*

#### **Poster 12**

**Vibrational Properties of Semi-Phylloquinone in the Q<sub>A</sub> Binding Site of Purple Photosynthetic Bacteria**

Leyla Rohani and Gary Hastings

*Department of Physics and Astronomy, Georgia State University, Atlanta, GA.*

#### **Poster 13**

**Streamlining the genome of a fast-growing cyanobacterium *Synechococcus elongatus* UTEX 2973 for enhanced bioproduction.**

Annesha Sengupta<sup>1</sup>, Anindita Bandyopadhyay<sup>1</sup>, Deng Liu<sup>1</sup>, Max G. Schubert<sup>2,3</sup>, Debolina Sarkar<sup>4</sup>, John I. Hendry<sup>4</sup>, George Church<sup>2,3</sup>, Costas D. Maranas<sup>4</sup>, Himadri B. Pakrasi<sup>1</sup>

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#### **Poster 14**

**Mechanism of proton-powered carbonic anhydrase activity in photosynthesis**

Ross Walker, Neil Miller, Juliana Artier, Robert L Burnap

*Department of Microbiology and Molecular Genetics, Oklahoma State University, Stillwater, OK.*

#### **Poster 15**

**Single-cell microscopy reveals asymmetric survival to photodamage in cyanobacteria.**

Jian Wei Tay<sup>1</sup> and Jeffrey C. Cameron<sup>1,2,3,4</sup>

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**Poster 16**

**Chloride facilitates Mn(III) formation during photo-assembly of the Photosystem II oxygen-evolving complex**

Brandon P. Russell and David J. Vinyard

*Department of Biological Sciences, Louisiana State University, Baton Rouge, LA.*

**Poster 17**

**Isothermal Titration Calorimetry of Membrane Protein Interactions: FNR and the Cytochrome b6f Complex**

S. D. Zakharov<sup>1</sup>, S. Savikhin<sup>2</sup> and W. A. Cramer<sup>1</sup>

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**Poster 18**

**Normal-coordinate Structural Decomposition Calculations in the PigmentHunter App: Comparing Chlorophyll Ring-deformation Variability across PSII Structures**

Chientzu Lin, Safa Ahad and Mike Reppert

*Department of Chemistry, Purdue University, West Lafayette, Indiana.*

**Poster 19**

**Designing a CRISPR System for Gene Knockout in Cyanobacteria**

John Dorlon, Dennis Nuernberg, Robert L. Burnap

*Department of Microbiology and Molecular Genetics, Oklahoma State University.*

**Poster 20**

**Combining Bulk 77k Fluorescence Spectroscopy and Single Cell Confocal Microscopy to Uncover Heterocyst Photosystem behaviors**

Christian M. Brininger<sup>1,2</sup> and Jeffrey C. Cameron<sup>1,2,3</sup>

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### Poster 21

#### **Spectroscopic and Computational Analysis of the Oxygen Evolving Complex Transformations in Photosystem II**

Gabriel Bury<sup>1\*</sup>, Scott Jensen<sup>2</sup>, Alireza Ravari<sup>1</sup>, Katherine Davis<sup>3</sup> and Yulia Pushkar<sup>1</sup>

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### Poster 22

#### **Generation and characterization of OCP-PSII complex for structural and functional analysis in cyanobacteria**

Dariusz M. Niedzwiedzki<sup>1</sup>, Xinyang L. Su<sup>2</sup>, Nikki C. Magdaong, Haijun Liu<sup>3,\*</sup>

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### Poster 23

#### **Probing copper binding in orange carotenoid protein by using H/DX and native mass spectrometry**

Jing Yan<sup>1,2</sup>, Ming Cheng<sup>1</sup>, Chunyang Guo<sup>1</sup>, Andy Xu<sup>3</sup>, Michael L. Gross<sup>1</sup>, Robert E. Blankenship<sup>1,3</sup>, Haijun Liu<sup>3,\*</sup>

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### Poster 24

#### **Exploring the relationship between the proteomes of the periplasm and thylakoid lumen**

Kelsey Dahlgren<sup>1,2</sup>, Jeff Cameron<sup>1,3,4</sup>

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### Poster 25

#### **Are Conserved Cysteines in ApcE Important for Redox Regulation of Phycobilisomes?**

Emily Koke<sup>1,2</sup>, Kelsey Dahlgren<sup>1,3</sup>, Jeff Cameron<sup>1,4,5</sup>

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Colorado, Boulder, CO, <sup>5</sup>National Renewable Energy Laboratory, Golden, CO

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##### **Using Single Molecule Spectroscopy to identify the sites involved in energy quenching inside the phycobilisome core**

Gonfa Tesfaye Assefa<sup>1</sup>, Tjaart P. J. Krüger<sup>1,2</sup>, Michal Gwizdala<sup>1,2</sup>

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University of Pretoria, South Africa,*

#### Poster 27

##### **Understanding the function of CupA in the CO<sub>2</sub> Concentrating Mechanism of *Synechococcus* sp.PCC7942**

Sydney Markham<sup>1</sup>, Dr. Robert Burnap<sup>2</sup> and Clark Jett<sup>3</sup>

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#### Poster 28

##### **Photoprotective dynamics in the microalga *Nannochloropsis oceanica* under periodic and sporadic light**

Audrey Short<sup>1,2,3</sup>, Johanna Hall<sup>4,5</sup>, Thien Crisanto<sup>6</sup>, Collin Steen<sup>2,3,7</sup>, David Limmer<sup>7</sup>, Krishna  
K. Niyogi<sup>2,6,8</sup>, Graham R. Fleming<sup>1,2,3,7</sup>

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#### Poster 29

##### **Comparative FTIR Spectroscopy of *T. elongatus* PSI isolated in Detergent Micelles and SMALP Nanoparticles.**

Neva Agarwala<sup>1</sup>, Gary Hastings<sup>1</sup>, Nathan Brady<sup>2</sup>, Jyotirmoy Mondal<sup>2</sup> and Barry D. Bruce<sup>2</sup>

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**Poster 30**

**Circular Dichroism and First Principles Simulations of Triplet Dynamics in FMO**

Zach Mitchell<sup>1</sup>, Sergei Savikhin<sup>1</sup> and Lyudmila Slipchenko<sup>3</sup>

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**Poster 31**

**The Effects of Quinone Concentration on Potentiostatic Measurements of *Rhodobacter sphaeroides* Reaction Centers Immobilized onto Graphene Oxide Electrodes.**

Kamil Woronowicz, Riley McHale, Allen Gong, Hyeveen Cho, Kenneth J. McDonald. Enoch Nagelli, F. John Burpo

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**Poster 32**

**REVEALING THE DIMERIC NATURE OF THE PRIMARY ACCEPTOR IN PHOTOSYSTEM I**

Michael Gorka,<sup>1</sup> Elijah Gruszecki,<sup>2</sup> Philip Charles,<sup>2</sup> Vidmantas Kalendra,<sup>2</sup> John H. Golbeck<sup>1</sup> and K. V. Lakshmi<sup>2</sup>

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**Poster 33**

**Monomeric and Trimeric PSI Particles Studied Using Time-Resolved Step Scan Fourier Transform Infrared Difference Spectroscopy**

Komalpreet Singh<sup>1</sup>, Neva Agarwala<sup>1</sup>, Haijun Liu<sup>2</sup> and Gary Hastings<sup>1</sup>

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**Poster 34**

**Photoswitching of terahertz structural dynamics in the photosynthesis photo protector orange carotenoid protein**

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