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P450 Biodiversity and Biotechnology: Final Program

10th International Symposium on Cytochrome P450 Biodiversity and Biotechnology

Sunday, October 3, 2010

1400- Registration Open

1730-1845 Dinner

1900-1915 Welcome - John Stegeman (Woods Hole Oceanographic)

Opening Keynote Lecture

1915-1930 Tsuneo Omura - Introduction of Michael Waterman

1930-2030 Michael Waterman, Vanderbilt University, USA

Unexpected properties of P450s

2030-2230 Welcome Reception (Swope Center)

Monday, October 4, 2010

Session: Structural evolution

Chairs: David Nelson (University of Tennessee) and Eric Johnson (Scripps Research Institute)

Focus: Phylogenetic and structural comparisons of P450s

0830-0900 David Nelson, University of Tennessee, USA

Evolution of animal P450s: Single gene origin and tandem duplication

0900-0930 Stephen Sligar, University of Illinois, USA

Structure and Function Across the P450 Landscape

0930-1000 Eric Johnson, Scripps Research Institute, USA

Vertebrate P450 Structural Evolution and Conservation

1000-1030 Coffee Break

1030-1100 Joanna Wilson, McMaster University, Canada

Phylogenetic and Functional Analyses of the Cytochrome P450 Families 2 and 4

1100-1130 Walter Müller, University of the Free State, South Africa

Carotenoid metabolizing cytochrome P450 monooxygenases from extremophiles

1130-1200 Dmitri Davidov, University of California at San Diego, USA

Cytochrome P450 from Photobacterium profundum, a deep-sea bacterium, reveals tightened control of water accessibility of the active site evolved in the piezophyle

1200-1300 Lunch

Session: Plants: P450 functions in development and defense

Chairs: Daniele Werck-Reichhart (CNRS, France)

Focus: Novel functions and regulatory processes of plant P450s in synthetic and catabolic pathways

1300-1330 Anne Osbourn, John Innes Center, Norwich, UK

Operon-like gene clusters for adaptive evolution in plants

1330-1400 Toni Kutchan, Washington University, USA

P450s in alkaloid formation

1400-1430 Daisaku Ohta, Osaka Prefecture University, Japan

Transcriptional cross-pathway regulation involved in balancing different secondary metabolisms in Arabidopsis

1430-1500 Coffee Break

1500-1530 Birger Lindberg Møller, University of Copenhagen, Denmark

Functioning dependent metabolons

1530-1600 Daniele Werck-Reichhart, CNRS-Strasbourg, France

The phenylpropanoid metabolon: new insight into the membrane-protein and protein-protein and interactions.

1600-1630 Christoph Crocoll, Max Planck Institute for Chemical Ecology (, Germany

The route to thymol and carvacrol formation: CYP71D178-D182 from oregano, thyme and marjoram

1645-1830 Poster Session I and Reception (Swope Center)

1830-1930 Dinner

Session: P450 Bioengineering I

Chair: Birger Lindberg Møller (University of Copenhagen, Denmark)

Focus: Applications for generating pharmaceuticals and other materials

2000-2030 Rita Bernhardt, University of Saarland

Engineering the regio-selectivity of steroid hydroxylation by CYP106A2

2030-2100 Vlada Urlacher, University of Stuttgart

Optimization of bacterial cytochrome P450 monooxygenases for biocatalysis

Tuesday, October 5, 2010

Session: Insects: P450 functions in development and defense

Chairs: Rene Feyereisen (INRA-CNRS) and Mary Schuler (University of Illinois)

Focus: Novel functions and regulatory processes of insect P450s in synthetic and catabolic processes

0830-0900 Rene Feyereisen, INRA-Sophia Antipolis, France

Comparative analysis of insect CYPomes

0900-0930 Mary Schuler, University of Illinois, USA

Perspectives on the insect P450s tackling natural and synthetic xenobiotics

0930-1000 Christopher Keeling, University of British Columbia, Canada

The P450 gene family of the mountain pine beetle

1000-1030 Coffee Break

1030-1100 Claus Tittiger, University of Nevada, USA

On the evolution of pheromone-biosynthetic and resin-detoxification P450s in pine bark beetles

1100-1130 Niels Jensen, University of Copenhagen, Denmark

Biosynthesis of cyanogenic defense compounds in plants and insects: a case of convergent evolution

1130-1200 Mark Paine, Liverpool School of Tropical Medicine, UK

P450s and insecticide resistance: of man and mosquitoes

1200-1300 Lunch

1300-1700 Free time and exploring
1700-1830 Poster Session II and Reception (Swope Center)

1830-1930 Dinner

Session: Bioengineering II

Chair: Rita Bernhardt (University of Saarland)

Focus: Applications for generating pharmaceuticals and other materials

2000-2030 Andrew Munro, University of Manchester, UK

Enzymology and Biodiversity of Cytochrome P450: Redox Partner Fusion Enzymes

2030-2100 Gianfranco Gilardi, University of Torino, Italy

Bioelectrochemistry of P450 enzymes

2100-2130 Kenneth Jensen, University of Copenhagen, Denmark

Light-driven Cytochrome P450 Hydroxylations

Wednesday, October 6, 2010

Session: Insights in structure and mechanism of P450s

Chairs: Paul Ortiz de Montellano (University of California at San Francisco) and Thomas Poulos (University of California at Irvine)

Focus: Structural features of P450 active sites and catalytic mechanisms

0830-0900 Thomas Poulos, University of California at Irvine, USA

The Ferryl Intermediate and Crystallography: the Good, the Bad, and the Ugly

0900-0930 Michael Green, Pennsylvania State University, USA

Cytochrome P450 Compound I: Capture, Characterization, and C-H Bond Activation

0930-1000 Larissa Podust, University of California at San Francisco, USA

Diversity of P450 catalysis in the biosynthesis of natural products

1000-1030 Coffee Break

1030-1100 Thomas Pochapsky, Brandeis University, USA

NMR-based Insights into Substrate Recognition in Cytochrome P450

1100-1130 Young-Tae Lee, Scripps Research Institute, USA

Three clusters of conformational states in P450cam suggest a mechanism for substrate recognition by conformational selection

1130-1200 Ilia Denisov, University of Illinois, USA

Mechanistic Studies of Membrane-bound Cytochromes P450 in Nanodiscs

1200-1230 Max Cryle, Max Planck Institute for Medical Research, Germany

What Roles do Carrier Proteins Play in Cytochrome P450/Carrier Protein Systems?

1230-1330 Lunch

Session: Microbial and fungal P450s

Chairs: Steve Kelley (Swansea University) and Andrew Munro (University of Manchester)

Focus: Evolution, structure and function in microbial and fungal taxa

1300-1330 Paul Ortiz de Montellano, University of California at San Francisco, USA

Mycobacterium tuberculosis cytochrome P450 in sterol utilization

1330-1400 Kirsty McLean, Manchester University, UK

Structure of cholesterol oxidase P450s from Mycobacterium tuberculosis

1400-1430 Ljerka Lah, National Institute of Chemistry, Slovenia

Integrated Study of Redox Partners in Fungal Cytochrome P450 Systems

1430-1500 Coffee Break

1500-1530 Steve Kelly, Swansea University, Wales, UK

Azole antifungal agents, CYP51 and resistance in the clinic

1530-1600 Galina Lepesheva, Vanderbilt University, USA

Structural basis for the CYP51 family conservation and drug targetability

1600-1630 Hans Cools, Rothamsted Research, Harpenden, UK

Recent evolution of P450 sterol 14á-demethylase (CYP51) of the wheat pathogen Mycosphaerella graminicola in response to selection by azole fungicides

1700-2200 Reception and Banquet

Thursday, October 7, 2010

Ecological and environmental applications

Chairs: Jed Goldstone (Woods Hole Oceanographic Institution) and Hideo Ohkawa (Fukuyama University)

0830-0900 Neil Bruce, University of York, UK

A staple diet of explosives: environmental applications and insight into the structure and function of the unique explosive degrading cytochrome P450 XplA

0900-0930 Hideo Ohkawa, Fukuyama University, Japan

Phytoremediation and phytomonitoring based on recombinant P450s and AhRs

0930-1000 Jagjit Yadav, University of Cincinnati, USA

Genome-to-function characterization of novel P450 monooxygenases in white rot fungus

1000-1030 Coffee Break

1030-1100 Hisato Iwata, Ehime University, Japan

Regulation and Catalytic Function of Avian CYP1A: Interspecies Similarities and Differences

1100-1130 Philippe Urban, CNRS, France

Broad Scale Substrate Selectivity of Novel Cytochrome P450 1C1, 1C2, and 1D1 Enzymes of Zebrafish Danio rerio

1145-1300 Lunch

---Conference ends---

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