14th International Symposium on Cytochrome P450 Biodiversity and Biotechnology

15-19th July 2018

Programme

Day 1 Sunday 15th July

Time	
15:00	**Registration** (Spring Lane Building - Atrium)
18:00	**Welcome** Neil Bruce
18:10	**Opening Lecture** Chair: René Feyereisen **Cytochrome P450 and the m&m paradigm** *David Nelson, University of Tennessee*
19:15 to 21:30	**Reception**

Day 2 Monday 16th July

Session: 1 P450 Structure & Function Session Chairs: Paul Ortiz de Montellano and Thomas Poulos	
09:00	**How important is dynamics to P450 catalysis?** *Thomas Poulos, University of California Irvine*
09:25	**Diversity in the substrate pocket specifies the active oxygen in androgen formation in P450 CYP17A1** *Michael Gregory, University of Illinois*
09:50	**Structural dynamics in the CYP51 function: from bacteria to humans** *Galina Lepesheva, Vanderbilt University*
10:15	**Hybrid P450 enzymes featuring Ru(II)-diimine complexes** *Lionel Cheruzel, San Jose State University*
10.40	**Coffee break**
11:10	**Structural insight into evolution of P450-BM3 regio- and diastereoselective steroid hydroxylation** *David Leys, University of Manchester*
11:35	**Characterisation of a cytochrome P450 aromatic *O*-demethylase for lignin bioconversion** *John McGeehan, University of Portsmouth*

12:00	**Biochemical characterisation of the two P450 monooxygenases in kistamicin biosynthesis** *Anja Greule, Monash University*
12:15	**Exploring conformational landscapes of cytochromes P450 with hydrostatic pressure: from pressure effects on protein equilibria to the studies of conformational adaptation in deep sea P450 enzymes** *Dmitri Davydov, Washington State University*
12:30	**Lunch and Posters**
13:30	**Cytochromes P450 from *Rhodococcus rhodochrous*: P450cin and others** *James de Voss, University of Queensland*
13:55	**Bacterial cytochrome P450 heme monooxygenase enzymes as biocatalysts for selective C-H bond hydroxylations** *Stephen Bell, University of Adelaide*
14:20	**Enzymology of the peroxygenase P450s and their potential for biofuel production** *Andrew Munro, University of Manchester*
14:45	**Microbial cytochromes P450 as targets for new bioactive compounds** *Steven Kelly, Swansea University*
15:10	**Coffee Break**
15:40	**Mechanistic studies of unusual cytochrome $P450_{cam}$ reactions: endosulfan dehalogenation and borneol formation** *Erika Plettner, Simon Fraser University*
16:05	**Novel FDA-approved drug compounds capable of binding to P450 BM3 'gatekeeper' mutants** *Laura Jeffreys, University of Manchester*
16:20	**Investigating differences in the explosive-degrading Class VI cytochrome P450 XplA and accompanying reductase XplB** *Liz Rylott, University of York*
16:35 to 18:00	**Posters**

Day 3 Tuesday 17th July

Session: 3 P450 Biodiversity & Evolution Session Chairs: Danièle Werck-Reichhart and David Nelson	
09:00	**Further tales from the orphanage: updates on viral P450s and on CYP20A1** *John Stegeman, Woods Hole Oceanographic Institution*
09:25	**Small scale evolution of cytochrome P450 genes** *Jed Goldstone, Woods Hole Oceanographic Institution*
09:50	**Investigating the contribution of cytochromes P450 in insecticide resistance of major disease vectors and agricultural pests** *John Vontas, Agricultural University of Athens*
10:15	**The investigation of a cytochrome P450 putatively involved in usnic acid biosynthesis** *Navriti Mittal, University of Manitoba*
10:30	**Understanding the evolutionary traits of P450s: special focus on Mycobacterial P450s** *Khajmohiddin Syed, University of Zululand*
10.45	**Coffee break**
Session: 4 Plant P450s Session Chairs: Reuben Peters and Søren Bak	
11:15	**CYPs and complex transformations in bacterial gibberellin phytohormone biosynthesis** *Raimund Nagel, Iowa State University*
11:40	**P450 driven production of plant natural products** *Birger Møller, University of Copenhagen*
12:05	**Plant multicellularity driven by the diversification of sterol biosynthetic enzymes** *Daisaku Ohta, Osaka Prefecture University*
12:30	**Lunch and Posters**
13:30	**Plant metabolic clusters – from genetics to genomics** *Anne Osbourn, John Innes Centre*
13:55	**P450s in plant diterpenoid metabolism: evolving strategies for discovery and production engineering** *Björn Hamberger, Michigan State University*
14:20	**A promiscuous minicluster to form a legion of metabolites: a flower defense strategy** *Danièle Werck-Reichhart, CNRS*

14:45	**Evolution and diversity of the 2-oxoglutarate-dependent dioxygenase (2OGD) superfamily in plants** *Masaharu Mizutani, Kobe University*
15:10	**Coffee Break**
15:40	**PLASTOCHRON1, a cytochrome P450, that stimulates organ growth in maize.** *Hilde Nelissen, Ghent University*
16:05	**Tight regulation of gossypol biosynthesis is linked to activities of cytochromes P450** *Xiao-Ya Chen, Chinese Academy of Sciences*
16:30	**An integrated approach to redesign plant cytochrome P450 enzyme** *Yi Shang, Yunnan Normal University*
16:45	**Sweetness in almond is due to the lack of the expression of *PdCYP79D16* and *PdCYP71AN24*, the first two genes in the amygdalin pathway** *Raquel Sánchez-Pérez, University of Copenhagen*
17:00 to 18:30	**Posters**

Day 4 Wednesday 18th July

Session: 5 P450 Biotechnology Session Chairs Chairs: Andrew Munro and Erika Plettner	
09:00	**Bacterial cytochromes P450 are potent and selective steroid hydroxylases** *Rita Bernhardt, University of Saarland*
09:25	**Meeting the ancestors: gains and losses over ~ 450 million years of evolution of the vertebrate, xenobiotic-metabolizing P450s** *Elizabeth Gillam, The University of Queensland*
09:50	**Enzyme engineering: diversity vs. selectivity** *Luet Wong, University of Oxford*
10:15	**Synthesis of oxyfunctionalized natural products and their analogs in multi-step cascades** *Vlada Urlacher, Heinrich-Heine University Düsseldorf*
10.40	**Coffee break**
11:10	**Understanding the timing of cytochrome P450-mediated aglycone formation during glycopeptide antibiotic biosynthesis: unravelling**

	the complex interplay of non-ribosomal peptide synthesis and P450-catalysed oxidative crosslinking *Max Cryle, Monash University*
11:35	**Generation of genetically modified rats in CYP27B1, CYP24A1 or vitamin D receptor gene by CRISPR/Cas9 system to reveal molecular mechanism of vitamin D** *Toshiyuki Sakaki, Toyama Prefectural University*
12:00	**Catalytically self-sufficient CYP116B5 from *A. radioresistens*: peroxide driven catalysis and biotechnological applications** *Gianfranco Gilardi, University of Torino*
12:25	**The selectivity of redox partners by bacterial cytochrome P450 enzymes** *Shengying Li, Chinese Academy of Sciences*
12:40	**Optimization of Forskolin biosynthesis in yeast via CYPs engineering** *Irini Pateraki, University of Copenhagen*
13:55	**Lunch and Posters** **Advisory Committee Meeting**
14:00 to 19:30	**Free time**
19:30 to 22.00	**Symposium dinner, National Railway Museum**

Day 5 Thursday 19th July

Session: 6 Animal P450s Session Chairs: John Stegeman and René Feyereisen	
09:00	**A single and highly selected cytochrome P450 allele in a major African malaria vector is reducing bed net efficacy** *Charles Wondji, Liverpool School of Tropical Medicine*
09:25	**From the CYPome of the red coral, *Corallium rubrum* to a bright coloured view of P450 diversity** *René Feyereisen, Ghent University*
09:50	**To what extent does within-species P450 variation inform us about between-species P450 variation?** *Charles Robin, The University of Melbourne*
10:15	**Quantitative chemical proteomic profiling approach reveals multiple cytochrome P450 enzymes that confer pyrethroid metabolic resistance in dengue vector, *Aedes aegypti*** *Hanafy Ismail, Liverpool School of Tropical Medicine*
10.40	**Coffee break**
11:10	**The role of cytochromes P450 in carotenoid pigment biosynthesis and acaricide resistance in plant-feeding spider mites** *Nicky Wybouw, Ghent University*
11:35	**The role of cytochromes P450 in triterpenoid mediated herbivore resistance** *Søren Bak, Univerisity of Copenhagen*
12:00	**Closing and Prizes**
12:30	**Lunch and Departure**