

Directing Biosynthesis VII

1-3 July 2024 | Birmingham, UK



Monday 1 July 2024

| | | |
|---|--|-----|
| 11:15 | Registration and refreshments Lunch from 12:00 | |
| 12:45 | Welcome and introduction Conference Chair: Kira Weissman | |
| Session 1: Genetics, enzymology and structural biology of natural product biosynthesis I (Chris Walsh Memorial Session) Session Chair: Jon Clardy | | |
| 12:55 | Remembering Chris Walsh Jon Clardy <i>Harvard Medical School, USA</i> | |
| 13:00 | Gladiolin biosynthesis as a model for understanding complex metabolite assembly by trans-AT polyketide synthases Greg Challis <i>University of Warwick, UK</i> | K01 |
| 13:40 | Biosynthesis of macrolactams with β-amino acid polyketide starter unit Fumitaka Kudo <i>Tokyo Institute of Technology, Japan</i> | K02 |
| 14:20 | Elucidation of enigmatic isomerizations in the oximidine biosynthetic pathway Dries De Ruyscher <i>KU Leuven - VIB Center for Microbiology, Belgium</i> | C01 |
| 14:40 | Unravelling the biosynthetic logic of fungal siderophore biosynthesis Matthew Jenner <i>University of Warwick, UK</i> | C02 |
| 15:00 | Refreshments | |
| Session 2: Genetics, enzymology and structural biology of natural product biosynthesis II Session Chair: Matthew Crump | | |
| 15:30 | Unveiling the inner workings of polyketide synthases for expanded access to biosynthetic products Lou Charkoudian <i>Haverford College, USA</i> | K03 |
| 16:10 | From crosslinking to cryo-EM – high resolution PKS and NRPS structure elucidation Michael Burkart <i>University of California San Diego, USA</i> | C03 |
| 16:30 | Structural and functional dynamics of site-specific vanadium-dependent haloperoxidases during a catalytic cycle Shaun McKinnie <i>University of California, Santa Cruz, USA</i> | C04 |
| 16:50 | Flash poster presentations (odd numbers) | |
| 17:10 | Poster session (odd numbers) and refreshments | |
| 18:20 | Close of Sessions | |

Tuesday 2 July 2024

| Session 3: Synthetic biology, metabolic engineering I Session Chair: Sarah Barry | | |
|---|--|-----|
| 9.00 | TBC 2023 Chemical Biology Interface Early Career Prize: Norman Heatley Award Stephen Wallace <i>University of Edinburgh, UK</i> | K04 |
| 9.40 | Detecting, predicting, and generating biosynthetic gene clusters using large natural-language model Maiko Umemura <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i> | C05 |
| 10.00 | Exploration of sidechain N-acyltransferases as biocatalysts for lipopeptide diversification Anna Lisa Vagstad <i>ETH Zurich, Institute of Microbiology, Switzerland</i> | C06 |
| 10:20 | One step from garbage? The future of natural product synthesis Russell Cox <i>Leibniz Universitat Hannover, Germany</i> | C07 |
| 10:40 | Refreshments | |
| Session 4: Synthetic biology and metabolic engineering II (Jim Staunton Memorial Session) Session Chair: Barrie Wilkinson | | |
| 11:05 | Remembering Jim Staunton Barrie Wilkinson <i>John Innes Centre, UK</i> | |
| 11:10 | Harnessing plant metabolic diversity for food and health applications Anne Osbourn <i>John Innes Centre, UK</i> | K05 |
| 11:50 | Microbial synthetic biology for natural products Eriko Takano <i>University of Manchester, UK</i> | K06 |
| 12:30 | Characterization of a new class of bacterial ribosomal peptides involved in copper stress response Sophie Juenger <i>MNHN-CNRS, France</i> | C08 |
| 12.50 | Flash poster presentations (even numbers) | |
| 13:10 | Lunch with Poster session (even numbers) from 13:50 | |
| Session 5: Industrial applications of natural products and biosynthetic enzymes Session Chair: Dominic Campopiano | | |
| 15:00 | Enzyme discovery, development & production – Interplay of disciplines to provide solutions for industrial challenges Alexander Pelzer <i>BRAIN Biotech, Germany</i> | I01 |
| 15:20 | TBC Alison Arnold <i>Ingenza, UK</i> | I02 |
| 15:40 | Synthesizing pharmaceutical intermediates with engineered enzymes David Entwistle <i>Codexis, USA</i> | I03 |
| 16:00 | TBC Jörg Mampel <i>Ginkgo Bioworks, USA</i> | I04 |
| 16:20 | Refreshments | |
| Session 6: Chemical ecology and computational approaches for assessing natural products Session Chair: Max Cryle | | |

| | | |
|-------|--|-----|
| 16:50 | Natural product biosynthesis in underexplored microbial niches Christian Hertweck <i>Leibniz Institute for Natural Product Research, Germany</i> | K07 |
| 17:30 | From sequence to structure and back again: an open-source framework to connect biosynthetic gene clusters to natural products Marnix Medema <i>Wageningen University, The Netherlands</i> | K08 |
| 18:10 | Data-driven natural product drug discovery Maximilian Helf <i>Novartis, Switzerland</i> | C09 |
| 18:30 | Extracting herbicide and antibiotic natural products from a plant-microbe interaction system Zhiwei Qin <i>Beijing Normal University, China</i> | C10 |
| 18:50 | Close of sessions | |
| 19:30 | Conference Dinner – Edgbaston Park Hotel, Birmingham (ticket holders only) | |

Wednesday 3 July 2024

| | | |
|--|--|-----|
| 9:00 | How to fund the transition to independent researcher Robert Bowles <i>Royal Society of Chemistry, UK</i> | |
| Session 7: Genetics, enzymology and structural biology of natural product biosynthesis III Session Chair: Hai Deng | | |
| 9.30 | Overproduction, discovery and degradation of terpenoids Tiangang Liu** <i>Shanghai Jiao Tong University, China</i> | K09 |
| 10:10 | Deciphering the enzymatic logic behind the biosynthesis of peptides armed with β-lactone warheads Guangcai Xu <i>Manchester Institute of Biotechnology, UK</i> | C11 |
| 10.30 | Enzyme enabled synthesis of biaryl natural products Lauren Murray <i>Monash University, Australia</i> | C12 |
| 10:50 | Thioholgamides: linking biosynthesis to function Jesko Köhnke <i>Leibniz Universität Hannover, Germany</i> | C13 |
| 11:10 | Refreshments | |
| Session 8: Genome and microbiome mining, microbiome engineering Session Chair: Andrew Truman | | |
| 11.40 | Biosynthesis of bacterial pyrrolizidine alkaloids and production of new derivatives Juliana Effert <i>Max-Planck-Institute for Terrestrial Microbiology, Germany</i> | C14 |
| 12:00 | Unexpected products in the activity landscape of fungal type III polyketide synthases Kristina Haslinger <i>Rijksuniversiteit Groningen, The Netherlands</i> | C15 |
| 12.20 | 2023 Natural Product Reports Emerging Investigator Lectureship TBC Christine Beemelmans <i>Helmholtz-Institute for Pharmaceutical Research Saarland, Germany</i> | K10 |
| 13:00 | Promiscuity and its consequences Jon Clardy <i>Harvard Medical School, USA</i> | K11 |
| 13:40 | Closing remarks & presentation of poster prizes Conference Chair: Kira Weissman | |
| 13:50 | Close and lunch | |

Please note that the programme is subject to change.

** presenting online