

# Directing Biosynthesis VII

1-3 July 2024 | Birmingham, UK



## Monday 1 July 2024

11:15	Registration and refreshments Lunch from 12:00	
12:45	<b>Welcome and introduction</b> Conference Chair: Kira Weissman	
<b>Session 1: Genetics, enzymology and structural biology of natural product biosynthesis I (Chris Walsh Memorial Session)</b> Session Chair: Jon Clardy		
12:55	<b>Remembering Chris Walsh</b> Jon Clardy <i>Harvard Medical School, USA</i>	
13:00	<b>Gladiolin biosynthesis as a model for understanding complex metabolite assembly by trans-AT polyketide synthases</b> Greg Challis <i>University of Warwick, UK</i>	K01
13:40	<b>Biosynthesis of macrolactams with <math>\beta</math>-amino acid polyketide starter unit</b> Fumitaka Kudo <i>Tokyo Institute of Technology, Japan</i>	K02
14:20	<b>Elucidation of enigmatic isomerizations in the oximidine biosynthetic pathway</b> Dries De Ruyscher <i>KU Leuven - VIB Center for Microbiology, Belgium</i>	C01
14:40	<b>2024 Felix Franks Biotechnology Medal</b> <b>Unravelling the biosynthetic logic of fungal siderophore biosynthesis</b> Matthew Jenner <i>University of Warwick, UK</i>	C02
15:00	Refreshments	
<b>Session 2: Genetics, enzymology and structural biology of natural product biosynthesis II</b> Session Chair: Matthew Crump		
15:30	<b>Unveiling the inner workings of polyketide synthases for expanded access to biosynthetic products</b> Lou Charkoudian <i>Haverford College, USA</i>	K03
16:10	<b>From crosslinking to cryo-EM – high resolution PKS and NRPS structure elucidation</b> Michael Burkart <i>University of California San Diego, USA</i>	C03
16:30	<b>Structural and functional dynamics of site-specific vanadium-dependent haloperoxidases during a catalytic cycle</b> Shaun McKinnie <i>University of California, Santa Cruz, USA</i>	C04
16:50	<b>Flash poster presentations (odd numbers) - by invitation of the scientific committee</b>	
17:10	<b>Poster session (odd numbers) and refreshments</b>	
18:20	Close of Sessions	

Tuesday 2 July 2024

<b>Session 3: Synthetic biology, metabolic engineering I</b>		
Session Chair: Sarah Barry		
9.00	<b>2023 Chemical Biology Interface Early Career Prize: Norman Heatley Award Multiplexed biosynthesis for in vivo Pd catalysis</b> Stephen Wallace <i>University of Edinburgh, UK</i>	K04
9.40	<b>Detecting, predicting, and generating biosynthetic gene clusters using large natural-language model</b> Maiko Umemura <i>National Institute of Advanced Industrial Science and Technology (AIST), Japan</i>	C05
10.00	<b>Exploration of sidechain N-acyltransferases as biocatalysts for lipopeptide diversification</b> Anna Lisa Vagstad <i>ETH Zurich, Institute of Microbiology, Switzerland</i>	C06
10:30	Refreshments	
<b>Session 4: Synthetic biology and metabolic engineering II (Jim Staunton Memorial Session)</b>		
Session Chair: Barrie Wilkinson		
11:05	<b>Remembering Jim Staunton</b> Barrie Wilkinson <i>John Innes Centre, UK</i>	
11:10	<b>Opening a treasure trove: unlocking saponin biosynthesis in soapwort</b> Jenny Jo <i>John Innes Centre, UK</i>	C16
11:30	<b>Repurposing a fully-reducing polyketide synthase for 2-methyl guerbet-like lipid production</b> Michael Herrera <i>University of Edinburgh, UK</i>	C17
11:50	<b>One step from garbage? The future of natural product synthesis</b> Russell Cox <i>Leibniz Universitat Hannover, Germany</i>	C07
12.30	<b>Biosynthesis of bacterial pyrrolizidine alkaloids and production of new derivatives</b> Juliana Effert <i>Max-Planck-Institute for Terrestrial Microbiology, Germany</i>	C14
12.50	<b>Flash poster presentations (even numbers) - by invitation of the scientific committee</b>	
13:10	Lunch with <b>Poster session (even numbers)</b> from 13:50	
<b>Session 5: Industrial applications of natural products and biosynthetic enzymes</b>		
Session Chair: Dominic Campopiano		
15:00	<b>Enzyme discovery, development &amp; production – Interplay of disciplines to provide solutions for industrial challenges</b> Alexander Pelzer <i>BRAIN Biotech, Germany</i>	I01
15:20	<b>Right host and right process for successful enzyme production</b> Alison Arnold <i>Ingenza, UK</i>	I02
15:40	<b>Synthesizing pharmaceutical intermediates with engineered enzymes</b> David Entwistle <i>Codexis, USA</i>	I03
16:00	<b>Optimizing bioproduction with evidence-based Machine Learning</b> Jörg Mampel <i>Ginkgo Bioworks, USA</i>	I04

16:20	Refreshments	
<b>Session 6: Chemical ecology and computational approaches for assessing natural products</b> Session Chair: Max Cryle		
16:50	<b>Natural product biosynthesis in underexplored microbial niches</b> Christian Hertweck <i>Leibniz Institute for Natural Product Research, Germany</i>	K07
17:30	<b>From sequence to structure and back again: an open-source framework to connect biosynthetic gene clusters to natural products</b> Marnix Medema <i>Wageningen University, The Netherlands</i>	K08
18:10	<b>Data-driven natural product drug discovery</b> Maximilian Helf <i>Novartis, Switzerland</i>	C09
18:30	<b>Extracting herbicide and antibiotic natural products from a plant-microbe interaction system</b> 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	<b>How to fund the transition to independent researcher</b> Robert Bowles <i>Royal Society of Chemistry, UK</i>	
<b>Session 7: Genetics, enzymology and structural biology of natural product biosynthesis III</b> Session Chair: Hai Deng		
9.30	<b>Overproduction, discovery and degradation of terpenoids</b> Tiangang Liu** <i>Shanghai Jiao Tong University, China</i>	K09
10:10	<b>Deciphering the enzymatic logic behind the biosynthesis of peptides armed with <math>\beta</math>-lactone warheads</b> Guangcai Xu <i>Manchester Institute of Biotechnology, UK</i>	C11
10.30	<b>Enzyme enabled synthesis of biaryl natural products</b> Lauren Murray <i>Monash University, Australia</i>	C12
10:50	<b>Thioholgamides: linking biosynthesis to function</b> Jesko Köhnke <i>Leibniz Universität Hannover, Germany</i>	C13
11:10	Refreshments	
<b>Session 8: Genome and microbiome mining, microbiome engineering</b> Session Chair: Andrew Truman		
11:40	<b>Characterization of a new class of bacterial ribosomal peptides involved in copper stress response</b> Sophie Juenger <i>MNHN-CNRS, France</i>	C08
12:00	<b>Unexpected products in the activity landscape of fungal type III polyketide synthases</b> Kristina Haslinger <i>Rijksuniversiteit Groningen, The Netherlands</i>	C15
12.20	<b>2023 Natural Product Reports Emerging Investigator Lectureship Elucidation of NRPS and PKS-based biosynthetic pathways and novel chemistry of symbiotic Actinomycetota</b> Christine Beemelmans <i>Helmholtz-Institute for Pharmaceutical Research Saarland, Germany</i>	K10
13:00	<b>Promiscuity and its consequences</b> Jon Clardy <i>Harvard Medical School, USA</i>	K11
13:40	<b>Closing remarks &amp; presentation of poster prizes</b> Conference Chair: Kira Weissman	
13:50	Close and lunch	

Please note that the programme is subject to change.

\*\* presenting online