

## Import and Export of Small Molecules for Whole Cell Biocatalysis

**Date:** September 12<sup>th</sup> and 13<sup>th</sup> 2017

**Venue:** Waldorf Astoria, Princes St, Edinburgh EH1 2AB. <http://www.waldorfasteriaedinburgh.com/>

**Aim:** Biochemists and microbiologists have long seen biocatalysis as an area with great promise for chemical synthesis, but industrial applications have been modest. However, significant challenges occur when substrate and product cannot be easily imported and exported from the cell. This event brings together academic scientists with diverse interests in the import and export of small molecules, alongside industrial scientists who are interested in improving the robustness of whole-cell biocatalysts.

### Draft Agenda:

Day One - Tuesday 12th September			
10.00	Registration		
10.30	Welcome		Gavin Thomas, CBMNet
10:45	Keynote	Computational Biochemistry of Biological Membrane Systems	Philip Stansfeld, University of Oxford
11.30	Presentation	Structural basis for the ins and outs of peptide transport across bacterial membranes	Konstantinos Beis, Imperial College London
12.15	Presentation	Transitioning from feasibility to commercial viability in sustainable biobased chemical manufacturing	Reuben Carr, Ingenza
12.40	Presentation	Functionalisation of cyclic ketones	Gary Black, Northumbria University
13.05	Lunch and Posters		
	Poster 1	Transportome of the biosurfactant producer <i>Starmerella bombicola</i>	Sylwia Jezierska, Ghent University
	Poster 2	Establishment of a vehicle-cargo transport system for the production of hydroxylated fatty acids	Silke Claus, Ghent University
	Poster 3	Towards cleaner air: Engineering thermostable biocatalysts for CO <sub>2</sub> capture and utilisation	Ricardo Cruz, University of Nottingham
	Poster 4	Siderophores as reversible anchors in the development of artificial metalloenzymes	Justin Clarke, University of York
	Poster 5	An algal Baeyer-Villiger monooxygenase is produced as an active enzyme in the cyanobacterium <i>Synechocystis</i> 6803	Elisabetta Bergantino, University of Padova
	Poster 6	Discovery and characterisation of reductive aminase biocatalysts for chemical synthesis	Sarah Montgomery, University of Manchester
	Poster 7	Energetic evolution of transportomes	Irina Borodina, Technical University Denmark
	Poster 8	Revelation of the Trinity: The first electron cryo-microscopy structure of the bacterial ABC-type tripartite assembly MacA-MacB-TolC at near-atomic resolution	Arthur Neurberger, University of Cambridge
	Poster 9	Development and characterisation of biosensors for alkane detection	Fang Xue, UCL
	Poster 10	The role of lipids in mechanosensation	Sam Miller, University of Aberdeen
	Poster 11	Bioproduction of 1-piperidine using engineered <i>Escherichia coli</i> strains	Valentine Anyanwu, University of Nottingham
	Poster 12	Increasing product yield and recovery in synthetic biology through transport engineering	Zeinu Mussa Belew, University of Copenhagen
	Poster 13	Phenylalanine ammonia lyases and aminomutases for the synthesis of optically pure amino acid derivatives.	Fabio Parmeggiani, University of Manchester
	Poster 14	Putrescine transaminases (yggJ and spuC) effective biocatalysts in the production of optically pure chiral amine building blocks and as precursors for N-heterocycle synthesis	James Galman, University of Manchester
	Poster 15	A reductive aminase from <i>Aspergillus oryzae</i>	Juan Mangas-Sanchez, The University of Manchester
	Poster 16	A Single Enzyme Oxidative 'Cascade' via a Dual Functional Galactose Oxidase	William Birmingham, University of Manchester

	Poster 17	Biocatalytic Imine Reduction and Reductive Amination	Scott France, University of Manchester
	Poster 18	One-Pot Oxidoreductive Enzymatic Cascades with the Reductive Aminase AspRedAm	Jeremy Ramsden, University of Manchester
	Poster 19	Chiral amine production through chemo- and biocatalytic techniques	Sebastian Cosgrove, University of Manchester
<b>14.00</b>	Flash Presentations		
	Presentation	The marine environment, an untapped industrial biotech resource	Darren Greetham, University of Huddersfield
	Presentation	Case studies from the Industrial Biotechnology Innovation Centre	Ian Archer, IBioIC
	Presentation	Energetic evolution of cellular transportomes	Irina Borodina, Technical University Denmark
	Presentation	Separation and concentration of molecules from biotechnological processes	Emmanouil Papaioannou, University of Lancaster
	Presentation	In planta identification of phytochemical transporters via synthetic biology approaches	Deyang Xu, University of Copenhagen
	Presentation	Assembly of an artificial metalloenzyme in the Escherichia coli periplasm based on a siderophore-PBP interaction	Justin Clarke, University of York
	Presentation	The alternating access cycle of a membrane transport protein deduced from combinatorial binding studies	Peter Henderson, University of Leeds
	Presentation	Making Clostridia Great Again	Janina Koelschbach, CHAIN Biotech
<b>15.00</b>	Break		
<b>15.15</b>	Summary to date		Mark Corbett, BIOCNET
<b>15.30</b>	Break out for discussions		
<b>16.30</b>	Summary discussions		
<b>17.30</b>	Close		
<b>18.30</b>	Drinks and posters		
<b>19.30</b>	Dinner		
<b>Day Two - Wednesday 13th September</b>			
<b>09.15</b>	Welcome		BIOCNET
<b>09.30</b>	Keynote	Encapsulating material in nanocontainers for bionanotechnological applications	Beppe Battaglia, UCL
<b>10.15</b>	Presentation	Whole cell biotransformations: dead or alive	Andrew Collis, GSK
<b>10.40</b>	Break and Posters		
<b>11.30</b>	Flash Presentations		
	Presentation	An algal Baeyer-Villiger monooxygenase is produced as an active enzyme in the cyanobacterium Synechocystis 6803#	Elisabetta Bergantino, University of Padova
	Presentation	Revelation of the Trinity: The first electron cryo-microscopy structure of the bacterial ABC-type tripartite assembly MacA-MacB-ToIC at near-atomic resolution	Arthur Neurberger, University of Cambridge
	Presentation	Boosting the biooxidation and synthesis of alkanes with the aid of outer membrane transporters	Frank Baganz, UCL
	Presentation	High-affinity adipate binding to AdpC, an orphan periplasmic binding protein from the Tripartite Tricarboxylate Transporter (TTT) family in Rhodospseudomonas palustris	Leonardo Rosa, University of Sheffield
	Presentation	Synthetic routes for the production of Organosiloxanes	Lu Shin Wong, University of Manchester
	Presentation	Biobased production	Gill Stephens, University of Nottingham
	Presentation	Novel biocatalysts from natural product pathways	Peter Harrison, University of Edinburgh
<b>12.30</b>	Summary		Gavin Thomas, CBMNet
<b>12.45</b>	Lunch and Networking		
<b>14.30</b>	Close		

