Industrial Biotechnology

Biocatalysis through to Synthetic Biology

Integrating Biocatalysis and Synthetic Biology into Sustainable Chemical Manufacturing Processes

24 – 26 APRIL 2017

Held at the Department of Biochemical Engineering, UCL, London, UK

In collaboration with

[Logos for UCL, CPD and Short Courses Award, and mbi]
Who should attend?
This course is designed for all those individuals working in any of the following industries where biocatalysis and synthetic biology is important: Fine and specialty chemicals, pharmaceuticals, personal care products, diagnostics as well as sustainable processing in the biorefining, biofuels and bulk polymer sectors.

Industrial Biotechnology: Biocatalysis through to Synthetic Biology

Integrating Biocatalysis and Synthetic Biology into Sustainable Chemical Manufacturing Processes

Duration: 3 Days    Location: UCL, London

This unique module will introduce options for integrating biocatalysis into chemical manufacturing processes, and also explore successful examples of biocatalyst design, process operation and biorefining for sustainable manufacturing.

In this module a series of lectures, problem solving case studies, and a practical workshop will provide close interaction with key academic and industrial speakers, enabling you to:

• Strengthen your knowledge in biocatalysis, and whole biotransformation processes, from fermentation to product.
• Understand the range of chemical conversions accessible by biocatalysis, and examples of successful industrial applications.
• Discover the industrial potential of synthetic biology.
• Explore the challenges and options for large scale biocatalysis.
• Network with sector leaders and subject matter experts.

Previous Expert Speakers Include

• Paul Dalby, UCL (Module Leader)
• Dan Noakes, CPI
• Chris Reeve, CPI
• Malcolm Lock, CPI
• Alex Smith, CPI
• Katie Chong, Aston University
• Stuart West, Biocatalysts
• Alison Arnold, Ingenza
• Markus Gershater, Synthace
• Peter Sutton, GSK
• Frank Baganz, UCL
• Gary Lye, UCL
• John Ward, UCL
• Brenda Parker, UCL

Course costs include materials, lunches and refreshments. Accommodation is not included, but we have negotiated special rates at nearby hotels. Details will be sent with registration pack.

University College London reserves the right to cancel any module which does not attract sufficient interest up to 48 hours before the start of the module. Delegates are responsible for the arrangement and payment of their own travel and accommodation. University College London claims no responsibility for delegates' commitments made with travel agencies and hotels in the event of a module being cancelled.
**Programme**

Emphasis is on teaching through interactive problem solving case studies in small classes for effective learning.

### DAY 1: Industrial Biotechnology Applications

- Biorefining principles and challenges
- Feedstocks and exploitation: process challenges
- Feedstocks to synthetic building blocks
- Process economics and sustainability
- Development of an industrial bioprocess: feasibility, adaptability, predictability and scalability
- Successful and emerging enzyme chemistries for biocatalysis

### DAY 2: Process Development

- Biocatalytic reactor design and operation
- Computation fluid dynamics in industrial biotechnology
- High throughput fermentation and biocatalytic process development
- Industry perspective on biocatalytic process development
- Biocatalytic process development for pharmaceutical applications

**CASE STUDY:** Discovery to manufacture
Part 1: feedstocks and process development

### DAY 3: Tool Development

- Overview of biocatalyst engineering and synthetic biology
- Enzyme discovery and metagenomics
- Transforming biological productivity with high level programming of laboratory automation
- Enzyme availability and production for industrial biocatalysis

**CASE STUDY:** Discovery to manufacture
Part 2: synthetic biology options – process vs. biological solutions
The award winning Modular Training Program for the Bioprocess Industries (MBI®) is acknowledged as the leading international provider of innovative UCL-accredited short courses in bioprocessing. These courses are designed to support continued professional and technical development within the bioindustry. Stakeholder impact is high with over 70 senior industrial experts contributing to the design and delivery of cutting-edge modules each year. MBI® plays a central role within the context of our larger knowledge transfer continuum which ensures cutting edge research is undertaken to capture the value of integrating engineering with complex and fast moving biology so that we can keep the global industry ahead in manufacturing. Modules are designed for flexible professional and technical development with options for achieving Certificate, Diploma or Masters level qualifications.

For further information and bookings please contact:

E: mbi-training@ucl.ac.uk
T: +44 (0) 20 7679 9619

www.ucl.ac.uk/mbi

Other Short Courses and CPD from the UCL Advanced Centre for Biochemical Engineering:

### MBI® Courses

- **3–5 October 2016**
  - Principles of Fermentation Processes

- **17–19 October 2016**
  - Rapid Fermentation Process Design

- **14–17 November 2016**
  - Downstream Processing – From Cell to Column

- **28 November – 1 December 2016**
  - Downstream Processing – Chromatography

- **23–25 January 2017**
  - Current Challenges in Mammalian Cell Processing

- **27 February – 2 March 2017**
  - Quality by Design for Effective Bioprocess Characterisation and Validation

- **13–15 March 2017**
  - Design of Experiments for Bioprocess Optimisation

- **24–26 April 2017**
  - Industrial Biotechnology: Biocatalysis through to Synthetic Biology

- **24–27 April 2017**
  - Analytical Data Analysis for the Bioprocessing Industry

### Short Courses

- **5–8 June 2017**
  - Bioprocess Design & Economic Evaluation

- **26–29 June 2017**
  - Bioprocess Facility Design

- **27–29 June 2017**
  - Vaccine Bioprocess Development and Commercialisation (held at MIT, US)

- **10–12 July 2017**
  - Single Use Technology for Rapid Manufacturing

- **6–8 March 2017**
  - Cell and Gene Therapy Manufacturing: Getting it Right from Start

- **24–26 April 2017**
  - Industrial Biotechnology: Biocatalysis through to Synthetic Biology

- **24–27 April 2017**
  - Analytical Data Analysis for the Bioprocessing Industry

### VISION Leadership Training

- **14–16 September 2016**
  - UCL Vision Leadership Core Course (held at KGI, US)

### Bespoke courses are also available

Please contact mbi-training@ucl.ac.uk to discuss your requirements.