**Advanced Course**

**GENOMICS IN INDUSTRIAL BIOTECHNOLOGY**

31 October - 4 November 2016

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**Institute Biotechnology Studies Delft-Leiden (BSDL)**

Delft University of Technology, Department of Biotechnology

Van der Maasweg 9
2629 HZ Delft

The Netherlands

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**Guest Lecturers**

- Dr. Anthony Burgard
  Genomatica
  San Diego, CA, USA
- Dr. Derek Butler
  BaseClear
  Leiden, the Netherlands
- Dr. Marek Chodick
  PhD
  DSM
  Delft, the Netherlands
- Prof. Jack Daran
  Delft University of Technology
  Industrial Microbiology
  Delft, the Netherlands
- Dr. Aljoscha Wahl
  Delft University of Technology
  Cell Systems Engineering
  Delft, the Netherlands

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**Coordinator Computer Exercises**

Marc van der Helm
Department of Biotechnology
Delft University of Technology

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**Further Information**

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This intensive, high-diversity, one-week course provides a full overview of the possibilities and challenges of genomics in the field of industrial biotechnology. A combination of expert lectures and hands-on activities ensures active participation. The participants will receive the course book, including the presentations of the lecturers, on the first day of the course. All lectures will be taught in English.

Lecturers

Expert lecturers are taught by renowned scientists from both Delft University of Technology and elsewhere from all over the world. They focus on topics such as:
- Genomics sequencing and analysis
- Transcriptomics (incl. RNA sequencing)
- Proteomics
- Metabolomics
- Biowarfare
- Genomics in strain improvement
- Bioinformatics
- Algorithms, legislation and patents
- Data handling and interpretation
- Mass spectrometry and automation
- Examples from biotechnology industry

Handouts

Two afternoons are reserved for hands-on activities in bioinformatics. These address issues of analysis of massive data generation, massive data handling, statistics, interpretation and visualization of genomics data.

Who should attend?

This Advanced Course is aimed both at participants from industry who want to update and enhance their theoretical knowledge and practical insight in this field and at participants from universities and research institutes with a wish to evaluate practical implications of theoretical knowledge.

Accommodation

The course fee includes meals (13 lunches and 4 dinners). Hotel accommodation is not included. Additional accommodation can be arranged at your request, addressed to bsdls@tudelft.nl.

Registration

This Advanced Course is aimed both at participants from industry who want to update and enhance their theoretical knowledge and practical insight in this field and at participants from universities and research institutes with a wish to evaluate practical implications of theoretical knowledge.

Aims

The Advanced Course on Genomics in Industrial Biotechnology aims at familiarizing industrial and academic research professionals (i.e. MSc, PhD, or equivalent experience) with modern techniques in genomics, transcriptomics, proteomics, metabolomics, and bioinformatics and their application in industrial research and development and their utility in contemporary biotechnological industry.

This course focuses on the singular and interdisciplinary nature of the results from molecular research tools such as genomics, transcriptomics, metabolomics, and bioinformatics to elucidate cellular regulatory mechanisms of sensing and responding to environmental and physical stimuli. Mathematical tools, computer algorithms are indispensable to analyze experimental data and model the experimental system. In combined approaches, these tools offer unparalleled possibilities for industrial biotechnology research.

Experts will present lectures on genome analysis and interpretation, genome-wide molecular analysis, transcriptomics, metabolomics, whole-genome protein expression and activity analysis, systems biology, genomics data analysis (metabolomics). Data handling and interpretation are key to the successful application of genomics and hence, will be an integral part of the course. The necessary links between theory and function will be the production of interactive case studies and day-workshops on implementation of these technologies in industrial fermentation will be illustrated with the aid of examples.

Lectures

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