

***Preliminary Program***  
(Feb 9, 2018)

# **Microbial Engineering**

**March 4-8, 2018**

**LaFonda on the Plaza - Santa Fe, New Mexico, USA**

## **Conference Chairs**

**Prof. Eli Keshavarz-Moore**  
UCL, United Kingdom

**Dr. Barry Buckland**  
BiologicB, USA



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## **Sunday, March 4, 2018**

16:00 – 18:00	Conference Check-in
17:45 – 18:00	<b>Welcoming Remarks</b> Barry Buckland and Eli Keshavarz-Moore, Conference Chairs Beth Junker, ECI Technical Liaison
18:00 – 18:50	<b>Plenary Lectures</b> <b>Manufacturing biopharmaceuticals in the age of acceleration</b> Chris Love, Massachusetts Institute of Technology, USA
18:50 – 19:40	<b>Development of live bacterial therapeutics</b> John Aunins, Seres Therapeutics, USA
19:40 – 19:45	Concluding Remarks
19:45 – 20:30	Reception
20:30 – 23:00	Dinner

### **NOTES**

- *Technical Sessions will be held in the **Ballroom South**.*
- *Poster Sessions will be held in the **Ballroom North**.*
- *The ECI office will be in the Stiha Room.*
- *Meals will be in La Terraza*
- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave discussion time as previously directed by your session chair.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *Please write your name on your program so that it can be returned to you if lost or misplaced.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*

## **Monday, March 5, 2018**

- 07:00 – 08:30 Breakfast
- 08:30 – 11:25 **Session I: Primary Metabolites**  
Session Chairs: Arindam Bose (AbiologicsB, LLC, USA)  
Brigitte Gasser (BOKU, Austria)
- 08:30 – 08:35 Session Introduction
- 08:35 – 09:10 **Metabolic engineering strategies for producing oleochemicals in bacteria**  
Brian F. Pfleger, University of Wisconsin-Madison, USA
- 09:10 – 09:45 **Improving biochemical yields with MixoFerm**  
Shawn W. Jones, White Dogs Labs, USA
- 09:45 – 10:00 **Cyanobacteria as photosynthetic factories: Synthetic biology methods in the development of next-generation production platforms**  
Hariharan Dandapani, University of Turku, Finland
- 10:00 – 10:30 Coffee break
- 10:30 – 10:55 **Systems metabolic engineering of *Corynebacterium glutamicum* and *Bacillus methanolicus* for production of new products from alternative carbon sources**  
Volker F. Wendisch, Bielefeld University, Germany
- 10:55 – 11:20 **MOMENTUM: Microbial Optimization via Metabolic Network Minimization**  
Zhixia Ye, Duke University, USA
- 11:20 – 11:25 Concluding Remarks
- 11:25 – 11:30 Introduction of Plenary Lecture – Barry Buckland
- 11:30 – 12:20 **Plenary Lecture**  
**New bio-based supply chains for plant-based medicines**  
Christina Smolke, Antheia, USA
- 12:20 – 12:25 Concluding Remarks
- 12:30 – 14:30 Lunch
- 14:30 – 16:25 **Session II: Therapeutic Proteins (Part 1)**  
Session Chairs: Karen Polizzi (Imperial College London, United Kingdom)  
Eli Keshavarz-Moore (UCL, United Kingdom)  
Michael Hohn (Merck, USA)
- 14:30 – 14:35 Session Introduction
- 14:35 – 15:10 **Learning from the mammalian expression system to develop a high titer-half antibody process in *E. coli***  
Emily Dong, Genentech, USA
- 15:10 – 15:35 **Matching secretion capacity via translation control**  
Neil Dixon, Manchester University, United Kingdom

**Monday, March 5, 2018 (continued)**

- 15:35 – 16:00      **C1: How the C1 platform will change the production approach for therapeutic proteins**  
Ronen Tchelet, Dyadic, USA
- 16:00 – 16:20      **Gram Level scFv expression platform of *Pichia pastoris***  
Jen-Wei Chang, Development Center for Biotechnology, Taiwan
- 16:20 – 16:25      Concluding Remarks
- 16:25 – 16:55      Coffee/Tea break
- 16:55 – 17:00      Introduction of Plenary Lecture – Eli Keshavarz-Moore
- 17:00 – 17:50      **Plenary Lecture**  
**mRNA vaccines and therapeutics: On the progress from promise to reality**  
Hari Pujar, Moderna, USA
- 19:00 – 20:30      Dinner
- 20:30 – 23:00      **Poster Session I** (with social hour and dessert)  
Session Chairs: Stefanie Frank (UCL, United Kingdom)  
Eli Keshavarz-Moore (UCL, United Kingdom)

## **Tuesday, March 6, 2018**

- 07:00 – 08:30 Breakfast
- 08:30 – 12:30 **Session III: Secondary Metabolites**  
Session Chairs: Beth Junker (Bioprocess Advantage, USA)  
Yi Tang (University of California, Los Angeles, USA)
- 08:30 – 08:35 Session Introduction
- 08:35 – 09:05 **Natural products by synthetic biology and microbial engineering**  
Ben Shen, The Scripps Research Institute, USA
- 09:05 – 09:35 **An integrated strain improvement and process development program for the production of UK-2A, the precursor of the fungicide Inatreq™ active**  
Mark Mikola, Dow AgroSciences LLC, USA
- 09:35 – 10:05 **Scale up of low producing, potent secondary metabolites**  
Scott Doncaster, BioVectra Inc., Canada
- 10:05 – 10:25 **One-pot synthesis of amino-alcohol using a *de novo* transketolase: Transaminase pathway in *Pichia pastoris* strain GS115**  
Marie-Jose Henríquez, UCL, United Kingdom
- 10:25 – 10:55 Coffee/Tea break
- 10:55 – 11:25 **Microbial engineering of new *streptomyces sp.* from extreme environments for novel antibiotics and anticancer drugs**  
Juan Asenjo, University of Chile, Chile
- 11:25 – 11:55 **Genome-guided methods for discovering new natural product from fungi**  
Yi Tang, University of California, Los Angeles, USA
- 11:55 – 12:25 **An efficient commercial platform for microbial engineering of natural products**  
Hsien-Chung Tseng, Manus Bio, USA
- 12:25 – 12:30 Concluding Remarks
- 12:30 – 14:00 Lunch
- 14:00 – 14:05 Introduction of Plenary Lecture – Barry Buckland
- 14:05 – 15:00 **Plenary Lecture**  
**Engineered polyketide synthases for production of commodity and specialty chemicals**  
Jay Keasling, University of California-Berkeley, USA
- 15:00 – 15:30 Coffee/Tea break
- 15:30 – 17:35 **Session IV: Biomaterials and Biofuels**  
Session Chairs: Behnam Taidi (CentraleSupélec, LGPM, France)  
Joel Cherry (Amyris Inc., USA)
- 15:30 – 15:35 Session Introduction

**Tuesday, March 6, 2018 (continued)**

- 15:35 – 16:05      **Development of 1,4-butandiol at Genomatica**  
Michael Japs, Genomatica, USA
- 16:05 – 16:45      **Automating bioengineering: First the hands, then the head**  
Ben Kaufmann-Malaga, Amyris, USA
- 16:45 – 17:15      **The circular bioeconomy and the concept of biorefinery**  
Behnam Taidi, CentraleSupélec, LGPM, France
- 17:15 – 17:30      **Exploiting fatty acid metabolic pathway for production of short chain fatty acids in *E. coli***  
Kamran Jawed, ICGEB/Rensselaer Polytechnic Institute, USA
- 17:30 – 17:35      Concluding Remarks
- 17:35 – 20:30      “Dine Around” (free time for participants to experience Santa Fe dining)
- 20:30 – 23:00      **Poster Session II**  
Session Chairs: Stefanie Frank (UCL, United Kingdom)  
Eli Keshavarz-Moore (UCL, United Kingdom)

**Wednesday, March 7, 2018**

- 07:00 – 08:30 Breakfast
- 08:30 – 10:30 **Session V: Therapeutics Proteins (Part II)**  
Session Chairs: Karen Polizzi (Imperial College London, United Kingdom)  
Eli Keshavarz-Moore (UCL, United Kingdom)  
Michael Hohn (Merck, USA)
- 08:30 – 08:35 Session Introduction
- 08:35 – 09:10 **Antibody production in micro-organisms**  
Hanxiao Jiang, Amyris Inc., USA
- 09:10 – 09:40 **Process optimization, manufacturing changes from early to late phase development, and comparability of Resolaris**  
Ying Buechler, aTyr Pharma, USA
- 09:40 – 10:10 **Promoter and process engineering for recombinant protein production in *Pichia pastoris* towards simple, fast and methanol-free cultivation regimes and high product titers**  
Roland Prielhofer, ACIB, Austria
- 10:10 – 10:25 **Towards extracellular release of recombinant proteins from *E.coli* using antisense technology**  
Shahin Heshmatifar, UCL, United Kingdom
- 10:25 – 10:30 Concluding Remarks
- 10:30 – 11:00 Coffee/Tea break
- 11:00 – 12:30 **Session VI: Vaccines**  
Session Chairs: Barry Buckland (BiologicB,LLC, United Kingdom)  
Tiffany Rau (BioProcess Technology Consultants (BPTC), USA)
- 11:00 – 11:05 Session Introduction
- 11:05 – 11:40 **Rational design of expression vectors for high quality biologics**  
Kerry Love, Massachusetts Institute of Technology, USA
- 11:40 – 12:00 **High yield plasmid DNA production under oxygen limitation using microaerobically induced replication**  
Alvaro Lara, Universidad Autónoma Metropolitana-Cuajimalpa, Mexico
- 12:00 – 12:30 **A *Pseudomonas fluorescens*- based platform for robust vaccine manufacturing**  
Russell Coleman, Pfenex Inc, USA
- 12:30 – 14:00 Lunch
- 14:00 – 14:05 Introduction
- 14:05 – 14:30 **Refolding of inclusion bodies**  
Akshay Goel, Biological E, India



**Wednesday, March 7, 2018 (continued)**

- 14:30 – 15:00      **Computational fluid dynamics modeling for fermentation risk reduction during technology transfer and risk understanding**  
Tracie Spangler, Merck & Co., Inc., USA
- 15:00 – 15:30      **Engineering of probiotic *E.coli* to treat metabolic disorders**  
Paul Miller, Synlogic, USA
- 15:30 – 15:35      Concluding Remarks
- 15:35 – 16:00      Coffee/Tea break
- 16:00 – 18:15      **Conference Workshop**  
Chair: Eli Keshavarz-Moore (UCL, United Kingdom)
- Topic: Leap-frogging microbial fermentation applications-what is needed, who can develop it, and how will it move the dial?
- 16:00 – 16:05      Introduction
- 16:05 – 16:15      Some History: Barry Buckland (BiologicB)  
During the Golden Age of Antibiotics in the USA in the 1960s and 1970s bulk manufacturing costs were in the range of 2 cents to 10 cents / gram. This was achieved by many companies at massive scale using microbial fermentations (in the USA: Abbott, Lederle, Merck, Pfizer, BMS, etc.; DSM and Glaxo in Europe). How did they achieve these very low COGS?
- 16:15 – 16:35      **Present Day: Equipment - Vendors and CMOs**  
Sartorius, GE
- 16:35 – 16:45      **Present Day: Cost models; Buy versus build**  
Tiffany Rau, BioProcess Technology Consultants (BPTC), USA
- 16:45 – 16:55      **Present Day: Secondary metabolites and chemicals**  
Joel Cherry, Amyris Inc., USA
- 16:55 – 17:05      **A vision for therapeutic proteins and vaccine protein antigens**  
Chris Love, Massachusetts Institute of Technology, USA
- 17:05 – 17:15      **Impact on human health: The unmet medical need is often affordability**  
Dave Robinson/Steve Hadley, Bill & Melinda Gates Foundation, USA
- 17:15 - 17:30      **Role of Academia/Government/Industry Partnership**  
NIIMBL, UCL Biomanufacturing Hub  
Barry Buckland, Eli Keshavarz\_Moore
- 17:30 – 18:10      Open Discussion
- 18:10 – 18:15      Concluding Remarks
- 18:15 – 18:30      Short biobreak
- 18:30 – 18:35      Introduction to Closing Lecture - Eli Keshavarz-Moore

**Wednesday, March 7, 2018 (continued)**

18:35 – 19:10

**Closing Plenary Lecture**

**Opening microbial cells expands their capabilities**

Jim Swartz, Stanford University, USA

19:45 – 23:00

**Reception, Banquet Dinner and Poster Prizes**

**Thursday, March 8, 2018**

07.00 – 09.30

Breakfast and Departures