

Preliminary Program
(March 15, 2023)

Cell Culture Engineering XVIII

April 23-28, 2023

**Grand Fiesta Americana Coral Beach Hotel
Cancun, Mexico**

Conference Chairs

Chetan Goudar
Amgen, USA

Laura A. Palomares
UNAM, Mexico

Tongtong Wang
Genentech, USA



Engineering Conferences International
369 Lexington Avenue, 3rd Floor #389 - New York, NY 10017, USA
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We would like to acknowledge the contributions from CCE XVII Chairs who built a strong program

Saturday, April 22, 2023

17:00 Early career preconference registration

Sunday, April 23, 2023

10:00 – 13:00 Preconference International Biomanufacturing omics workshop

12:30 – 17:30 Poster set-up

14:00 – 16:45 Conference Check-In

14:30 – 15:30 Early Career Preconference Flash talks (8 x 5-min talks)

15:30 – 16:15 Early Career Pre Conference Icebreaker/ Networking

16:15 – 16:45 Coffee break

16:45 – 17:00 Welcome remarks
ECI Liaison (Michael Betenbaugh, Johns Hopkins University, USA)
CCE Chairs

17:00 – 17:45 **Keynote 1**
Alison Moore, Allogene Therapeutics, USA
“Cell Culture Engineering” and what this means for the future of medicine

18:00 – 19:30 Dinner

19:30 – 21:30 **Poster Session (even-numbered posters)**
Chairs: **Karthik Jayapal, Merck & Co., USA**
Shawn Lawrence, Regeneron Pharmaceuticals, Inc., USA
Olivier Henry, Polytechnique Montreal, Canada
Yao-Ming Huang, Eli Lilly & Co., USA

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Monday, April 24, 2023

Breakfast

08:00 – 08:45

Keynote 2

Guangping Gao, University of Massachusetts Medical School, USA

Human gene therapy – Principles, history, state of the art, challenges and approaches

Session 1: Multispecific Modalities: Commercialization Successes & Future Trends

Chairs: **Inn Yuk, Genentech, USA**

Alan Dickson, University of Manchester, United Kingdom

08:45 – 08:50

Session introduction

08:50 – 09:10

Invited Commercialization Experience

Latonia Harris, Janssen R&D, Johnson & Johnson, USA

Insights into bispecific antibody development, characterization, and manufacture

09:10 – 09:30

Invited Commercialization Experience

Jessica Wu, Genentech, USA

Continuous improvement in bispecifics manufacturing: Advantages and disadvantages of 2-cell vs. 1-cell culture process

09:30 – 09:50

Invited Process Experience

Shawn Lawrence, Regeneron Pharmaceuticals, USA

Regeneron bispecific molecule structure begets platform production process compatibility

09:50 – 10:10

Invited Process Experience

Weichang Zhou, WuXi Biologics, China

Challenges and successes in developing and manufacturing multiple formats of bispecific antibodies

10:10 – 10:40

Coffee Break

10:40 – 10:55

Protein engineering: Computing tools

Neeraj Agrawal, Amgen, USA

Transforming molecule selection and process development through attribute focus and the deployment of high-performance computing tools

10:55 – 11:00

Poster Talk: Vector/CLD Design

Anett Ritter, Novartis Institutes for BioMedical Research, Switzerland

Fine-tuning of plasmid design and glycoengineering strategies to generate tailored CHO cell lines

11:00 – 11:05

Poster Talk: Cocultivation

Dawn Eriksen-Stapleton, Pfizer, USA

Co-culturing cell lines for efficient manufacture of multispecifics

11:05 – 11:10

Poster Talk: Cellular Bottlenecks

Tobias Jerabek, University of Applied Sciences Biberach, Germany

Analysis of production bottlenecks in BiTE molecules producing CHO Cells

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Monday, April 24, 2023 (continued)

- 11:10 – 11:25 **Platform Improvements from Systems Biology**
Johan Rockberg, KTH, Sweden
Cellular demands of secreted protein products – systems and synthetic biology improve quality and titer
- 11:25 – 11:40 **Cell-Free Platform Experience**
Marcella Yu, Sutro Biopharma, USA
Building one block at a time toward complex biologics using cell-free protein synthesis process
- 12:00 – 13:30 Lunch
- 13:30 - 15:00 Workshops (4 concurrent workshops)
Chairs: Margarida Serra, iBET, Portugal
Anurag Khetan, Bristol-Myers Squibb, USA
- TBD
- 15:00 – 15:30 Coffee Break
- Session 2: Cell Line Development: Current State and Future Directions**
Chairs: **Zhimei Du, Landmark Bio, USA**
Mark Smales, University of Kent, United Kingdom
Jamey Young, Vanderbilt University, USA
- 15:30 – 15:35 Session Chair opening remarks: Zhimei Du and Jamey Young
- 15:35 – 15:55 **Gang Chen, Regeneron Pharmaceuticals, Inc., USA**
Cell line technologies for speed-to-clinic and commercial production of biologics
- 15:55 – 16:15 **Takeshi Omasa, Osaka University, Japan**
Newly-established Chinese hamster-derived cell line for protein production
- 16:15 – 16:35 **James Budge, University of Kent, United Kingdom**
Engineering of Chinese hamster ovary cell lipid metabolism results in an expanded ER and enhanced recombinant biotherapeutic protein production
- 16:35 – 16:55 **Meiping Chang, Merck Research Lab, USA**
Chromosomal instability drives convergent and divergent evolution toward advantageous inherited traits in mammalian CHO bioproduction lineages
- 16:55 – 17:15 **Nicole Borth, BOKU University and Austrian Center of Industrial Biotechnology, Austria**
What's in a Phenotype?
- 17:15 – 17:20 **Poster Talk, Kim Le, Upside Foods, USA**
Rebuilding CHO again and again: Development of a species agnostic modular cell line development platform for cultivated meat
- 17:20 – 18:00 Free time
- 18:00 – 19:30 Dinner

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Monday, April 24, 2023 (continued)

19:30 – 21:30

Poster session (odd-numbered posters)

Chairs: **Karthik Jayapal, Merck & Co., USA**

Shawn Lawrence, Regeneron Pharmaceuticals, Inc., USA

Olivier Henry, Polytechnique Montreal, Canada

Yao-Ming Huang, Eli Lilly & Co., USA

Tuesday, April 25, 2023

07:30 – 08:30 Optional breakfast conversation for diversity, equity, and inclusion

Breakfast

Session 3: Systems and Synthetic Biology for Improved Cell Culture Performance

Chairs: **Bhanu Mulukutla, Pfizer, USA**

Nicole Borth, BOKU University and Austrian Center of Industrial Biotechnology, Austria

08:45 – 08:50 Session introduction

08:50 – 09:10 **Jack Scarcelli, Pfizer Inc., USA**

Systems and synthetic biology approaches towards optimization of N-glycan sialylation

09:10 – 09:30 **Nathan Lewis, University of California, USA**

What does a cell need for efficient protein secretion: Deciphering, modeling, and augmenting the CHO machinery

09:30 – 09:50 **Ioscani Jiménez del Val, College Dublin, Ireland**

GalMAX: Model-inspired glycoengineering for biopharmaceutical quality assurance

09:50 – 10:10 **Wei-Shou Hu, University of Minnesota, USA**

Synthetic cell lines for recombinant AAV production

10:10 – 11:00 Coffee Break

11:00 – 11:20 **Laura Segatori, Rice University, USA**

Feedback-responsive cell factories for biomanufacturing

11:20 – 11:30 **Eleftherios Papoutsakis, University of Delaware, USA**

The microRNA landscape of the extracellular vesicles generated by Chinese hamster ovary cells under normal and stressed conditions

11:30 – 11:40 **Jamey Young, Vanderbilt University, USA**

Metabolic engineering of high-productivity CHO host lines for biomanufacturing

11:40 – 11:50 **Lars Nielsen, University of Queensland, Australia**

Biologics 4.0: Emergence of the CHO Biofoundry

11:50 – 12:00 **Veronique Chotteau, KTH, Sweden**

Transcriptomics guided mechanistic metabolic model for perfusion culture process

12:00 – 13:30 Lunch

Session 4: Analysis and Control of Cell Culture-based Manufacturing

Chairs: **Marcella Yu, Sutro Bio, USA**

Sarika Mehra, IIT Bombay, India

13:30 – 13:35 Session Introduction

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Tuesday, April 25, 2023 (continued)

- 13:35 – 13:55 **Christian Klinger, Roche, Germany**
Effective cell culture operations by implementing accurate, non-invasive determination of the critical process parameter pH in Roche's Drug Substance Network
- 13:55 – 14:15 **Dong-Yup Lee, Sungkyunkwan University, South Korea**
Real-time data-driven and multi-scale model-guided system for bioprocess digital twin platform
- 14:15 – 14:35 **Jianlin Xu, Bristol-Myers Squibb, USA**
Upstream control strategy development for afucosylated species in mAb biomanufacturing
- 14:35 – 14:55 **Shanta Boddapati, Seattle Genetics, USA**
Bioreactor scale induced alteration in cell metabolic state can impact amino acid misincorporations in recombinant proteins produced in CHO cells
- 14:55 – 15:15 **Stephen Goldrick, University College London, United Kingdom**
Machine learning and advanced data analytics automating the exploitation of Raman spectroscopy: from micro-scale to large-scale operation
- 15:15 – 15:35 **Anne Robinson, Carnegie Mellon University, USA**
Advanced control of glycosylation and titer in fed-batch monoclonal antibody production
- 15:35 – 15:40 **Poster Talk, Ryan Graham, Genentech, Inc., USA**
Achieving product quality targets while maintaining high titer in CHO cell culture processes
- 15:40 – 15:45 **Poster Talk, Cameron Harrington, Pfizer, USA**
Short chain fatty acids produced by CHO cells enhance their specific productivity in fed-batch cultures
- 15:45 – 17:00 **Poster Session (even-numbered posters) / Coffee**
Chairs: **Karthik Jayapal, Merck & Co., USA**
Shawn Lawrence, Regeneron Pharmaceuticals, Inc., USA
Olivier Henry, Polytechnique Montreal, Canada
Yao-Ming Huang, Eli Lilly & Co., USA

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Wednesday, April 26, 2023

Breakfast

08:00 – 12:00

Networking time

12:00 – 13:30

Workshops (4 concurrent workshops)

Chairs: Margarida Serra, iBET, Portugal

Anurag Khetan, Bristol-Myers Squibb, USA

TBD

13:45 – 14:30

Martin Sinacore Award Lectures

Pooja Jambunathan, Merck, USA

Accelerated process development and commercialization - Bringing life-saving drugs to market

Madhuresh Sumit, Pfizer, Inc., USA

TBD

14:30 – 15:30

Break

Session 5: CCE for Cell-based Therapies

Chairs: Krishnendu Roy, Georgia Institute of Technology, USA

John Moscariello, Bristol-Myers Squibb, USA

15:30 – 15:35

Session Introduction

15:35 – 15:55

Madhusudan V. Peshwa, Tessera Therapeutics, USA

Rapid, scalable, cost-effective process for generation of stably integrated chimeric antigen receptor (CAR) engineered T-cells by “Gene Writing”: An all RNA approach, without need for use of viral vectors or nucleases

15:55 – 16:15

Stephen Balakirsky, Georgia Institute of Technology, USA

AI-enabled biomanufacturing

16:15 – 16:35

Ivie Aifuwa, Bristol-Myers Squibb, USA

Adaptive T cell processing through integrated process analytical technologies

16:35 – 16:45

Zhimei Du, Landmark Bio, USA

Differential effects on natural killer cell production by membrane-bound cytokine stimulations

16:45 – 16:55

Joseph Egan, University College London, United Kingdom

A soft sensor of cell concentration in a perfusion bioreactor via a digital twin

16:55 – 17:05

Margarida Serra, iBET, Portugal

Advancing manufacture of hiPSC-derived hepatocytes with improved functionality: A nature-inspired protocol

17:05 – 17:15

James Piret, University of British Columbia, Canada

Process Analytical Utility of Raman Spectroscopy for Cell Therapy Manufacturing

17:15 – 17:25

Susan Abu-Absi, 2seventy bio, USA

Engineered T-cell therapy: State of the science

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Wednesday, April 26, 2023 (continued)

18:00 – 19:30

Dinner

19:30 – 21:30

Poster session (odd-numbered posters)

Chairs: **Karthik Jayapal, Merck & Co., USA**

Shawn Lawrence, Regeneron Pharmaceuticals, Inc., USA

Olivier Henry, Polytechnique Montreal, Canada

Yao-Ming Huang, Eli Lilly & Co., USA

Thursday, April 27, 2023

Breakfast

08:00 – 08:45

Keynote 3 (Multispecifics: Title TBD)
Ray Deshaies, Head of Global Research, Amgen

Session 6: Production of Viral Vectors and Other Emerging Therapeutic Modalities

Chairs: **Scott Estes, Codiak Biosciences, USA**
Paula Alves, iBET, Portugal

08:45 – 08:50

Session Introduction

08:50 – 09:10

Jenny Shupe, Biogen, USA
Advancing the productivity, robustness, and scalability of AAV production process by transient transfection in suspension cell culture

09:10 – 09:30

TBD

09:30 – 09:40

David McNally, University of Massachusetts Chan Medical School, USA
Advanced manufacturing platform for AAV-mediated gene therapeutic production

09:40 – 09:55

Saurabh Sen, Sanofi, USA
Development of a Subclonal host cell line for AAV production

09:55 – 10:00

Poster Talk, Sandra Klausing, Sartorius, Germany
On the AAVenue to success: Advances in technologies for AAV production

10:00 – 10:05

Poster Talk, Jean-Simon Diallo, Virica Biotech, Canada
Overcoming barriers in viral vector manufacturing: Small molecule targeting of antiviral defences

10:05 – 10:55

Coffee Break

10:55 – 11:15

Ashley Baltes, Bristol-Myers Squibb, USA
Development of a second-generation lentiviral vector to reduce COGM while meeting both vector and CAR T cell CQAs

11:15 – 11:30

Kerstin Otte, University of Applied Sciences Biberach, Germany
A hot new bioprocess strategy to improve small EV production

11:30 – 11:45

James Wagner, Merck, USA
Scalable, serum-free cell culture platform for improved production of diverse live virus and viral vector vaccine candidates

11:45 – 11:50

Poster Talk, Ana Meliciano, iBET/ITQB-NOVA, Portugal
Towards large-scale production of human-induced pluripotent stem cell-derived extracellular vesicles in stirred-tank bioreactors

11:50 – 11:55

Poster Talk, Charlotte Piard, Codiak BioSciences, USA
Making bionanoparticles at the 500L scale: The evolution of a perfusion cell culture to increase supply of exosomes

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Thursday, April 27, 2023 (continued)

- 11:55 – 12:00 **Poster Talk, Lars Pelz, Max-Planck Institute Magdeburg, Germany**
Influenza A virus OP7 defective interfering particles: Cell culture-based production and antiviral efficacy in vivo
- 12:00 – 13:30 Lunch
- Session 7: Cell Culture for Integrated and Continuous Bioprocessing**
Chairs: **Massimo Morbidelli, Politecnico di Milano, Italy**
Jason Walther, Sanofi, USA
- 13:30 – 13:35 Session Introduction
- 13:35 – 13:55 **Paul Gramlich, Amgen, USA**
Maintaining productivity over extended durations for perfusion processes
- 13:55 – 14:15 **María del Carne Pons Royo, BOKU University and Austrian Center of Industrial Biotechnology, Austria**
Scaleable microscale perfusion systems for yeast and mammalian cells to accelerate process development of bioproducts
- 14:15 – 14:35 **Susan Essilfie, Just Biotherapeutics, USA**
Implementation of high productivity perfusion cell culture at-scale in an integrated continuous manufacturing platform
- 14:35 – 14:55 **Ricardo Suárez-Heredia, Sanofi, USA**
On digital bioprocessing for manufacturing intelligence: Application of process analytical technology (PAT) and process data analytics (PDA) for upstream process development and intensification
- 14:55 – 15:05 **Mona Bausch, Merck KGaA, Germany**
Development of a highly concentrated perfusion medium supplement to decrease media demand leveraging a newly designed 250 mL single use perfusion bioreactor
- 15:05 – 15:15 **Jun Tian, WuXi Biologics, China**
Ultra-intensified intermittent-perfusion fed-batch (UIIPFB) process quadrupled productivity of a bispecific antibody
- 15:15 – 16:00 Coffee Break
- 16:00 – 17:00 **CCE Award Lecture**
Manuel Carrondo, IBET - Instituto de Biologia Experimental e Tecnológica, Portugal
Cell Culture and Social Engineering
- 17:00 – 18:30 Break
- 18:30 – 19:30 Reception
- 19:30 – 21:30 Banquet

Friday, April 28, 2023

Departures

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