

Biochemical and Molecular Engineering XXIII: Accelerating Biotech Solutions to aid a Changing World

POSTER PRESENTATIONS
as of 10 July 2024

| <u>Poster</u> | <u>Title</u> |
|---------------|--|
| 1 | Engineering Genetic Tools to Control Individual Microbes and Microbiota without Antibiotic Resistance Genes at a Single Strain Level Tae Seok Moon, Washington University in St. Louis, USA |
| 2 | Analyzing the potential of toluene <i>n</i>-xylene monooxygenase in drug metabolism via protein engineering Gonul Vardar-Schara, California State University Stanislaus, USA |
| 3 | Cell culture optimization through metabolic modeling and metabolomics in cellular agriculture. Pomaikaimaikalani Yamaguchi, Tufts University, USA |
| 4 | Advanced manufacturing controls using process analytical technologies (PAT) to enable robust and productive drug substance processes Kyle McElearney, Amgen, USA |
| 5 | Quantum Mechanical Modeling of Enzyme Promiscuity: Application to Carboligases Geoffrey Bonnanzio, Northwestern University, USA |
| 6 | Engineering synthetic microbial consortia for carbon-efficient waste to chemicals production Shane Orgnero, University of Toronto, Canada |
| 7 | Influence of Endocytosis on RNA-Containing Complex Activity and Specificity S. Patrick Walton, Michigan State University, USA |
| 8 | Unleashing the potential of <i>Aureobasidium pullulans</i> for biosurfactant production by strain and process engineering Marie R.E. Dielentheis-Frenken, Institute of Applied Microbiology, RWTH Aachen University, Germany |
| 9 | Multichromatic optogenetic control of microbial co-culture populations for chemical production Jaewan Jang, Princeton University, USA |
| 10 | Systems biology of isobutanol production in <i>Saccharomyces cerevisiae</i> reveals a general mechanism to boost chemical production, involving chromatin, mitochondria, and ATP level perturbations Jose Montano Lopez, Princeton University, USA |

| <u>Poster</u> | <u>Title</u> |
|---------------|--|
| 11 | Closed loop control of microbial population ratio of optogenetically controlled yeast-yeast consortia Saurabh Malani, Princeton University, USA |
| 12 | SialMAX: Maximizing Biopharmaceutical α-2,6-Sialylation in CHO Cells Cristina Abascal Ruiz, University College Dublin, Ireland |
| 13 | Accelerated, low ecological footprint, manufacturing platform for continuous production of biotechnological products Natalia Danielewicz, enGenes Biotech, Austria |
| 14 | Global Proteomics and Resource Allocation Modeling Reveals Thermodynamic Bottlenecks and Highlights Genetic and Metabolic Interventions for c. Thermocellum Wheaton Schroeder, the Pennsylvania State University, USA |
| 15 | CatPred: A comprehensive framework for deep learning <i>in vitro</i> enzyme kinetic parameters k_{cat}, K_M and K_i Veda Sheersh Boorla, The Pennsylvania State University, USA |
| 16 | High-efficiency PET degradation with a two-enzyme system immobilized on magnetic nanoparticles Qing Sun, Texas A&M University, USA |
| 17 | Parameterizing large-scale kinetic models using an improved framework Patrick Suthers, The Pennsylvania State University, USA |
| 18 | Bottom-up reconstruction of synthetic pyrenoids unravels the evolution and mechanisms of carbon concentration by EPYC1 peptides Andreas Markus Küffner, Max Planck Institute for Terrestrial Microbiology, Germany |
| 19 | Dial-A-Sugar: Developing Actuators for Real-Time mAb Glycosylation Control in CHO Cells Sheryl Lim, University College Dublin, Ireland |
| 20 | Novel high-throughput screens for protein assembly reveal essential molecular interactions in bacterial organelle assembly Carolyn Mills, University of California, Santa Barbara, USA |
| 21 | Acetate availability determines the trade-off between growth and fatty acid chain length in chain-elongating bacteria Ian Gois, University of Toronto, Canada |
| 22 | Model-Driven Transfection Process Development Ana Luiza Pinto Queiroz, APC LTD, Ireland |

| <u>Poster</u> | <u>Title</u> |
|---------------|---|
| 23 | Progressive Protein Engineering for Rapid Discovery of a Detergent Protease with Enhanced Sustainability and Stain Cleaning Benefits Thomas Graycar, International Flavors & Fragrances, USA |
| 24 | Development of automatic and miniaturised continuous fermentation system for improvement of microbial strains Krittanaï Trisakulwattana, University College London, UK |
| 25 | Enhancing the growth capability of a novel industrial biotechnology host, <i>Halomonas</i> sp. under oxygen limitation Waritthorn Thanakarn, Department of Biochemical Engineering, University College London, UK |
| 26 | Genome-scale metabolic models for a synthetic soil microbial community as a path for understanding community functioning Omar Keshk, EPFL, Switzerland |
| 27 | Scalable stem cell-based platform to produce tissue specific extracellular vesicles (EVs) Rachel Moen, Vanderbilt University, USA |
| 28 | Enhancing monoclonal antibody production through targeted metabolic engineering of industrial CHO cells Kevin Ruiz-Márquez, Vanderbilt University, USA |
| 29 | Metabolite-regulated CRISPR activation for dynamic transcriptional control Anthony Stohr, University of Delaware, USA |
| 30 | Polyethylene deconstruction initiated by LDPE-oxidases from yellow mealworm gut microbiota Ross Klauer, University of Delaware, USA |
| 31 | Developing light-driven energy systems for cell-free protein synthesis Blake Rasor, Max Planck Institute for Terrestrial Microbiology, Germany |
| 32 | Enhancing Human Cell Line Engineering via Cell Line Specific Sequence Alignment Eva Price, University College London, Oxford Biomedica, UK |
| 33 | The role of IRE1 under elevated levels of palmitate on DNA damage repair and the development of chemotolerant breast cancer cells Kevin Chen, Michigan State University, USA |

| <u>Poster</u> | <u>Title</u> |
|---------------|---|
| 34 | Engineered viruses meets engineering characterization: facilitating successful recovery of quality lentiviral vectors through process and product understanding Andrea Rayat, University College London, UK |
| 35 | Engineered Enzymes Enable Scalable and Sustainable Nucleic Acid Synthesis Zhe Rui, Codexis, USA |
| 36 | Altering Degradation Pathways in Cells Under ER Stress Improves Recombinant Protein Production R. Chauncey Splichal, Michigan State University, USA |
| 37 | Nucleic acid exchange between <i>Clostridium</i> spp. revealed through PacBio sequencing and rRNA-fluorescence in situ hybridization John Hill, University of Delaware, USA |
| 38 | Harnessing syntrophic microbial cocultures for carbon-neutral, supratheoretical isopropanol production Sofia Capece, University of Delaware, USA |
| 39 | Methanotrophic Culture Adaptation to Build an Efficient Electrochemical Carbon Dioxide Valorization Process Kent Rapp, Johns Hopkins University, USA |
| 40 | ADVANCED PRODUCTION OF L-HISTIDINE AND ITS DERIVATIVES USING CUSTOMIZED CORYNEBACTERIUM GLUTAMICUM Sung Ok Han, Korea University, South Korea |
| 41 | Tautomer-informed biochemical Reaction Prediction for Pathway Design Konrad Lagoda, EPFL, Switzerland |
| 42 | In silico functional comparison of the leaf microbiome by reducing metabolic complexity Evangelia Vayena, EPFL, Switzerland |
| 43 | Genetic basis of dicarboxylic acid metabolism in four <i>nitro</i>-proteobacteria Allison Pearson, University of California, Berkeley; Joint BioEnergy Institute, USA |
| 44 | Engineering Autonucleolytic Host Cells for Improved Bioprocessing of Gene Therapy Viral Vectors Darren Nesbeth, University College London, UK |
| 45 | Robust cyanophycin production critically limited by lackluster enzyme expression and native regulatory networks Kevin Fitzgerald, Northwestern University, USA |

| <u>Poster</u> | <u>Title</u> |
|---------------|--|
| 46 | Engineering Nitrogen-Fixing Bacteria for Agricultural Use Maya Venkataraman, UW-Madison, USA |
| 47 | Polyketide synthase engineering as a tool for the rapid design and production of novel polyhydroxyalkanoates Leah S. Keiser, UC Berkeley, USA |
| 49 | Acetate as a Platform for Carbon-Negative Production of Oleochemicals Shivangi Mishra, University of Wisconsin-Madison, USA |
| 49 | Engineering of enzymatic cascades using CodeEvolver® Oscar Alvizo, Codexis, USA |
| 50 | In Vivo Transfer of Biological Nitrenes Isaac Donnell, UC Berkeley, USA |
| 51 | Engineering Saccharopolyspora erythraea for heterologous natural product discovery and production Justin Baerwald, UC-Berkeley, Lawrence Berkeley National Lab, USA |
| 52 | Engineering enzymes for green manufacturing of noncanonical amino acids Hannah Bachmeier, Aralez Bio, USA |
| 53 | Rumen-inspired synthetic consortia stably convert lignocellulose to butyrate and hexanoate Elaina Blair, University of California, Santa Barbara, USA |
| 54 | Elucidating Cancer Metabolism With Large-Scale Kinetic Modeling Ilias Toumpe, École polytechnique fédérale de Lausanne, Switzerland |
| 55 | Spatiotemporal modeling of a synthetic microbial community during colony expansion Asli Sahin, EPFL, Switzerland |
| 56 | A systems biology approach for the parallel generation of multiple condition-specific genome-scale metabolic models by integrating relative multi-omics data David Liaskos, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland |
| 57 | Computational modeling of host-parasite metabolic interactions to guide host-directed therapies Denis Alain Henri Lucien Joly, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland |
| 58 | Engineering Cyanobacteria for Improved Phosphorus Uptake from Wastewater Ted Chavkin, University of Wisconsin Madison, USA |

| <u>Poster</u> | <u>Title</u> |
|---------------|--|
| 59 | Towards Upcycling Waste-Stream Feedstocks into Value-Added Chemicals Using Genetically Engineered Yeasts Mohamed Nasr, University of Toronto, Canada |
| 60 | Engineering a molecular ratchet protein biosensor for affinity and specificity to novel small molecule ligands through computational modeling and design Alison Leonard, University of Colorado Boulder, USA |
| 61 | Reseeding and cryopreservation of cardiomyocyte progenitors during human pluripotent stem cell differentiation increases cardiomyocyte purity Austin Feeney, University of Wisconsin-Madison, USA |
| 62 | Developing a cell-free protein expression platform for anaerobic gut fungi Janelle Arnold, University of California, Santa Barbara, USA |
| 63 | Electro-fermentation: methodology and insights Kenneth F. Reardon, Colorado State University, USA |
| 64 | Bacterial Cellulose Esters as Highly Effective Additives for Bioplastics and Their Impact on Properties and Biodegradation Byoung-In Sang, Hanyang University, South Korea |
| 65 | Large-scale kinetic modeling of metabolic networks using stratified sampling of neural networks Subham Choudhury, EPFL, Switzerland |
| 66 | Simplifying mRNA vaccine manufacturing by using immobilised enzymes during in vitro transcription reactions Georgia Taylor, University College London, UK |
| 67 | Sugar, Spice, and Everything Nice: Directed Evolution of Glucose-Dependent Enzymes via Growth Complementation of Glucose Non-Utilizing E. coli Chiagoziem Ngwadam, Rice University, USA |
| 68 | Harnessing the Oleaginous Yeast Yarrowia lipolytica for Upcycling of Depolymerized Plastic Waste Cong Trinh, University of Tennessee, Knoxville, USA |
| 69 | 2-Ketoacid decarboxylase engineering to improve isobutanol production in Saccharomyces cerevisiae Joshua Dietrich, University of Wisconsin-Madison, USA |
| 70 | Selection of Mutants that Enhance Oil Recovery from a Nonmodel Oleaginous Yeast Mark Blenner, University of Delaware, USA |

| <u>Poster</u> | <u>Title</u> |
|---------------|--|
| 71 | Engineering MS2 bacteriophage virus-like particle for targeted drug delivery into hepatocellular carcinoma. Daniel de Castro Assumpcao, Northwestern University, USA |
| 72 | Functional genomic screening of non-conventional yeast hosts enabled by highly active genome-wide CRISPR-Cas9 libraries Aida Tafrihi, University of California, Riverside, USA |
| 73 | Discovering novel enzymes for lignocellulose breakdown in anaerobic gut fungi Shiyun Jin, University of California, Santa Barbara, USA |
| 74 | Characterization and engineering of non-model fungal and algal systems for bioproduction, biodegradation, and biomaterials applications Hugh Purdy, University of California, Santa Barbara, USA |
| 75 | Genetic Engineering Strategies for Early Branching Anaerobic Gut Fungi Sarah Seagrave, University of California, Santa Barbara, USA |
| 76 | Engineering Ligand Activated RNA Polymerases Zachary Baumer, University of Colorado Boulder, USA |