AGENDA AND SCHEDULE OF EVENTS

LABORATORY OF RENEWABLE RESOURCES ENGINEERING

Symposium Celebrating 47 Years

LORRE: Bioproducts, Biomanufacturing, One Health Discovery to Translation

Organizing Committee

Michael Ladisch, LORRE, ABE, Purdue
Scott Rudge, Syner-G BioPharma Group
Tom Huang, Nkarta Therapeutics
Xiaoping Yang, IGO, Ltd, Methanex Corp., LONGi Green Ltd
Nathan Mosier, ABE, LORRE, Purdue

Past, Present, and Future

Tuesday, May 20 (Morning, Room B073 ABE)

8:00 Coffee for early arrivals, Parker Lobby, ABE Building 225 S. University Street, Purdue University

8:30 Welcome to LORRE 47th Anniversary Celebration Introductions
Michael Ladisch, Distinguished Professor ABE, BME, and Director of LORRE
George Tsao, Professor, Emeritus, Davidson School of Chemical Eng. and founding Director, LORRE
Ron Turco, Associate Dean for Agricultural Research and Graduate Education, College of Agriculture
Kelly Delp, Senior Director of Development, COA. Purdue for Life Foundation
Nathan Mosier, Head, Department of Agricultural and Biological Engineering and ISA Named Professor

8:45 Evolution of Renewable Resources Engineering: Bioproducts, Biomanufacturing, One Health: *Chair:* Michael Ladisch, Distinguished Professor & Director

Shirish Sankhe, Director and Founding Partner, Institute for Sustainability, Employment and Growth: Sr Partner Emeritus at McKinsey & Co; *Net Zero Transition and Sustainability*

David Tsao, Global Manager of Technology Team for Remediation Development, Engineering and Technology, bp. *Phytoremediation*

Gintaras Reklaitis, Gedge Distinguished Professor of Chemical Engineering, Davidson School of Chemical Engineering. *Process Modeling in Biomanufacturing.*

Scott Rudge, Principal, CMC Development, Syner-G Biopharma Group, *Next Generation Process Development and Products for One Health*

Bernie Engel, Dean, College of Agriculture, *Engineering, Agriculture, and Innovation in the COA*

10:00 **Break** Posters & coffee, Second Floor Balcony, Co-chairs – Stella Chang, Tosin Olanrewaju, Jorge Gutierrez, Diana Mesa (Grad Students, ABE, LORRE)

10:45 Bioproducts: Co-*Chairs:* Glen Austin, Xylogenics, Antonio dos Santos, Boston College

Tuesday, May 20 (Continued, Room B073 ABE)

10:45 Yulin Lu, Co-founder and CEO, Yali Bio. *Animal-free Lipids and Fats from Precision Yeast Fermentations*

Xueli Chen, LBNL; Diana Gutierrez, Post-doctoral Researcher; Diana Mesa, Grad Student, ABE, LORRE, *Gamechangers: Pellets, Liquefaction, Fermentation and Carbon Sequestration*

Junli Liu, Sr. Research Scientist, ABE, LORRE. *Sustainable Aviation Biofuels*

Abigail Engelberth, Assoc Prof ABE, LORRE, *Technoeconomic Assessment of Bioprocesses*

Tingyue Gu, Professor, Chemical and Biomolecular Engineering, Ohio University, *Microbial Biofilms*

George Tsao, Founding Director, LORRE and Professor Emeritus, ChE: *Comprehensive Economic Model: Integrating Tokens and Dokens for Global Predictions*

12:00 **Lunch** (Parker Lobby, ABE Ground Floor Atrium)

1:00 Biomanufacturing: *Co-chairs* -Jaycey Hardenstein, Eli Lilly. Alisha Tungare, Salesforce; Fernanda da Cunha, Research Assistant Professor, ABE, LORRE

Cristiane Farinas, Embrapa Instrumentação, and Professor, ChE, U. São Carlos. *Biotechnology for Nanocellulose, Biofertilizer and Enzyme Production*

ST. Yang, George Endowed Chair Professor Chemical and Biomolecular Engineering & Food Science, Ohio State U., *Synthetic Biology for Biomanufacturing*

Shweta Singh, Assoc Prof. ABE LORRE, EEE, ChE *Circular Economy for Sustainable Biomanufacturing*

Hanxiao Jiang, Cataya Bio, *Lab to Biomanufacturing: Scaling Synthetic Biology for Sustainable Future*

Olga Souza, Grad Student, ABE, LORRE, *Enzyme Retro-synthesis of Natural Product Analogs*

Karthik Sankaranarayanan, Assistant Professor ABE and LORRE, Purdue. *AI and Machine Learning for Reverse Synthesis of New Enzyme Biocatalysts.*

Registration website: https://engineering.purdue.edu/LORRE. Questions? carie@purdue.edu and ladisch@purdue.edu

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Tuesday, May 20 (continued)

2:15 Short Break / Stretch

2:30 One Health: Co-Chairs: Tom Huang, Nkarta, Justin Couetil, M.D.-Ph.D., IU Medical School, Eduardo Ximenes, Indiana University-Bloomington

David Nolte, Edward M. Purcell Distinguished Professor of Physics and Astronomy, Purdue, *Living Tissue: Sentinels for Emerging Microbial Threats*

Shivani Mahajan, Grad Student, Phys, ABE, LORRE, - *DLD-1 Cells for detecting viral threats*

Kurt Ristroph, Assistant Professor, ABE, ChE, *Controlled nanoprecipitation to formulate bioactive molecules*

Chris Ho, M.D. Ph.D. Drug Design Methodologies, LLC, *Computer-aided Rational Drug Design*

Somali Chaterji, Associate Prof. ABE, LORRE, ECE, CEO – KeyByte, *CloudCell: Scalable ML Infrastructure & Algorithms for Single-Cell Genomics*

Riya Debbarma, Grad Student, ABE, LORRE, *Intravitreal Protein Diffusion in the Treatment of Age-Related Intraocular Diseases*

Fernanda da Cunha, Research Assistant Professor, ABE, LORRE, Upstream and *Downstream Fundamentals for Biopharmaceutical Processes*

Tuesday, May 20 (continued)

3:45 Concluding Remarks: Michael Ladisch Distinguished Professor and Director: *LORRE Vision for the Future: Bioproducts, Biomanufacturing and One-Health*

4:00 Adjourn until reception and dinner

6:00 Reception followed by Dinner at The Outpost; 2501 Old U.S. Hwy. 231, Lafayette, IN (Transportation arrangements will be available)

Wednesday, May 21 (ABE 4107, 4118)
ABE Lab Visits

8:00 Coffee for early arrivals, Parker Lobby, ABE Building 225 S. University Street, Purdue University

8:30 Laboratory Visits with graduate students

Morning Sessions (ABE 1164)

9:15 Panel on Career Journeys – Post-Purdue: Chair - Mahesh Krishnan, Director, Global Vaccines and Biologics Commercialization, Merck, Tom Huang, Nkarta, Glen Austin, Xylogenics, Nathan Mosier, Purdue

10:00 LORRE: Next Steps
Michael Ladisch, Director, *LORRE: The Next 47 Years; Vision for a Sustainable Future*

Panel and Audience Discussion Roundtable led by LORRE Advisors with Director

11:00 Meeting Concludes

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Bioproducts, Biomanufacturing, One Health – Student Poster Presentations
Chair: Stella Chang; Co-chairs: Tosin Olanrewaju, Diana Mesa, Jorge Ramirez

Bioproducts (Tosin Olanrewaju)

- Emily Aicher & Tosin Olanrewaju; Abigail Engelberth, *Characterizing Distiller's Grains as a Novel Source of Value-Added Lutein and Zeaxanthin; Techno-economic Analysis of Integrated Aquaponics Food Production System*
- Junli Liu, *Sustainable biokerosene production from lipids using efficient ozone cracking*
- Shivani Mahajan; David Nolte, Michael Ladisch, Fernanda da Cunha, *Osteosarcoma chemosensitivity signatures from BETi with holographic dynamic contrast OCT*

Biomanufacturing (Diana Mesa)

- Nilanjan Samanta; Karthik Sankaranarayanan, *From Sequence to Function: Predicting Enzyme Function from Protein Sequences*
- Ryan Griffiths; Karthik Sankaranarayanan, *Monte Carlo Tree Search for Biocatalytic Retrosynthesis*
- Bianca de Paula Macedo; Karthik Sankaranarayanan, *Computational Planning and Experimental Implementation of Enzyme-Catalyzed Pathways for Sustainable Synthesis of Target Molecules*
- Diana Betancur; Michael Ladisch, Fernanda da Cunha, *Carbon Sequestration by Oxalic Acid Fermentation*
- Jorge Ramirez & Stella Chang; Michael Ladisch, Fernanda da Cunha, *Modeling of High Solids Biomass Liquefaction, Techno-economic Assessment and Life Cycle Assessment for Industrial Scale-up*

One Health (Jorge Ramirez)

- Riya Debbarma; Michael Ladisch, Fernanda da Cunha, *Imaging of Intra-Matrix IgG Diffusion as an Indicator of Age-Related Vitreous Changes*
- Chen-Yi Lu; Somali Chaterji, *Improving Semi-Supervised Semantic Segmentation with Sliced-Wasserstein Feature Alignment and Uniformity*
- Olaoluwa Adegbohungbe; Michael Ladisch, *Tangential flow filtration*