Friday (9/13/2024)

1:00 PM – 6:00 PM:	Registration	Lobby +Alcove
4:00 PM – 11:00 PM:	Hotel Check-in	Lobby +Alcove
6:00 PM – 7:00 PM:	Reception and Networking Activity	Lobby +Alcove
7:30 PM – 8:30 PM:	IBE Leadership Council Meeting* *only council members	Off-site Restaurant

Saturday (9/14/2024)

7:00 AM – 6:00 PM:	Registration	Lobby +Alcove
7:00 AM – 8:00 AM:	Continental Breakfast and Networking	Emory Break Area
8:00 AM – 9:15 AM:	Opening Welcome and Keynote Presentation **Presiding:** Dr. Ramaraja Pandian Ramasamy, IBE President and Sr. Associate Dean – University of Georgia **Keynote:** A Convergence Approach for One Health **Speaker:** Dr. Ranu Jung, Endowed Chair, Associate Vice Chancellor, Distinguished Professor at University of Arkansas	Emory Amphitheater
9:15 AM – 9:30 AM:	Break Poster Set-up	Emory Break Area Silverbell Pavilion

9:30 AM – 12:00 PM: Concurrent Sessions (1a and 1b)

Session 1a: Sustainable Fuels and Chemicals for One Health — Emory Amphitheater
Session Chairs: Dr. Sudhagar Mani

9:30 – 9:45 Data-Driven Solvent Discovery for Sustainable Process Design and Applications
Jian Shi, Yuxuan Zhang, Jameson Hunter, Ahamed Ullah, Qing Shao and Usman Abbas

9:45 – 10:00 Location Proposal for a Bioetanol Production Plant using the AHP – GIS Multicriteria Methodology, in the Cauca Valley
Nicolas Perez and Maria Fernanda Eraso

10:00 – 10:15 Investigation of the effect of pyrolysis temperature on fast pyrolysis products of southeast forest residue by using Pyro-GC/MS
Seyedehsan Vasefi and Sudhagar Mani

10:15 – 10:30 Robust Body-Centered Au9 Cluster-Based Nanocatalysts for Cleavage of Lignin-Derived C-O and C-C Bonds
Zhaoxian Qin, Akanksha Lakra and Zhaohui Tong

10:30 – 10:45 Lignin Degradation to Isolated Phenolic Acid and Jet Fuel with Copper Nanoparticle and Single Atom-Modified Graphene Oxide Catalyst
Xintong Xu, Wenbo Peng and Zhaohui Tong

10:45 – 11:00 Open-source process models to accelerate innovation in biorefining
Juliana Vasco-Correa, Yajie Wu, Juan Manuel Restrepo-Florez, Camila Valderrama, Hunter Porcano and Elmin Rahic

11:00 – 11:15 Break

11:15 – 11:30 Integrated experimental and economic optimization of AD parameters for RNG production from prairie biomass
Elmin Rahic, Nicholas Cassady, Zhiyou Wen, Mark Mba-Wright and Juliana Vasco-Correa

Session 1b: Bioenvironmental Engineering for One Health — Dogwood

Session Chair: Dr. Luguang Wang and Dr. Elmin Rahic

9:30 – 9:45 In-Situ Hydrogen Generation from Waste Hydrocarbon Residue: Two-Phase Microbial Electrolysis Cells for Sustainable Energy in Abandoned Oil and Gas Reservoirs
Georgia Barefoot and Cheng Li

9:45 – 10:00 Sediment Microbial Fuel Cells for Sustainable Wastewater Treatment and Water Reclamation for Poultry Production Farms
Christian Ward, Ben LaRocque and Cheng Li

10:00 – 10:15 Multi-reagent assay of microplastics using smartphone-based capillary flow velocity measurement from laser-cut paper microfluidic chips
Lexi DeFord and Jeong-Yeol Yoon

10:15 – 10:30 Cable bacteria, a new ubiquitous bacteria for environmental applications
Cheng Li

10:30 – 10:45 Binding Strength and Transport Kinetics of Organic Dyes into Different Live Diatoms Using Second Harmonic Scattering Spectroscopy
Ceaira Howard, Hui Wang, Jesse B. Brown, Yi Rao and Liyuan Hou

10:45 – 11:00 Outdoor Pilot-Scale Rotating Algae Biofilm Reactor Nutrient Uptake and Struvite Analysis
Davis Haag

11:00 – 11:15 The Influence of Biological Inoculants and Nitrogen Rates on Nitrogen Uptake, Canopy Temperature, and Grain Yield in Corn
Annie Sheffield and Ronnie Heiniger

11:15 – 11:30 Biofiltration design to reduce diffuse methane emission
Juliana Vasco-Correa, Camila González, Vancie Peacock and Johannes Ali

11:30 – 11:45 Break

11:45 – 12:00 Extremozymes: Development of efficient biocatalysts from Extremophiles [via Zoom]
Jenny M. Blamey

12:00 PM – 1:30 PM: Lunch and Networking Dining Room

1:30 PM – 3:15 PM: Concurrent Sessions (2a, 2b, and 2c)

Session 2a: Precision Agriculture for One Health 1 Emory Amphitheater
Session Chairs: Dr. Guoming Li and Dr. Guoyu Lu

1:30 – 1:45 How Precision Agriculture Fits into One Health Theme
Ramaraja Pandian Ramasamy

1:45 – 2:00 Optimizing deep learning-based algorithms to track individual broilers in group settings
Sai Akshitha Reddy Kota, Dr.Guoming Li and Dr.Chongxiao Chen

2:00 – 2:15 A Crop Modeling Approach to Predict Aflatoxin Hotspots in Peanut Fields
Sara Maktabi, Kenneth Boote, Jake Fountain, Gerrit Hoogenboom, Cristiane Pilon and George Vellidis

2:15 – 2:30 Sustainable Water Management Using Precision Agriculture and Machine Learning
Vinicius Soncini Trevisan, Leonardo Bastos, Lorena Lacerda and George Vellidis

2:30 – 2:45 Automated Environmental Swabbing: A Robotic Solution for Enhancing Food Safety in Poultry Processing
Siavash Mahmoudi, Clark Griscom, Philip G. Crandall and Dongyi Wang

2:45 – 3:00 Automatic Segmentation of Birds Using a Combination of Object Detection and Foundation Image Segmentation Models
Mahtab Saeidifar, Guoming Li, Jin Lu, Lilong Chai, Ramesh Bahadur Bist and Xiao Yang

3:00 – 3:15 Leveraging Computer Vision for Precision Agriculture: Optimizing Peanut Seed Singulation in Vacuum Seed Metering Systems
Manuel Blaser, Wesley Porter, Simerjeet Virk, Glen Rains and Adrian Koller

Session 2b: Biological Sensing and Diagnostics 1 Dogwood
Session Chairs: Dr. Jose Reyes-De-Corcuera, Dr. Carmen Gomes, and Dr. Baviththira Suganthan

1:30 – 1:45 Enhanced POC Detection of Gram-Negative Bacteria in Milk Using Stepwise Voltage-Driven Dielectrophoretic Capacitive Sensing
Jie Wu, Yu Jiang and Shigetoshi Eda

1:45 – 2:00 Phage protein-based biosensor to detect Campylobacter jejuni
Baviththira Suganthan, Ashley M Rogers, Clay S Crippen, Christine M Szymanski and Ramaraja Pandian Ramasamy

2:00 – 2:15 A Cell-Based Electrochemical Biosensor for the Detection of Hepatitis A Virus
Dilmeet Kaur, Malak Esseili and Ramaraja Pandian Ramasamy

2:15 – 2:30 Applying image analysis for rapid and practical detection of foodborne pathogens
Anthony James Franco and Evangelyn Alocilja

2:30 – 2:45 Machine Learning Enabled Nondestructive Paper Chromogenic Array Detection of Multiplexed Viable Pathogens on Food Products
Boce Zhang

2:45 – 3:00 A miRNA-based Electrochemical Biosensor for Potential Oral Cancer Biomarker Detection
Sanket Naresh Nagdeve, Baviththira Suganthan and Ramaraja Pandian Ramasamy

3:00 – 3:15 A Nucleic Acid Biosensor for Breast Cancer Biomarker Detection
Lexi Hansen, Sanket Naresh Nagdeve, Baviththira Suganthan and Ramaraja Pandian Ramasamy

Session 2c: Emerging Topics in Biological Engineering — Basswood
Session Chair: Dr. Jian Shi

1:30 – 1:45 3D Printed Biocompatible polymers for Biomedical Applications
Kenan Song, Lindsay B. Chambers and Sri Vaishnavi Thummalapalli

1:45 – 2:00 Algae for Sustainable Meat Production: Use of Enzymatic Microalgae Hydrolysates for Cellular Agriculture
Elise Barton and Ron Sims

2:00 – 2:15 Cultivating Ethical AI: Navigating Open AI's Impact on Agricultural Systems
Aleena Rayamajhi

2:15 – 2:30 Fungi for Future Materials: Circular Production of Pure Mycelium Materials
Tyler Barzee, Keya Rani Roy, Zachary Byrd

3:15 PM – 3:30 PM: Coffee and Snack Break — Emory Break Area

3:30 PM – 5:15 PM: **Concurrent Sessions (3a and 3b)**

Session 3a: Precision Agriculture for One Health 2 — Emory Amphitheater
Session Chairs: Dr. Guoming Li and Dr. Guoyu Lu

3:30 – 3:45 Measuring Ornamental Tree Canopy Attributes for Precision Spraying Using Drone Technology and Unsupervised Segmentation
Aleena Rayamajhi, Hasan Jahanifar and Md Sultan Mahmud

3:45 – 4:00 3D Peanut Canopy Foliage Density Measurement for Precision Spraying
Muhammad Asif, Hasan Jahanifar, Aleena Rayamajhi and Md Sultan Mahmud

4:00 – 4:15 Enhanced Weed Detection Using YOLOv9 on Open-Source Datasets for Precise Weed Management
Muneeb Elahi Malik and Md Sultan Mahmud

4:15 – 4:30 Using Crop Coefficient Curves of Crops Grown in the Southeastern United States to Improve Irrigation Scheduling Efficacy
Emily Bedwell, Lorena Lacerda, Theodore McAvoy, John Snider, Brenda Ortiz and George Vellidis

4:30 – 4:45 Quantifying the Frequency of Flash Drought in the Southeastern United States and Estimating Its Effects on Crop Yield
Jasia Jannat, Jose H. Andreis, Gerrit Hoogenboom, Pam Knox, Rick Lusher and George Vellidis

4:45 – 5:00 Application of Computer Vision Techniques in Peanut Cultivation for Precision Agriculture
Jiakai Lin, Peggy Ozias-Akins and Guoyu Lu

5:00 – 5:15 Three-dimensional Reconstruction of Cotton Based on Diffusion Model
Jinchang Zhang, Andrew Paterson and Guoyu Lu

Session 3b: Biological Sensing and Diagnostics 2 — Dogwood

Session Chairs: Dr. Jose Reyes-De-Corcuera, Dr. Carmen Gomes, and Dr. Baviththira Suganthan

3:30 – 3:45 Electrochemical nanohybrid sensor for detection of orthophosphate
Maria Torres, Geisianny A Moreira and Eric S McLamore

3:45 – 4:00 A Smartphone-based Approach for Comprehensive Soil Microbiome Profiling
Yan Liang, Bradley Khanthaphixay, Jocelyn Reynolds, Preston Leigh, Melissa Lim and Jeong-Yeol Yoon

4:00 – 4:15 Variety Identification of Shelled and In-shell Pecans Using Hyperspectral Imaging and Machine Learning
Ebenezer Olaniyi, Christopher Kucha and Priyanka Dahiya

4:15 – 4:30 Laser-induced graphene sensors derived from renewable sources for potassium monitoring in hydroponic systems
Raquel Soares, Sara Silvestre, Cicero Pola, Gustavo Miliao, Dokyong Lee, Elvira Fortunato, Joao Coelho, Jonathan Claussen and Carmen Gomes

4:30 – 4:45 Laser-Induced Graphene for Enhanced Electrochemical Sensing: Innovations in Synthesis, Surface Engineering, and Multiplexed Biosensing for Environmental and Biomedical Applications
Jonathan Claussen, Zachary Johnson, Nathan Jared, Gustavo Miliao, Griffin Ellis and Carmen Gomes

4:45 – 5:00 Low cost source measure unit (SMU) to characterize sensors built on graphene-channel field-effect transistors
Ashley Galanti and Mark Haidekker

5:00 – 5:15 Rapid Detection of Antimicrobial Resistant Genes Using Plasmonic Biosensor
Kaily Kao and Evangelyn Alocilja

5:15 – 5:30 Rapid microfluidic paper assay for nucleic acid amplification assessment after PCR and RPA
Bailey Buchanan, Reid Loeffler and Jeong-Yeol Yoon

5:15 PM – 6:00 PM: Break — Emory Break Area

6:00 PM – 7:00 PM: Poster Session — Silverbell Pavilion
Session Chair: Dr. Ryan Summers

[1] Exploring cellular mechanics in glioblastoma and the effects of Radioimmunotherapy: An Atomic Force Microscopy Investigation
Nabila Masud, Md Hasibul Hasan Hasib, Nathan Faivre, Xuan Xuan Lee, Andrew E. Ekpenyong and Anwesha Sarkar

[2] Characterization of biomolecule-attached single-walled carbon nanotubes (SWCNTs) using Atomic Force Microscopy
Nabila Masud, Md Hasibul Hasan Hasib, Seyed Sepehr Hejazi, Nigel F Reuel and Anwesha Sarkar

[3] Binding Strength and Transport Kinetics of Organic Dyes into Different Live Diatoms Using Second Harmonic Scattering Spectroscopy
Ceaira Howard, Hui Wang, Jesse B. Brown, Yi Rao and Liyuan Hou

[4] Functional characterization of a nitroreductase gene from Acinetobacter sp. NRRL B-65365 that activates anti-cancer prodrug CB1954
Hayat Ullah and Jixun Zhan

[5] CRISPR-based functional characterization of a flavin-dependent halogenase in chlorflavonin biosynthesis
Ammar Mussaji and Jixun Zhan

[6] Algae for Sustainable Meat Production: Use of Enzymatic Microalgae Hydrolysates for Cellular Agriculture
Elise Barton and Ronald Sims

[7] Unveiling the Soil's Frenemies: Bacillus and Pseudomonas Interspecies Interactions
Anagha Wankhade and David Britt

[8] Techno-economic feasibility of renewable gas production from lignocellulose in dairy farms
Camila Valderrama, Hunter Porcano, Elmin Rahic and Juliana Vasco-Correa

[9] Engineering Pseudomonas putida for Increased Alginate Production
Virginia Akins, Lindsey Clark and Jixun Zhan

[10] Development of a Cell-Free Protein Synthesis System using a Psychrotolerant Bacterium as molecular chassis
Jenny M. Blamey, Giannina Espina, Joaquin Atalah, Guillermo Mejías-Navarrete, Diego Sanchez-Caceres, Litsy Martinez, Svetlana Harbaugh, Michael S. Goodson and Nancy Kelley-Loughnane

[11] Micro-algae and Cellular Agriculture: The Optimization Process
Gracyn Ekstrom, Elise Barton and Dr. Ron Sims

[12] Production of mevalonate from glycerol by Escherichia coli citrate synthase variants
Caroline Hartner, Meredith Mock and Mark Eiteman

[13] Biomimetic Laser-Induced Graphene System for Real-Time Pesticide Spray Monitoring in Farm Fields
Nathan Jared, Zachary Johnson, Griffin Ellis, Nathan Neihart and Jonathan Claussen

[14] The Multifaceted Role of Poloxamer 188 in Cytomegalovirus Treatment
Kade Robison, Dr. David Britt, Dr. Elizabeth Vargis and Alisa Dabb

[15] The Increased Valorization of Methane for the Production of Ectoine
Tansley Mazurkiewicz, Jaden Storrer and Ronald Sims

[16] Effects of UV radiation on Algae Biofilms of Rotating Algae Biofilm Reactors
Rebecca Sweeten, Ron Sims and Joshua Wintch

[17] Improvements in a Field Pilot-Scale Rotating Algae Biofilm Reactor for Anaerobic Digester Effluent Bioremediation and Biomass Production
J. Dietr Storrer, Davis Haag and Ronald Sims

[18] Enhancing field deployable electrochemical nanosensor for glyphosate detection and monitoring in hydroponic food production
Joana Temeng and Diana Vanegas

[19] Effects of Light Intensity on Algae Biofilms in Rotating Algae Biofilm Reactor (RABR)
Joshua Wintch

[20] Comparison of RNA Expression between Planktonic and Biofilm Cyanobacteria
Douglas M. Harper, Eric H. Matthews, Seth M. Wilkinson and Charles D. Miller

[21] Comparison of Population Analysis Tools in Bioinformatics
Seth Wilkinson, Eric Matthews and Doug Harper

7:00 PM – 8:30 PM: Awards Ceremony and Banquet Dinner Silverbell Pavilion

Sunday (9/15/2024)

7:00 AM – 12:00 PM: Registration — Lobby + Alcove

7:00 AM – 8:00 AM: Continental Breakfast and Networking — Emory Break Area

8:00 AM – 9:15 AM: Opening Welcome and Keynote Presentation — Emory Amphitheater
Presiding: Dr. Ramaraja Pandian Ramasamy, IBE President and Sr. Associate Dean at University of Georgia

Keynote: Rethinking our Approach to Health using a One Health Paradigm [via Zoom]
Speaker: Dr. Ramanan Laxminarayan, Founder and President of the One Health Trust, Senior Research Scholar at Princeton University, Affiliate Professor at the University of Washington

9:15 AM – 9:30 AM: Break — Emory Break Area

9:30 AM – 12:00 PM: Concurrent Sessions (4a, 4b, and 4c)

Session 4a: From Linear to Circular Bioeconomy Systems — Emory Amphitheater
Session Chairs: Dr. Rui Shi and Dr. Brahm Verma

9:30 – 9:35 Welcome and Introduction of the Session
Brahm P Verma and Rui Shi

9:35 – 9:55 The Urgency of Transdisciplinary Efforts and Stakeholder Engagement in Transitioning from a Linear to a Circular Bioeconomy Systems
David Jones, Brahm Verma, James Jones and Lara Moody

9:55 – 10:15 Emergence Agriculture: Case studies
Charlie Messina

10:15 – 10:35 Circular Forest Biomass and Bioproducts Systems: Challenges and Opportunities
Sudhagar Mani

10:35 – 10:55 Break

10:55 – 11:15 Ice cream waste valorization to advance carbon-negative bioeconomy
Fuad Ale Enriquez, Bright Amanful, Hariteja Nandimandalam, Rui Shi and Yi Zhang

11:15 – 11:35 Food in human health and environmental policy training to promote circular bioeconomy systems [via Zoom]
Holly Rosencranz and Warren Lavey

11:35 – 11:55 Role of Biology-Inspired Engineering in Advancing Circular Bioeconomy Systems
Brahm P. Verma and James W. Jones

11:55 – 12:00 Closing Remarks

Session 4b: Synthetic Biology and Metabolic Engineering — Dogwood
Session Chair: Dr. Lukas Buecherl

9:30 – 9:50 Verification Guided Design of Genetic Circuits
Lukas Buecherl, Mohammad Ahmadi, Hao Zheng and Chris Myers

9:50 – 10:10 Development of a Transcriptional Repressor-Based Genetic Inverter for Regulation of Tryptophan Derivatives Production in *Escherichia coli*
Xinyu Gong, Yuxi Teng, Jianli Zhang, Qi Gan, Ming Song, Ameen Alaraj, Peter Kner and Yajun Yan

10:10 – 10:30 Exploration and characterization of nitroreductase from Acinetobacter sp. NRRL B-65365 that reduces nitro compounds
Hayat Ullah and Jixun Zhan

10:30 – 10:50 Population Analysis of Rotating Algal Biofilm Reactors
Eric Matthews, Seth Wilkinson, Douglas Harper, Amanda Moravek and Charles Miller

10:50 – 11:10 Break

11:10 – 11:30 Modulation of the secretome profile of endothelial progenitor cells with bioactive glycosaminoglycan materials to improve wound healing
Vanessa Dartora, Randy Carney, Aijun Wang, Qiu Peng and Alyssa Panitch

11:30 – 11:50 Functional characterization of a flavin-dependent halogenase in chlorflavonin biosynthesis using CRISPR and homologous recombination techniques.
Ammar Mussaji and Jixun Zhan

Session 4c: Panel of Biological Engineering Educators — Basswood
Session Chair: Dr. Ramaraja Pandian Ramasamy

9:30 – 12:00 A panel of educators will present perspectives and engage in audience discussion regarding biological engineering education.

12:00 PM – 1:30 PM: Lunch and Networking — Dining Room

1:30 PM – 2:30 PM: IBE Strategic Planning Meeting* — Emory Amphitheater
*by IBE invitation only