



CONFERENCE AGENDA & SCHEDULE OF PRESENTATIONS

(Current as of April 5, 2016; subject to change)

THURSDAY, APRIL 7, 2016

- 1:00 pm - 6:00 pm** **Registration Desk Open**
Pre-function Area, First Floor
- 2:45 pm** **Greenville Area Tour Attendees: Meet in Hotel Lobby**
(pre-registration required)
- CUBEInC at Greenville Hospital System
 - ICAR
 - Exploration and Dinner on Own - Downtown Greenville
- 5:00 pm – 7:00 pm** **Welcome Reception**
Meritage Room
- 6:00 pm – 7:00 pm** **Student Social**
Champagne Ballroom
- 9:00 pm** **Tour Attendees Return**

FRIDAY MORNING, APRIL 8, 2016

- 7:00 am - 6:00 pm** **Registration Desk Open**
Pre-function Area, First Floor
- 7:00 am – 8:00 am** ***Continental Breakfast Provided***
Chateau Ballroom
- 7:00 am – 8:00 am** **IBE Speed Networking Event** *(see registration desk for signups)*
Technic Room
- 8:00 am – 9:30 am** **Opening Remarks/Keynote Session**
Chateau Ballroom
- 8:00 am** **Opening Remarks**
Dr. Ben Stuart, 2016 President of IBE



8:05 am

Keynote Speaker

Martine LaBerge, Ph.D., F.B.S.E., Executive Director, CUBEInC; Clemson University

Endovascular Devices for Managing Atherosclerosis: Innovation and Translation

9:30 am – 9:45 am

Break

9:45 am – 11:45 am

Four Concurrent Sessions

I. Synthetic Biology/iGEM: Technic Room

Chairs: Dr. John Dueber – University of California, Berkeley and Dr. Meghdad Hajimorad, California State University - Chico

9:45 am

Measurement of Promoter-Based Transcriptional Noise for Application in Gene Network Design

Caroline Golino, John Marken, Elli Cryan, Taylor Jacobs, Michael LeFew, Joe Maniaci, Panya Vij, Andrew Halleran, William Buchser, Margaret Saha, College of William and Mary

10:00 am

Towards a Modular Framework for Riboswitch Design

Nicholas Emery, Allen Liu, Cristina Castillo, University of Michigan

10:15 am

Design and construction of a suite of completely modular E. coli plasmids

Alexandra N. Gautreaux, Ryan M. Summers, University of Alabama

10:30 am

RNAiCare

Adam Christiansen, University of Alberta; Graeme Glaister, Rhys Hakstol, Andy Hudson, Chris Isaac, Suneet Kharey, Michelle Kwan, Taylor Luchanski, Seme Mate, Angela Micovic, Karin Otero, Chris Sehn, Jeff Tingley, Scott Wong, HJ Wieden, University of Lethbridge; Dr. Nora Foroud, Agriculture and Agri-Food Canada; Cesar Rodriguez, Florida State University

10:45 am

BREAK

11:00 am

LactoWare: Reprogramming Lactic Acid Bacteria to Fight Malicious Viruses

Sara Gertsch, Chad Nielsen, Alexander Torgesen, Dr. Charles Miller, Tom Overbeck, Ryan Putman, Michael Paskett, Timothy Kerns, Alexander Cook, Chase Spencer, Utah State University

11:15 am

Building artificial cells by bottom-up synthetic biology

Allen Liu, Jin Woo Lee, Kenneth Ho, Lap Man Lee, Victoria Murray, University of Michigan



11:30 am *Construction of non-canonical translation initiation elements for synthetic biology using phenotypic sorting and high-throughput sequencing*
Hans-Joachim Wieden, University of Lethbridge; Justin Vigar, University of Lethbridge; Eric Holmqvist, University of Würzburg; Jarg Vogel, University of Würzburg

11:45 am *Devising a Green Solution for Blue Denim*
John Eugene Dueber, Tammy M. Hsu, Zachary N. Russ, University of California, Berkeley

II. NC-1194: Nanotechnology and Biosensors I: Zinfandel Room

Chair: Dr. Chenxu Yu, Iowa State University

9:45 am *An ultra-selective single base mismatch DNA biosensor on configurable chip device for detection of human genotype of Cryptosporidium DNA*
Hoda Ilkhani, Han Zhang, Anhong Zhou, Utah State University

10:00 am *Bio-Inspired Patterned networkS (BIPS) for development of wearable biosensors*
E.S. McLamore, Agricultural and Biological Engineering, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA; M. Convertino, HumNat Lab, Division of Environmental Health Sciences & PH Informatics Program, School of Public Health, Institute on the Environment, Institute for Engineering in Medicine, Biomedical Informatics and Computational Biology Program, University of Minnesota, Twin-Cities, MN, USA; J.C. Claussen, Department of Mechanical Engineering, Iowa State University, USA; D.C. Vanegas, Food Engineering Department, Universidad del Valle, Cali, Colombia

10:15 am *Colorimetric and Electrochemical Sensing of Iron (III) Using Nile Red-Functionalized Graphene Film*
Omer Sadak, Ashok Sundramoorthy, Sundaram Gunasekaran, University of Wisconsin-Madison

10:30 am BREAK

10:45 am *DOTS qPCR: a handheld, rapid molecular diagnostic tool for Ebola*
Ariana M. Nicolini, Dustin K. Harshman, Tyler D. Toth; M. Alejandra Mandel, David W. Galbraith, Jeong-Yeol Yoon, University of Arizona

11:00 am *Integration of Engineered Biomolecules and Nanoparticles into Photopolymer Systems to Create Novel Optrodes and Optrode Arrays for Cell Physiology*
Leyla Kahyaoglu, Agricultural and Biological Engineering, Purdue University; Jenna Rickus, Agricultural and Biological Engineering, Biomedical Engineering, Physiological Sensing Facility at the Bindley Bioscience Center and the Birck Nanotechnology Center



11:15 am *Nano-phytotein: phytochemical-protein nanoparticles for bioavailability*
Shin Sik Choi, Md. Abdur Razzak, Kyung Mi Lee, Ha Eun Kim, Department of Energy Science and Technology, Department of Food and Nutrition, Myongji University, South Korea

III. Sensors & Biosensors I: Champagne 3

(This session will run until 12:15 pm)

Chairs: Dr. Anhong Zhou, Utah State University and Dr. Jonathan Claussen, Iowa State University

9:45 am *Micromachined Optical Fiber Biosensors (featured presentation)*
Hai Xiao, Clemson University

10:15 am *Characterizing Paper-based Genetics Networks as a Low-tech Pathogen Detector*
Hannah L. Itell, Laurie J. Heyer, A. Malcolm Campbell, Davidson College

10:30 am *A paper based graphene-nanocauliflower hybrid composite for point of care biosensing*
S.L. Burrs, Prairie View A & M University; M. Bhargava, University of Florida; J. Kiernan-Lewis, University of Florida; N. Schwalb, University of Florida; C. Gomes, Texas A&M University; J. Claussen, Iowa State University; D.C. Vanegas, Universidad del Valle, Cali, Colombia; E.S. McLamore, University of Florida

10:45 am *Inkjet printed graphene electrodes for electrochemical biosensing*
Suprem Das, John A. Hondred, Allison A. Cargill, Qing He, Nathaniel Garland, Shaowei Ding, Jonathan C. Claussen, Iowa State University

11:00 am BREAK

11:15 am *Aptasensor based approach for real-time monitoring of Listeria innocua and Listeria monocytogenes*
Katherine Hills, Cassie Giacobassi, Carmen Gomes, Texas A&M University; Yue Rong, University of Florida; Diana Vanegas, Universidad del Valle; Eric McLamore, University of Florida

11:30 am *Real-time detection of Escherichia coli using biosensors functionalized with lectin and carbon-hydrogel nanostructures*
Cassie Giacobassi, Katherine Hills, Carmen Gomes, Texas A&M University; Yue Rong, Eric McLamore, University of Florida, Diana Vanegas, Universidad del Valle

11:45 am *Design and build up of Gold nanoparticles based-immunosensors for biotoxins detection*
Maroua BEN HADDADA, Souhir BOUJDAY, Michele SALMAIN, IPCM, UPMC Univ Paris 6, UMR 8232 ,75005 Paris, France

12:00 pm *Rapid and non-destructive detection of tissue bacterial infection*
Robin E. Sweeney, Jeong-Yeol Yoon, University of Arizona



IV. Algae-Based Systems I: Champagne 1 & 2

Chair: Dr. Ronald Sims, Utah State University

- 9:45 am *The evaluation of media ingredients and temperature on the growth of the winter algae Chloromonas Rosae*
Czarena Crofcheck, Elizabeth Miller, Aubrey Shea, Caoli Cheng, University of Kentucky
- 10:10 am *Rheological characterization of a novel thermoresponsive microalgal cultivation system*
Bendy Estime, Dacheng Ren, Radhakrishna Sureshkumar, Department of Biomedical and Chemical Engineering, Syracuse University
- 10:35 am *An Algal Revolving Biofilm (RAB) system for microalgal cultivation with enhanced biomass production and reduced footprint*
Zhiyou Wen, Martin Gross, Iowa State University
- 11:00 am **FEATURED PRESENTATION**
Sustainable Production of Marine Bioenergy: A Korean Experience in Large-Scale Microalgal Cultures in the Ocean
C.G. Lee, Inha University
- 11:35 am *Optimization of Chlorella protothecoides Biomass Production under Mixotrophic Condition by Response Surface Methodology*
Terry Walker, Ning Zhang, Clemson University

FRIDAY AFTERNOON, APRIL 8, 2016

12:00 pm – 1:30 pm LUNCH (on your own)

**1:30 pm – 2:45 pm General Session
Chateau Ballroom**

Dr. Michael J. Yost: Director of General Surgery Research, Associate Professor,
Department of Surgery, Medical University of South Carolina
From Bedside to Bench and Back Again

2:45 pm – 3:00 pm BREAK



3:00 pm – 4:15 pm **General Session: Bio-Business Nexus: *Entrepreneurship in Science***
Chateau Ballroom

Speakers

Narendra Vyavahare: *From Academic Research to Market- It's a Long Road, But It's Worth It*

Mike Gara, Director of Innovation, CUBInC: *Funding the valley of death: How to fund a startup, from lab to market*

Steve Johnson, CEO - CreatiVasc Medical Inc., COO - Brookhaven Medical Inc.: *Prepare for the unexpected: It will happen*

Question-and-Answer Session

4:15 pm – 4:30 pm **BREAK**

4:30 pm – 6:30 pm **Four Concurrent Sessions**

I. Biochemical Conversions/Metabolic Pathway Engineering: Technic Room

Chairs: Dr. Yanna Liang, Southern Illinois University and Dr. Jixun Zhan, Utah State University

(This session will run until 6:40 pm)

4:30 pm *Isolation of Levoglucosan-Utilizing Bacteria and Crystallographic Characterization of Levoglucosan Dehydrogenase*
Ajay Arya, Mark A. Eiteman, University of Georgia

4:45 pm *Anaerobic fermentation for producing biofuels and bioproducts from corn stover*
Chunjie Xia, Yanna Liang, Southern Illinois University Carbondale; Aditi Kumar, Carbondale Community High School; Xiaowen Chen, Melvin Tucker, National Renewable Energy Lab.

5:00 pm *Optimizing microbial coal conversion to methane for ex situ applications*
Ji Zhang, Dr. Yanna Liang, Dr. Satya Harpalani, Southern Illinois University Carbondale

5:15 pm *An integrated platform for producing biofuels from sweet sorghum bagasse*
Zheting Bi, Southern Illinois University Carbondale

5:30 pm **FEATURED PRESENTATION**
Production of High-Value Methylxanthines by Metabolically Engineered E. coli
Ryan M. Summers, University of Alabama; Khalid H.R. Algharrawi, Mani Subramanian, University of Iowa

5:55 pm *Investigation of the biosynthetic pathway of elsinochromes and hypocrellins*
Lei Sun, Utah State University



- 6:10 pm *Production of Citramalic Acid using Metabolically Engineered Escherichia coli*
Xianghao Wu, Mark A. Eiteman, University of Georgia
- 6:25 pm *Metabolic engineering of Serratia marcescens for direct bioconversion of chitin to N-acetylneuraminic acid*
Qiang Yan, Stephen S Fong, Department of Chemical and Life Science Engineering, Virginia Commonwealth University, Richmond, Virginia

II. NC-1194: Nanotechnology and Biosensors II: Zinfandel Room

Chair: Dr. Chenxu Yu, Iowa State University

- 4:15 pm *Life in nanoliter: Monitoring single colony lifecycle by means of electrochemical impedance spectroscopy*
P. Takhistov, C. Chang, S. Patel, Rutgers University
- 4:30 pm *Portable biosensors for in-field detection of pathogenic bacteria in foods and mycotoxins in grains*
Yanbin Li, Zhuo Zhao, Zach Callaway, University of Arkansas; Lizhou Xu, Zhan Lu, Jianping Wang, Zunzhong Ye, Zhejiang University
- 4:45 pm *Progress in Portable DNA Purification from Bulk Suspensions*
Lena Diaz, Daniel M. Jenkins, Ryo Kubota, University of Hawaii
- 5:00 pm *Raman spectroscopy in the detection of ionizing radiation damage in whole blood*
Shaowei Ding, Chenxu Yu, Iowa State University; Vinita Chauhan, Barbara C. Kutzner, Ruth C. Wilkins, Consumer and Clinical Radiation Protection Bureau, Health Canada
- 5:15 pm *Smartphone-based, sensitive uPAD detection of urinary tract infection and gonorrhea*
Soohee Cho, Tu San Park, Tigran G. Nahapetian, Jeong-Yeol Yoon, University of Arizona
- 5:30 pm *Synthesis and Verification of Multifunctional Antimicrobial Glyco-Amino Acid Compounds Against Bacterial Pathogen*
Evangelyn C. Alocilja, Leann Lerie Matta, Kasey Pryg, John Shinnors, Nathan Murray, Michigan State University
- 5:45 pm *Multifunctional Biomimetic Receptors for Cell Binding and Concentration*
Evangelyn Alocilja, Leann Matta, Mercy Quilantang, Kasey Pryg, Najwa Taylor, Octavio Almeida, Breno Pinheiro, Michigan State University



III. Sensors & Biosensors II: Champagne 3

(This session will run until 6:45 pm)

Chairs: Dr. Anhong Zhou, Utah State University and Dr. Jonathan Claussen, Iowa State University

- 4:30 pm *A Microfluidic ExoSearch Chip for Ovarian Cancer Diagnosis*
Mei He, Department of Biological and Agricultural Engineering, Terry C. Johnson Cancer Research Center, Kansas State University
- 4:45 pm *Concentrating micro particles in an LOC device with ACEO*
Yu Zhao, Guigen Zhang, Clemson University
- 5:00 pm *In situ monitoring of induced nephrotoxicity in organ-on-a-chip with smartphone-based fluorescence microscope*
Soohee Cho, Argel Islas-Robles, Ariana M. Nicolini, Terrence J. Monks, Jeong-Yeol Yoon, University of Arizona
- 5:15 pm *Use of Raman SERS to detect fatty acid receptor activity in a microfluidic device*
Han Zhang, Yan Liu, Timothy A. Gilbertson, Anhong Zhou, Utah State University
- 5:30 pm BREAK
- 5:45 pm *Fast and Low-Cost Chlorophyll Fluorometer*
Mark A. Haidekker, Marc van Iersel, University of Georgia; Erico Mattos, Phytosynthetix, Inc.
- 6:00 pm *Enhanced Dynamic-Range X-ray Imaging*
Mark A. Haidekker, University of Georgia
- 6:15 pm *Building and Improving A Nitrate Biosensor Promoter*
Shuk Hang (Grace) Li, A. Malcolm Campbell, Davidson College
- 6:30 pm *Molecular Detection and Identification in a Nanopore Flux Capacitor*
Samuel Bearden, Guigen Zhang, Clemson University; Ethan McClure, University of Rhode Island

IV. Algae-Based Systems II: Champagne 1 & 2

Chair: Dr. Ronald Sims, Utah State University

- 4:30 pm *Qualitative Analysis of Microbial Community during Anaerobic Digestion Of Algal Biomass*
Anna Doloman, Ronald Sims, Charles Miller, Utah State University; Yousef Soboh, Palestine Technical College at Arroub



- 4:50 pm *Integrated Green Approach for Nutrients Recovery and Biofuels Production from Microalgae*
Ali Teymouri, Graduate Student, Sandeep Kumar, Assistant Professor, Ben Stuart, Professor & Chair, Civil & Environmental Engineering, Old Dominion University
- 5:10 pm *Hydrothermal liquefaction of algae from a biofilm cultivation system*
Jay Barlow, Jason C. Quinn, Ronald C. Sims, Utah State University
- 5:30 pm *Algal Culture for Agriculture and Aquaculture Waste Treatment*
Gregory Schwartz, Assistant Professor, Bioresource and Agricultural Engineering, Cal Poly, D. E. Brune, Professor of Bioprocess and Bioenergy Engineering, Division of Food Systems and Bioengineering, University of Missouri
- 5:50 pm *Performance of Algal-Bacterial Flocs in Wastewater Treatment and Lipid Production*
Wen Zhang, Johnnie Chamberlin, University of Arkansas
- 6:15 pm *Anaerobic Digestion for Sustainable Algal Biofuels: Opportunities and Approaches to Technological Challenges*
Pavlo Bohutskyi, Pacific Northwest National Laboratory, Richland, WA; Edward J. Bouwer, Department of Geography & Environmental Engineering, Johns Hopkins University; Michael J. Betenbaugh, Department of Chemical & Biomolecular Engineering, Johns Hopkins University
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- 6:30 pm **IBE Business Meeting/Executive Council Meeting (All Annual Meeting Attendees Invited)**
Chateau I, II, III, IV

DINNER (on your own)

- 7:30 pm **Student Dinner** – Location TBD (more information at Registration Desk)

SATURDAY MORNING, APRIL 9, 2016

- 7:00 am – 6:00 pm **Registration Desk Open**
Pre-function Area, First Floor
- 7:00 am – 8:00 am **Continental Breakfast**
Chateau Ballroom
- 7:00 am – 8:00 am **Committee/Community Meetings**
Breakout room areas; signs posted



8:00 am – 9:20 am Keynote Session

Chateau Ballroom

DNA-based Materials and Their Applications

Dr. Dan Luo, Cornell University

9:20 am – 9:50 am General Session

Chateau Ballroom

Bioelectronic Nose Using Human Olfactory Receptors

KSBB President Tai Hyun Park, Seoul National University

10:00 am – 12:30 pm Four Concurrent Sessions

I. Biomaterials and Nanomaterials: Technic Room

Chairs: Dr. Elizabeth Vargis, Utah State University and Dr. Heather Hunt, University of Missouri

(This session will run until 12:45 pm)

10:00 am *Biomedical foams based on polysaccharide polyelectrolyte complexes*
Jingxuan Yang, Greg Risser and Jeffrey M. Catchmark, Pennsylvania State University

10:30 am *Bioactive Polyethylene Glycol Microgels as Pharmaceutical Carriers*
Jinku Kim (presenting author), Jinhyung Kim, Hongik University

10:45 am *Assessing the Biocompatibility of Different Sizes and Concentrations of Au Nanoparticles Conjugated on Decellularized Tissue Scaffolds*
Hilary Schmidt, Dr. Sheila Grant, Dave Grant, Dominic Romero, Josh Greaser, and Jacob Coffman, University of Missouri

11:00 am *Carbon nanotubes and cellular perturbation: Augmentation of differentiation dynamics in neural stem cells*
Massooma Pirbhai, Susquehanna University; Slava V. Rotkin, Sabrina S. Jedlicka, Lehigh University

11:15 am BREAK

11:30 am *Ion Channel Activities in the Presence of Ionic Liquids Using Model Cell Membrane*
Hyunil Ryu, Inha University; Hwankyu Lee, Dankook University; Seigo Iwata, Soka University; Sangbaek Choi, Inha University; Moon Ki Kim, Sungkyunkwan University; Young-Rok Kim, Kyung Hee University; Shinsaku Maruta, Soka University; Sun Min Kim, Inha University; Tae-Joon Jeon, Inha University



- 11:45 am *Fabrication and Characterization of an Electrospun PCL and Soy Lecithin Composite Material*
Evan Buettman, Samuel Pautler, Dr. Sheila Grant, David Grant, Jonathan Gootee, University of Missouri
- 12:00 pm *Micro and Nano Modification of Titanium Based Dental Implants for Better Osseointegration*
Manish Chaturvedi, Pankaj Chauhan, Vinay Patil, Naresh Bhatnagar, Indian Institute of Technology Delhi
- 12:15 pm *Elucidating impact of nanosized TiO₂ and ZnO on microbial ecology*
Nathalia Londono, Ariel Donovan, Honglan Shi, Yanna Liang, Southern Illinois University, Carbondale
- 12:30 pm *Development and Evaluation of an In Vitro Aneurysm Model Using Calcium Chloride*
Brooks Lane, University of South Carolina

II. Biological Engineering Education: Zinfandel Room

Chairs: Dr. Czarena Crofcheck, University of Kentucky and Dr. David Jones, University of Nebraska, Lincoln

- 10:00 am *Convergence and Biological Engineering*
Brahm Verma, University of Georgia
- 10:15 am *Human Behavior in Management and Technology: A Graduate Course in the PSU BioRenewable Systems Program*
Jeffrey M. Catchmark, The Pennsylvania State University
- 10:30 am *Interdisciplinary Biomimicry Projects in Sophomore Design for Innovation*
Ramana M. Pidaparti, College of Engineering, University of Georgia; Jacquelyn K.S. Nagel, James Madison University
- 10:45 am BREAK
- 11:00 am *Research Quality Synthetic Biology Plasmids for Educational Uses: actClone & repClone*
Monica Prudencio, Camille Johnson, Shuk Hang (Grace) Li, Julia Preziosi, Helen Webster, A. Malcolm Campbell, Davidson College; Todd T. Eckdahl, Missouri Western State University
- 11:15 am *Using Protein Binding to Curved Phase Separated Lipid Bilayers to Enhance Biomolecular Thermodynamics Courses*
Mark J. Uline, University of South Carolina



11:30 am *Spam Conferences and Predatory Publishers -- A new Scourge at the Dawn of Traditional Scientific Publishing*
Mark A. Haidekker, University of Georgia

11:45 am *General Discussion: Future of Biological Engineering Education*
All Participants

III. Tissue and Cellular Engineering: Champagne I & 2

Chairs: Dr. Tarek Shazly and Dr. John Eberth, University of South Carolina

10:00 am *Complementary therapeutic strategy for craniofacial bone regeneration*
Min Lee, Jiabing Fan, Tara Aghaloo, University of California, Los Angeles

10:15 am *Design, Construction, and Evaluation of a Perfusion Bioreactor Based on Hollow Fiber Technology for Scalable Production of Human Dental Pulp Stem Cell*
Omar Trujillo, Sandra J. Perdomo, Juan C. Munavar, Joseph Pardo, Juan S. Pinzan, Universidad El Bosque, Alvaro A. Rodriguez, and Gloria I. Lafaurie, Universidad el Bosque.

10:30 am *Development of vibrational culture model mimicking vocal fold tissues*
Dongjoo Kim, Jae-Yol Lim, and Soonjo Kwon
Department of Biological Engineering, Inha University, Incheon, Korea
Department of Otorhinolaryngology, Inha University College of Medicine, Incheon, Korea

10:45 am *Isolation Affects VEGF Expression in Retinal Pigment Epithelial Cells*
Farhad Farjood, Elizabeth Vargis, Utah State University

11:00 am *Genomic instability in human pluripotent stem cell cultures-Implications for Stem Cell Bioprocessing*
Raj R. Rao, Department of Chemical and Life Science Engineering, School of Engineering
Department of Human and Molecular Genetics, School of Medicine
Virginia Commonwealth University

11:15 am *Optimization of Biomaterials for Motor Neuron Growth*
Sadjo Sidikou, University of Maryland Baltimore County (UMBC); Vani Ravichandran, UMBC;
Elise Adamson, UMBC; Laura Walker, UMBC; Jennie Leach, UMBC
Presenting Authors: Sadjo Sidikou, Vani Ravichandran, and Elise Adamson

11:30 am *Soy Isoflavones Modulate Amyloid Oligomers Associated with Alzheimer's Disease*
S. Zeb Vance, Colman Moore, Kayla Pate, Melissa Moss, University of South Carolina



- 11:45 am *Analysis of Vertebral Artery Mechanics in a Porcine Model: Comparing the 2nd and 3rd Segments*
Boran Zhou, David Prim, Michael Collins, Michael Kempner, Adam Hartstone-Rose, John F. Eberth, Tarek Shazly, University of South Carolina; Mohammed Alshareef, Medical University of South Carolina
- 12:00 pm *Design and Fabrication of a Three-Dimensional In Vitro Model of Vascular Stenosis*
Rebecca S Jones, Pin Hsuan Chang, Tzlil Perahia, Katrina A Harmon, Lorain Junor, Daping Fan, John F Eberth, Richard L Goodwin, University of South Carolina; Michael J Yost, Medical University of South Carolina
- 12:15 pm *Resveratrol releasing polymer implants for engineering thermogenic adipose tissue*
Michael Hendley, University of South Carolina; R. Michael Gower, University of South Carolina

IV. Environmental Engineering: Champagne 3

Chair: Dr. Ying Ouyang, US Forest Service

- 10:00 am *A model to estimate hydrological processes and water budget from on-farm storage ponds*
Ying Ouyang, USDA Forest Service; Joel O. Paz, Department of Agricultural and Biological Engineering, Mississippi State University; Gary Feng, John Read, Ardeshir Adeli, and Johnie N. Jenkins, USDA-ARS, Crop Science Research Laboratory
- 10:15 am *Application of Chemical Looping Concept as a Novel Technology for Methane Steam Reforming Thermally Coupled with Fuel Combustion*
M.R. Rahimpour, Majid Saidi, Chemical Engineering Department, School of Chemical and Petroleum Engineering, Shiraz University, Iran
- 10:30 am *Efficient demulsification of water-in-oil emulsion by a novel nano-titania modified chemical demulsifier*
Mohammad Reza Rahimpour, Abdolhossein Jahanmiri, Tahere Tohidian, Department of Chemical Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Iran
- 10:45 am BREAK
- 11:00 am *Evaluation of Crop Rotation on Water Quality and Quantity using SWAT*
Xiaojing Ni, Prem B. Parajuli, Mississippi State University
- 11:15 am *Hydrogen production via chemical looping steam methane reforming process: Effect of cerium and calcium promoters on the performance of Fe₂O₃/Al₂O₃ oxy*
M.R. Rahimpour, A.Hafizi, Chemical Engineering Department, School of Chemical and Petroleum Engineering, Shiraz University, Iran



11:30 am *Upgrading of lignin-derived bio-oils by catalytic hydrodeoxygenation*
Mohammad Reza Rahimpour, Majid Saidi, Department of Chemical Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Iran

SATURDAY AFTERNOON, APRIL 9, 2016

- 12:30 pm – 1:45 pm LUNCH (on your own)**
Poster Set-Up: The Gardens, First Floor (*All posters must be set up by 1:45 pm. Assigned poster numbers can be found on next pages.*)
- 1:45 pm – 2:30 pm IBE Speed Networking Event**
Chateau Ballroom – Pre-function Area
- 2:30 pm – 3:30 pm General Session**
Chateau Ballroom
Biological Inspired Engineering That Makes the World a Better Place
Dr. James Mihelcic: Professor and State of Florida 21st Century World Class Scholar, Department of Civil and Environmental Engineering at University of South Florida
- 3:40 pm – 4:30 pm General Session: Bioethics Essay Finalists**
Chateau Ballroom
Chair: Dr. Lisa Wilken, Kansas State University
- 3:40 pm *Genetic Engineering: A Misunderstood Science*
Jonathan Gootee, University of Missouri - Columbia
- 3:50 pm *The Ethical Implications of CRISPR in Biological Engineering*
Mitchell Hanson, University of Missouri - Columbia
- 4:00 pm *An Ethical Case for Continued Embryological Gene-Editing Research and Regulation on its Clinical Applications*
Caleb Hazelwood, Missouri Western State University
- 4:10 pm *The Permissibility of 3D Bioprinting Organs*
Alexis Planells, University of Missouri - Columbia
- 4:20 pm *Ethical Considerations of Genetic Enhancement*
Savannah Pounds, University of Missouri - Columbia



Advancing Biology-Inspired Engineering

2016 Annual Conference

April 7-9, 2016 | Greenville, South Carolina



- 4:45 pm – 6:15 pm** **Poster Session & Reception** (*see next page for poster presentation listing*)
Chairs: Dr. Mark Uline and Dr. Melissa Moss, University of South Carolina
The Gardens, First Floor
- 6:30 pm – 8:30 pm** **Awards Banquet & Dinner**
Champagne Ballroom
- 8:30 pm** **Adjournment**



POSTER PRESENTATIONS

Chairs: Dr. Mark Uline, Dr. Melissa Moss, University of South Carolina

UNDERGRADUATE STUDENT POSTERS

- 1. Characterization of Residual Antigen in a Porcine Osteochondral Xenograft**
Moriah Lorge, Animal and Dairy Sciences Department, Mississippi State University, Brad Kindred, Steve Elder, Agricultural & Biological Engineering Department, Mississippi State University.
- 2. Development of CelLEX for Discovery of Translational Riboswitches**
Alex Duryee, Sean Holloran, Javier Paz-Blanco, Jon Trocosso, Jeff Poet, and Todd Eckdahl, Missouri Western State University; Laurie J. Heyer, A. Malcolm Campbell, Davidson College.
- 3. Development of foundational genome engineering technologies in undomesticated organisms**
Colin Hemez, Lionel Jin, Danny Keller, Dan Shapiro, Jessica Tantivit, Erin Wang, Holly Zhou, Ariel Hernandez-Leyva, Natalie Ma, Jaymin Patel, Corey Erik Perez, Yale University; Stephen Dellaporta, Farren Isaacs, Yale University
- 4. Effect of key polyphenol functional groups on oligomer formation in Alzheimer's disease**
Ryan Geiser, Shelby Chastain, McCall Rogers, Kayla Pate, Melissa Moss, University of South Carolina
- 5. Effects of Temperature and Organic Carbon Concentration on Algae-Based Biofilm Biomass Productivity and Treatment of Dairy Wastewater**
Zachary T. Fica, Ronald Sims, Utah State University
- 6. Examining the natural diversity of quorum sensing for orthogonal pathways**
Jiaqi Wu, Renae Daer, Ryan Muller, Karmella Haynes, Arizona State University
- 7. Expanding Programmed Evolution Applications Through Discovery of New Riboswitches**
Nicholas Elder, Camille Johnson, Shuk Hang (Grace) Li, Julia Preziosi, Monica Prudencio, Erica Shook, Helen Webster, Laurie J. Heyer, A. Malcolm Campbell, Davidson College; Jeff Poet, Todd Eckdahl, Missouri Western State University.
- 8. Improving efficacy of chemotherapy for colon cancer using CCL8**
Dr. Michael Gower, University of South Carolina
- 9. Immunomodulatory Polymer Implants for the Treatment of Colon Cancer**
Dr. Michael Gower, University of South Carolina
- 10. Optimization of Lipoprotein Extraction Procedure for Wastewater Cultivated Algae**
Tyler Marlar, Ronald Sims, Utah State University; Ashik Sathish, Iowa State University
- 11. Polymer Grafted Nanoparticles as Drug Delivery Vehicles**
R. Brock Fletcher, University of South Carolina; Biomedical Engineering Program; Julia G. Pribyl, University of South Carolina, Dept. of Chemistry and Biochemistry; Lei Wang, University of South Carolina, Dept. of Chemistry and Biochemistry; Kristin P. Miller, University of South Carolina, Arnold School of Public Health; Brian C. Benicewicz, University of South Carolina, Dept. of Chemistry and Biochemistry; Alan W. Decho, University of South Carolina, Arnold School of Public Health
- 12. Reduction of Greenhouse Gas Emissions from Septic Tanks via Compost Biofiltration**
Alan Hodges, Celeste Hancock, Judith Sims, Ronald Sims, Utah State University



- 13. Effects of micropatterning breast cancer stem cell maintenance and tumorsphere formation within PEGDA hydrogel**
Samuel Keeney, Leily Daneshian, Esmail Jabbari, University of South Carolina
- 14. Plant Derived Polyphenols Modulate Amyloid- β Aggregation in Alzheimer's Disease**
Colman Moore, S. Zeb Vance, Kayla Pate, Melissa Moss, University of South Carolina
- 15. Polymer scaffolds for adipose tissue engineering**
Skyler Marker, Michael Hendley, Michael Gower, University of South Carolina

GRADUATE STUDENT POSTERS

- 16. Aging Effects of Human Lung Bronchioles on Airflow Dynamics and Lung Function**
JongWon Kim, College of Engineering, University of Georgia; Rebecca L. Heise, Department of Biomedical Engineering, Virginia Commonwealth University; Angela M. Reynolds, Department of Mathematics & Applied Mathematics, Virginia Commonwealth University
- 17. BioMethane production from wastes augmented with algae**
Jason Peterson, Dr. Ronald Sims, Department of Biological Engineering, Utah State University
- 18. Biophysical properties of human primary lung cells exposed to diesel exhaust particles and resveratrol protective effect**
Wei Zhang, Qifei Li, Anhong Zhou, Utah State University
- 19. Creating *Pichia (Scheffersomyces) stipitis* as Potential organism for commercial bioethanol production**
Shraddha Maitra, Dr. Atul Narang, Dr. Stefan Oehler, IIT Delhi
- 20. Dissolved Ozone Output Modeling for the HyDOZ System**
Sakura B. Phansiri, Dr. Scott Osborn, University of Arkansas; Jessica Hart, BlueInGreen LLC
- 21. Effect of Polymer Functionalized Carbon Dots on Norovirus Virus-like Particles (VLPs)**
Marsha Moyer, Xiuli Dong, Liju Yang, North Carolina Central University; Gregory E. LeCroy, Fan Yang, Ya-Ping Sun, Clemson University
- 22. Effect of Stretch-Induced Cellular Inflammation in Lung Tissue**
Israr Bin M. Ibrahim, University of Georgia
- 23. Evaluating a Measure-Calculate Method for Determining Sediment Oxygen Demand in Lakes**
G. Scott Osborn, Adrian Beirise, University of Arkansas
- 24. Flexibility of the Lumbar Spine for Activities of Daily Living**
Emily Bliven, Dr. Deborah Munro, University of Portland; Sabina Blizzard, Dr. Jung Yoo, Oregon Health & Sciences University
- 25. Influence of Matrix on 3D-Cultured Prostate Cancer Cells: Drug Response and Expression of Drug-Associated Proteins**
Rasheena Edmondson, Audrey F. Adcock, Liju Yang, Biomanufacturing Research Institute and Technology Enterprises (BRITE), Department of Pharmaceutical Sciences, North Carolina Central University



26. Investigation of Polymer-functionalized Carbon Nanotube-Coated Filters for Removal of Bacterial Pathogens

Shengyuan Wang, Xiuli Dong, Liju Yang, North Carolina Central University; Gregory E. LeCroy, Fan Yang, Ya-Ping Sun, Clemson University

27. LactoWare: Programming Lactic Acid Bacteria to Fight Malicious Viruses

Sara Gertsch, Chad Nielsen, Alexander Torgesen, Dr. Charles Miller, Tom Overbeck, Ryan Putman, Michael Paskett, Timothy Kerns, Alexander Cook, Chase Spencer, Utah State University

28. Microbial Dynamics During Anaerobic Digestion Of Algal Biomass And Sodium Acetate In UASB Reactor

Anna Doloman, Ronald C. Sims, Charles D. Miller, Utah State University; Yousef Soboh, Palestine Technical Collages - Arroub

29. Production of novel polyketides in Escherichia coli by supplementing exogenous nutrients

Lei Sun, Jia Zeng, Department of Biological Engineering, Utah State University

30. Sustainable Nutrient Sources for Algal Biofuel Production

Caleb Talbot, Dr. Ben Stuart, Dr. Sandeep Kumar, Old Dominion University

31. Tissue Analysis of Normal and Emphysematous alveolar sacs models

Parya Aghasafari, Ramana Pidaparti, University of Georgia

32. Effect of Alkaline Pretreatment on Anaerobic Co-Digestion of Swine Wastewater and Corn Stover

Zhimin Liu, North Carolina State University; Jay J. Cheng, North Carolina State University

HIGH SCHOOL STUDENT POSTERS

33. Synthesis and Application of Nanoscale Graphene Oxide-Doped Hydrogels as Scaffolds for Tissue Engineering, Cancer Therapy, and Drug Delivery

Arvind P. Sridhar, Kevin Sadhu, Clement Marmorat, Marcia Simon, Miriam H. Rafailovich, Stony Brook University

34. Utilizing Non-invasive Technology to Measure Untethered Cardiac and Respiratory Patterns of Reptiles in Non-laboratory Environments

Samson Karben, YULA Boys High School

GENERAL POSTER SESSION PARTICIPANTS

35. Application of Electric cell-Substrate Impedance Sensing (ECIS) toward Personalized Medicine

Audrey F. Adcock, North Carolina Central University; Chiagozie O. Agbai, North Carolina Central University; Liju Yang, North Carolina Central University

36. Evaluation of a label-free interferometric biosensor for rapid detection of norovirus using virus like particles

Xiuli Dong, Biomanufacturing Research Institute and Technology Enterprise (BRITE) and Department of Pharmaceutical Sciences, North Carolina Central University, and Liju Yang, Biomanufacturing Research Institute and Technology Enterprise (BRITE) and Department of Pharmaceutical Sciences, North Carolina Central University



37. Histomorphometric Analysis of a Novel Bone Wax Substitute Compared to Bone Wax in the 6 Week Porcine Bone Defect Model

Tristan Tham, MD, New York Head and Neck Institute; Peter Costantino, MD, New York Head & Neck Institute, Chairman, Department of Otolaryngology, Lenox Hill Hospital; Keith Roberts, Hemostasis LLC; John Burban, PhD, Hemostasis LLC; John Shanahan, PhD, Hemostasis LLC

38. Mechanical and electrochemical assessment of Alumina-TiC composite in an aqueous environment

Presenting Author: Hetal Maharaja, PhD Candidate, Department of Bioengineering, Clemson University; Corresponding Author: Dr Guigen Zhang, Professor, Department of Bioengineering, Clemson University.