



INSTITUTE OF BIOLOGICAL ENGINEERING

16th ANNUAL CONFERENCE

PROGRAM



WELCOME FROM IBE PRESIDENT AND PROGRAM CHAIRS:

Welcome to the 2011 Annual Conference of the Institute of Biological Engineering. This year's meeting in Atlanta, Georgia will be the sixteenth annual conference of our dynamic and vibrant community of biological engineers. We come together to share our exciting advances in research, innovations in education, success stories in economic development, to learn from our colleagues and reconnect with friends. In doing so, we come together as an institution to shape the profession of biological engineering.

For our keynote presentations, we are privileged to host two world-renowned researchers. Dr. Steve Stice of the University of Georgia will address the plenary session on Friday, March 4th with his recent advances in stem cell therapies, while Dr. Larry McIntire will address the plenary session on Saturday, March 5th with his work on describing vascular modulation via mechanical forces.

We also extend a warm welcome to the leadership of the Korean Society of Biotechnology and Bioengineering (KSBB) and affirm a continuation of scholarly exchanges between IBE and KSBB. Dr. Eun-ki Kim, President of the KSBB will present an introduction to KSBB on Friday, March 4th.

Another highlight of this year's program is the special symposium on Biosensors, which provides a rigorous series of presentations on biosensor technologies including bio-nanotechnology and system and device integration. This session is sponsored by the National Science Foundation, and will feature talks by Drs. Stefan Zauscher of Duke University and Alex Simonian, Program Director of the NSF Biosensing program.

IBE greatly values and celebrates the efforts and successes of our student members. We will recognize regional meeting winners, finalists in the 2011 Bioethics Essay Competition, winners in the undergraduate and graduate Student Poster Competitions, student travel awardees, iGEM participants and student presenters.

We express our sincere gratitude to all the presenters and speakers for bringing their research and sharing their excitement about biological engineering at this meeting. We encourage and invite you to submit your original research presented here for publication in the *Journal of Biological Engineering*. A special "thank you" to session chairs, judges, program committee, council members and the headquarters staff (especially Brian Doty and Sarah Clements) for their effort and initiative to make this meeting happen.

We look forward to celebrating with you from the reception on Thursday through the Awards Banquet on Saturday. Thank you for making IBE a success!

William Batchelor, President

Kaustubh Bhalerao, Co-chair, Program Committee

Liju Yang, Co-chair, Program Committee

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GENERAL INFORMATION

Program Proceedings & Presentations

Included in the registration packet is a CD of the Program Proceedings. The proceedings are as of Thursday, February 21, 2011. The information provided in the printed program is as of Friday, February 25, 2011. All times and event information are subject to change.

Please note the **Poster presentations** will be available for viewing beginning at **noon on Friday, March 4, 2011**. Feel free to stop by the *Ellington Salon F* room to see the posters prior to the session. Presenters will be available to answer questions during the session on **Saturday, March 5, 2011 beginning at 4:00pm**.

A final version of the proceedings as well as the program will be available at www.ibe.org after the conclusion of the conference.

Conference Evaluations

Conference evaluations will be distributed via email on Saturday, March 5, 2011. Please take a few minutes to complete the evaluation and help us continue to develop programs that meet your needs. Thanks in advance for your feedback!!

2012 Annual Conference

Mark your calendars now for the 2012 Annual Conference! The conference is scheduled for Thursday, March 1, 2012 – Saturday, March 3, 2012 in Indianapolis, IN at the Westin Indianapolis. More details will be available at www.ibe.org!

Call for Session Chairs! Do you have a topic recommendation or would you like to chair a session at the 2012 conference. Fill out the sign-up and recommendation sheet located in your folder and return to the registration desk.

IBE Membership and Volunteer Opportunities

Are you an IBE member? Have you renewed your membership? Stop by the registration desk to join today or visit www.ibe.org!

Award Nominations

Nominate someone you admire for the following **2012 Awards** –

- **IBE Leadership Award**
- **Student Leadership Award**
- **Fellows**

IBE recognizes outstanding leaders who have contributed to the field of biological engineering. We need your help! Please take a few minutes to nominate the person you think should receive the 2012 awards.

Additional information about all three awards is available with your registration packets.



SESSION SCHEDULE-AT-A-GLANCE (as of February 25, 2011)

THURSDAY, MARCH 3, 2011				
CONCURRENT SESSIONS 2:00 PM – 4:00 PM	<i>Mercer Salon G</i> I: Biofuels & Bioenergy I	<i>Piedmont</i> II: Water Quality / Biological Engineering Education	<i>Mercer Salon H</i> III: Biological Engineering Design	<i>Mercer Salon I</i> IV: Biosensor Symposium – Session I: Bioinstrumentation & Devices
2:45 PM – 3:15 PM	BREAK – Mercer Prefunction			
4:30 PM – 5:30 PM	WELCOME RECEPTION – Mercer Prefunction			
5:45 PM	COUNCIL MEETING – Ravinia			
FRIDAY, MARCH 4, 2011				
7:00 AM – 7:50 AM	CONTINENTAL BREAKFAST – Mercer Prefunction			
8:00 AM – 9:00 AM	KEYNOTE TALK: Dr Steven L Stice, University of Georgia – Mercer Salons H & I			
CONCURRENT SESSIONS 9:10 AM – 11:55 AM	<i>Mercer Salon G</i> I: Biofuels & Bioenergy II	<i>Piedmont</i> II: Bioprocessing & Natural Products	<i>Mercer Salon H</i> III: Bioimaging & Diagnostics / Biomolecular Computing	<i>Mercer Salon I</i> IV: Biosensor Symposium – Session II: Biosensors 1
10:30 AM – 11:00 AM	BREAK – Mercer Prefunction			
12:00 PM* – 1:00 PM	LUNCH – Ellington Salon E			
1:15 PM – 1:45 PM	INVITED TALK – KSBB PRESIDENT – Eunki Kim, PhD, Inha University, Incheon, Korea – Mercer Salons H & I			
1:45 PM – 3:15 PM	BIOBUSINESS NEXUS: PARTNERING FOR TECHNOLOGY TRANSLATION – Mercer Salons H & I			
CONCURRENT SESSIONS 3:30 PM – 6:00 PM	<i>Mercer Salon G</i> I: Biofuels & Bioenergy III	<i>Piedmont</i> II: Synthetic & Systems Biology	<i>Mercer Salon H</i> III: BioBusiness Nexus Showcase	<i>Mercer Salon I</i> IV: Biosensor Symposium – Session III: Biosensors 2
4:30 PM – 5:00 PM	BREAK – Mercer Prefunction			
6:00 PM	DINNER ON OWN			
SATURDAY, MARCH 5, 2011				
7:00 AM – 7:50 AM	CONTINENTAL BREAKFAST – Mercer Prefunction			
8:00 AM – 9:00 AM	BIOETHICS ESSAY COMPETITION – Presidents Ballroom			
9:00 AM – 10:00 AM	KEYNOTE TALK: Dr Larry V McIntire, Georgia Institute of Technology – Mercer Salons H & I			
CONCURRENT SESSIONS 10:15 AM – 11:45 AM	<i>Mercer Salon G</i> I: Biofuels & Bioenergy IV	<i>Piedmont</i> II: Tissue & Cellular Engineering	<i>Mercer Salon H</i> III: Ecological & Environmental Engineering - Sustainability	<i>Mercer Salon I</i> IV: Biosensor Symposium – Session IV: Biosensors 3
12:00 PM* – 1:00 PM	LUNCH – Ellington Salon E			
CONCURRENT SESSIONS 1:15 PM – 4:00 PM	<i>Mercer Salon G</i> I: iGEM Synthetic Biology	<i>Salon I</i> II: Ecological & Environmental Engineering - Complexity	<i>Mercer Salon H</i> III: Biomimetics & Biomaterials	<i>Piedmont</i> IV: Biosensor Symposium – Session V: Bionanotechnology
4:10 PM – 5:50 PM	POSTER SESSIONS – Ellington Salon F			
6:30 PM – 8:30 PM	AWARDS BANQUET – Ellington Salon E			

***Note: Poster presenters are permitted to set up beginning at 9:30 am on Friday, March 4, 2011. The room will be open to attendees at 12:00pm on Friday, March 4, 2011 to view the posters prior the competition at 4:10pm on Saturday, March 5, 2011**



THURSDAY MARCH 3, 2011

1:00 PM – 5:00 PM

REGISTRATION & INFORMATION CENTER

Location: Mercer Prefunction

2:00 PM – 4:00 PM Concurrent Session A-I

BIOFUELS & BIOENERGY I

Chair: Fei Yu (Mississippi State University)

Location: Mercer Salon G

- 2:00 PM Algae Production, Harvesting, and Reaction for Biofuels in a 460-acre Lagoon System
Ronald Sims, Issah Hamud, Reese Thompson, Erick Griffiths, Daniel Dye (Utah State University)
- 2:15 PM Evaluation of algae growth in the presence of flue gas contaminants
C. Crofcheck, A. Shea, J. Rivas, M. Montross, M. Crocker, R. Andrews (University of Kentucky)
- 2:30 PM Scale-up of pretreatment and its effect on downstream bioconversion of poplar wood (Populus sp.) into biofuels
Jyotsna Pandey, Tom L. Richard (Pennsylvania State University)
- 2:45 PM Break
- 3:00 PM Improving Cold Flow Properties of Biodiesel through Urea Inclusion
Junli Liu, Bernie Tao (Purdue University)
- 3:15 PM Mathematical modeling and lipid production in rotating algal photo bioreactors
Paul Woolsey, Ronald Sims (Utah State University), Issa Hamud (City of Logan)
- 3:30 PM Adjourn

2:00 PM – 4:00 PM Concurrent Session A-II

WATERSHED, WATER QUALITY AND MODELING / BIOLOGICAL ENGINEERING EDUCATION

Location: Piedmont

WATERSHED, WATER QUALITY AND MODELING

Chair: Prem Parajuli (Mississippi State University)

- 2:00 PM Quantifying changes in turbidity and sediment load in relation to land use in Tibbee Creek Watershed, Mississippi
Shane Irvin, Joel O. Paz, Mary Love Tagert, Prem Parajuli, Thomas Cathcart (Mississippi State University)
- 2:15 PM Algal biofilm production and harvesting system for water quality improvement with biofuels by-product
Logan Christenson, Ron Sims (Utah State University), Issa Hamud (City of Logan Environmental Department)
- 2:30 PM Evaluating spatial and seasonal variability of fecal coliform bacteria loads at watershed scale in Mississippi
Priyantha Jayakody, Prem Parajuli (Mississippi State University)
- 2:45 PM In search of apparent causal associations between flow percentiles and watershed variables
Herbert Segane (University of Georgia), Y. Mohamoud (ERD-EPA, Athens), E. W. Tollner, T. C. Rasmussen, J. Dowd (University of Georgia)
- 3:00 PM Break



BIOLOGICAL ENGINEERING EDUCATION

Chair: Arthur Johnson (University of Maryland)

- 3:15 PM Essential Concepts for Biological engineers
Arthur Johnson (University of Maryland)
- 3:30 PM Stitches: Bio-inspired design and technologies impacting communication interactions in retirement communities
Claudia Rebola, Chauncey Saurus, Jorge Palacio, Gbolabo Ogunmakin, Patricio Vela (Georgia Tech University)
- 3:45 PM Creative interdisciplinary education through a biologically-inspired design curriculum
Marc Weissburg, A Geol, M Helms, C Tovey, J Yen (Georgia Tech University)
- 4:00 PM Adjourn
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2:00 PM – 4:00 PM Concurrent Session A-III

BIOLOGICAL ENGINEERING DESIGN

Chair: Shelia Grant (University of Missouri)

Location: Mercer Salon H

- 2:00 PM Signal processing and control algorithms for autonomous chemical plume tracking
Konstantin Volyanskyy, DR Webster, MJ Weissburg (Georgia Institute of Technology)
- 2:15 PM High-Density Algal Photobioreactors for Bioactive Compound Production
KSBB Representative - Choul-Gyun Lee (Inha University)
- 2:30 PM Pseudomonas putida KT2440 Bacterial Chemotaxis Behavior Analysis via Video Microscopy with Sodium Benzoate and Succinic Acid as Chemoattractants
Serena Bennett (Utah State University)
- 2:45 PM Break
- 3:00 PM Understanding Biological Metabolic Rate Limits for use in Human Engineering
Astrid Layton, Dr. Bert Bras, Marc Weissburg (Georgia Institute of Technology)
- 3:15 PM Analysis of Analogies from Environmental Ecology to Industrial Ecology
Astrid Layton, Dr. Bert Bras, Dr. Marc Weissburg (Georgia Institute of Technology)
- 3:30 PM Opportunities for Innovation: Design of a Collagen-Nanoparticle Dermal Filler
Sheila Grant, Rebecca Rone, Dave Grant (University of Missouri)
- 3:45 PM University of Missouri Biodesign and Innovation Program - Taking an Idea from Napkin to Market
Rebecca Rone, Paul Dale, Gregg Scheller (University of Missouri)
- 4:00 PM Adjourn



2:00 PM – 4:00 PM Concurrent Session A-IV

BIOSENSOR SYMPOSIUM – SESSION I: BIOINSTRUMENTION & DEVICES

Chairs: Eric McLamore (University of Florida) and Samir Iqbal (University of Texas at Arlington)

Location: Mercer Salon I

- 2:00 PM Investigation of functional electrospun bionanofibers in microfluidic channels
Lauren Matlock-Colangelo, Daehwan Cho, Peter Asciello, Chunhui Xiang, Margaret Frey, Antje Baeumner (Cornell University)
- 2:15 PM GenoAPE: an adaptive cytometer to characterize noisy gene expression in live cells
David Ball, Jean Peccoud (Virginia Bioinformatics Institute)
- 2:30 PM Development of a handheld lab-on-a-chip immunosensor to track the transport and distribution of H1N1/09 virus in a mock classroom
Hyuck-Jin Kwon, Hyuck-Jin Kwon, David J. You, Scott V. Angus, Jeong-Yeol Yoon (University of Arizona)
- 2:45 PM Break
- 3:00 PM A Non-Invasive Technique for Studying Metabolic Uncoupling and Membrane Transport
Eric McLamore (University of Florida), D.M Porterfield (Purdue University)
- 3:15 PM Focusing Microparticles in a Microfluidic Channel with Ferrofluids
Leidong Mao, Taotao Zhu, Rui Cheng (University of Georgia)
- 3:30 PM *Saccharomyces Cerevisiae* Hyper Osmotic Adaptation Through Hog Pathway Using Microfluidic And Fluorescence Microscopy
Damon Rafieian, Nabi Nabiollahi, K. Bodvard, S. Svedhem (University of Chalmers)
- 3:45 PM Adjourn

4:30 PM – 5:30 PM

WELCOME RECEPTION

(Cash bar)

Location: Mercer Prefunction

Join us for a Welcome Reception to kick off the 2011 Annual Conference. Grab a snack, a beverage and enjoy! Catch up with old friends and network with new acquaintances. Take advantage of the time with others in the biological engineering community or come ask the speakers questions about their presentations.

5:45 PM –

COUNCIL MEETING

Location: Ravinia

Presiding: William D. Batchelor, IBE President 2011



FRIDAY MARCH 4, 2011

7:00 AM – 6:30 PM

REGISTRATION & INFORMATION CENTER

Location: Mercer Prefunction

7:00 AM – 7:50 AM

CONTINENTAL BREAKFAST

Location: Mercer Prefunction

8:00 AM – 9:00 AM Keynote Presentation

KEYNOTE TALK – DR STEVEN L STICE, UNIVERSITY OF GEORGIA

Chair: Mark Riley (University of Arizona), 2010 IBE President

Location: Mercer Salons H & I

Title: Advances in Pluripotent Stem Cells for use in Neural Cell Based Therapies and Drug Discovery

Steven L Stice, PhD

Professor, GRA Eminent Scholar,

Director, Regenerative Bioscience Center

Edgar L. Rhodes Center for ADS

University of Georgia

9:10 AM – 11:55 AM Concurrent Session B-I

BIOFUELS & BIOENERGY II

Chair: Fei Yu (Mississippi State University)

Location: Mercer Salon G

9:10 AM Optimization of Dissolved Air Flotation for Algal Harvesting at the Logan, Utah Wastewater Treatment Plant
Andrew Elder, Ronald Sims (Utah State University), Issa Hamud (City of Logan)

9:30 AM Engineering cellulolytic Escherichia coli towards Biofuel production
Ramanan Sekar, Dr. Rachel Chen, Dr. Hyun-Dong Shin (Georgia Institute of Technology)

9:50 AM Enzyme Nanocomposites for Electricity Generation in Biological Fuel Cells
Naga S. Parimi, Ramaraja P. Ramasamy (University of Georgia)

10:10 AM Sustainable Bioenergy and Seafood Co-Production: An Industry/University Cooperative
David Brune (University of Missouri)

10:30 AM Break

10:50 AM The binding affinity and specificity of family 1 Cellulose Binding Modules (CBMs)
Jeffrey Catchmark, Jing Guo (Pennsylvania State University)



11:10 AM Production of ethanol from sweet sorghum grown in semi-arid environments
Mark Riley, Fei Jia, Mario Marquez, Ilse Rojas, Valerie Teetor, Dennis Ray, Michael Ottman, Kimberly Ogden
(The University of Arizona)

11:30 AM Adjourn

9:10 AM – 11:55 AM Concurrent Session B-II

BIOPROCESSING & NATURAL PRODUCTS

Chair: Jixun Zhan (Utah State University)

Location: Piedmont

9:10 AM Functional study of asukamycin biosynthesis
Zhe Rui, Tin-Wein Yu (Louisiana State University)

9:30 AM A novel halogenase from Pochonia chlamydosporia for natural product biosynthesis
Jixun Zhan, Jia Zeng (Utah State University)

9:50 AM Biosynthesis of nonribosomal peptides in Beauveria bassiana
Yuquan Xu, Istvan Molnar (University of Arizona)

10:10 AM Analysis of surface chemistry on cellulose nanowhiskers
Jeffrey Catchmark, Jin Gu, Edward Q. Kaiser, Douglas D. Archibald (Pennsylvania State University)

10:30 AM Break

10:50 AM A simplified bio-ethanol process and biodegradable composite synthesis from its fermentation broth
Zhaohui Tong, Letian Wang, Claudia C. Geddes, Ismael U. Nieves, Michael T. Mullinix, Zhihong Fu, Lonnie O. Ingram
(University of Florida)

11:10 AM Collagenase inhibition and anti-oxidative activities of glycosaminoglycans
Byeong-Dae Choi, Grace N. Palmos, Si-Hyang Park, Seok-Joong Kang, Yeung-Joon Choi (Gyeongsang National University), Hwan-Yeol Kang (Amaranth Cosmetic Co)

11:30 AM Adjourn

9:10 AM – 11:55 AM Concurrent Session B-III

BIOIMAGING & DIAGNOSTICS / BIOMOLECULAR COMPUTING

Location: Mercer Salon H

BIOIMAGING & DIAGNOSTICS

Chair: Greg Bashford (University of Nebraska at Lincoln)

9:10 AM Tendon elasticity imaging using 1D transient elastography
Jessica Mills, Pengfei Song, Greg Bashford (University of Nebraska – Lincoln)

9:30 AM An improved adaptive median filter for noise reduction
Benjamin A. Thomas, Mark A. Haidekker (University of Georgia)



9:50 AM Morphometric analysis of gastrocnemius biopsies from patients with peripheral arterial disease provides objective criteria for diagnosis
Kim Cluff, Govindarajan Konda Naganathan, Jeyamkondan Subbiah, Ashok Samal (University of Nebraska Lincoln), Dimitrios Miserlis (University of Nebraska Medical Center)

10:10 AM Near-infrared long-persistent nanoparticles for in vivo bioimaging
Yen-Jun Chuang, Feng Liu, Lianchun Wang (University of Georgia), Binghe Wang (Georgia State University), Hong Zhuang (United States Department of Agriculture), Zhengwei Pan (University of Georgia)

10:30 AM Break

BIOMOLECULAR COMPUTING

Chair: Kaustubh Bhalariao, (University of Illinois, Urbana-Champaign)

10:50 AM Real-time simulations of flexible biological molecules in confined geometries
Michael Peters (Virginia Commonwealth University)

11:10 AM Toward automated selection of parts for genetic regulatory networks
Fusun Yaman, Swapnil Bhatia (Boston University), Aaron Adler (BBN Technologies), Douglas Densmore (Boston University), Jacob Beal (BBN Technologies)

11:30 AM Rate-independent modules for chemical computation
Marc Riedel, Philip Senum (University of Minnesota)

11:50 AM Adjourn

9:10 AM – 11:55 AM Concurrent Session B-IV

BIOSENSOR SYMPOSIUM – INVITED TALK

Chair: Liju Yang (North Carolina Central University)

Location: Mercer Salon I

9:10 AM INVITED TALK: Design and Use of Surface-Tethered (Bio)Macromolecular Nanostructures for Nanomechanical Sensing and Novel Detection and Amplification Platforms

Stefan Zauscher, Ph.D.

Associate professor

Department of Mechanical Engineering and Materials Science

Duke University

BIOSENSOR SYMPOSIUM –SESSION II: BIOSENSORS 1

Chair: Majed Dweik (Lincoln University)

Location: Mercer Salon I

9:50 AM Towards explaining the flow-sensitivity of molecular rotors
Adnan Mustafic, Mark A. Haidekker (University of Georgia)

10:10 AM The CELC-2 biochip: A new non-invasive electrophysiology platform for single cells
Amani Salim, Andrew Hermann, Pedro Jofre (Purdue University), Aeraj ul Haque (Argonne National Laboratory), Jonathan C. Claussen, D. Marshall Porterfield (Purdue University)

10:30 AM Break



- 10:40 AM Nanoparticle immunoagglutination rayleigh scatter assay to complement microparticle immunoagglutination mie scatter assay in a microfluidic device
Jeong-Yeol Yoon, Brian C. Heinze (The University of Arizona)
- 11:00 AM A self-calibrating viscosity sensor for lipid membranes
Matthew E. Nipper, Mark A. Haidekker (University of Georgia), Marianna Dakanali, Emmanuel A. Theodorakis (University of California San Diego)
- 11:20 AM Carbon-hydrogen-oxygen (CHO) MEMS biochip: electrochemical characterizations
Andrew Hermann, Amani Salim, Jonathon C. Claussen, Aeraj ul Haque, Marshall D. Porterfield (Purdue University)
- 11:40 AM A microsensor for real-time measurements or ionic silver flux
Matthew Stensberg (Purdue University), Eric McLamore (University of Florida-Gainesville), Marisol Sepulveda, Wen Zhang, M. Katherine Banks, D. Marshall Porterfield (Purdue Univeristy)
- 12:00 PM Adjourn

12:00 PM – 1:00PM

LUNCH

Location: Mercer Prefunction

1:15 PM – 3:15 PM General Session I

1:15 PM INVITED TALK – KSBB PRESIDENT

Chair: Mark Riley (University of Arizona), 2010 IBE President

Location: Mercer Salons H & I

Introduction of KSBB (The Korean Society for Biotechnology and Bioengineering)

Eunki Kim, PhD

Professor, Department of Biological Engineering

President, The Korean Society for Biotechnology and Bioengineering (KSBB), National Research Lab of Skin Bioactive Materials

Inha University, Incheon, Korea

1:45 PM BIOBUSINESS NEXUS: PARTNERING FOR TECHNOLOGY TRANSLATION

Chairs: Roy Young (Pennsylvania State University) and Guigen Zhang (Clemson University)

Location: Mercer Salon H & I

1:45 PM Helping Georgia Technology Entrepreneurs Launch and Build Successful Companies
Nina Sawczuk, General Manager, Advanced Technology Development Center (ATDC), Georgia Tech

2:05 PM From Vision to Venture: How the University of Georgia Fosters the Commercialization of Innovative Life Science Research Through Start-up Company Formation
Stefan Schulze, Associate Director, Georgia BioBusiness Center (GBBC), University of Georgia

2:25 PM Funding for Technology Translation
John P. Richard, Partner, GA Venture Partners

2:45 PM Panel Discuss and Q & A

3:15 PM Adjourn



3:30 PM – 6:00 PM Concurrent Session C-I

BIOFUELS & BIOENERGY III

Chair: Fei Yu (Mississippi State University)

Location: Mercer Salon G

- 3:30 PM Bio-oil production from woody biomass and poultry litter
Sushil Adhikari, Harideepan Ravindran (Auburn University)
- 3:45 PM Hindrances to liquid hydrocarbon production over Mo/HZSM-5 using biomass syngas
Jason Street, James Wooten, Eugene Columbus, James Warnock, Fei Yu, Mark White (Mississippi State University)
- 4:00 PM Synthesis of solid acid catalyst from biochar for cellulose and hemicellulose hydrolysis of liquid fuels
Rick Ormsby, Dr. Jim Kastner Joby Miller (The University of Georgia)
- 4:15 PM Thermochemical liquefaction of microalgae for biocrude production
Umakanta Jena, K. C. Das (University of Georgia)
- 4:30 PM Break
- 4:45 PM Gasoline range hydrocarbons synthesis from biomass-derived syngas over Mo/HZSM-5 catalyst
Jin Hu, Fei Yu, Yongwu Lv, Qiangu Yan, James Wooten, Eugene Columbus, William D. Batchelor (Mississippi State University)
- 5:00 PM Efficient optimization of synthetic metabolic pathways
Howard Salis, Iman Farasat, Jason Collens (Pennsylvania State University)
- 5:15 PM Catalytic Pyrolysis of Biomass for Hydrocarbons Production
Sushil Adhikari, Suchithra Thangalazhy Gopakumar (Auburn University)
- 5:30 PM Adjourn
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3:30 PM – 6:00 PM Concurrent Session C-II

SYNTHETIC & SYSTEMS BIOLOGY

Chairs: Kaustubh Bhalerao (University of Illinois, Urbana-Champaign) and Goutam Vemuri (Chalmers University of Technology)

Location: Piedmont

- 3:30 PM A genetic tachometer to gauge cell proliferation rates
Clifford Wang, Ryan W. Peacock (Stanford University)
- 3:45 PM Mutations on rpoS: sufficient and necessary for 'Stress hardened' bacteria
Kaustubh Bhalerao (University of Illinois, Urbana-Champaign)
- 4:00 PM Synthetic DNA design and SBOL implementation using GenoCAD
Brad Howard, Laura Adam, Mandy Wilson, Russell Hertzberg,; Jean Peccoud (Virginia Tech - Virginia Bioinformatics Institute (VBI)- Synthetic Biology Group)
- 4:15 PM Metabolic engineering of bacteria for sustainable production of fatty acid derived products
Brian Pfleger (University of Wisconsin at Madison)
- 4:30 PM Break



- 4:45 PM Narrowing the solutions of genome-scale modeling through proton efflux, rigorous proton balancing, and optimizing the biomass equation
Ryan Senger (Virginia Technology Institute)
- 5:00 PM Folding-like-refolding of protein aggregates and inclusion bodies
Woo-Seok Choe, Jiryang Jang (Sungkyunkwan University)
- 5:15 PM Hysteretic Properties of a modular positive feedback-based gene amplifier
Phillip Poisson, Kaustubh Bhalerao (University of Illinois at Urbana-Champaign)
- 5:30 PM Resource utilization and competition among yeasts
Goutham Vemuri (Chalmers University of Technology, Göteborg, Sweden)
- 5:45 PM Economics of membrane occupancy in metabolism
Krishnan Mahadevan (University of Toronto)
- 6:00 PM Adjourn
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3:30 PM – 6:00 PM Concurrent Session C-III

BIOBUSINESS NEXUS SHOWCASE

Chairs: Roy Young (Pennsylvania State University) and Guigen Zhang (Clemson University)

Location: Mercer Salon H

- 3:30 PM Novel Cell Therapy
L. Franklin Bost, CEO, SpherIngenics, Inc
- 3:45 PM Bridging the Gap
Mark A. Samuels, CEO, Regenerative Matrix LLC
- 4:00 PM 3DKUBE™ Technology Platform for Standardized 3D Cell Culture
Matthew Gevaert, CEO, Kiyatec, Inc
- 4:15 PM Imaging Enabled by Spectroscopy
Shabbir Bambot, CTO, LumaMed, Inc
- 4:30 PM Break
- 4:45 PM PreventaBed Mobilizes the Immobile Patient
Roldolfo Ferraresi, BedLab, LLC
- 5:00 PM Bioenergy and Biomaterials from Algal Biomass
Ryan Hunt, Director of R&D, IntellEnergy
- 5:15 PM Toward Manufacturing Scale-Up of hESC Derived Therapeutics
Thomas Schulz, Sr. Scientist, ViaCyte, Inc
- 5:30 PM Commercializing Human Stem Cell Products
Steve Stice, Chief Scientific Officer, Aruna Biomedical, Inc
- 5:45 PM Adjourn



3:30 PM – 6:00 PM Concurrent Session C-IV

BIOSENSOR SYMPOSIUM – INVITED TALK

Chair: Liju Yang (North Carolina Central University)
Location: Mercer Salon I

3:30 PM INVITED TALK: Introduction and Highlights of the Biosensing Program at NSF

Aleksandr L Simonian, Ph.D.
Program Director
Biosensing Program
National Science Foundation (NSF)

BIOSENSOR SYMPOSIUM – SESSION III: BIOSENSORS 2

Chair: Majed Dweik (Lincoln University)
Location: Mercer Salon I

- 4:15 PM Nanoparticle DNA-based biosensor for rapid detection of tuberculosis
Evangelyn Alocilja, Edith Torres-Chavolla (Michigan State University)
- 4:30 PM Micro Glucose and ATP Biosensors Based on DNA Modified Single-Walled Carbon Nanotube and Pt black
Nanocomposite
D M Porterfield, Jin Shi, Tae-Gon Cha, Jonathan C. Claussen, Alfred R. Diggs, Jong Hyun Choi (Purdue University)
- 4:45 PM Break
- 5:00 PM Inhibition of amyloid- β protein assembly is dependent upon environmental conditions: A quartz crystal
microbalance biosensor analysis
Melissa Moss, Joseph A. Kotarek, Deborah D. Soto-Ortega (University of South Carolina)
- 5:15 PM Considerations for using integral feedback control to construct a perfectly adapting synthetic gene network
Jordan Ang, Sangram Bagh (University of Toronto Mississauga), Brian P. Ingalls (University of Waterloo), David R.
McMillen (University of Toronto Mississauga)
- 5:30 PM Electrical Impedance-based Measurement to Distinguish Oral Cancer Cells and Non-cancer Oral Epithelial Cells
Liju Yang, Jaouad Mamouni, Tonya S. Lane, Martez D. Yancey (North Carolina Central University)
- 5:45 PM Carbon nanotubes-based field effect transistor immunosensors for small molecules
Ashok Mulchandani, Lakshmi N Cella, Chaker Tlili, Miso Park, Wilfred Chen, Nosang Myung (University of California,
Riverside)
- 6:00 PM Adjourn

6:00 PM DINNER ON OWN



SATURDAY MARCH 5, 2011

7:00 AM – 6:00 PM

REGISTRATION & INFORMATION CENTER

Location: Mercer Prefunction

7:00 AM – 7:50 AM

CONTINENTAL BREAKFAST

Location: Mercer Prefunction

8:00 AM – 9:00 AM General Session

BIOETHICS ESSAY COMPETITION

Chairs: Jerry Gilbert (Mississippi State University) & Praveen Kolar (North Carolina State University)

Location: Mercer Salons H & I

Presentations of the top five Bioethics Essays with discussion.

- 8:00 AM The application of the “reductionist approach” to solve societal health problems and develop new health technologies.
Yasmin Kadry (University of Maryland)
- 8:10 AM Biological Engineering-Looking Beyond the Boundaries.
Mian Mohammad Bilal Khalid (University of Maryland)
- 8:20 AM Solving Community Problems- A Polio Case Study.
Allison Mettler (University of Nebraska)
- 8:30 AM The Ethics of Biological Engineering: Community versus the Individual.
Spencer Sokoloski (University of Maryland)
- 8:40 AM The Importance of National Funding for Society-Level Bioengineering Solutions.
Sam Sun (Olin College of Engineering)
-

9:00 AM – 10:00 AM Keynote Presentation

KEYNOTE TALK – DR LARRY V. MCINTIRE, GEORGIA INSTITUTE OF TECHNOLOGY

Chair: William D Batchelor (Auburn University), 2011 IBE President

Location: Mercer Salons H & I

Title: Role of Mechanical Forces in Vascular Biology: From Cells to Molecules

Larry V. McIntire, PhD

Wallace H. Coulter Professor & Chair

Coulter Dept. of Biomedical Engineering

Georgia Institute of Technology and Emory University



10:15 AM – 11:45 AM Concurrent Session D-I

BIOFUEL & BIOENERGY IV

Chairs: Fei Yu (Mississippi State University)

Location: Mercer Salon G

- 10:15 AM Fermentation of Sugar Mixtures found in Lignocellulosic Hydrolysate
Mark Eiteman, Tian Xia (University of Georgia), Elliot Altman (Middle Tennessee State University)
- 10:30 AM Improved Sodium Ion Tolerance of Escherichia coli
Mark Eiteman, Xianghao Wu (University of Georgia), Elliot Altman (Middle Tennessee State University)
- 10:45 AM Sweet sorghum for biofuel production
Yanna Liang, Ruplal Choudhary, Nicolas Sarkany, Yi Cui, Tianyu Tang, Thara Siddaramu, Arosha Loku Umagiliyage (Southern Illinois University Carbondale)
- 11:00 AM Fluorescent measurement of neutral lipids in yeast cells by using Nile red
Yanna Liang, Tianyu Tang, Matt McCarroll (Southern Illinois University Carbondale)
- 11:15 AM Biofuel production from industrial waste crude glycerol through yeast fermentation
Yanna Liang, Yi Cui, James W. Blackburn (Southern Illinois University Carbondale)
- 11:30 AM Influence of feeding dry or wet distillers grains and manure handling systems on greenhouse gas emission and energy intensity of milk production in WI
Thais Passos Fonseca, Horacio Aguirre-Villegas, Julie Sinistore, Simone Kraatz, Rebecca Larson, Douglas Reinemann (University of Wisconsin-Madison)
- 11:45 AM Adjourn
-

10:15 AM – 11:45 AM Concurrent Session D-II

TISSUE & CELLULAR ENGINEERING

Chair: Melissa Moss (University South Carolina)

Location: Piedmont

- 10:15 AM Stem cell fate on differentially loaded polymeric membranes
Courtney LeBlon, Annie Golding, BreeAnn Young, Kai-Tak Wan, Sabrina Jedlicka (Lehigh University)
- 10:30 AM Effect of Vibration during Compressive Mechanical Stimulation on Osteogenic Response of In Vitro Tissue-Engineered Bone
Anak Khantachawana, Chaiyong Koaykul, Kwanchanok Viravaidya-Pasuwata (King Mongkut's University of Technology Thonburi), Shigeo M. Tanaka (Kanazawa University)
- 10:45 AM An in-vitro model for studying lipid uptake and transport
Matthew Faulkner, J. Brandon Dixon (Georgia Institute of Technology)
- 11:00 AM Confluent and aligned growth of endothelial cells on nanoparticle arrays through focal adhesion and endocytotic mechanisms
Jeong-Yeol Yoon, Phat L. Tran, Jessica R. Gamboa, Katherine E. McCracken, Mark R. Riley, Marvin Slepian (The University of Arizona)
- 11:15 AM Magnetically-targeted stem cell delivery for cardiac regeneration
Ke Cheng, Tao-Sheng Li, Konstantinos Malliaras, Darryl Davis, Yiqiang Zhang, Eduardo Marbán (The Heart Institute, Cedars-Sinai Medical Center)
- 11:30 AM Adjourn



10:15 AM – 11:45 AM Concurrent Session D-III

ECOLOGICAL & ENVIRONMENTAL ENGINEERING – SUSTAINABILITY AND CONSERVATION

Chair: Joel O Paz (Mississippi State University)

Location: Mercer Salon H

- 10:15 AM Distribution of picea rubens and climate change – linking a systems model to a spatial landscape model
Kyung-Ah Koo Koo, Bernard C. Patten, Marguerite Madden (University of Georgia)
- 10:30 AM Bioanalytic networks: coupled mangrove and urban ecosystems
Keith J Van de Riet, Anna Dyson, Jason Vollen, Dr. John Gowdy, Dr. Mourad Zeghal, Dr. Uta Berger (Rensselaer Polytechnic Institute), Dr. Ed Proffitt (Florida Atlantic University)
- 10:45 AM Environmental toxicity of nanoparticles
Kaustubh Bhalerao, Sun Min Kim, Rashid Bashir (University of Illinois at Urbana-Champaign)
- 11:00 AM Cultivation of edible mushrooms using Sonora region agriculture waste
Francisco Mondaca, Iram Mondaca, Maria Mercedes Meza, Maria Guadalupe Aguilar (Instituto Tecnológico de Sonora)
- 11:15 AM Adjourn
-

10:15 AM – 11:45 AM Concurrent Session D-IV

BIOSENSOR SYMPOSIUM – SESSION IV: BIOSENSORS 3

Chair: Majed Dweik (Lincoln University)

Location: Mercer Salon I

- 10:15 AM Bottom-up construction of nanostructured amperometric biosensors
Jonathan Claussen, James Hengenius, David B. Jaroch, Amani Salim, Jin Shi, Anurag Kumar, Mohammad H. Khawaja, Allison B. Hibbard, Monique M. Wick (Purdue University)
- 10:30 AM Development of a novel detection scheme for enteroviral infection using FTIR spectroscopy and cell culture.
Felipe Lee Montiel, Kelly Reynolds, Mark R. Riley University of Arizona)
- 10:45 AM Monitoring microfluidic based cell culture using optimized 3D nanostructured electrodes
Rajan Gangadharan, Guigen Zhang (Clemson University)
- 11:00 AM Affinity Ratio Dependent Colorimetric Aptasensors Using Gold Nanoparticles
KSBB Representatives - Man Bock (Korea University), Yeon Seok Kim (Korea Institute of Science and Technology), Joong Hyun Kim (BioNano Research Center, Korea Research Institute of Bioscience and Biotechnology (KRIBB), In Ae Kim, Su Jin Lee, Man Bock Gu (Korea University)
- 11:15 AM Detection of stink bug damage in cotton bolls with fluorescence
Erin Roberts, Adnan Mustafic, Mark A. Haidekker (University of Georgia)
- 11:30 AM Adjourn
-

12:00 PM – 1:00 PM

LUNCH

Location: Ellington Salon E



1:15 PM – 4:00 PM Concurrent Session E-I

iGEM SYNTHETIC BIOLOGY

Chair: Tom Richard (Pennsylvania State University)

Location: Mercer Salon G

- 1:15 PM A Versatile Architecture for Producing Bacteria-Based Three-Dimensional Rapid Prototyping Systems
Brian Ma, Lucas Hartsough, Yuehan Huang, Melissa Xu, Alexandre Bulgakov, Paul Nguyen (California Institute of Technology)
- 1:30 PM Inducing a Thermogenic Response to Cold Shock in *E. coli*
Scott Holmes, Debika Mitra, Christian Mandrycky, Mitesh Agrawal, Gita Mahmoudabadi, Robert Fee, Siddarth Tantia, Atta Hassan, Margo Clark, Amy Schwartz, Monica Hunyh, Christina Graves, Shadeah Suleiman, Richard In-Ho Joh, Dr. Joshua Weitz, Dr. Eric Gaucher, Dr. Mark St (Georgia Tech iGEM Team)
- 1:45 PM Genetically Engineered *Saccharomyces cerevisiae* that Is Responsive to Voltage Signals at a Transcriptional Level
Yizhi Cai, Marc Ostermeier, Jef Boeke, Noah Young, Justin Porter (The Johns Hopkins University School of Medicine)
- 2:00 PM Addressing the Problem of Complexity in Synthetic Biology
Keegan Owsley, Timothy Fenton, Jennifer Lau, Holly Lam, Justin Tantiengloc, Arjun Nair, Marc Facciotti (University of California, Davis)
- 2:15 PM Programmable, Self-Constructing Biomaterials
Yunxin Jiao, Laura H Deming, Shirley M Galbiati, Andrew C Yang (Massachusetts Institute of Technology)
- 2:30 PM Break
- 2:45 PM GENOMIKON: An Educational Tool Kit for Rapid Genetic Construction
Michael Ellison, Douglas Ridgway, Karina Arnesen, Eric Bennet, Stephanie Confort, Oscar Cortes, Anh Dao, Mark Elliot (University of Alberta)
- 3:00 PM A Novel Platform For Engineering Synthetic Gene Networks in the Budding Yeast *S. cerevisiae*
Alex Power (University of Ottawa)
- 3:15 PM CyanoBricks: Genomic Engineering Tools for the Photosynthetic Cyanobacterium *Synechocystis*
Charles Miller, Cody Tramp, Alex Hatch, Cole Peterson, Brad Henrie, Shujie Shen, Abiezer Tejada, Eduardo Monzon, H. Scott Hinton, Ronald Sims, Charles D. Miller (Utah State University)
- 3:30 PM Oxygen-Sensing BioBrick Promoters
Andrew Kirk, Erik McCann (Penn State University)
- 3:45 PM Characterization of Passive and Active *Pseudomonas aeruginosa* Biofilm Detachment
Wen Zhang (Purdue University), Eric S. McLamore (University of Florida)
- 4:00 PM Adjourn



1:15 PM – 4:00 PM Concurrent Session E-II

ECOLOGICAL & ENVIRONMENTAL ENGINEERING – COMPLEXITY AND SYSTEMS ISSUES

Chair: Caner Kazanci (University of Georgia)

Location: Mercer Salon I

- 1:15 PM Network Utility from a Throughflow Perspective
Lindsey Tuominen, Stuart J. Whipple, Bernard C. Patten, Caner Kazanci, Nickolas Castro, Maren Turbow (University of Georgia)
- 1:30 PM Indirect Effects and Distributed Control in Ecosystems
John Schramski, Bernard C. Patten, David K. Gattie, Caner Kazanci (University of Georgia)
- 1:45 PM Adjacency Network Analysis: Assessing the Stability of Pastoral Ecosystems
Oksana Buzhdygan (Chernivtsi National University), Svetlana S. Rudenko (Chernivtsi National University), Bernard C. Patten (University of Georgia)
- 2:00 PM Developing a thermodynamic analogue for ecological systems analysis
Ernest Tollner, Quianquian Ma, Caner Kazanci (University of Georgia)
- 2:15 PM Modeling Microbial and Nutrient Dynamics in Zero-Discharge Aquaculture Ecosystems
David Brune (University of Missouri), Kendall Kirk (Clemson University)
- 2:30 PM Break
- 2:45 PM Ecological utility analysis of interactions and benefit/cost relations between object pairs in networks: background and directions for new development
Stuart Whipple, Bernard C. Patten Lindsey Tuominen, Caner Kazanci (University of Georgia)
- 3:00 PM Network Utility from a Throughflow Perspective
Lindsey Tuominen, Stuart J. Whipple, Bernard C. Patten, Caner Kazanci, Nickolas Castro, Maren Turbow (University of Georgia)
- 3:15 PM Use of simulation-based methodology to study residence time and its distribution for compartmental systems
Qianqian Ma, Caner Kazanci (University of Georgia)
- 3:30 PM Decomposition of complex ecological networks into functional components
Caner Kazanci, David Luper, John R. Schramski, Bernard C. Patten, Stuart J. Whipple, Malcolm R. Adams (University of Georgia)
- 3:45 PM Patterns in the Indirect Pathways of Ecological Networks
John Schramski (University of Georgia), Michael Freeze (University of North Carolina, Wilmington)
- 4:00 PM Adjourn
-

1:15 PM – 4:00 PM Concurrent Session E-III

BIOMIMETICS & BIOMATERIALS

Chair: Darlene Taylor (North Carolina Central University)

Location: Mercer Salon H

- 1:15 PM Biodegradable hyperbranched polyglycerol based hydrogel with tunable properties and encapsulated drug for localized therapy
Darlene Taylor Singh (North Carolina State University)



- 1:30 PM An Innovative Approach to Bioengineering Using Novel Thermo-responsive Biomaterials
Juana Mendenhall (Morehouse College & MLK Visiting Assistant Professor at MIT)
- 1:45 PM Characterization of PET Hernia Mesh: A Study of In Vivo Degradation
Sheila Grant, Daniel Grant, Dave Grant, Sharon Bachman, Bruce Ramshaw, Halifax Health
(University of Missouri)
- 2:00 PM A versatile biomimetic biomaterial synthesis approach using an electrochemical process
Xingguo Cheng, Sapna A Desai (Southwest Research Institute)
- 2:15 PM Bioabsorbable Hydroxyapatite Functionalized Bacterial Cellulose for Cartilage and Bone Tissue Regeneration
Yang H, Jeffrey M. Catchmark, Erwin A. Vogler (Pennsylvania State University)
- 2:30 PM Break
- 2:45 PM Fabrication of a Cellulose Nanocomposite with an Improved Supermolecular Structure as a Potential Scaffold in Cardiovascular Tissue Engineering
Parisa Pooyan, Professor Hamid Garmestani, Professor Rina Tannenbaum (Georgia Institute of Technology)
- 3:00 PM Influence of Nanofilm with Different Surface Chemistry of Microtextured Titanium on the Osteoblast Cell Response
Barbara Boyan, Zvi Schwartz (Georgia Institute of Technology & University of Texas Health Science Center at San Antonio), Rene Olivares-Navarrete (Georgia Institute of Technology), Michel Dard (Institut Straumann AG, Basel, Switzerland), Rina Tannenbaum (Georgia Institute of Technology)
- 3:15 PM Diatom Silica Biomineralization as Inspiration and Tool for Enzyme Immobilization
Nils Kroger, Vonda C. Sheppard, Nicholas R. Haase, André Scheffel, Nicole Poulsen (Georgia Institute of Technology)
- 3:30 PM Structural differences of cellulose synthesized from in vivo and in vitro from *Gluconacetobacter xylinus*
Lin Fang, Jeffrey M. Catchmark, Ming Tien, Prashanti Iyer (Pennsylvania State University)
- 3:45 PM Antimicrobial Coating Containing Silver Nanomaterials for Orthopedic Implants
Jace Landry, Casey McMann, Charles Anzalone, Syed Ali Zamin (Louisiana State University)
- 4:00 PM Adjourn

1:15 PM – 4:00 PM Concurrent Session E-IV

BIOSENSOR SYMPOSIUM – SESSION V: BIONANOTECHNOLOGY

Chair: Yu Lei (University of Connecticut)

Location: Piedmont

- 1:15 PM Alkaline "green" synthesis of biocompatible gold nanoparticles
Evangelyn Alocilja, Michael J. Anderson, Edith Torres-Chavolla, Brian A. Castro (Michigan State University)
- 1:35 PM Inactivation of Bacterial Cells in Suspensions by Single-walled Carbon Nanotubes
Liju Yang, Cheenou Yang, Jaouad Mamouni (North Carolina Central University)
- 1:55 PM Direct electrochemistry and electrocatalysis of novel single-walled carbon nanotubes-hemoglobin composite microbelts – Towards the development of sensitive and mediator-free biosensor
Yu Ding, Ying Wang, Yu Lei (University of Connecticut)
- 2:15 PM Break
- 2:35 PM Effect of Single-walled Carbon Nanotubes on *Bacillus Anthrax* Cell Growth, Spore Formation, and Spore Germination
Marquita Lilly, Kamal Aferchich, Liju Yang (North Carolina Central University)



- 2:55 PM Modeling the Impact of Nanoparticles Upon the Toxicity of Phenol to Artemia
David Brune, Susana Lizcano (University of Missouri)
- 3:15 PM Silica-coated magnetic nanoparticle supported catechol 1, 2-dioxygenase: a useful biocatalyst for catechol toxicity removal in water
KSBB Representatives - Jeong Ho Chang, Soo Youn Lee (Korea Institute of Ceramic Engineering & Technology), Seon-Young Lee (Inha University), Jin Hyung Lee (Korea Institute of Ceramic Engineering & Technology)
- 3:35 PM Adjourn
-

4:10 PM – 5:50 PM Poster Session P1 & P2

GRADUATE STUDENT POSTER COMPETITION

Chair: Prem Prajauli (Mississippi State University)

Location: Ellington Salon F

Poster No.

- 14 Acrylate Metabolism by *Megasphaera elsdenii*
Mark Eiteman, Rupal Prabhu (University of Georgia), Elliot Altman (Middle Tennessee State University)
- 28 Converting sweet sorghum bagasse to microbial oil for biofuel production
Yanna Liang, Tianyu Tang, Thara Siddaramu, Rupal Choudhary, Arosha Loku Umagiliyage (Southern Illinois University Carbondale)
- 38 Cross Flow Filtration for Mixed-Culture Algae Harvesting from Municipal Wastewater Lagoons
Misheka Wilson, Ronald Sims (Utah State University), Hassan Arafat (Adjunct Professor, MIT), Issa Hamud (Head of City of Logan Environmental Department)
- 41 Hypothesis Generation for Transgenic Risk Assessment Studies Using Ecosystem Modeling
Lindsey Tuominen, Bernard C. Patten (University of Georgia)
- 42 Stem cell fate on differentially loaded polymeric membranes
Courtney LeBlon, Anne S. Golding, BreeAnn C. Young (Lehigh University), Kai-Tak Wan (Northeastern University), Sabrina S. Jedlicka (Lehigh University)
- 43 Zeolite-based Algae Biofilm Rotating Photobioreactor for Algae and Biofuel Production
Ashton Young, Ronald C. Sims (Utah State University)
- 44 Evaluating Alga Growth in Different Temperatures
Keelin Cassidy, Czarena Crofcheck, Michael Montross (University of Kentucky)
- 46 Evaluation of Heat Shock Proteins in the Stress Responses of *Chlamydomonas reinhardtii*
Sarah Short, Czarena Crofcheck, Seth DeBolt, Jozsef Stork (University of Kentucky)
- 60 A novel halogenase from *Pochonia chlamydsoporia* for natural product biosynthesis
Jixun Zhan, Jia Zeng (Utah State University)
- 74 Oscillatory glucose flux in INS 1 pancreatic β^2 cells: A self-referencing microbiosensor study
D Porterfield, Jin Shi (University of Purdue), Eric S. McLamore (University of Florida) David Jaroch, Jonathan C. Claussen, Jenna L. Rickus (University of Purdue)
- 101 Comparing the physiological effects of ionic silver and nanosilver on *Daphnia magna* embryos
Matthew Stensberg (Purdue University), Eric McLamore (University of Florida-Gainesville), Gowri Yale, Marisol Sepulveda, D. Marshall Porterfield (Purdue University)



- 121 Biomass and lipid production of heterotrophic microalgae *Chlorella protothecoides* by using biodiesel derived crude glycerol
Yen-Hui Chen, Terry H Walker (Clemson University)
- 131 Optimizing Anaerobic Digestion of Algae by Pretreatment and Codigestion
Kirsten Sims, Charles Miller, Conly Hansen (Utah State University), Issa Hamud (Logan City)
- 139 Specific inhibition of the halogenase in radicicol biosynthesis by bromide at the transcription level
Jixun Zhan, Jia Zeng, Jonathan Valiente (Utah State University)
- 154 Electrochemical capacitive biosensor for the detection of proteins
Nrutya Madduri (Clemson University)
- 155 Economic Evaluation of Electricity Generation from a Small-Scale Bio-Gasification Facility using an Optimization Model
Yangyang Deng, Prem B. Parajuli, Eugene P. Columbus, Joel O. Paz (Mississippi State University)
- 157 Microcantilever Based Aptameric Nanosensor for Cocaine Detection
Kyungho Kang, Pranav Shrotriya (Iowa State University)
- 158 Investigation of Functional Electrospun Bionanofibers in Microfluidic Channels
Lauren Matlock-Colangelo, Daehwan Cho, Peter Asiello, Chunhui Xiang, Margaret Frey, Antje Baeumner (Cornell University)
- 160 Controlling the performance of electrochemical biosensors through nanomaterials: Simulation and Experiment
Jonathan Claussen, James Hengenius, David B. Jaroch, Amani Salim, Jin Shi, Anurag Kumar, Mohammad H. Khawaja, Allison B. Hibbard, Monique M. Wickner (Purdue University)
- 167 Aptamer-based SPR Biosensor for Detection of Avian Influenza Virus
Hua Bai, Ronghui Wang, Tieshan Jiang, Young M Kwon, Yanbin Li (University of Arkansas)

UNDERGRADUATE STUDENT POSTER COMPETITION

Chair: Prem Prajauli (Mississippi State University)

Location: Ellington Salon F

Poster No.

- 8 Antimicrobial Coating of Silver Nanoparticles for Orthopedic Implants
Charles Anzalone, Dr Daniel Hayes, Emily Hodges, Jace Landry, Dr. W. Todd Monroe, Casey McMann, Ammar Qureshi (Louisiana State University)
- 13 Collagen Type I and III Distribution Found in Biological Scaffold Materials Explanted from Human Subjects
Corey Deeken, Margaret M. Frisella RN, Brent D. Matthews, MD, Jaime A Cavallo, MD (Washington University, Dept. of Surgery)
- 29 Effect of Repetitive Loading on the Tensile Strength of Hernia Repair Materials
Corey Deeken, PhD (Washington University, Dept. of Surgery), Braden J. Eliason (Washington University in St. Louis), Corey R. Deeken PhD, Margaret M. Frisella RN, Brent D. Matthews, MD (Washington University, Dept. of Surgery)
- 68 3-Dimensional Co-Culture Device for Measuring Cellular Transport
James Hollier, Meredith Dixon, Addy Reine, Matt Walters (Louisiana State University)
- 79 Polypropylene Hernia Mesh: A Study of Patient Factor Effects on Physicochemical Properties
Sarah Smith, Kaitlin Bruegenhemke, Matthew Cozad, Sheila Grant (University of Missouri)



- 127 Suggested Neurotoxicity for LRRK2 GCK Domains in HEK 293T Cells
Liyang Tang, Dr. Yulan Xiong, Dr. Ted Dawson (Johns Hopkins University)
- 137 The Spaceflight Environment Induces Differential Gene Expression Including Cell-Wall-Related Genes of *Arabidopsis thaliana*
Tyler Pyle, K.D.L. Millar, P. Kumar, J.Z. Kiss (Miami University, Ohio), F. Souret, M.J. Correll (University of Florida)
- 138 Daphnia Impact on Logan Wastewater Lagoons
Nhean Chea, Kalie S. McCulloch, James A. Powell, Ronald C. Sims (Utah State University)
- 150 Electrical/electrochemical impedance Spectroscopic Study of Oral Cancer Cells Using Interdigitated Microelectrodes
Jaouad Mamouni, Liju Yang (North Carolina Central University)
- 162 Evaluation of PBR Material of Construction on the Growth of *Scenedesmus*
Tabitha Graham, Nick Rhea, Aubrey Shea, Czarena Crofcheck, Mike Montross, Mike Wilson, Mark Crocker, Rodney Andrews (University of Kentucky)
- 165 Effects of biomechanical microenvironments on breast cancer
Soonjo Kwon, Aaron Winder, Timothy Doyle (Utah State University)
- 189 Single-Walled Carbon Nanotubes Coupled with Near-Infrared Laser for Inactivation of Bacterial Cells
Jaouad Mamouni, Yongan Tang, Marvin Wu, Branislav Vlahovic, Liju Yang (North Carolina Central University)
-

GENERAL POSTER PRESENTATIONS

Chair: Prem Prajauli (Mississippi State University)

Location: Ellington Salon F

Poster No.

- 21 Economic Model for Evaluating Syngas Production Cost of Bio-gasification Facility
Hakkwan Kim, Prem B. Parajuli (Mississippi State University)
- 24 Semi-Quantitative Evaluation of the Remodeling Characteristics of Biological Scaffold Materials Explanted from Human Subjects
Emily Gray, Corey R. Deeken PhD, Andres A. Roma MD, Jaime A. Cavallo MD, Margaret M. Frisella RN, Brent D. Matthews, MD (Washington University in St. Louis)
- 30 Ni-doped heterogeneous magnetic mesoporous silica for selective biodegradation of catechol by histidine-tagged protein immobilization
KSBB Representatives - Jeong Ho Chang, Soo Youn Lee (Korea Institute of Ceramic Engineering & Technology), Jiho Lee (Inha University), Jin Hyung Lee (Korea Institute of Ceramic Engineering & Technology)
- 67 Searching for Tyrosinase Transcription Inhibitor for Skin Pigmentation Control
KSBB Representative - Eunki Kim (Inha University)
- 72 Enhancement of Skin Immune Activities of *Lithospermum erythrorhizon* by Ultrasonification Extraction Process
Hyeon Yong Lee, Yong Chang Seo (Kangwon National University), Ji Seon Kim, Woon Yong Choi (Kangwon National University), Young Ock Kim, Seon Woo Cha, Ock Tae Kim (Rural Development Administration)
- 77 The Use of Enzymatic Techniques to Remove Scar Tissue from PET and PTFE Explanted Hernia Mesh
Bryce Romans, Sheila Grant (University of Missouri)



- 126 A Non-invasive Sensor for Metabolic Burden
Kaustubh Bhalerao, Vaisak Parekatt (University of Illinois at Urbana Champaign)
- 140 Tg-Ftir Analysis of Pecan Shells Thermal Decomposition
Oladiran Fasina, Littlefield, B (Auburn University)
- 163 Nanowire Switch and Nanoelectrode Based Impedance Biosensor for Rapid Screening of Avian Influenza Virus
Yanbin Li, Ronghui Wang (University of Arkansas), Xiaole Mao, Tony Huang, Huaguang Lu (Pennsylvania State University)
- 166 Serological Profiling of Melanoma Patients with Whole Proteome Lysate Microarrays
Daniel Schabacker (Argonne National Laboratory), Sara Forrester, Timothy Barger (Eprogen) Bryce Nelson, Brad Garcia (GenTel Bioscience Inc), David Lubman, Tasneem Patwa, Arul Chinnaiyan, Arun Sreekumar, Gang Zu, Michael Sabel (University of Michigan Medical Center)
- 192 Pichia pastoris: A Novel Chassis for iGEM
Joe Sexton, Georgia State 2010 iGEM Team (Georgia State iGEM)
- 117 Aptamer-based SPR Biosensor for Detection of Avian Influenza Virus
Hua Bai, Ronghui Wang, Tieshan Jiang, Young M Kwon, Yanbin Li (University of Arkansas)
- 70 Effect of High Pressure Homogenization Process on hydrolyzing Ulva pertusa Kjellman for Bioethanol Production
Hyeon Yong Lee, oon Yong Choi, Yong Chang Se; Ji Seon Kim, Choon Geun Lee (Kangwon National University), Kyung Hwan Jung (Chungju National University), Do Hyung Kang (Korea Ocean Research)
- 110 Effect of Encapsulants on Antimicrobial Activities of Benzethonium Chloride Nanoparticles
Hyeon Yong Lee, Yunyun Zou, Woon Yong Choi, Choon Geun Lee, Yong Chang Seo, Ji Seon Kim, Ju hee Ahn (Kangwon National University)
- 146 Characterization of the biosynthesis of radicicol from Chaetomium chiversii
Yuquan Xu, Shuhao Wang, Patricia Espinosa, Istvan Molnar (University of Arizona)
- 156 In-plane chip-to-chip microfluidic interconnects
Venkat Goli, Kipp Schoenwald, Todd Sulchek (Georgia Institute of Technology)
- 128 In vitro characterization of the first indanomycin polyketide synthase subunit
Kathryn Rommel, Wendy L. Kelly (Georgia Institute of Technology)

6:30 PM – 8:30 PM

AWARDS BANQUET

Location: Ellington Salon E