



## From the Department Head

I am very pleased to share the developments in our department over the past few months. There are 109 undergraduates (sophomores to seniors) and 25 graduate students this Fall. We have two new staff members join us recently, Ms. Janelle Delany Mott, Fiscal Manager, and Mr. Anthony Taylor, Administrative Specialist. Dr. D. Julie Carrier left us earlier this year to be the Department Head of Biosystems Engineering and Soil Science Department at the University of Tennessee, Knoxville.

Several of our faculty participated in the 2016 Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE) in Orlando. The senior design team of Christian Heymesfield, Kyle Lawrence, J. Dillon Madden and Paul Naegle placed second at the 2016 G.B. Gunlogson Student Environmental Design Competition, hosted by the American Society of Agricultural and Biological Engineers. Their faculty advisors were Drs. Tom Costello and Julie Carrier. The team worked with KYA Chocolate, a company based in Elm Springs, Arkansas, and designed a fermentation box and a solar-powered drying system that farmers could easily construct using materials they have on hand.

Dr. Costello took 43 Biological Engineering students for a three day Field–Industry Tour in Arkansas. The tour included Heifer International Ranch in Perryville, Whillock Hydroelectric Power Station, Diamond Bear Brew House, Hormel (Skippy Peanut Butter), row crop farming operations in Lonoke and Scott, Arkansas to tour, a UA Discovery Farm near Morrilton, Point Remove Irrigation District Pumping Plant, and Buffalo Point On-Site Waste Treatment Plant.

The Arkansas Section of ASABE held its 53rd Annual meeting in Little Rock on October 7. Dr. G. Scott Osborn, was named Engineer of the Year by the Arkansas section of ASABE. The *Engineering and Technology Innovation for Global Food Security Conference* was held in South Africa in October. It was the first conference of the ASABE's Global Engagement Initiative held outside North America. The UA System Division of Agriculture and the College of Engineering were among the sponsors of the conference.

Dr. Yanbin Li is the principal investigator for a \$2.3 million grant from the Walmart Foundation for the Walmart Food Safety Collaboration Center in China. He is working with other faculty at UA and will be working with Chinese universities and poultry companies to improve the safety of poultry products in that country.

The Arkansas Academy of Biological and Agricultural Engineering (AABAE) is engaged in helping us grow the departmental scholarships. We would like to raise funds to endow the Carl Griffis Memorial Scholarship and would appreciate your support. Please do not hesitate to call (479-575-2351), e-mail (lverma@uark.edu) or visit us. We would love to hear from you.

Lalit R. Verma, P.E.  
Professor and Department Head

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University of Arkansas  
Division of Agriculture  
Biological and  
Agricultural Engineering  
790 W Dickson St  
ENGR 203  
Fayetteville AR 72701  
TEL: 479-575-2352  
FAX: 479-575 2846  
EMAIL: baeg@uark.edu

### SIGNIFICANT FACULTY ACCOMPLISHMENTS

## Dr. Li's Food Safety Research Leads to Collaborative Project in China



Food-borne diseases cost over \$70 billion and cause more than 600 million cases of illness and thousands of deaths worldwide per year. Dr. Li is working with the Walmart Food Safety Collaboration Center, as well as Chinese universities and poultry companies, to improve the safety of poultry products in that country. The project is funded by a \$2.3 million grant from the Walmart Foundation.

The project has two main focuses: biosensing technology to more rapidly and easily detect pathogenic bacteria and antibiotic residues in the poultry supply chain and dynamic risk-assessment models integrated with supply chain management to help the industry and regulators make better decisions for ensuring food safety. The project encompasses the entire poultry supply chain, from the farms where chickens are raised all the way to the kitchens in which meals are prepared.

In addition to addressing the problem of food-borne illness, the project will also examine antibiotic residue in poultry products. Antibiotic use on Chinese poultry farms varies and causes antibiotic residues in products. Li hopes this project will help the industry and regulators decide how to effectively limit antibiotic use to prevent antibiotic resistance problems.

## Dr. Osborn Named Engineer of the Year

Scott Osborn has been named Engineer of the Year by the Arkansas section of the American Society of Agricultural and Biological Engineers. Osborn was selected for the award because of the impact of his engineering research and associated inventions and equipment designs. Osborn holds 12 patents related to dissolving gases into water for waste and drinking water treatment, ecological restoration, odor control and pH adjustment. In 2004, Osborn and Marty Matlock, professor of biological and agricultural engineering, co-founded the company BlueInGreen. Osborn calculated that the company has contributed approximately \$18.2 million to the economy of Arkansas through sales revenue, grants and investor funding.



### BAEG FACULTY

#### Department Head

**Dr. Lalit Verma**  
Professor  
lverma@uark.edu

#### Faculty

**Dr. Thomas Costello**  
Associate Professor  
tac@uark.edu

**Dr. Brian E. Haggard**  
Professor Director of  
AR Water Resource Center  
haggard@uark.edu

**Dr. Jin-Woo Kim**  
Professor  
jwkim@uark.edu

**Dr. Yanbin Li**  
Distinguished Professor  
yanbinli@uark.edu

**Dr. Otto J. Loewer**  
Professor  
ojl@uark.edu

**Dr. Marty Matlock**  
Professor, Exec. Dir.  
Office for Sustainability  
mmatlock@uark.edu

**Dr. G. Scott Osborn**  
Associate Professor  
gsosborn@uark.edu

**Dr. Benjamin Runkle**  
Assistant Professor  
brrunkle@uark.edu

**Dr. Bailey Sullivan**  
Instructor  
basulliv@uark.edu

**Dr. Jun Zhu**  
Professor  
junzhu@uark.edu

#### Extension Faculty

**Dr. Chris Henry**  
Assistant Professor  
cghenry@uark.edu

**Dr. Yi Liang**  
Assistant Professor  
yliang@uark.edu

**Dr. Sammy Sadaka**  
Assistant Professor  
ssadaka@uaex.edu

**Dr. Karl VanDevender**  
Professor  
dvan@uaex.edu

### SIGNIFICANT FACULTY ACCOMPLISHMENT

Marty Matlock, executive director of UA Sustainability Programs and professor in Biological and Agricultural Engineering, was awarded a USEPA Science To Achieve Results (STAR) grant in collaboration with Professor Steve Luoni, Director of the Fay Jones School of Architecture's Community Design Center to develop design methodologies for urban ecosystem services. This project is in collaboration with Louisiana State University and Mississippi State University, and will work with three pilot cities to develop designs for urban resilience in water, habitat, and social systems.



Professors Marty Matlock (BENG), Steve Luoni, Director of the Fay Jones School of Architecture's Community Design Center, and Ken McCown, chair of the department of landscape architecture, are working with the Hawaii Department of Agriculture to create a master plan for food security for the islands. The project incorporates undergraduate student design with community stakeholder engagement to create a model food hub for small scale fruit and vegetable production.

Marty Matlock, executive director of UA Sustainability Programs and professor in Biological and Agricultural Engineering, has been appointed to a three-year term to the US Environmental Protection Agency Science Advisory Board by Gina McCarthy, Administrator of the USEPA. The purpose of the Science Advisory Board is to employ sound science in USEPA's pursuit of resolutions to a broad range of urgent environmental issues. Matlock's role will be to apply his scientific and technical expertise to support EPA's mission of protecting public health and the environment.

Professor Marty Matlock (BENG) was an invited participant to the National Academies of Sciences' workshop on sustainable oceans. The workshop, titled Sustaining the Deep Blue, was funded by the Keck Foundation, and was convened in November at the National Academies of Sciences campus in Irvine, CA. Participants from across the nation engaged in brainstorming and creative exchanges to develop priority strategies for restoring and enhancing marine ecosystems. Matlock's role was nutrient cycling impacts, and resulted in a concept for bringing light to the phosphorous rich but deep, dark, and cold meso-pelagic zone.

Brian Haggard and Marty Matlock have completed their three year assignment on the Governor's appointed Oklahoma Scenic Rivers Joint Study Committee. This committee was charged with overseeing the "joint Study" and making specific recommendations to the Governors of Arkansas and Oklahoma on what phosphorus levels result in nuisance algae and undesirable water-quality conditions. The "joint study" conducted by Dr. Ryan King of Baylor University included two years of data collection evaluating how algal biomass and species changed over a gradient of ambient phosphorus concentration in Oklahoma's Scenic Rivers and adjacent watersheds. This effort should the continued collaboration between the states of Arkansas and Oklahoma to improve water quality within the Scenic River's transboundary watersheds.

### STUDENT TRIP

On Thursday, September 29, 2016, Tom Costello and Anthony Taylor departed with forty-three students for a three day Biological Engineering Student Field–Industry Tour. The first stop was Heifer International Ranch in Perryville, Arkansas. At the ranch, the students learned about Heifer’s sustainable agricultural programs around the world and saw demonstrations of several appropriate technology applications for the developing world, including a human powered water pump. The next stop on the tour was Whillock Hydroelectric Power Station, a small renewable electric generating station on the Arkansas River that is operated by the Arkansas Electric Cooperatives. The visit included a trek several stories below the river to view the turbines and generators. We then departed for Little Rock, Arkansas to tour the Diamond Bear Brew House. Students got to see their setup for the fermentation process and bottling. The brew master spoke on his process controls needed to insure the desired quality and taste of the beer. On the second day, the group toured Hormel (Skippy Peanut Butter). We saw the whole process from off-loading train cars of peanuts, processing/ manufacture of the peanuts to peanut butter, as well as automated packaging. The company also hosted the students in a taste test. Our favorite was super crunch. All Skippy product in the U.S. is made in Little Rock! The faculty and students then traveled to Lonoke and Scott, Arkansas to tour row crop farming operations, arranged by the Lonoke County Extension office. Students got close-up looks at large farm machinery (tractors, planters, sprayers, combines), got a tour of an on-farm grain handling, storage and drying facility, and learned about irrigation practices and pumping plants. On the third day, the tour started at a UA Discovery Farm near Morrilton, Arkansas where we viewed runoff collection stations to monitor losses and water quality from row crop agriculture. The site is collecting baseline data for conventional production practices as well as conservation strategies. Then we toured the nearby Point Remove Irrigation District Pumping Plant that distributes surface water from the river to farmers for irrigation. Arkansas has untapped surface water potential that can reduce the need for groundwater pumping. The last stop was the Buffalo Point On-Site Waste Treatment Plant, a small treatment plant near the Buffalo River that takes in sewage from the restrooms in the park. The system was small, simple, robust and effective in protecting the pristine river. While at the park, we had a picnic lunch and visited the beautiful bluffs along the river at Buffalo Point. The tour was very educational and much fun. We all traveled together on a cushy tour bus. The success of the tour was dependent upon the many people who prepared for our visits and hosted us along the way.



Dr. Verma taking in the view during our riparian lunch at Cherokee Park

STUDENT TRIP



Students visit the Hormel (Skippy Foods) Plant



Row Crop Farm



Students tour Diamond Bear Brew House



Whillock Hydro-Electric Power Station



Students visit Irrigation District Pumping Plant

### ACCOMPLISHMENTS

#### **Graduate Student Looks to Make Smart Textiles, Exotic Surfaces a Reality**

Batta-Mpouma, who is advised by professor Jin-Woo Kim, is in the midst of developing a process to fabricate cellulose nanocrystals-based nanofibers and films from cellulose-rich plant materials. The nanofibers would have many potential applications in biosensing, photovoltaics and displays, including the creation of wearable bioelectronics textiles.



Photo by Whit Pruitt, University Relations

#### **Congratulations to Vaishali Kandpal**

Vaishali Kandpal, master's student in biological engineering, College of Engineering; her adviser is Chris Henry. She is a first place finalist for the Graduate School's second-annual Three Minute Thesis competition. The university-wide final is scheduled for Friday, Feb. 10, 2017.



#### **Grad Students Win Design Contest**

Congratulations to a team of our graduates who received second place at the 2016 G.B. Gunlogson Student Environmental Design Competition, hosted by the American Society of Agricultural and Biological Engineers. The team included Christian Heymsfield, Kyle Lawrence, J. Dillon Madden and Paul Naegle. They made a presentation at the 2016 Annual International Meeting of ASABE at Orlando in July. Their faculty advisors were Julie Carrier (now relocated), and Thomas Costello. This is the seventh consecutive year that biological engineering students from the University of Arkansas have placed in the top three at a national design competition, and since 2010, 11 student teams from the department have been recognized nationally.



### STAFF MEMBERS SPOTLIGHT

**The semester, we are happy to welcome two staff members to our department. Janelle is the Department Fiscal Manager and Anthony is our Administrative Specialist.**

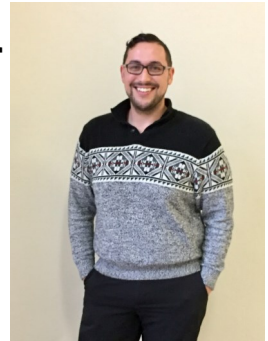


#### **Janelle Alexander Mott**

I was raised in SE Arkansas and North Central Louisiana where my Southern heritage was instilled. I attended the University of Arkansas in Fayetteville, Sam M. Walton College of Business, where I earned my B.S.B.A. in Marketing Management with a Minor in Communication. From there, I worked at Tyson Foods, Inc. at several departments as a Trade Marketing Manager and a Business Analyst. My five year old daughter, Alexa, is my dancing princess who is up for all adventures. We love to travel, cook, and spend time with friends and family.

#### **Anthony Taylor**

I was born in Roswell, New Mexico, but raised a Navy brat so I was able to see a fair amount of the United States shore line before calling Arkansas home. I have been working on campus for almost ten years now as a Coordinator for Facilities Management. I enjoy playing tabletop games and trying not to burn my house down while attempting a Pinterest recipe.



### **The Department is this year's home of the College of Engineering's Christmas Swap Cookie Jar**



Bio and Ag swept the Staff Bake-off. Linda Pate won first place for her Chocolate Chip Banana Bread and Brad Austin received second place for his Caramel Cheesecake. Congratulations, Linda and Brad!

## NEW STUDENTS

Isabella Boddicker  
Tristan Carpenter Boyd  
Colton E Bryant  
Kristen B Connelly  
Jordan Michel Fisher  
Lillian J Glaeser  
Lourdes Ines Gonzalez De La Cruz  
Sarah C Gould  
Laura Caroline Gray  
Isaac Houston Green  
Lillie M Haddock  
Gavin P Heller  
Lydia Catherine Huck  
Andrew M Jewell  
Wesley Robert Jones  
Bailey Christine Keller  
John Garrett Lampson  
Eli G LaSalle  
Mary Catherine Lawson  
Annie Lee  
Charles Braden Lloyd  
Aryana B Mitchell  
Priscila Morales  
Zachary A Morgan  
Joshua Matthew Niccum  
Meagan Noel O'Hare  
Timothy Matthew Oliver  
Madeline Jane Oxner

Pablo Andres Pena  
Marilyn S Pharr  
Roya Mercedeh Rashidi  
Guillermo Sanchez Sanchez  
Daniel Austin Seel  
Connor W Smalling  
Hsi-Cheng Su  
Jaden Emily Talley  
Nhia Thao  
James C Vaughan  
Natalie Von Tress  
Wesley Robert Wahls  
Kelly Elizabeth Walls  
McKenzie Jo Williams  
Trent T Willson  
Trent Woessner  
Zachary Daniel Wofford  
Kaylyn Michelle Zuech



## SCHOLARSHIP RECIPIENTS

### **Mike & Yvonne Jones**

Brooke Benham  
Megan Rasmussen

### **Arkansas Academy of Agri & Biological Engineering**

Trent Woessner  
Kami Parmenter  
Bailey Keller

### **Biological and Agricultural Engineering General Scholarship**

McKenna Belcher

### **Billy Bryan Scholarship**

Ryan Clark  
J.A. Riggs Scholarship  
Dustyn Perkins  
Jillian Schneider

### **Xzin McNeal Kendrick Hardaway**

Jillian Schneider  
Brooke Benham  
Madeline Ludwig  
Thomas Helvick  
Hsi-Cheng Su

### **John W. and Tryanny Odom White**

Nichol Ghanfili

# Scholarship Donation Opportunities

Please accept my contribution to the following scholarship(s). My check for  
\$\_\_\_\_\_ is enclosed.

**Billy Bryan** Scholarship Fund \_\_\_\_\_

**Joel T. Walker** Memorial Scholarship Fund \_\_\_\_\_

**Carl L. Griffis** Memorial Scholarship Fund \_\_\_\_\_

Biological and Agricultural Engineering **General** Scholarship Fund \_\_\_\_\_

Biological and Agricultural Engineering **Student Support** Fund \_\_\_\_\_

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Remit Payment To:

*Dept. of Biological & Agricultural Engineering*

*203 Engineering Hall*

*University of Arkansas*

*Fayetteville, AR 72701*