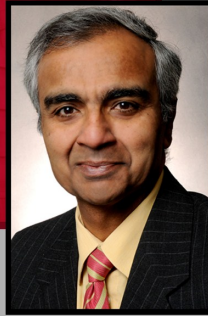


**From the Department Head
Dr. Lalit R. Verma**



It is a pleasure to share the highlights of the past few months in the Spring 2012 BAEG Newsletter. The semester with record enrollments in our classes, challenging us to accommodate students in lectures and multiple lab sections. We have five senior design teams engaged in challenging real-world problems under the guidance of their coordinator Dr. Tom Costello and other faculty mentors. Teams are also preparing for national competitions while completing the projects. Some of our students will participate in study-abroad programs in Belize. Drs. Haggard and VanDevender were recognized in January with the John W. White Outstanding Team Award at the UA System Division of Agriculture and Bumpers College Awards Ceremony. We have reconstituted our Advisory Board and will engage them in a comprehensive review of our programs on May 15 to seek feedback and recommendations.

We were engaged in continued review of our academic, research and extension programs with the impending separation of the biomedical engineering portion of our portfolio. The undergraduate curriculum has undergone a comprehensive review and revision to deliver the Biological Engineering degree of "Healthy Planet Healthy People" addressing the challenges in sustainable food, water and energy systems. We had constructive input from some of our graduates through the Academic Advisory Committee. Our research and extension programs address problems relevant to our stakeholders, not only dealing with food and agriculture, but also in sustaining ecological prosperity for a healthy planet. Our Department of Biological and Agricultural Engineering is truly unique as it resides in the UA System Division of Agriculture and UA Dale Bumpers College of Agricultural, Food and Life Sciences and the College of Engineering. Research and teaching faculty are on campus while our extension colleagues are in the state office of the UA Division of Agriculture's Cooperative Extension Service. The newest addition of Dr. Chris Henry at the Rice Research and Education Center in Stuttgart has been valuable and seriously needed to address water issues in our Delta region. Dr. Bajwa left to become the Chair at North Dakota State University. We have experienced steady growth both in the quality and numbers of our students, and scholarly productivity of our dedicated faculty.

Please let us know how you can help us and do not hesitate to call (479-575-2351), e-mail (lverma@uark.edu) or if you are in the area, drop in for a visit. I would be delighted to meet with you.

Lalit R. Verma
Professor and Department Head

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Spring 2012 Edition

Significant Faculty Accomplishments



Dr. Marty Matlock

Dr. Marty Matlock was recognized by the American Academy of Environmental Engineers by being named a Board Certified Environmental Engineer in November, 2011.



Dr. Otto Loewer

Dr. Otto Loewer has been awarded the ASABE Outstanding Agricultural Engineer of 2011. The 48th Annual Meeting of the Arkansas Section American Society of Agricultural and Biological Engineers met on October 7, 2011 at the University of Arkansas

Division of Agriculture Cooperative Extension Service Building in Little Rock, Arkansas.

The University of Arkansas Division of Agriculture Awards Luncheon was held January 6, 2012 where The John W. White Outstanding Team Award was received by the Arkansas Phosphorous Index Team that developed the risk assessment tool and training program to guide environmentally appropriate animal manure applications on pastures. The team consisted of Mike Daniels, Andrew Sharpley, Chuck West and Tommy Daniel, all in the Department of Crop, Soil and Environmental Sciences; Edward Gbur, director of the Agricultural Statistics Laboratory; Brian Haggard, director of the Arkansas Water Resources Center; Nathan Slaton, director of Soil Testing and Research; and Karl VanDevender, Extension engineer, Department of Biological and Agricultural Engineering.



Dr. Brian Haggard
Professor



Dr. Karl Vandevender
Professor, Extension



Pictured from left: Dr. John Hopkins, Dr. Dharmendra Saraswat, Dr. John Boyd, and Dr. James Robbins

The Blue Ribbon Extension Communication Award for "Mobile Web Apps for Weed and Insect Control 2011" by the Southern Region-American Society for Horticulture Sciences (SR-ASHS) was awarded to our University of Arkansas Cooperative Extension Service team consisting of (from left) Dr. John Hopkins, Dr. Dharmendra Saraswat, Dr. John Boyd, and Dr. James Robbins. The SR-ASHS annual meeting was held February 6, 2012 in Birmingham, Alabama.

The 'web' apps have been designed to be accessed across multiple platforms (e.g. iPad, iPhone, Android) thereby increasing their access by mobile devices on an 'as needed' basis. They can be viewed on any internet connected device (e.g. desktop, laptop). Although developed for use in Arkansas, the weed and insect

'web-apps' will have broad use across many states in the Midsouth and Southeast by a broad group of users consisting of commercial applicators, home gardeners, extension agents, commercial growers, landscapers, crop advisors, Master Gardeners, college students, and K-12 students.

The app can be previewed at www.hdwap.com/uada For username and password, enter in : horticulture

Significant Student Accomplishments



(Left to Right) Mahmoud Sharara, Gurdeep Singh, Dr. Lalit Verma, Dr. Dharmendra Saraswat, and Dr. Samy Sadaka

2012 GRADUATE STUDENT RESEARCH COMPETITION

The 2012 Graduate Student Research Poster Competition was a great success this year with three times as many entries as the year before and more than double the categories represented. The awards ceremony was held at the University of Arkansas Alumni House on February 23 with awards presented by Governor Mike Beebe and Chancellor Gearhart.

Mahmoud Sharara, Ph.D. student in Biological Engineering, won 1st place in the Biological and Agricultural Engineering division of the Student Research Poster Competition for his

poster titled "Auger Reactor Gasification of Algal Blooms from Wastewater Treatment". Mahmoud is advised by Dr. Samy Sadaka.

Gurdeep Singh, M.S. Student in Biological Engineering, won 2nd place in the research competition with his poster titled "Simulating Water Quality Impacts of Biofuel Crop Production". Gurdeep is advised by Dr. Dharmendra Saraswat.

Luke Brockman, MS in Biomedical Engineering, won the 2nd place in category of nanotechnology. His poster title is "Nanowire and Aptamer Based QCM Biosensor for Rapid Detection of Avian Influenza Virus"

Jacob Lum, Ph.D. student in Cell and Molecular Biology and advised by Dr. Yanbin Li, won the 2nd place in category of cell and molecular biology. His poster title is "In-vitro Selection of Aptamers Against Avian Influenza Virus Subtype H7".



(Left to Right) Luke Brockman, Jacob Lum, and Dr. Yanbin Li

2 BENG GRADUATE STUDENTS RECEIVE DOCTORAL ACADEMY FELLOWSHIP AWARDS



Zach Callaway

Gurdeep Singh

Zach Callaway and Gurdeep Singh have been awarded Doctoral Academy Fellowship (DAF) Awards from the Graduate School and International Education. Both graduate students will begin pursuing their Doctoral programs this Summer. The fellowship awards are one of the highest marks of recognition that the University of Arkansas offers its graduate students. In order to be considered, students must be nominated by their major professor. Recipients of the DAF must have a GPA of at least 3.65/4.0 and a GRE scores of at least 1200 V/Q and 5.0 writing and will receive \$10,000 on top of their graduate assistant pay.



Katie Whitbeck

Biological Engineering Student to try out for Summer 2012 Olympics

Katie Whitbeck is a senior Biological Engineering student from Oklahoma City who will be trying out for the U.S. Women's Swim Team for the 2012 Summer Olympics in London. The tryouts will be held in Omaha, NE at the end of June. Katie practices her swimming and conditioning several hours a week while staying in contact with her two coaches in Oklahoma. The Biological and Agricultural Engineering Department wishes her the best of luck with her training and competition.

Student Selected for Internship with Georgia-Pacific

Biological Engineering student, Jana Hindman, has been selected to be the Ashland Water Technologies Intern with the Georgia Pacific plant in Portland, Oregon. This competitive summer internship program provides students with real world experience that has potential for leading to full time jobs. According to the Georgia-Pacific website, the program provides opportunities with the following responsibilities:

- Investigating and evaluating long-term compatibility of emerging technologies
- Maintaining close working relationships with equipment and raw material suppliers
- Facilitating technology transfer between production facilities and interacting with facility colleagues
- Participating in activities with professional associations, universities and technical institutions

Jana will begin working in late May and will be there until mid August. She is very excited about the opportunity to work in Portland and the potential for a possible future career.



Jana Hindman



(Left) Naresh Pai with ASPRS President, Gary Florence

ASPRS Recognizes BENG Post-Doctoral Associate

Naresh Pai, a Post-Doctoral Associate in the Biological and Agricultural Engineering department, was awarded a Presidential Citation by the American Society for Photogrammetry and Remote Sensing (ASPRS). This award is given to individuals for special, personal, and meritorious contributions to the Society President and to the operation and advancement of the Society.

For this award, Pai provided service to the ASPRS Website Design Committee, which oversaw and provided feedback to the redesign of the ASPRS website (www.asprs.org). The award was presented on March 22nd, 2012, during the Memorial Address ceremony at the 2012 Annual ASPRS Conference in Sacramento, CA.

Naresh is supervised by Dr. Dharmendra Saraswat and performs research on the practical applications of geospatial technologies in the agricultural and water resources area.

BENG Students Traveling to Belize



Colby Reavis



Mary Price



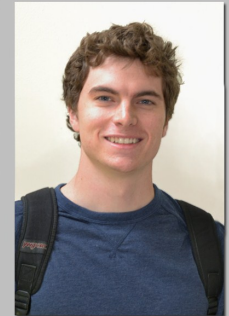
William Ryan



Adam Burke



Jackson Boice



Russell Bair

Six U of A Biological Engineering Students are traveling to Belize this Summer for a 3 week program as members of the engineering team to assist in community development project in the small city of Dangriga. They will focus on two main projects. The first is to replace a concrete bridge with culverts or design a new bridge entirely. The second is to design and construct a new building or booth utilized for tourism information for the city.

The students are expected to complete writing a assignment for the course stating their goals and expectations of the project prior to leaving Fayetteville and a second upon returning that evaluates their processes and outcomes.

The U of A has partnered with the community of Dangriga and Peacework for Education since 2006. More information regarding this program and others can be found at <http://studyabroad.uark.edu>.



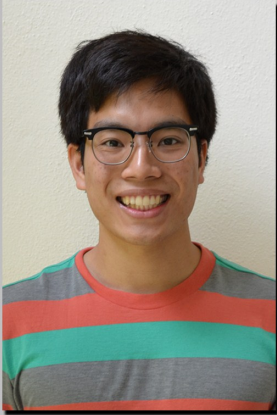
Aaron Thomason

Student Granted Opportunity to Study in Cuba for Summer 2012

Junior BENG student Aaron Thomason has been awarded the opportunity of traveling to Cuba for a 4 week program sponsored by the Cuban and Caribbean Studies Institute of the Stone Center for Latin American Studies through Tulane University. The program is takes place at the University of Havana. Aaron will be taking two classes during his stay; a Latin American Studies course that focuses on Cuban culture, politics, ecology, and environmental management, and a Cuban history course.

Aaron is excited for the opportunity to meet and learn from Cuba's Ecological Engineers that helped transition Cuban agriculture during the "Special Period" after the fall of the Soviet Union when oil and other resources necessary for conventional industrial agriculture were sparse.

Tulane University's Summer in Cuba program takes place beginning May 26 - June 23, 2012.



Jimmy Vo

BENG Student Receives 2 Major Awards

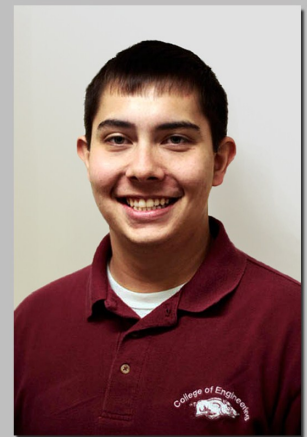
Biomedical Engineering student Jimmy Vo has been awarded the Barry M. Goldwater Scholarship worth \$7500. This nationally competitive scholarship was awarded to 282 scholars from 1123 applicants from colleges nationwide. Jimmy is one of two students to win this award in Arkansas.

Candidates are selected based on merit and their experience in research. The award is considered the most prestigious in the U.S. for undergraduates studying the sciences.

Earlier this year, Jimmy was recognized by the American Association for Cancer Research by receiving the Thomas J. Bardos Science Education Award for Undergraduate Students. The award funded Jimmy's attendance to the associations's annual meeting for two years. This year, the meeting took place in Chicago where Jimmy presented his research that he has conducted with assistant professor, Dr. David Zaharoff. Together, they are studying Interleukin -12 (IL - 12), which is a protein used to stimulate the immune system to attack cancerous tumors.

BENG Student Featured in New Faces of Engineering: College Edition

Senior, Joseph Wyatt has been recognized by the National Engineers Week Foundation's first annual *New Faces of Engineering: College Edition* on a list titled "15 of the most promising college engineering students from the United States - and across the world." Students were chosen based on their skills in academics, leadership, communication, and community service. Joseph was especially recognized for his participation in establishing a chapter of the American Indian Science and Engineering Society on the University of Arkansas campus three years ago and currently serves as the chapter vice president. The focus of the society's efforts are to promote diversity by increasing the number of minorities in the field of engineering.



Joe Wyatt

2012 College of Engineering's Outstanding Senior



Abby Washispack

Biological Engineering student Abigail Washispack has been awarded the College of Engineering's Outstanding Senior for 2012. This honor was selected by the College of Engineering's Dean, Dr. Ashok Saxena. Abigail was one of three final candidates personally interviewed by Dean Saxena based on her academic and extra-curricular accomplishments and career plans.

Abigail will be recognized during the College's Commencement Ceremony, where she will be seated on stage and asked to speak on behalf of her senior class.

Faculty Spotlight: Dr. Yanbin Li

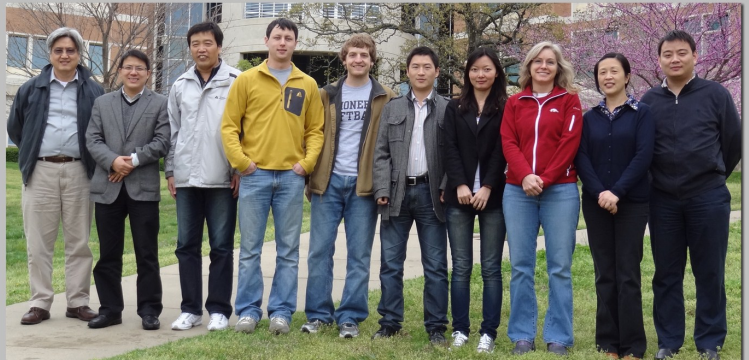


*Dr. Yanbin Li
Professor and Tyson Endowed Chair in Biosensing Engineering*

Dr. Yanbin Li was honored on April 25 at the annual Outstanding Engineering Alumni Awards ceremony at the Nittany Lion Inn on the University Park campus in Pennsylvania. Dr. Li was one of thirteen alumni recognized for their exceptional levels of professional achievement.

For the past several years, Dr. Li and his research team has focused on a project on a nanotechnology-based biosensor for rapid detection of avian influenza in poultry. This is an international collaborative project sponsored jointly by both USDA/NIFA and China Ministry of Science and Technology. Dr. Li has collaborated with Dr. Billy Hargis, Professor of Poultry Science, and Dr. Steve Tung, Professor of Mechanical Engineering at University of Arkansas, Dr. Luc Berghman, Professor of Immunology at Texas A&M University, Dr. Tony Huang, Professor of Nanofabrication, and Dr. Huaguang Lu, Research Professor of Virology at Penn State University. Dr. Li and coinvestigators and their research teams conducted the research in collaboration with some professors at China Agricultural University and South China Agricultural University,

China. They conducted the experiments in the laboratories at University of Arkansas, Penn State University and South China Agricultural University. The biosensor is based on antibodies/aptamers for very specific capture of avian influenza H5N1, magnetic nanoparticles for highly efficient separation of target virus in poultry swab samples and micro/nanoelectrodes in microfluidic chips for ultra sensitive measurement of impedance signals of captured virus. Their results indicated the novel biosensor method could detect avian influenza virus at low concentrations in poultry swabs in less than two hours. The research prototype of the biosensor showed it advantages as a portable, simple operation, cost-effective instrument for in-field use. They are conducting more tests in China and also assisting the University for technology transfer.



Dr. Li (left) with his students

At the same time, Dr. Li and his research team has also worked on a research project on a fluorescent biosensor for simultaneous detection of multiple foodborne pathogens, including Salmonella Typhimurium, E. coli O157:H7 and Listeria monocytogenes, in collaboration with Dr. Michael Slavik, Professor of Microbiology at University of Arkansas, and researchers at Zhejiang University in China. The biosensor is based on magnetic nanobeads to simultaneously capture and separate three target pathogens in a food sample and quantum dots to simultaneously detect them. The biosensor method was able to detect multiple target bacteria in less than one and half hours. A prototype of this biosensor is being designed and fabricated and will be tested as an automated instrument for future applications.

Multidisciplinary and systematic approaches and international collaboration are critical in development of the biosensor technology with applications in agriculture and food. Dr. Li and collaborators believe there are more opportunities in the future to work together for more challenging research.

New to Our Department



*Aaron Wilson
Fiscal Manager*



*Cosmo Denger
Technology Support Specialist*