ISSUE 6 Vol. 2 NEWSLETTER OF ACHIEVEMENT JULY 2010

Introducing TREM

Visitors from across campus were welcomed to an April open house to view the Translational and Regenerative Medicine Imaging laboratory (TREM), the newest biomedical engineering laboratory on the lower level of Chase Hall. The lab features a high field Magnetic Resonance (MR) scanner suitable for mouse and small specimen imaging and is directed by Dr. Shadi F. Othman, who joined the faculty in August 2008.

The TREM lab has already sparked the interest of other researchers at UNL and at the University of Nebraska Medical Center (UNMC). One laboratory technique, high resolution Magnetic Resonance Elastography (MRE), uses custom software to couple the MR scanner with a mechanical actuator to obtain mechanical images of different mouse organs. MRE is currently being applied to assess the growth of implanted tissue-engineered constructs in living mice and is also being used in collaboration with UNMC to study mechanical property changes for traumatic brain injury in a mouse model. For more information about the lab and current research projects, please visit the lab Website: **trem.unl.edu**.

Photo by Brett Hampton

The MRI is in the room next to the main lab space, and is monitored via computer.

Dr. Shadi Othman shows Dr. Prem Paul, Vice Chancellor for Research and Economic Development, one of the culture plates used in the lab.

Holly Reiling, Clarissa Nutt, Dr. Othman, graduate student Evan Curtis, and Jamie Volbracht share a light moment during the open house.

From the Department Head

Ron Yoder

As we update you in this issue of the Biological Systems Engineering Department newsletter we have a significant focus on the activities and achievements of our students, and on international activities. From participation in intercollegiate athletics, to honor societies, to international study—we are proud of the accomplishments of our students. While we highlight the accomplishments of recent graduates Craig Brester, Wes Cammack, and Ben Nelson, there are numerous other students in our programs representing UNL in athletic competition, and excelling in the classroom: Bryan Peters, baseball (Big 12 Commissioners Honor Roll); Luke Lingenfelter, football (Big 12 Commissioners Honor Roll); Jeffrey Uher, football; Travis Englund, track and field (Big 12 Commissioners Honor Roll); Jessica Mills, soccer (Academic All Big 12); Jerad Gubbels, wrestling; Suzanne Higgins, track and field (Academic All Big 12); and Bobbi Balogh, swimming and diving.

In a sampling of the international activities our students, faculty, and staff are involved in we provide you with details of Paul Jasa in China, Derrel Martin in Brazil, Curt Weller in Africa and South America, and our students traveling to Argentina and Egypt. We encourage all of our undergraduate students to engage in international activities at some time in their academic careers to better prepare themselves for their professional careers. Four of our B.S. graduates in May were from other countries, so coming to UNL was an international experience for them.

Mark your calendars for September 18 and plan to join us for fun, food, fellowship, and football. We will begin mid-morning with tours of Chase Hall, Splinter Labs, and the Lester Larsen Tractor Museum, followed by lunch and time for visiting. At 2:30 the game between the Huskers and the Huskies will be shown on the big screen, and everyone is invited to stay—perhaps some of the highly prized products of the Dairy Store will be available for tasting.

Biological Systems Engineering Department Newsletter

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Any mention of trade names in this publication does not imply endorsement by the Biological Systems Engineering Department.

Biological Systems Engineering Department Newsletter
Archives
Past issues are on the web at bse.unl.edu/news.shtml

2010 Hall of Fame John E. Rosenow

Courtesy photo
John Rosenow

John Rosenow is the founder and Chief Executive of the million-member Arbor Day Foundation which has been responsible for planting more than 200 million trees around the world. Under his leadership, the Arbor Day Foundation, in cooperation with the U.S. Forest Service and the National Association of State Foresters, created the Tree City USA community forestry program which today impacts 3,400 towns, cities, and military bases in all 50 states. The Foundation also is responsible for Tree Line USA (a public utility program), the Rain Forest Rescue program, and Arbor Day Farm's Lied Lodge (an international conference center dedicated to education and conservation). The Nature Explore program, established in collaboration with Dimensions Education Research Foundation, which helps create Nature Explore Classrooms in child care centers, schools, parks, and nature centers throughout the country, is another well-known program.

John graduated from Elmwood High School and received a B.S. in Agricultural Engineering from UNL in 1971. He received the O.J. Ferguson Award as the outstanding senior in the College of Engineering and Technology, and was a member of Sigma Tau (now Tau Beta Pi) and Alpha Epsilon (the Agricultural Engineering Honorary). John was in FarmHouse (President, junior year) and was active in the College and the then named Agricultural Engineering Department. Some of his outstanding activities included winning the ASAE Mid-Central student research paper competition at St. Joseph, MO, serving as Co-Chair of E-Week in 1970, and serving as Vice President of the prestigious Innocents Society.

After graduation, John became the Nebraska Director of Tourism at age 21, the nation's youngest to ever direct a state tourism program. John created the *Nebraska, the Good Life* marketing program and Nebraska Vacation Guides. During his tenure, Nebraska Department of Tourism programs won several regional and national awards, including two Discover America Awards, and the economic impact of Nebraska's tourism industry doubled.

Additionally, John also serves on the board of Keep America Beautiful. He was an initial member of USDA's National Urban and Community Forestry Advisory Council. In 2006, with the Dimensions Foundation and others, he helped found the Nature Action Collaborative for Children, for the World Forum Foundation.

In 2001, John and three other distinguished alumni participated in the University-wide Master's Week. They shared experiences with students and guest lectured in classes, including some in this Department.

John is a creative and effective leader who generates and implements ideas through good organization, collaboration, and delegation of responsibility. Those talents developed early while in Agricultural Engineering, were honed at the Nebraska Department of Tourism, and utilized to the utmost through the Arbor Day Foundation. Congratulations to John Rosenow, the newest Hall of Fame member.

Three Student Athletes—All Walk-ons

Academics at the university level can be challenging for many students from small towns. Adjusting to life in a larger city, the number of people, and the rigorous courses can easily take a toll if one is not focused and prepared for the experience. Add college-level athletics in the mix, and it becomes even more difficult. Three of our recent graduates know this from personal experience. Ben Nelson (no, not the U.S. senator) from Atwater, MN, Craig Brester from Howells, and Wes Cammack from DeWitt all met academic and athletic expectations placed upon them during their time in the department and at UNL, and excelled.

Left to Right: NU Student Male Athelete of the Year, Craig Brester, Ben Nelson, and Wes Cammack

Easy to pick out in a crowd, Ben began college as a mechanical engineering major and during his sophomore year realized that he might be tied to a desk doing computer design and modeling. He talked to his advisor who pointed him to Mechanized Systems Management. Ben found it to be a good fit—he could solve problems while working with his hands and seeing the results of his labor, something he always liked about growing up on a dairy farm. Ben praises Jack Schinstock for the great help he provided in guiding his academic choices, and feels he will use what he learned in his career.

As a sophomore, Ben also walked on to the basketball team as a forward and made the transition from a small high school gym to the Devaney Center, which holds 13,000 and is a lot noisier. Ben found the traveling and practice time involved a trade-off with "normal" student activities. He has no regrets about his decision since the fans, students, coaches, and teachers were all cheering for his success whether on the court or in the classroom.

Craig also made the small-town to big-city transition when he came to the university. He attended class with 28 students in high school, and then attended classes with over 100 students at UNL. Growing up on a diversified farm taught him responsibility and gave him self confidence in getting things done on his own. He walked on to the wrestling team as a freshman, and went from being the top dog in high school sports, to the bottom of the heap—literally and figuratively. He came in weighing 174, red-shirted, and then wrestled at 197 for four years. During his last two years, Craig was ranked number 2 in the nation in his weight class, and was a 3-time NCAA All-American. Although he has no Olympic aspirations, he did get to experience the Denver training facility, and has a wealth of experiences thanks to Coach Manning. He was NU's Male Student-Athlete-of-the-Year and closed his career with a 109-21 career, finishing in the top ten at UNL in both career wins and career winning percentage. Accomplished off the mat too, Craig was a four-time first-team Academic All-Big 12 selection, a four-time NWCA All-Academic Team member, and a recipient of a Big 12 Postgraduate Scholarship. He followed the science option in Mechanized Systems Management because of his interest in combining agriculture and science. Jack was also instrumental in bringing Craig into the program. Craig is currently an administrative associate with the athletic department.

A true-freshman walk on, Wes joined the football team after the fourth game of the season as a wide receiver and member of the special teams for kick offs and punt returns. He lettered all four years, was an honors student, and an Academic All-Big 12 for three years. Although he started college as undeclared, and was leaning towards history for a major, Wes decided to switch to a field more related to agriculture, and found his way to Agricultural Engineering. That switch put him 20 credit hours behind his classmates, but he caught up.

Wes is working for ConAgra in Wisconsin at the Swiss Miss plant in Menomonie now that he has graduated. He wants to learn the manufacturing process, which will meet his need to stay active, and not be sitting at a desk all the time. An MBA may be in his future plans, and he hasn't ruled out returning to farming some day.

All three students mentioned the time management skills needed to participate in athletics as a positive part of their college experience. The structured hours devoted to their sports meant learning how to juggle practices, meetings, travel, and studies which has prepared them for multi-faceted careers, and given each of them discipline about using their time well. All three agree that among the best things about being a student athlete include meeting people, being part of a team, making connections that would not have happened otherwise, and the incredible support from their coaches and faculty. Once you're on a team, it takes initiative and hard work to stay on it. These three true student athletes proved it can be done.

Alumni Visit

We welcome the opportunity to share ongoing activities of the department with visitors. Two alumni visited this spring and in seminar presentations shared their recent work. (Presenting a seminar is not a requirement to visit the Department.)

Jennifer Melander

In April, **Jennifer Melander** presented a seminar on silorane composites, biocompatible materials most recently used as a dental restorative. Jennifer, who received her B.S. (2003) and M.S. (2005) in our department, just finished her Ph.D. at the University of Missouri at Kansas City. As a post-doc at UMKC, she is moving existing silorane composite research into orthopedic applications for stabilizing traumatic bone injuries working with orthopedic surgeons and residents at "hospital hill," the university medical complex in Kansas City. She works for Dr. David Eick, Chair of the Department of Oral Biology in the School of Dentistry. Jennifer would like to stay in the academic setting as a researcher and teacher, and this summer, taught a course in engineering statics in the civil and mechanical engineering department, in the College of Computing and Engineering.

Charles Remund

Also in April, **Dr. Charles (Chuck) Remund**, (Ph.D., 1985) President of GeoPro, Inc., in Elkton, South Dakota, presented a seminar on geothermal energy systems for students and faculty. Chuck finished his undergraduate and Master's studies at South Dakota State in Agricultural Engineering, taught for two years at SDSU in the Mechanical Engineering Department, and then came to Lincoln for his Ph.D. in 1985. After graduation in 1988, he taught Mechanical Engineering at South Dakota State for 22 years. He began a gradual shift from teaching to business in 1995, slowly developing the first of three companies he has started, GeoPro, Inc., which specializes in grouting bore holes with a thermally enhanced grout. His second company, GRTI performs conductivity testing. Geo-Connection, Inc., the third company, is a consulting, design, and training company that utilizes a software they developed specifically for geothermal applications. The three companies serve an international clientele, from Canada to Japan, to the Caribbean, Mideast, and Europe.

What's New? Update your profile at: bse.unl.edu

Select Alumni Update under Department heading.
Inclusion in the newsletter is optional.

Alum news

2000s

Donee Alexander (2002, B.S., BSEN; 2004, M.S., BSEN) is working on her Ph.D. at the University of Washington in Civil and Environmental Engineering. An interest in evaluating how engineering technologies affect community health in the developing world also led to a certificate in Global Health from the Global Health Department where, this past quarter, Donee developed and taught a senior/graduate-level course entitled *Engineering in the Developing World*. Research takes her to Bolivia for half of the year where she evaluates the health benefits related to improved cookstove implementation. In addition to her research, she is the Bolivia project manager for Engineers Without Borders—UW Chapter. Donee writes, "The department was great to me, and I'm sure I wouldn't be where I am now had I not gone to UNL."

DelShawn Brown (2007, B.S., BSEN) received his M.S. in Environmental Engineering this spring from UNL. He is employed by FD & Associates based in Omaha, NE, and working on the Omaha Lead Superfund Site. FD & Associates provides environmental services to the EPA and HUD. DelShawn supervises 15 employees and field staff. Responsibilities include income projections for payroll, compliance with state and federal guidelines, and proposal preparation in response to RFPs for contract procurement. DelShawn plans to gain as much experience as possible to sit for the PE exam in the next few years. Future plans may include a return to school to pursue a Ph.D.

Ai Pheeng Wee (2007, B.S., BSEN; 2009, M.S., BSEN) is working for Pfizer in North Carolina.

Jacob Johnson (2007, B.S., BSEN) is a biomedical engineer with the Department of Veterans Affairs in Minneapolis. He was recently nominated for the Biomedical Engineer of the Year award.

Crystal Bryan (2007, B.S., BSEN) will be starting her third year of graduate studies at Tufts University Sackler School of Graduate Biomedical Sciences. She soon will have a new publication in BMC Genetics. Her thesis project involves cell cycle control and cardiomyocyte growth.

Katrina Christiansen (2005, B.S., BSEN; 2006, M.S., BSEN) will finish her Agricultural Engineering Ph.D. at Iowa State University while living in Auburn, Alabama, where her husband accepted a post-doc position with Auburn University. Her dissertation will be titled *Cost Structures and Life Cycle Impacts of Algal and Terrestrial Biomass Production*. She plans to finish in May 2011.

Todd Reed (2004, B.S., MSYM; 2009, M.S., MSYM) has recently moved to Lincoln after getting married. He works for Althouse Ag, Inc., and also sells seed for Golden Harvest. He is in the process of setting up an enterprise that will offer yield map analysis and prescription planting maps.

Kimberly Ryland (2003, B.S., BSEN) is an Advance Product Engineer with 3M in Ardmore, OK.

Blaine Christiansen (2001, B.S., BSEN) has begun a position as Assistant Professor in the Department of Orthopaedics at UC Davis Medical Center. After UNL he attended graduate school at Washington University in St. Louis, where he earned his M.S. and Ph.D. in Biomedical Engineering. After a two-year post-doc at Harvard Medical School in the Center for Advanced Orthopedic Studies, he now researches the role of the mechanical loading environment in determining the structure and strength of bone, and how bone adapts to increased or decreased mechanical loading conditions.

1990s

Gregory Kelvin (1995, B.S., BSEN) is a member of the faculty of Environmental Engineering at Carnegie Mellon University.

1980s

Kevin Fairbanks (1983, B.S., AGEN) has just finished his second year of learning the exciting world of nuclear power. He is programming the Plant Process Computer, VAX 4100's, running OpenVMS, and coding in Fortran. He writes that it takes him back to the days in Lincoln under Dr. Schulte, programming the SOLSWINE application on the mainframe.

Faculty and Staff News

Deepak Keshwani attended the Annual Meeting of the Great Plains IDEA alliance from April 18-21 in Kansas City, MO. He represented the Mechanized Systems Management program in the alliance, which gives universities from across the country access to courses via distance education and offers on-line certificate programs for students.

The UNL Teaching Council and the UNL Parents Association honored faculty and staff for their contributions to students at a ceremony in January. **Jack Schinstock** (14th time), **Dennis Schulte** (12th time) and **Dave Morgan** (first time) were recognized.

Derrel Martin delivered the keynote address at World Water Day, in Belo Horizonte, Brazil, during World Water Week. Sponsored by the State of Minas Gerais in partnership with Valmont, the week-long event is held at rotated locations in Brazil. Derrel met with university and government researchers, graduate students, and Valmont representatives and toured fields where he observed carrots, table beets, and coffee being grown with center pivot irrigation. He also gave a talk at a field day and coffee tradeshow for growers, producers, and industry-related people and a technical talk about water resource development and water management in Nebraska.

Curt Weller was awarded the 2010 American Association of Cereal Chemists International (AACCI) Excellence in Teaching Award. This annual award recognizes excellence in teaching subjects related to grains and cereal processing.

At the July national meeting of NACAA in Tulsa, OK, **John Hay** received the National Association of County Agricultural Agents Acheivement Award. This honor is awarded each year to a member in Nebraska with less than ten years of service who has demonstrated outstanding performance.

Congratulations to three faculty members on their promotions: **John Hay**, was promoted to Associate Extension Educator; **Jeyamkondan (Jeyam) Subbiah** to Associate Professor with tenure; and **Lameck Odhiambo** was promoted to Research Assistant Professor.

Jeyam Subbiah was quoted by the Wall Street Journal on March 31 regarding new microwave technologies and his work on food safety issues, arrangement of food in the container, and quality of cooking.

Three BSE faculty members were recognized at the College of Engineering Employee Recognition dinner in April for their participation in a Multi-discipline Research Award. **William Kranz, David Shelton,** and **Simon van Donk** joined other faculty from Civil Engineering (Shannon Bartelt-Hunt, Tian Zhang), Animal Science (Terry Mader), Agronomy and Horticulture (Charles Shapiro), and the School of Natural Resources (Daniel Snow) for a collaborative EPA funded project titled *Effects of Cattle Manure Handling and Management Strategies on Fate and Transport of Hormones in the Feedlot and the Field.*

Extension Engineer **Crystal Powers,** who works with **Rick Stowell,** has traveled widely this spring and summer to Colorado and Illinois as part of the national team developing the National Air Quality Site Assessment Tool; to Minnesota for her work on a biofilter demonstration and the Green Hog Barn regional project; to Indiana for national Extension programming about livestock carbon footprints and lifecyle analysis at the ADSA Discover Conference on Sustainability in the Dairy Industry; to California for the Livestock and Poultry Environmental Learning Center; to Texas for coordinating professional development workshops and presenting a paper at the International Symposium on Air Quality and Manure Management for Agriculture (Sept. 13-15); and later to Banff, Alberta (Oct. 3-8) at the International Greenhouse Gases in Animal Agriculture Conference.

Courtesy photo

Curt describing processes used for preparing common forms of cereal products and ingredients for attendees at the Granotec seminar in Buenos Aires.

In April **Curt Weller** traveled to South America to participate in a conference presented by Granotec. A large South American company, Granotec sells ingredients, services, product development, and mixes to the baking industry throughout the Americas. During the nine-day trip, the same workshop, *La Neciesaria Innovacion en el Procesamiento de Alimentos Base Cereales*, was presented in Buenos Aires, Argentina; Santiago, Chile; and Lima, Peru. Curt spoke on *Alternative Processing Technologies for Non-traditional Cereals and Grains*, and *Preparation of Wheat Flours with High Nutritional Benefits*.

In May, he was off again, this time to Africa where he and David Jackson (Food Science and Technology, UNL and ARD Associate Dean) met with collaborators in Tanzania and Zambia for a project with INTSORMIL to promote the increased use of sorghum and millet in East Africa, and to build a sustainable infrastructure for product development for entrepreneurs and industry. The collaboration is a partnership of UNL, Sokoine University of Agriculture in Tanzania, and the University of Zambia. Joseph Mpagalile of Sokoine University, was a visiting scholar in BSE and worked with the Industrial Agricultural Products Center for his Fulbright. Nyambe Mkandawire, from Zambia, is a Ph.D. student of Dr. Weller's.

Courtesy photo

Moses, a Zambian grain sorghum producer, showing Curt the difference in glume color between two popular white varieties used for food products.

Robert Weber, research manager for the Industrial Agricultural Products Center, received the IANR Outstanding Employee Award for managerial/professional staff for January/February. He was praised for his organizational skills and his upbeat attitude.

Wayne Woldt, Jan Hygnstrom, and **Sharon Skipton** just completed a project funded through EPA and NDEQ to provide training on alternative systems for onsite wastewater treatment professionals. They developed seven, six-hour courses and revised the certification training developed to help the professionals prepare for their exams. Since 2007, they have offered 42, six-hour sessions throughout Nebraska, with 983 attendees.

John Hay and wife, Brooke, welcomed Liatris Ann Hay to the world on Dec. 11th.

Jeremy Steele at the Lester Larson Tractor Museum, and his wife, Sarah, are the proud parents of Luke, born on Dec. 12th.

Dean Eisenhauer participated in his second half-marathon during the Lincoln marathon this year. Two department students, Andrew Volkmer and Kate Johnson, also participated in the half-marathon.

Courtesy photo

On behalf of the department, Dean Eisenhauer accepted from CASNR Dean Steven Waller the 2010 Award for Engagement of Emeriti Faculty on April 18, 2010, at the CASNR Week banquet. The CASNR Alumni Association recognized BSE's effective and innovative ability to engage emeriti faculty.

No-Till in China

Paul Jasa, Extension Engineer, recently shared his no-till knowledge and experiences at the Ordos Model Farm project in Ordos, China, from April 25 to May 1. This demonstration farm is a cooperative effort between the Ordos government, the Inner Mongolia Institute of Agriculture and Animal Husbandry, and Valmont Industries. The collaboration has striven to establish a location where Chinese growers can be educated and trained on modern irrigated agricultural technology. The project's goal is to introduce, demonstrate, and support agricultural technology for producers in order to conserve water, improve yields, and increase profitability. This is the same farm that Ron Yoder, Bill Kranz, and Dean Yonts worked with two years ago, sharing their irrigation knowledge.

While there, Paul presented information on no-till equipment, residue management, and the associated water savings at a two-day conference for government leaders and university scientists and specialists. He also conducted a no-till planter field demonstration for the conference, using an Italian made planter recently purchased by the farm. In addition, he shared crop management information and no-till tips with the farm's agronomists and production crew and interacted with the Valmont team in China. The UNL assistance for this demonstration farm is being coordinated by Kelly Downing (1984, B.S., AGEN; 1995, M.S., AGEN), International Ag Specialist for Valmont.

Courtesy photo

Paul Jasa with Mayor Bai of the Ordos region (center), and Lynette, a Valmont translator.

Courtesy photo

In Memoriam

Robert Kleis passed away December 17, 2009, in Lincoln. He spent his life in agriculture, first as a farm boy in Michigan, then working as a farm laborer, a farm machinery serviceman, and dairy herd improvement tester—all before he graduated from high school. After he served in the U.S. Army during World War II, he completed his B.S. and M.S. in electrical and agricultural engineering at Michigan State College, and a Ph.D. in mathematics and agricultural engineering at Michigan State University. He had a successful career in agricultural research and also held administrative positions, including Department Head of Agricultural Engineering at UNL. He served as Associate Director for the UNL Agricultural Experiment Station and Executive Director for BIFAD and USAID in Washington, D.C. At the time of his retirement in 1980, Bob was Executive Dean for International Programs at UNL. In addition to the numerous honors and awards he received over his lifetime, he published more than 50 technical papers, 200 popular publications, and four book chapters. He was instrumental in founding the Lester Larson Tractor Test Museum and was a volunteer for the TeamMates mentoring program.

Jagan Mohan Rangarajan

Visiting Scholar

Jagan Mohan Rangarajan, Ph.D., was a visitor to our department from April 1 to June 30, working with **Dr. Hanna** and the Industrial Agricultural Products Center, and with **Dr. Subbiah**. He is a Senior Scientist with the Indian Institute of Crop Processing Technology in Tamil Nadu, India, and received his doctorate from Tamil Nadu University in Food Science.

The areas of his interest include extrusion, food safety, and primary processing of pulses (legumes) and cereals, of which paddy (rough rice) is the grain of focus. In India, he works on processing, steaming, and ways to add nutrition to the rice for product development.

Farewell

Viacheslav Adamchuk has taken a position at McGill University, in the Bioresource Engineering Department. He will be teaching undergraduate and graduate courses related to machine design, GIS, precision agriculture, and instrumentation.

ASABE Annual Meeting

The American Society of Agricultural and Biological Engineers (ASABE) held its annual meeting the week of June 21, 2010, in Pittsburgh, Pennsylvania.

Ron Yoder, Department Head, completed his term as President of ASABE at the end of the meeting and is now Past President.

Tami Brown-Brandl completed her term as a member of the Board of Trustees for 2008-2010.

Suat Irmak received the 2010 Young Extension Worker Award for his outstanding contributions and impact to soil and water resource engineering through research, extension education, and outreach programs. In 2008, Suat was recognized for his achievements with the New Holland Young Researcher Award, and is the only person known to have received both awards.

Educational Aids Blue Ribbon Awards:

Short Publication:

Using Chemigation Safely and Effectively—Calibration Workbook
W. Kranz, D. Yonts, C. Burr, J. Hay, J. Schild, **E. Vitzthum, D. Hay,** J. Witkowski

Using Tractor Test Data for Selecting Farm Tractors
R. Grisso, D. Vaughan, J. Perumpral, G. Roberson, R. Pitman, **R. Hoy**

For the ASABE Robotics Competition, our department team finished 5th this year. Team members were **Andrew Landgraf, David Mabie,** and **Jake Brezinski**.

Randal Taylor (Ph.D., Agricultural Engineering, 1996) was recognized for developing Standard S579, Yield Monitor Field Test Engineering Procedure.

Student News

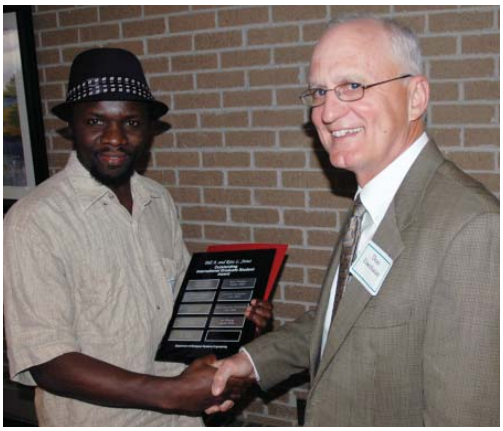
Courtesy photo

Left to right: Cady Sargus, Dr. Pannier, Allison Mettler, and Stephanie Berger

February Forum At the 2010 February Forum on Tuesday, February 9, at the Holiday Inn Downtown Lincoln, faculty member **Angela Pannier** introduced our attending students – C**ady Sargus, Allison Mettler,** and **Stephanie Berger** – and presented them with certificates of excellence. The program featured Dr. Shireen Adenwalla, associate professor of physics at UNL, as the keynote speaker. Since 2005, this annual event has recognized outstanding junior and senior women majoring in scientific fields.

SMART Scholarship

Shannon Killion, (2009, B.S., BSEN) currently a graduate student in environmental engineering, received a SMART Scholarship, a program established by the U.S. Department of Defense to increase the number of civilian scientists and engineers working in Defense Department laboratories. The scholarship supports undergraduate and graduate students pursuing degrees in science, technology, engineering, and mathematics. After a SMART orientation in Monterey, CA, Shannon left for a College of Engineering study abroad opportunity at Sweden's University of Technology in Luleå in environmental engineering. She will return in the spring of 2011 to finish her degree and then work for the U.S. Army Tradoc Analysis Center in Fort Leavenworth, KS.



Dean Eisenhauer presents the Bill A. and Rita L. Stout Outstanding International Graduate Student Award to Isa Kabenge, a Ph.D. student from Uganda, at the annual spring banquet. Isa's adviser is Suat Irmak.

A great place for work! Graduate offices in rooms 14 and 18, received a makeover this year with new carpeting and modular office furniture.

Societies

Ivy Day, held at the Champions Club on April 11, recognized members of the Innocents Society and the Mortar Board Society. **Dr. Angela Pannier** was named an Honorary Mortar Board member. **Bobbi Balogh** (BSEN) was mentioned as a notable sophomore and recipient of a Jane Wade Anderson Scholarship. **Scott Barker** (BSEN) served as Sergeant-At-Arms in the Innocents this past year; and junior-level students **Quentin Dudley**, Biological Systems Engineering, Worthington, MN, and **Marcus Kuhl,** Agricultural Engineering, Kearney, were selected for membership in the Innocents Society.

Intern at NASA

Andrea Gilkey (2010, B.S., BSEN) will be experiencing NASA as an intern this summer before heading to MIT for graduate school.

Outstanding Seniors

Heidi Gengenbach was recognized as the outstanding senior in Biological Systems Engineering and **Wes Cammack** as the outstanding senior in Agricultural Engineering at the annual College of Engineering Graduate Recognition prior to graduation. Heidi will begin medical school at UNMC this fall.

E-Week

During E-week in April, graduate student **Mary Regier's** poster *Zein Microspheres for Oral Nonviral Gene Delivery and Tissue Engineering Applications*, was selected as one of the top 5, and displayed in the hallway of Scott Engineering. Her advisor is **Dr. Angela Pannier**.

Argentina for Spring break

On March 11, 2010, 25 students (including six from BSE) and two instructors departed on a ten-day trip to Argentina arriving in Buenos Aires. Agricultural tours along with other experiences that highlighted the culture and history of Argentina were part of the itinerary. The group traveled west from Buenos Aires to Mendoza, a city on Argentina's western border with stops along the way at major cities, Rosario and Cordoba, along with many smaller cities. Also on the itinerary were visits to a number of farms that were similar to farms in Iowa and Nebraska, and visits to co-ops, a grain port, a peanut processing plant, research farms, two dairies, wineries, and a number of other agricultural-related sites.

Part of the study abroad experience was researching and writing a paper about an aspect of Argentina that students could investigate during the trip. **Rebecca Dornbierer**, an Agricultural Engineering major from Deshler, choose the methods and advancement of Argentina's irrigation for agriculture for her topic. She was surprised by the number of center pivots on the farms they toured. While the systems being used were mostly Valley (manufactured in Valley and McCook, NE) and Zimmatic (manufactured in Lindsay, NE), she also saw a couple of T-L systems (manufactured in Hastings, NE) and Reinke systems (manufactured in Deshler, NE). Center pivots dominated the irrigation application method in the regions they visited. Rebecca also inquired about corner systems and learned that they aren't used since most farmers still don't have all their land irrigated, so the optimization of watering corners isn't important at this stage. She didn't see any flood irrigation and learned it was rarely used in those areas because of their no-till practices and extremely flat fields.

Rebecca spoke to farmers and learned more about the links to politics, export taxes, and tariffs that the Argentine farmers deal with. Loans and subsidies make farming in the U.S. more stable, while custom harvesting is more common there. Without an Ogallala acquifer to support irrigation as in Nebraska, she saw how changes in geography and weather make an impact on the amount of irrigation that is possible. No-till is widely used in the section of Argentina they traveled through, with sorghum being the main crop grown. Much like the western United States, irrigation plays a huge role in Argentina's agricultural success. The necessity for irrigation in much of the country's agricultural regions, because of lack of natural rainfall, largely justifies its implementation.

The trip was a wonderful experience both culturally and academically for the students. The people were very friendly and eager to share their lives with the students. Rebecca finds irrigation for agricultural purposes very interesting, especially in Nebraska because "it's what makes us competitive with other states that naturally get enough rain." Her experience in Argentina expanded her understanding and knowledge of irrigation on a global level, and she appreciated seeing the technology of Nebraska being developed and adapted in another country.

Courtesy photo

They could be in Nebraska, but it's Argentina. Left to right: Rebecca Dornbierer, David Jobman, Aaron Fuelberth, Dan Leiser, A.J. Wiese, and Jamie Kathol.

Land of the Nile

Four students joined a College of Engineering sponsored trip to Egypt for spring break. **Tom Bader**, (AGEN, Gresham), **Dan Reiff** (BSEN, Omaha), **Thao Nguyen** (BSEN, Lincoln), and **Lauren Kirschman** (BSEN, Omaha), were part of a group led by Dean David Allen for a class titled *The History of Science and Technology in Egypt*. Lectures supporting the field trips and a tightly scheduled itinerary ensured a compact and rich learning experience.

Dan

Thao

After landing in Cairo and seeing the great pyramids, the group flew to Aswan to see both the dam and Lake Nasser. After seeing Abu Simbel, the temple to two sun gods that Ramses II had built (that was famously moved to make way for the rising waters caused by the dam), they embarked on a three-day cruise north to Luxor, which in ancient times was named Thebes. Luxor is known for the Temple of Karnak and the Valley of the Kings, the burial sites for pharaohs from the New Kingdom. Probably the most famous of these pharaohs was Tutankhamun. The students were amazed to see that colors in the tomb murals were still intact, and the sight of mummies was thought provoking.

From Luxor, the group returned to Cairo, a city of 18 million, where the McDonald's is 4 stories tall. Traffic seems to have no regulatory system, and as a result, the streets are filled with lots of honking horns. Things that we take for granted in this country were different in Egypt. Much of the water is not safe to drink, so lots of bottled water was consumed. In an effort to avoid food illnesses, the menu served to the students had very little variety. Just being out of the comfort zone of this country was an educational experience.

Tom

Tom thought that the mummies were incredible, and that the pyramids were awe inspiring. Dan was fascinated by the chanting in the mosque and was surprised by how it touched him on emotional and sensory levels. While Thao wanted to meet and interact with the Egyptian people more, she was also grateful that everything on the trip was organized for them, and felt that navigating on her own would have been a challenge. She was amazed that the pyramids were built without modern equipment, and that just being in a Muslim country was an education in itself. She reflected that a lot of what she saw in the countryside was similar to how people in Vietnam live; finding similarities of how rural people live around the world interests her.

GRADUATION

May 2010 Graduates

Agricultural Engineering
Wes Cammack, DeWitt
Ryan Hillen, Leigh
Wayne Jarecki, Lindsay

Biological Systems Engineering
Andrew Anderson, Bellevue
Santiago Arciniegas, McLean, VA
Robert Brauer, Utica
Whitney Brown, Denton
Martin Gakuria, Nairobi, Kenya
Heidi Gengenbach, Blair *(with Highest Distinction)*
Andrea Gilkey, Overland Park, KS
Kim Grieb, La Vista
Kathleen Johnson, Omaha
Hanieh Kamelian, Vancouver, BC, Canada
Peter Nelson, Sioux Falls, SD
N. Thao Nguyen, Dong Nai, Vietnam
Dana Tabor, Omaha
Chance Thayer, Imperial
Cassandra Wehling, Lincoln
Yueying Zhang, Shijiazhuang, China

Mechanized Systems Management
Peter Barger, Wauneta
Craig Brester, Howells
Jack Godbersen, Wisner
Joseph Holoubek, David City *(with High Distinction)*
Brent McKinney, Juniata
Patrick Moser, Clearwater *(with High Distinction)*
Ben Nelson, Atwater, MN
Blake Rasmussen, Laurel
Michael Rennau, Wood River
Brent Stark, Ponca
Patrick Trout, Tecumseh
Justin Vonasek, Holdrege

Master of Science
Beth Duensing, Canistota, SD
Thesis title: *Controlling Nonviral Gene Delivery Through the Cell-biomaterial Interface*

Ahmad Maat Su, Kuala Lumpur, Malaysia
Thesis title: *Mapping Vertical Profiles of Apparent Soil Electrical Conductivity Using an Angular Scanning Approach*

Honors Program
Heidi Gengenbach
Thesis title: *Engineering the Cell-biomaterial Interface for Nonviral Gene Delivery Through Extra Cellular Matrix Protein Adsorption*

Andrea Gilkey
Thesis title: *Zein Microspheres for DNA Delivery*

Kathleen Johnson
Thesis title: *Effect of Macropores on the Green-Ampt Wetting Front Pressure Head*

Hanieh Kamelian
Thesis title: *A Generalized Pattern Recognition System Using Fuzzy Clustering and Genetic Algorithm*

MSYM graduates and faculty, May 2010. Left to right: Brent Stark, Patrick Moser, Blake Rasmussen, Brent McKinney, Joe Holoubek, Mike Rennau, Jack Schinstock, Ben Nelson, Patrick Trout, Justin Vonasek, Ron Yoder, Peter Barger, and Deepak Keshwani.

BSEN/AGEN graduates and faculty, May 2010. Left to right: Hanieh Kamelian, Ryan Hillen, Heidi Gengenbach, Peter Nelson, Dana Tabor, Ron Yoder.

MSYM graduates and faculty, Dec. 2009. Left to right: Brian Dunekacke, Sean Gillilan, Nate Kelly, Dustin Fairlay, Dane Mosel, Alexander Austin, Dan Malander, Andrew Olson, Michael Peterson, and Ron Yoder.

BSEN graduates and faculty, Dec. 2009. Left to right: Nate Stahr, Michaela McBride, Curt Weller.

THE DEAN'S LIST

Fall 2009

Agricultural Engineering
Jacob Carlen
Adam Emanuel*
Brady Folck
Wayne Jarecki
Marcus Kuhl*
Andrew Landgraf
Corey Smith
Jared Speichinger
Wyatt Stubbs
Andrew Volkmer

Biological Systems Engineering
Andrew Anderson*
Sanatiago Arciniegas
Brad Balogh
Scott Barker*
Brian Barnes
Stephanie Berger
Christopher Black
Tyler Borcyk*
Brenden Boyle
Anne Bradford
Robert Brauer*
Alexandra Brown
Jacob Campbell
Stephanie Canny*
Bonnie Cobb
Emily Cook
Elizabeth Cowles*
James Dalton
Jordan Dau
Kathlyn Do
Joseph Dougherty*
Quentin Dudley*
Austin Dudzinski*
Eric Farris*
Brendan Feehan
Ryan Freiberger
Martin Gakuria
Heidi Gengenbach*
Anrea Gilkey
Casy Heier
Suzanne Higgins*
Richard Horrocks
Kathleen Johnson
Stacey Joy
Tim Kinoshita*
Monica Krause*
Olivia Lambdin
Joshua Lee*
Luke Lingenfelter
Amy Mantz
Johnathan McCoy
Michael McKinney*
Abbey McTaggart
Jeremiah Meints
Daniel Menter
Allison Mettler
Jackson Miller
Jessica Mills
Michael Mumaugh
Cat Tuong Nguyen
Stephen Nogel
Sheridan Nusz*
Jared Ostdiek*
Keith Ozanne
Ian Parsley*
Nicholas Phillips*
Alexander Pieper*
Allison Potter
Daniel Reiff*
Rachel Remund
Justin Rosenbohm
Daran Rudnick
Catherine Sargus
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Tyler Scherr
Ashley Schmidt
Laurel Schmitz*
Kristine Seier
Alexander Sellers
Derek Shafer
Jacob Sison-Martinez
Katelyn Stanley
Bradley Staskiewicz
David Svoboda*
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Elizabeth Thrailkill
Ashley Vejvoda
Cassandra Wehling
Yueying Zhang

Mechanized Systems Management
Patrick Moser*
Wesley Niemann*
Brandon Perry*
Mark Spangler*

Spring 2010

Agricultural Engineering
Wes Cammack
Adam Emanuel
Brady Folck
Ryan Hillen
Andrew Landgraf
David Lindquist
Johnathan McCoy
Cory Smith
Andrew Volkmer

Biological Systems Engineering
Andres Anderson*
Santiago Arciniega*
Bobbi Balogh
Scott Barker
Brian Barnes
Stephanie Berger*
Brenden Boyle*
Anne Bradford
Robert Brauer
Jacob Campbell
Bonnie Cobb
Emily Cook
Elizabeth Cowles*
James Dalton
Joseph Dougherty
Quentin Dudley*
Austin Dudzinski
Skylar Falter
Eric Farris*
Michaela Fischer
Heidi Gengenbach*
Andrea Gilkey
Casey Heier
Suzanne Higgins*
Kathleen Johnson*
Stacey Joy
Tim Kinoshita*
Monica Krause*
Olivia Lambdin*
Luke Lingenfelter
Johnathan McCoy
Michael McKinney*
Jeremiah Meints
Daniel Menter
Allison Mettler
Jessica Mills
Cat TuongNguyen
Stephen Nogel*
Sheridan Nusz
Jared Ostdiek
Daniel Owen
Keith Ozanne
Ian Parsley*
Nicolas Phillips
Alexander Pieper
Allison Potter
Daniel Reiff*
Rachel Remund
Justin Rosenbohm
Daran Rudnick
Catherine Sargus*
Tyler Scherr
Laurel Schmitz
Kristine Seier
Alexander Sellers
Derek Shafer
Jacob Sison-Martinez
Megan Sisson
Katelyn Stanley
Bradley Staskiewicz*
David Svoboda
Chance Thayer
Max Twedt
Cassandra Wehling

Mechanized Systems Management
Trenton Buss
Joseph Holoubek*
Daniel Leiser
Patrick Moser*
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** indicates 4.0 gpa*

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A sincere thank you from the members of the Biological Systems Engineering department and our students to the alumni, friends, and organizations for their contributions. These generous donations support student scholarships and special opportunities, as well as equipment for classrooms and laboratories.

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