

Winter 2009

## CNS Connections, Winter 2009-10

University of Northern Iowa. College of Natural Sciences.

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## CNS Connections, Winter 2009-10

### Description

Inside this issue:

- Message from the Dean
- CNS explores alternative energy possibilities
- CNS News in Short
- Green promises kept at CEEE
- Applause
- Transitions
- Summer camps help middle school students to experience science firsthand
- CNS students in the news
- IMSEP awards grants
- Citizen Science aims to make science accessible
- CNS team participates in project to explore Earth's interior
- Faculty research
- Imagine the impact
- South campus trail provides portal to nature
- Internationally distinguished UNI grad establishes teaching and learning award
- Alumni News
- CNS advisory board

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# *CNS Connections*

## University of Northern Iowa



**The Tallgrass Prairie Center researches biomass production by prairie species.**

**Newsletter of the UNI College of Natural Sciences**

**Winter 2009-10**



# Contents

1	Message from the Dean
2	CNS explores alternative energy possibilities
4	CNS News in Short
5	Green promises kept at CEEE
6	Applause
7	Transitions
7	Summer camps help middle school students to experience science firsthand
8	CNS students in the news
10	IMSEP awards grants
11	Citizen Science aims to make science accessible
12	CNS team participates in project to explore Earth's interior
13	Faculty research
14	Imagine the impact
14	South campus trail provides portal to nature
15	Internationally distinguished UNI grad establishes teaching and learning award
15	Alumni News
17	CNS advisory board

*Cover:* UNI students enrolled in Wildlife Ecology and Management sweep-net for insects in a biomass research plot at the Cedar River Natural Resource Area in Black Hawk County. The Tallgrass Prairie Center wants to determine an optimal mix of prairie species for electrical production. See article, p. 2.

# Message from the Dean

What an interesting year this past year has been.  
(And what a loaded statement that is!)

When the 2008 academic year began, we were able to increase the money available to departments to support their teaching, learning and scholarship for the first time in seven years. We were conducting searches for eight new faculty members to replace those who had retired or to add individuals who would strengthen our education efforts. But then, of course, the world economic crisis led to requests that UNI return money to the state and ultimately to cut more than \$15 million from its budget between last year and this year. We closed six of the eight searches and otherwise trimmed our budget wherever we could. While we have sought to minimize the damage to our students' education, certainly compromises had to be made in terms of larger sections and fewer small classes. The stimulus money provided to UNI has meant that the impact this year to our students is not overwhelming, but 2010-11 is a challenge we must still meet.

In response to our belief that we should be accountable to our students and alumni, and the taxpayers of Iowa, UNI took a leadership role in the nation in providing important data online (see [www.collegeportraits.org/IA/UNI](http://www.collegeportraits.org/IA/UNI)). To operate more effectively and efficiently, we began an assessment of all the academic programs at UNI, with the intention of improving the best programs, restructuring other programs and reallocating funds from programs no longer needed or viable. Despite a tremendous amount of effort and angst, I believe the result will make UNI a stronger institution. Finally, to improve our educational offerings, we have aggressively sought funding from federal agencies, private foundations and private donors, as well as economic initiatives within the state. The result of these efforts will be new opportunities for students in the classroom, more scholarship support to reduce their sacrifices to attend UNI and additional opportunities for them to work closely with faculty members in mentor-guided research.

With all the challenges of the past year, it would be easy to be discouraged. But when I reflect on the impressive learning of our students and the scholarship of the faculty, I am encouraged and excited about the opportunities that we are able to offer at UNI.

UNI's leadership in the collaborative effort of the three Regents institutions through the Iowa Mathematics and Science Education Partnership has provided exciting successes this year and laid the groundwork for the future. UNI faculty members have received grants from the Iowa Power Fund to develop outreach activities and conduct research to help Iowa move toward greater reliance on renewable energy. At present, we are working with colleagues from our sister Regents institutions to prepare a major grant proposal to the National Science Foundation for support in the sciences and technology.

You will read throughout this issue of CNS Connections about last year's activities within the college and of individual accomplishments. Less obvious is the hard-working team effort of everyone in the college that has resulted in increased enrollments in our programs, improved retention rates (which were already some of the highest among UNI's peer institutions), and tremendous support from our alumni and friends with contributions to help support our students. If you have contributed to a department or to the college this year, thank you so much for your gifts—you have helped us immeasurably. Imagine the impact if everyone were able and willing to contribute!

It is always a pleasure to hear from alumni! If you can visit campus, please do stop in to say hello. A number of you did this year—what a treat for us. If someone here at UNI has made a significant difference in your life, send her or him a note to say so. E-mail addresses are available through the directory feature of [www.uni.edu](http://www.uni.edu).



Joel Haack

*Joel K Haack*

Joel K. Haack



# CNS explores alternative energy possibilities

The University of Northern Iowa, specifically the College of Natural Sciences, is a strong contributor to Iowa's efforts to promote alternative energy development. Current projects, most of which have received funding from the Iowa Power Fund, focus on different aspects of this problem, from biomass production to solar cells and hydrogen storage material to wind energy.

"We see these initiatives as something the college is well positioned to undertake," said Joel Haack, CNS dean. "Some of our faculty members already have research interests in the area of alternative energy, and we have the research facilities needed for these types of investigations. An added advantage is that our students benefit from participating in such studies." The projects now under way are described below.

The TPC began its experiments on 100 acres of sandy, marginal land in the Cedar River Natural Resource Area in Black Hawk County. Unfortunately, the plots were flooded during the summer of 2008, making it necessary to reseed in May 2009. The 2009 growing season was good enough that the researchers think they may be able to have a crop to test in the fall of 2010. The ability of the prairie plants to produce a large amount of biomass per unit area is another benefit of using them, as well as their ability to store atmospheric carbon deep in their roots, becoming part of a carbon-negative energy system.

The Biomass Production by Prairie Species project has received \$612,000 from the Iowa Power Fund and \$285,000 from the USDA's Natural Resources Conservation Service.



Replanting the research site of the Biomass Production by Prairie Species project in May 2009.

## More efficient photovoltaic solar cells

The most common solar cells today are made with silicon. Martin Chin, associate professor of chemistry and biochemistry, is the lead investigator in a collaboration among UNI, Luther College and Distek Integration, Inc. to develop more efficient photovoltaic cells based on dye-sensitized solar cell technology. The research project is funded by a year-long Iowa Power Fund grant of more than \$78,000.

"The dye-sensitized solar cell uses inexpensive titanium dioxide instead of silicon as the main material," Chin explained. He and his colleagues at Luther and Distek are working on creating and

testing new dyes to be used in the dye-sensitized solar cell with the overall goal of making the cells more efficient at converting sunlight to electricity. At press time, they had narrowed the field of possible compounds.

Other members of Chin's research team from UNI are Jeff Elbert, associate professor of chemistry and biochemistry, Reg Pecan, associate professor of industrial technology, Tim Kidd, assistant professor of physics, and four UNI undergraduate students. From Luther College are Brad Chamberlain, associate professor of chemistry, and two undergrads. Two high school teachers who are part of the RAISE project and a high school student complete the team.

## Biomass production by prairie species

The Tallgrass Prairie Center (TPC) in the College of Natural Sciences, along with Cedar Falls Utilities, the Black Hawk County conservation board and the Soil Tilth Laboratory at Iowa State University, are engaged in a research project to determine an optimal mix of prairie species for maximum energy yield in electrical production by utilities.

"As a part of the project, we are examining best vegetation management techniques for most sustainable yield of energy from the prairie vegetation while maintaining wildlife habitat," said Daryl Smith, principal investigator of the project, TPC director and professor of biology. The researchers are looking at how the prairie species thrive on poor soils, how the biomass should be harvested, how it can be turned into biofuels and how well the fuel burns in power plants.

## Economically competitive hydrogen storage material

In its natural state, hydrogen is hard to control and very dilute. To develop hydrogen into a commercially viable energy source, high-density storage systems for the material must first be developed. The Iowa Power Fund awarded a \$400,000 grant to Tim Kidd, assistant professor of physics, to create an economically competitive hydrogen storage material that would dramatically change the energy storage industry.

The grant, which runs through September 2012, is funding research on the development of materials to store hydrogen at very high densities. “Our research involves the creation of storage materials to compress the hydrogen so that it will have energy densities far greater than what is currently available,” said Kidd, “and to do so in a way that the devices will be able to operate for years with minimal



Tim Kidd (left) and student Dustin Klein work on a vacuum chamber that lets them grow and analyze nanoscale materials with molecular precision.

maintenance.”

When hydrogen is used as an energy source, the only products are energy and water, with none of the particulates or greenhouse gas emissions associated with fossil fuels, Kidd explained. It is also very versatile as an energy source and can be used at many levels of energy production—consumer electronics, transportation vehicles, small power plant facilities. “Hydrogen can be used as a replacement for batteries, gasoline or even coal-fired power plants,” said Kidd.

The early part of the research focused heavily on materials development. After identifying a class of materials with promise for hydrogen storage, the researchers explored different growth methods to produce several types of these

materials in powder and single crystal form. They have also examined how modifications in the chemical composition and crystal structure can impact hydrogen storage and other system properties.

In addition to Kidd, the research team consists of Mike Roth and Paul Shand, professors of physics, Laura Strauss, associate professor of chemistry and biochemistry, eight undergraduate research assistants and three high school teachers working as part of the RAISE program.

## Wind energy

UNI, along with the other Regents universities, five Iowa community colleges, and representatives from industry and state government, have formed the Iowa Alliance for Wind Innovation and Novel Development (IAWIND), which is working to identify and support the growing needs of the wind energy industry in the state. In the summer of 2009, IAWIND began a research initiative, inviting faculty at the three Regents universities to apply for grants to accelerate the growth of basic and applied wind-energy research.

To increase understanding of wind energy, UNI offered a two-credit course, Wind Energy Applications in Iowa, in the fall 2009 semester through its Continuing and Distance Learning program. The cross-disciplinary course, taught by Reg Pecen, associate professor of industrial technology, other CNS faculty—Alan Czarnetzki, Earth Science, Jim Demastes, Biology, Arindam Ghosh, Industrial Technology, and Bill Stigliani, Center for Energy and Environmental Education—UNI faculty members not in CNS and industry representatives, and coordinated by Bart Bergquist, acting head of the Department of Industrial Technology, provided an overview of wind energy, its use, development and operation.

“As the world’s fastest growing energy technology, wind energy systems will need to employ more people—from engineers to technicians—who are knowledgeable about the technology,” Pecen noted. For more information about UNI’s involvement in wind and other renewable energy technologies, visit [www.renewiowa.org](http://www.renewiowa.org).



# CNS News in Short

■ The Recycling and Reuse Technology Transfer Center carried out a comprehensive environmental education pilot program to raise awareness of recycling, reusing and reducing waste for grades one, three and five at Lincoln Elementary School in Cedar Falls during the 2008-09 academic year. Called Get Your Green On, the program included educational books, presentations, field trips, visits from superhero Enviroman, environmental education videos and an outreach opportunity for the fourth graders to help plant 4,690 sedges at the UNI wetland. Get Your Green On is being offered in all six Cedar Falls elementary schools during the 2009-10 academic year and was awarded a Governor's Award of Excellence for Environmental Education for 2008. The program was coordinated by RRTTC program assistant Jennifer Bruss, with assistance from student Tyler Lorenz (Enviroman).



Governor Chet Culver (second from left) presented the Governor's Award of Excellence for Environmental Education to the RRTTC team (l.-r.): Catherine Zeman, director, Jennifer Bruss, program assistant, Phillip Wilson, the new Enviroman, and Tyler Lorenzen, the retiring Enviroman.

■ Four industrial technology programs—construction management; manufacturing technology with options in design, advanced manufacturing and metal casting; graphic communications; and technology management—were re-accredited by the Association of Technology Management and Applied Engineering (formerly the National Association of Industrial Technology) at its annual meeting in November 2008 in Nashville, Tenn., for a third six-year period without further requirements. The metal casting program also received its first five-year accreditation from the Foundry Educational Foundation (FEF) in May. Of 25 universities belonging to FEF, UNI is one of only three that have received a five-year accreditation; typically schools receive a three-year term.

■ The inaugural lecture in the Physics Department's Begeman Lecture Series was "NASCAR: The Science of Speed," by Diandra Leslie-Pelecky, professor of physics at the University of Texas at Dallas, in October 2008. Louis Begeman, for whom the newly renovated physics building was renamed in fall 2007, was the first head of the Physics Department. The lecture series was made possible through a gift from his family through the UNI Foundation.

■ The Hari Shankar Memorial Lecture in April featured Eric Hart, adjunct associate professor of mathematics at Maharishi University of Management, who spoke on the Iowa Core Curriculum for K-12 Mathematics. Hari Shankar, who died in June 2008, taught at Ohio University in Athens for more than 30 years before joining the UNI Department of Mathematics as a visiting professor.

■ Working with the Center for Energy and Environmental Education and other local and state organizations, 28 team members of the Iowa Green Americorps Energy Unit provided rebuilding and energy-efficient home improvements in the area during the summer. They identified and assisted with rebuilding and reconstruction for flood and tornado victims, low-income and elderly persons and were involved in energy education and outreach in the community at regional fairs and other events.

■ In January 2009 the State Farm Foundation awarded more than \$40,000 for infrastructure in the Computer Science Department that will support curriculum development and student-centered research in desktop parallel computation using multi-core processors. The equipment makes it possible to introduce students to the parallel architecture that will be fundamental to future computing, according to Eugene Wallingford, department head.

■ Students from Theodore Roosevelt High School in Des Moines who are part of GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) visited the Center for Energy and Environmental Education and the Electrical Engineering Technology program at the Industrial Technology Center in April. The students learned about job opportunities in the STEM (science, technology, engineering and mathematics) areas and participated in a variety of hands-on activities involving a hydrogen fuel cell, a solar-powered lawn mower, the UNI solar boat and an energy bike. GEAR UP is a federally funded national initiative to increase the number of students prepared to enter and succeed in postsecondary education.



GEAR UP students learn about solar technologies during a visit to UNI from Des Moines.



■ Scott Giese, associate professor of industrial technology, and Nate James, a senior IT student, represented UNI at Discover Engineering, a special program in February 2009 for fifth through eighth graders presented by the Pella Corporation to provide students and parents opportunities to learn about the



Scott Giese talks to students at Discover Engineering, a special program in Pella for students and parents to learn about the profession of engineering.

profession of engineering.

Pella engineers and representatives of the Regents universities staffed five interactive stations to introduce the participants to different types of engineering opportunities. At UNI's station, focused on industrial/manufacturing engineering technology, Giese and James demonstrated how to make a metal casting.

■ Students in the Mathematics Department club TEAM (Teaching Educators About Mathematics) held their third annual Mathematics Fair in February for about 75 fourth, fifth and sixth graders and their families from the Cedar Valley area. The fair featured 25 booths where students could take part in interactive and fun mathematics activities.

■ The Iowa Mathematics and Science Education Partnership was recently awarded a grant of nearly \$900,000 from the National Science Foundation's Robert Noyce Teacher Scholarship Program to encourage science, technology, engineering and mathematics majors and professionals to become middle and high school math and science teachers.

■ UNI's physics program was one of 12 visited by the National Physics Teachers Preparation task force in its national search to identify outstanding physics education programs. A summary of the task force's findings was sent to all colleges and universities in the U.S.

■ The Department of Earth Science hosted the combined 2008 annual Tri-State Geological Field Conference and the Great Lakes Section of the Society for Sedimentary Geology Fall Field Conference in October 2008. A total of 124 individuals from eight states participated.

## Green promises kept at CEEE

Green through and through. That's the verdict on the Center for Energy and Environmental Education (CEEE) building, according to a recent study to determine if the building is performing according to its original design of being sustainable and energy-efficient. Known as Iowa's first green building, the CEEE uses, on average, one third less electrical energy per square foot compared with some other campus buildings.

Built by a \$4 million grant from the U.S. Department of Energy and opened in 1994, the 31,000-square-foot center was constructed using state-of-the-art energy efficiency at that time. Local and recycled materials were used, and the open floor plan makes maximum use of natural lighting. The stone wall bisecting the structure conserves coolness and warmth, helping to regulate the temperature of the building's interior.

The study, conducted in the summer of 2008 through a grant from the Iowa Energy Center and covering the years 2006-08, showed benefits from the daylighting and passive solar design plus the use of renewable resources to decrease total energy use. Daylighting is the practice of placing windows or other openings and reflective surfaces so natural light provides effective illumination during the day.

Depending on the year in question, the report says, 25 to 40 percent of the building's energy consumption is derived from renewable sources, such as solar and geothermal. Passive solar accounts for some of this energy gain; 50 percent of the building's window space is on the south side. Low-e, argon-filled insulating windows allow heat into the building during colder months, while a southern overhang keeps the building from overheating during hotter months.

Other lighting features that were state-of-the-art at the time of construction include occupancy sensors, indirect lighting with a reflective ceiling, and stepped photo-cell sensors, which adjust room lighting based on the amount of daylight available.

An appliance inventory, also part of the performance study, indicated that if appliances are turned off and unplugged, energy use is further reduced. For the full energy monitoring report, visit [www.ceee.uni.edu](http://www.ceee.uni.edu) and click on Energy, then Reports.



A daylighted hall at the CEEE.

Background image: The Center for Energy and Environmental Education

■ **Cliff Chancey (Physics)** received the 2009 Veridian Credit Union Community Engagement Award for working with the Waterloo Community School District through UNI's Classic Upward Bound and Educational Talent Search programs. He will be president of the Iowa chapter of the American Association of Physics Teachers, the professional organization of physics teachers in universities and high schools, for the 2010-11 year, and he is heading the peer review committee of the National Professional Science Master's Association, which is charged with setting national standards for PSM programs.

■ **R. Martin Chin (Chemistry and Biochemistry)** received the 2009 CNS Dean's Award for Superior Achievement in Research. He is president-elect of the UNI chapter of Sigma Xi, The Scientific Research Society.

■ **Lyn Countryman (Biology/Science Education)** was elected president of the Iowa Academy of Science and was named a BEN (BiosciEd Net) Scholar for 2008-09. BEN is a digital library portal for teaching and learning in the biological sciences.

■ **Alan Czarnetzki (Earth Science)** serves as associate editor of the National Weather Digest, published by the National Weather Association, and was awarded the Nebraska-Iowa Circle K Outstanding Kiwanis Advisor Award 2008-09.

■ **Dawn Del Carlo (Chemistry and Biochemistry)** was re-elected to the American Chemical Society Committee on Research in Chemistry Education.

■ **Jim Demastes (Biology)** received the 2009 Apple Polisher Award for making a difference in the lives of students.

■ **J. Philip East (Computer Science)** is chair of the National Education Computing Conference review committee of the Special Interest Group for Computing Teachers of the International Society for Technology in Education. He is also a lead reviewer for the National Council for Accreditation of Teacher Education.

■ **Mohammed Fahmy (Industrial Technology)** is a member of the board of directors of the Iowa Business Council's Advanced Manufacturing Research Collaboration Cluster and a member of the advisory board of the Center for Industrial Research and Services at Iowa State University.

■ **Dean Franzen (Mathematics)** received the 2009 Dean's Award for Teaching Excellence in the Liberal Arts Core.

■ **Scott Giese (Industrial Technology)** was elected vice chair of the Foundry Education Foundation executive board and was elected treasurer of the Northeast Iowa chapter of the American Society of Materials.

■ **Paul Gray (Computer Science)** was appointed chair of the education program of Supercomputing, an international conference for high-performance computing, networking, storage and analysis.

■ **John Groves (Earth Science)** received the Dean's Award for Teaching Excellence in Departmental Programs for 2009.

■ **Chad Heinzel (Earth Science)** was elected chair of the Geology section of the Iowa Academy of Science and was elected president of the Geologic Society of Iowa.

■ **Patricia Higby (Center for Energy and Environmental Education)** was appointed in January 2009 to the Iowa Consumer Advisory Panel, a nine-member group created by the state legislature to consult with the Consumer Advocate of Iowa on public utility issues. She was also awarded two grants through the competitive grant program of the Iowa Energy Center: Monitor Energy at the Center for Energy and Environmental Education and School Energy Efficiency Assessment and Assistance Project.

■ **Thomas Hockey (Earth Science)** was elected chair of the American Astronomical Society (AAS) Historical Astronomy division and appointed chair of the AAS Education Prize committee. He also was appointed secretary of the International Astronomical Union, World Heritage Site Working Group, and managing editor of *Archeoastronomy: The Journal of Astronomy in Culture*.

■ **Doug Hotek (Industrial Technology)** was named a Certified Senior Industrial Technologist by the Association of Technology Management and Applied Engineering (formerly the National Association of Industrial Technology).

■ **Elizabeth Hughes (Mathematics)** was appointed a member of the Association of Mathematics Teacher Educators research committee.

■ **Mohammad Iqbal (Earth Science)** was awarded a grant of \$150,000 from the National Science Foundation for Field and Lab-based Activities for Undergraduate Students to Study the Hydrologic Environment.

■ **Laura Jackson (Biology)** was elected chair of the advisory board of the Leopold Center for Sustainable Agriculture.

■ **Ali Kashef (Industrial Technology)** received the Milestone Award for Outstanding Mentoring of Graduate Students in 2008.

■ **Syed Kirmani (Mathematics)** is associate editor of the *Aligarh Journal of Statistics*, the *Journal of Applied Statistical Science*, the *Journal of the Iranian Statistical Association* and the *Journal of Statistical Theory and Applications*.

■ **Cherin Lee (Biology/Science Education)** received the Ross A. Nielsen Professional Service Award.

■ **Kirk Manfredi (Chemistry and Biochemistry)** is a member of the Awards committee for the American Society for Pharmacognosy.

■ **John McCormick (Computer Science)** was awarded the prize for Best Presentation of Conference for his presentation "Ada and Software Engineering Education: One Professor's Experiences" at the 13th International Conference on Reliable Software Technologies in Venice, Italy, in June of 2008. He was awarded the Outstanding Ada Community Contribution Award by the Association for Computing Machinery Special Interests Group in Ada in spring 2009.

■ **Siobahn Morgan (Earth Science; CNS associate dean)** serves as a consultant-evaluator for the Higher Learning Commission, for which she made an accreditation visit to Grand Valley State University in 2008.

■ **Glenn Nelson (Mathematics)** received a Student Alumni Ambassadors Apple Polishers Award.

■ **Wendy Olson (Biology)** was elected chair of the Organismal Biology section of the Iowa Academy of Science.

■ **Reg Pecan (Industrial Technology)** received the UNI Graduate School Milestone Award for Outstanding Mentoring of Graduate Students in 2008.

■ **Ed Rathmell (Mathematics)** was presented with a Lifetime Achievement Award by the Iowa Council of Teachers of Mathematics in February 2009, and he is a member of the ICTM executive board.

■ **Daryl Smith (Biology)** received a 20-year Integrated Roadside Vegetation Management Service Award from the Association for Integrated Roadside Managers.

■ **Bridgette Stevens (Mathematics)** was the CNS recipient of the 2009 University Book & Supply Outstanding Teaching Award.

■ **William Stigliani (Center for Energy and Environmental Education)** is UNI's lead person to conduct the study of "Climate Change and Its Expected Impacts on Iowa," a collaborative initiative by the three Regents universities that was commissioned by the state.

■ **Laura Strauss (Chemistry and Biochemistry)** is president of the UNI chapter of Sigma Xi, The Scientific Research Society.

■ **Michael Walter (Biology)** was awarded a patent for bio-based technology applicable to dangerous bio-agent detection, decontamination and therapy. Recent proof-of-principle tests in BSL3 facilities with actual anthrax spores demonstrated that a prototype air-sampler/detector system does respond to spores in a matter of seconds.

■ **Jim Walters (Earth Science)** was appointed to the advisory board of the Iowa Geological and Water Survey of the Iowa Department of Natural Resources.



# Transitions

## ***New faculty***

**Earth Science and Science Education:** Kyle R. Gray, assistant professor (Ph.D., University of Akron)

**Physics:** Andrew J. Stollenwerk, assistant professor (Ph.D., University at Albany SUNY)

## ***Retirements***

**Timothy Cooney**, professor, 19 years in the Department of Earth Science and 13 years at Price Laboratory School

**Janet Drake**, 16 years in the Department of Computer Science

## ***Change in position***

**Shoshanna Coon**, associate professor of chemistry and biochemistry, was named interim associate dean of graduate academic affairs

## Summer camps help middle school students to experience science firsthand

Young scientists-in-the-making attended four camps on the UNI campus this past summer to learn about energy, the environment and robots. This is the second summer for the camps, which are part of the federally funded Engaging Iowa in Science and Mathematics program.

"Our aim with these science camps is to spark the imagination of students in grades five through eight about how

exciting and interesting science can be," said Katie Schafer, camp director. "These were not camps centered on dry textbooks but on hands-on activities and inquiry-based learning."

All of the week-long camps were held in July and were limited to 20 students each. There was one section of Exploring Energy, one of Rivers, Rocks and Prairies, and two sections of Beginning Robotics.

In Exploring Energy, students learned about where energy comes from, how it is used and ways to use current energy resources more efficiently. Campers also conducted experiments in solar and food energy and explored alternative sources of energy during a field trip to visit a wind turbine and a hydropower station.

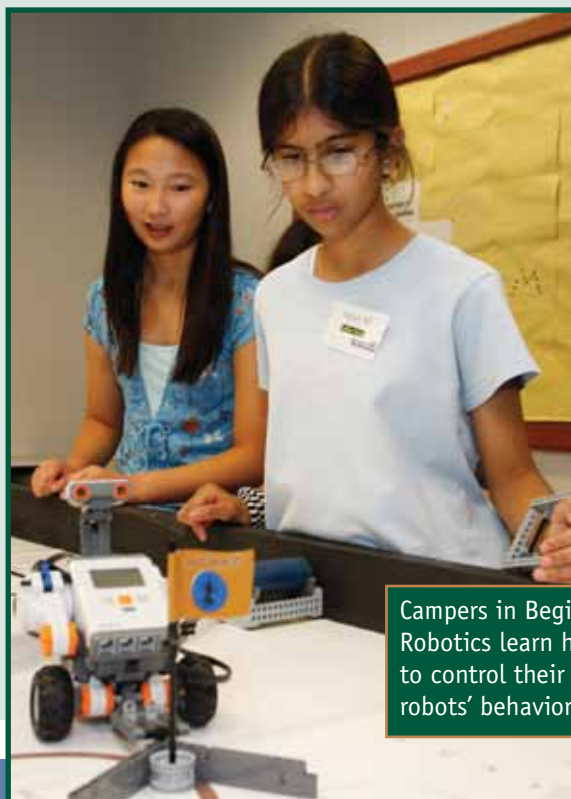


Students in the Exploring Energy camp burn different foods to measure how much energy they contain.

Rivers, Rocks and Prairies invited students to investigate the world around them as they learned what makes up the ground under their feet and how to use technology to map it out. They examined different species of Iowa fish and explored a prairie to discover its makeup. Campers analyzed different locations to determine the connection between environmental factors and living creatures.

Students in Beginning Robotics participated in a series of training challenges using the LEGO NXT robot and the LEGO Mindstorms programming software. They learned how to use feedback from sensors, combined with timing, loops and conditional statements to control their robots' behavior. The session ended with a competition to make the planet "Pantheon" habitable for a colony of space explorers.

"Judging from the level of enthusiasm and interest, I'd say the camps were very successful," said Schafer. "We believe that camps like these will encourage more students to pursue studies in science. Often, it's just a matter of exposing students to these types of experiences." Schafer hopes that UNI will be able to offer the camps again next summer.



Campers in Beginning Robotics learn how to control their robots' behavior.

# CNS Students in the News

## Recognition

■ At the Foundry Education Foundation College Industry Conference in Chicago in November 2008, industrial technology student **Nate James** was awarded the \$2,500 Keith D. Millis Scholarship, and IT student **Steve Schilling** received the \$2,000 Burleigh Jacobs Scholarship from Grede Foundries. Each also received a \$1,000 scholarship from the American Foundry Society, Twin Cities chapter.

■ The UNI student affiliates chapter of the American Chemical Society (ACS), advised by **Dawn Del Carlo**, assistant professor of chemistry and biochemistry, received a commendable award for the activities the group conducted during the 2007-08 academic year.

■ The Industrial Technology Department's robotics team, **Joel Sauser, Dustin Clark, Jeffrey Faust, Brian DeLorbe** and **Michael Eichenberger**, won the Best Electrical/Control Methodology award in the Robotic Manipulator Competition at the National Association of Industrial Technology annual meeting in Nashville, Tenn., in November 2008. Their adviser was **Jin Zhu**, assistant professor of industrial technology.

■ Physics major **Shanon Davis** was one of 60 students nationwide selected to participate in the 2009 Posters on the Hill at the Rayburn House Office Building in Washington, D.C.,

in May. Davis, whose research is on nanoscience and alternative energy, was accompanied by her adviser, **Tim Kidd**, assistant professor of physics.

■ Two of the four UNI computer science teams competing in the 2009 National Cyberdefense Competition at Iowa State

University in March placed in the top four. Team Panther—**Danny Lockard, Francisco Mota, Matt Connolly, Kyle O'Brien**—took second place, and Team Purple—**Shawn Sonnack, James Stumme, J.C. Last, Alex Rottinghaus**—came in fourth.

■ Biochemistry major **Kevin O'Connor** and mathematics teaching major **Brandon Weiland** were among 23 UNI students inducted into the Omicron Delta Kappa Circle of the national leadership honor society.

■ **Bridget Doughan**, biology: biomedical, **Cierra French**, biology, **Megan Hart**, biology, **Sarah Arneal**, biology and Spanish, **Lance Baetsle**, biology and psychology, **Gideon Cox**, graphic communications, **Jesse Hemsath**, biology, and **Corey Gevaert**, mathematics, were awarded Carver Scholarships, valued at \$5,200 per year for two years.

■ **Justin Huisman** took first place for his poster "The Effects of Planting Methods and Granivory of Seeding Emergence and Establishment in a Tallgrass Prairie Reconstruction" at the second annual UNI Graduate Student Research Symposium in April, and **John Holding** placed third with "Native Perennial Vegetation as a Feedback for Renewable Energy." Their advisers were **Daryl Smith**, director of the Tallgrass Prairie Center and professor of biology, and **Laura Jackson**, professor of biology, respectively.

■ **Abdullellah Alsheddi**, a biology major from Riyadh, Saudi Arabia, was one of three students to receive the UNI Lux Award for best representing the ideal of service to the university community.

■ Purple and Old Gold Awards, recognizing meritorious scholarship, were presented to seven CNS graduates in May 2009: **Alexa Warwick**, biology; **Stacey Reisdorph**, earth science; **Aaron Miller**, computer science; **Sheena Suckow**, industrial technology (graphic communications); **Diane Meyer**, chemistry and biochemistry; **Megan Klein**, mathematics; **Gary Rosonke**, industrial technology (electrical and information engineering technology).

■ Industrial technology student **Faruk Yildiz** received the Outstanding Doctoral Dissertation Award from the UNI Graduate College for "Low Power Energy, Energy Harvesting and Storage Techniques from the Ambient Human Power Energy Sources." His adviser was **Mohammed Fahmy**, professor of industrial technology.



Abdullellah Alsheddi



Bridget Doughan



Gideon Cox



Shanon Davis



UNI Solar Panthers getting ready for the Solar Slalom at the 2009 Solar Splash.

■ The Solar Panthers, the Department of Industrial Technology's solar electric boat team, took third place overall at the 2009 Solar Splash competition in Fayetteville, Ark., in May, their best finish yet. The team also won an award



for outstanding electrical system design and third-place finishes in the solar slalom and for best visual display. Team members included **Douglas Bechthold**, team leader, **Kyle Ross**, **Paul Johnson**, **Ben Kambach**, **Damon Knowling**, **Hannah Loan**, **Jorunn Musil** and **Tony Wagner**.

■ Sophomore **Brandon Culpepper**, an industrial technology (electrical and information engineering technology) major, is the first recipient of the Todd Western Memorial Scholarship in Industrial Technology. Western, who died in 2008, worked at John Deere for more than 40 years.

■ **Anna J. Schrad**, a biology major, received the 2009 CNS Dean's Award for Superior Achievement as a Student.



Dr. Robert and Brenda Good, with Emily Riesberg, the first recipient of their fellowship.

■ **Emily Riesberg**, a biology honors major, is the first recipient of the Dr. Robert and Brenda Good Undergraduate Research Fellowship in Biology. She did research with **Jeff Tamplin**, associate professor of biology, during the summer of 2009 on the temperature tolerances of turtles. The Goods, both 1974 UNI graduates, Bob in biology and Brenda in mathematics, are members of the CNS advisory board.

■ **Joshua Hanna**, a graduate student in science education and a teacher in the Muscatine Community School District, received the Excellence in Science Teaching Award for the Life Sciences from the Iowa Academy of Science. The Stanley Foundation's 2009 Catherine Miller Explorer Award recognized Hanna as "an outstanding teacher in the



Josh Hanna and friend, a Galapagos giant tortoise.

Muscatine Community who is dedicated to sharing a global perspective with his students and colleagues." As part of the award, Hanna took a 10-day trip to the Galapagos Islands in the summer of 2009, which he had identified in an essay written for the Stanley Foundation as the place he would most like to visit.

■ **Travis Benner**, a science education graduate student and a fourth and fifth grade science teacher at Blue Grass Elementary School, was named a state finalist in elementary science for the Presidential Award for Excellence in Mathematics and Science Teaching, the highest recognition that a K-12 science or math teacher may receive for outstanding teaching in the U.S.

### Research/projects

■ Graphic communication students **Christopher McGee** and **Ty Welu**, with **Carl Blue**, assistant professor of industrial technology, completed a study dealing with color preferences in Web design in 2008.

■ Biology graduate student **Sarah Benedict** was nominated in November 2008 by the Iowa Department of Natural Resources for its Outstanding Individual Volunteer Award for training student workers in netting and radio tracking techniques for the DNR's project on Indiana bats, an endangered species.

■ Five CNS students—biology majors **Alexa Warwick**, **Michelle Formanek**, **Chelsea Reinhard**, and **Katie Berge** and physics major **Shanon Davis**—were among 21 UNI honors students

who presented their research in poster format at "Research in the Capitol," a collaborative effort of the honors programs of the Regents universities at the Iowa statehouse in March.

■ Seven CNS students presented their research at the UNI Honors Research Conference, showcasing undergraduate research projects by students in the UNI University Honors Program, in April: **Callie Kronlage**, mathematics; **Beth Kolsrud** and **Michelle Gogerty**, mathematics/statistics and actuarial science; **Jessica Fohey**, **Mandy Larson** and **Kassidy Lyons**, biology; and **Adam Campbell**, earth science.

■ UNI's American Chemical Society student affiliate group and the Department of Chemistry and Biochemistry sent 12 students to present posters of their research at the ACS national meeting in Salt Lake City in spring 2009. Three other students co-authored faculty presentations at the meeting.

■ Geology students **Drew Kreman**, **Rodney Hubscher**, **Bree McClenning** and **Adam Lee** gave presentations on their undergraduate research at the annual meeting of the Geological Society of America in Houston, Texas, in October 2008.

# IMSEP awards grants

The Iowa Mathematics and Science Education Partnership (IMSEP) awarded six of its 14 FY 2010 grants to principal investigators from the University of Northern Iowa.

With the four multi-year grants awarded to UNI principal investigators in FY 2009, 10 IMSEP grants are currently in progress at UNI.

The call for proposals was sent to faculty and staff from Iowa's three public universities and their education partners in public and private sectors. The projects must support IMSEP's three goals: to improve mathematics and science performance of Iowa students, to prepare more high-quality math and science teachers for Iowa's schools, and to promote statewide collaboration and cooperation.

"We are gratified to be able to provide support to the University of Northern Iowa for these extremely worthwhile projects," said Kari Jastorff, IMSEP program manager. "Along with support funds awarded to the other Regents universities, we can collaboratively impact Iowa's math and science education system by producing more quality, diversely represented teachers in the science, technology, engineering and mathematics fields, as well as improve the performance of Iowa learners in math and science."

The 10 UNI projects are briefly described below, with grant amounts rounded to the nearest \$1,000. FY 2010 grants run from June 1, 2009, to May 31, 2010. For specific project fund amounts, visit [www.iowamathscience.org/competitivegrants.shtml](http://www.iowamathscience.org/competitivegrants.shtml).

## FY 2010 projects

### Telescopes and Astronomy Curriculum Project.

(\$37,000) Groups of 20 to 24 Iowa teachers developed astronomy curriculum for their teaching level in a series of summer workshops. The curriculum is available to all teachers via a Web site. Workshop participants used and incorporated into their lesson plans a computer-controlled telescope. Principal investigator is Siobahn Morgan of the Department of Earth Science and CNS associate dean.



Participants in the Astronomy for Teachers workshop discuss stellar spectra on the UNI campus in summer 2009.

### Project-Based Learning and Other Innovative Instructional Activities for Middle School and High School Science.

(\$91,000) Thirty Iowa science teachers designed learning activities in summer workshops, piloted the activities in their classrooms and refined them throughout the year. The completed activities, along with videotaped demonstrations, will be posted on a Web site. Principal investigator is Jody Stone of the Department of Chemistry and Biochemistry.

### Assessment, Reflection, Community and Knowledge.

(\$90,000) High school mathematics teachers are employing an adapted Japanese lesson study design to develop professional learning communities. The content focus is the Iowa Core Curriculum for high school mathematics. Principal investigator is Elizabeth Hughes of the Department of Mathematics.

**Establishing a Professional Development School in Middle School Mathematics.** (\$58,000) Logan Middle School in Waterloo is providing extended, high-quality field experiences for preservice teachers. The school-based field experience model in mathematics education provides additional one-on-one instruction and classroom support for low-achieving middle school math students, as well as instructional support for middle school mathematics teachers. Principal investigator is Jihwa Noh of the Department of Mathematics.

**Increasing and Maintaining Mathematical Cognitive Demand: Implementing High-Quality Critical Thinking Instructional Tasks in Middle Grades and High School Mathematics.** (\$43,000) The project examines the instructional practices of 44 Iowa middle school and high school mathematics teachers through the lens of implementing and maintaining high-level critical thinking mathematics tasks that challenge students to think and reason. Principal investigator is Bridgette Stevens of the Department of Mathematics.

**Learning Mathematics and Science Through the Arts.** (\$59,000) Teaching artists trained by the John F. Kennedy Center for the Performing Arts are leading project activities to improve the content and pedagogical knowledge of Iowa math and science inservice and preservice teachers. Principal investigator is Amy Hunzelman, director of education and special programs at the Gallagher-Bluedorn Performing Arts Center.



## Multi-Year Projects

### **O'My Iowa Geology—Loving Outdoor Learning.**

(\$50,000, FY 2009, 2010) UNI, the University of Iowa and the Iowa Limestone Producers Association are providing teachers with field-based opportunities that develop observational skills and encourage new earth science field experiences, with the end goal of a sustainable Iowa geologic education/information network. Principal investigators are Chad Heinzl and James Walters of the Department of Earth Science.



Participants in O'My Iowa Geology learn about water quality testing in summer 2009.

### **Improving Chemistry Teaching in Iowa.**

(\$324,000, FY 2009, 2010) The project, with the University of Iowa and Iowa State University, includes a survey on chemistry teacher needs, development and delivery of teacher professional development workshops in summer, outreach during fall

professional meetings and the development of an online course for teachers. Principal investigator is Bill Harwood of the Department of Chemistry and Biochemistry.

### **Improving Science Instruction in Pre-K Classrooms.**

(\$190,000, FY 2009, 2010) Early childhood education and science education faculty are collaborating to improve science education for young children in Iowa. Principal investigator is Betty Zan, director of the Regents' Center for Early Developmental Education.

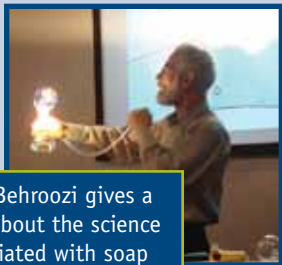
### **Iowa Mathematics and Science Academy.**

(\$268,000, FY 2009, 2010) The project is working to generate in 40 low-income, first-generation and minority students yearly the skills and motivation to complete a postsecondary program in mathematics, science or technology-related fields. Principal investigator is Angela Francis, academic adviser of Upward Bound Mathematics and Science.

## Citizen Science aims to make science accessible

From soap bubbles to computer security, the wide-ranging series of informal talks called Citizen Science, held Saturday mornings at the Center for Energy and Environmental Education during the 2008-09 academic year, aimed to reach amateur scientists and those with a passing interest in science.

The intent of the series, which was open to the public and free of charge, was to make the technical accessible, according to CNS Dean Joel Haack. "Whatever the science topic—whether something in today's headlines or something that people are just curious about—background information and context can make the difference between understanding its significance or not," he noted. "We see CNS faculty as a valuable community resource, with a wealth of information they can share in an accessible way."



Fred Behroozi gives a talk about the science associated with soap bubbles for the Citizen Science series.

The first installment of the series, given by J. Ben Schafer, associate professor of computer science, focused on the history and science behind beer brewing. An amateur brewer, Schafer described the ingredients and equipment for brewing as well as what happens during the process.

Fred Behroozi, professor of physics, looked at soap bubbles through the work of several 17th and 18th century painters in the second talk. He discussed the chemistry, physics and mathematics associated with soap bubbles and demonstrated several physical phenomena, such as light scattering, using soap bubbles and soap films.

Common-sense computer security was the subject of the third Citizen Science talk, given by Paul Gray, associate professor of computer science, who explored security issues surrounding common computing equipment at home, such as computer workstations, DSL and cable modem equipment, wireless access points and even MP3 players.

In conjunction with Severe Weather Awareness Week in March, Alan Czarnetzki, professor of meteorology, and Jeff Kennedy, KWWL-TV meteorologist, reviewed current recommendations for safety during tornadoes, lightning and flash floods and discussed the formation of thunderstorms and tornadoes.

The final installment of the 2008-09 series highlighted games and puzzles from the perspective of mathematics. Doug Shaw, associate professor of mathematics, explored some games and puzzles that can be analyzed mathematically as well as their implications.

"We were especially pleased with the diversity of topics in this year's series and hope to continue offering Citizen Science talks in the future," said Haack. The series was sponsored by the College of Natural Sciences and funded by the federal grant, Engaging Iowa in Science and Mathematics.

# CNS team participates in project to explore Earth's interior

Representatives of the Department of Earth Science took part last summer in a National Science Foundation project to explore the formation, structure and evolution of the North American continent. James Walters, professor and head of the Department of Earth Science, and two May 2009 geology graduates, Rodney Hubscher and Drew Kreman, spent 10 weeks locating optimal sites in Iowa where seismometers could be installed.

The USArray project ([www.iris.edu/USArray](http://www.iris.edu/USArray)), part of the decade-long EarthScope experiment ([www.earthscope.org](http://www.earthscope.org)), is placing hundreds of permanent and portable seismometers across the continental U.S., according to Walters. With the data from the network, researchers will be able to collect detailed images of the Earth's interior and investigate the processes controlling earthquakes and volcanoes.

Begun in California in 2004, the project is now east of the Rockies. Last summer's teams worked in Iowa, Minnesota, Missouri, Arkansas and Louisiana to locate appropriate sites, preferably remote and secluded. "Our ideal site was in secluded pasture land, along a fence," said Kreman. The seismic stations are placed about 45 miles apart in a grid-like configuration and remain on site for two years.

Each seismic station consists of a plastic tube three feet in diameter and seven feet long sunk vertically into a hole in the ground. The seismometer, a dome-capped steel cylinder about the size of a basketball, rests on a concrete pad at the bottom of the insulated tube. A computer and various electronics are also placed in the tube, which is then sealed and buried. Solar panels above ground provide power, and cell phone modems relay the seismometer data.

The data consist of plots of sound waves, arriving from all directions. Combining these plots gives scientists information on what lies beneath Earth's surface. By determining the time it takes vibrations to travel from one place to another, scientists can determine the nature of the material the vibrations pass through.

Walters' students, who attended a four-day training session at the University of Minnesota in May, surveyed target areas, secured permission from landowners and staked the sites.

Seismometers will be installed in the summer of 2010. "Many of the Iowa farmers hosting these sites planned on using the stations as education portals for their children and community schools," Hubscher noted. "Students will be able to monitor the station live, and EarthScope provides educational materials to supplement the learning experience."

Both Kreman

and Hubscher found Iowa farmers to be easy to work with and that their association with UNI helped. "This was a great opportunity for the students to get some hands-on experience in the field," said Walters. Hubscher is working on a master of science degree in geology at San Diego State University, and Kreman is pursuing a master's degree in the geosciences at the University of Arkansas.

For more information on educational activities, publications and workshops for teachers and park and museum interpreters specifically related to EarthScope, go to [www.earthscope.org/es\\_eno](http://www.earthscope.org/es_eno).



Hubscher (left) and Kreman complete a site reconnaissance.



# Faculty research

**David Saunders**, professor and head of the Department of Biology, is investigating the blood-clotting mechanism of hibernating turtles, which experience low body temperatures

and a build-up of acid in the blood, similar to what occurs in trauma patients. These conditions result in a decreased ability of the blood to clot in mammals, and Saunders is attempting to determine if the blood of hibernating turtles responds similarly to that of mammals. If the former is affected to a lesser degree by these conditions, he will examine the potential adaptations of turtles with the goal of better treating the clotting difficulties in trauma patients.

**Laura Hoistad Strauss**, associate professor of chemistry and biochemistry, is collaborating with Tim Kidd of the Physics Department to examine transition metal dichalcogenides (TMDC) as hydrogen storage materials. TMDC are layered compounds that have been used in applications such as high-temperature lubricants. The layered nature of the compound allows for the intercalation of materials into the van der Waals gap between the layers. The intercalation of various 3d materials with the TMDC host materials appears to enhance the uptake of hydrogen into the material.

**Paul Gray**, associate professor of computer science, is working on GPGPU (General-Purpose computing on Graphic Processing Units) programming, a new architecture aimed at high-performance computing. While the name implies high-end video rendering, the architecture is most suited for parallel computations in scientific codes. Research leveraging the GPGPU architecture includes material point methods (MPM) and processing of large databases consisting of light detection and ranging (LIDAR) information for the state of Iowa.

**Chad Heinzel**, assistant professor of geology and science education, is engaged in an ongoing international investigation of Mediterranean indigenous proto-urban settlements during the early Iron Age (900-734 BCE) and their cultural development/transition into the Greek and



Dave Saunders in his lab

Phoenician civilizations. He is using a geographic information system (GIS) to characterize landscape developments, climatic variability and natural resource (water, stone, clay) availability in western Sicily throughout the Holocene Epoch (11,200 calibrated years before the present to the present). These data are being correlated with archaeological data to develop an understanding of human land-use changes, settlement patterns and cultural identity.

**Arindam Ghosh**, assistant professor of industrial technology, is evaluating the physical properties of low-alloy steels and their ability to achieve properties above 140ksi yield strength while maintaining necessary ductility and toughness. The work involves induction melting and casting techniques and includes methods for heat treatment and testing. Higher strength casting alloys can allow metal casters to lighten casting designs by reducing section thicknesses. By using these high-strength alloys, steel castings can achieve strength-to-weight ratios as high as titanium castings at a fraction of the cost with reduced lead times and overall cost.

**Elizabeth Hughes**, assistant professor of mathematics, is working on a three-year professional development project for 22 high school math teachers in collaboration with Keystone Area Education Agency 1. By creating a professional learning community among the teachers, the project aims to increase their knowledge of the Iowa Core Curriculum's (ICC) Essential Mathematics Strands, improve their integration of the ICC's Essential Skills, develop their understanding and use of formative assessment, and build a professional learning community among the teachers that allows for self-reflection and respectful collaboration.

**Larry Escalada** and **Jeff Morgan**, associate and assistant professors of physics and science education, respectively, **Karen Couch Breitbach**, science education instructor, and **Jody Stone**, professor of chemistry and biochemistry and science education, have a three-year professional development project, Iowa Physics Teacher Instruction and Resources (IPTIR), to prepare more high-quality high school physics teachers. Funded by the State Board of Regents and Title IIA, IPTIR provides 24 Iowa secondary physics/science teachers, many of whom are completing the requirements for a physics teaching endorsement, with intense two-week summer institutes followed by academic-year professional development and support. The program focuses on physics content and pedagogy with emphasis on research-based instructional methods and national/state science education initiatives.



Chad Heinzel stands on a fallen column of a temple built by Greek colonists in sixth century B.C. Sicily.

# Imagine the impact

When our friends and alumni make gifts to UNI, they are giving more than dollars. They are giving us the gift of their faith and trust that we will be careful stewards of their generosity in a way that benefits the university community and honors their good intentions.

Even with the challenges brought on by our unsettled economy, our alumni have continued their generous support. In the past year, College of Natural Sciences friends and alumni have made a significant impact in the lives of our students and faculty by supporting scholarships, undergraduate research assistantships, department program funds and special programs such as public lectureships. Whether your gift is for immediate use or you create an endowment to ensure perpetual support, you are making an impact upon our students that will ripple forever.

**Program and scholarship support** are the backbone of giving. Endowments create permanent funds that provide vital support for our students and academic programs and help give UNI an advantage when recruiting students and faculty to our campus.

The **CNS Dean's Fund for Excellence** provides direct support to students and faculty in different ways each year. The fund is flexible and allows the college to direct dollars

quickly to areas where resources might otherwise be limited. When you make a gift of \$1,000 or more, you will become a

member of the Dean's Inner Circle in recognition of your high level of support.

The **UNI**

—Unknown

*"What we do for ourselves dies with us. What we do for others and the world remains and is immortal."*



Cassie Benning Luze  
CNS Development Director  
800-782-9522 or 319-273-6078  
cassie.luze@uni.edu

**Annual Fund** is critical in providing resources that the university can use immediately, as they are needed most. With an annual fund gift of \$1,000 or more, you will become a member of the Campanile Society and will join others who are committed to the long-term growth and mission of UNI.

UNI's **Old Central Associates** have created a legacy for the future with a planned gift. UNI played an important role in launching you into adulthood and a career. By including UNI in your estate planning or by making a planned gift now, you can help students and programs in a way you never thought possible.

The UNI Foundation's campaign theme is "Imagine the Impact." When you share your resources with UNI, you go beyond imagining to **doing!** Thank you for your steady friendship and support of the College of Natural Sciences and the University of Northern Iowa.

## South Campus Trail provides portal to nature

The recently developed South Campus Trail, which takes users into woods full of deer and some 60 native species of birds, is a treasure now available for the public's use and enjoyment.

Opened to the public in the fall of 2008, the nearly four-mile trail system runs around the middle branch of Dry Run Creek watershed on the UNI campus, meandering along a wooded stretch of Dry Run Creek as it traverses diverse habitats, including tallgrass prairie, lowland and upland forests and an oak savanna. (For a map of the trail system, go to [www.uni.edu/biology/trailmap.html](http://www.uni.edu/biology/trailmap.html).)

"For many years, the area was surrounded by chain-link fence with Keep Out signs," said Billie Hemmer, manager of the UNI Biological Preserves and the Botanical Center. The decision to create the trails, she said, was the result of efforts to introduce the community to the UNI Preserves. Signage was created to identify the preserves as part of the UNI Department of Biology, trails were marked, tree stumps were

removed and other necessary manual labor was done. Trails were laid out so that research projects are protected.

The trail system is open from dawn to dusk, year round, and hiking, jogging, cross-country skiing and bird watching are permitted. Prohibited are biking, dogs and all motorized vehicles. Regulated bow hunting is allowed in-season but only by those authorized for the Urban Deer Management Area in the Upland Forest Preserve.

"The South Campus Trail offers people an opportunity to experience a variety of natural environments without leaving Cedar Falls or even the campus," said Hemmer. "We are happy to open it to the public."

The UNI Biological Preserves system, begun in 1970 by the Department of Biology, is a complex of diverse natural habitat restorations and reconstructions totaling 155 acres. The preserves are used as a field lab for teaching and for research projects.



Part of the South Campus Trail with prairie forbs and grasses.



## Internationally distinguished UNI grad establishes teaching and learning award

The Yager Exemplary Teaching and Learning Recognition Award, established from the Dr. Robert and Phyllis Yager Science Education Fund for Excellence, will recognize its first awardees in the spring of 2010. The award will recognize exemplary science and mathematics teaching in the field by UNI alumni. Their specific demonstrated successes in instructional approach and the impact on their students will be identified and shared with UNI faculty to build upon the strengths of current teaching and learning models.

Robert Yager, professor emeritus of science education in the College of Education at the University of Iowa, where he taught for 50 years, received his B.A. degree in biology from UNI in 1950. He went on to earn his M.S. and Ph.D. degrees in plant physiology from the University of Iowa. His research interests have focused on the relationship of science, technology and society; creativity; student motivation; and attitudes toward science.

The author of more than 600 books, chapters and research reports, Dr. Yager is a past president of seven national and professional organizations and headed one of the largest graduate programs in science education. He currently works on the National Science Foundation-supported IMPPACT research effort studying the effectiveness of science teacher education programs. He has received many state and national awards, including the Distinguished Service to Science Education Award from the National Science Teachers Association, the Governor's



UNI President Ben Allen awards Dr. Robert Yager an honorary doctorate in humane letters.

Science Medal for Science Teaching, and the Lifetime of Distinguished Contributions Through Research Award from the National Association for Research in Science Teaching. In addition, Dr. Yager received the UNI Alumni Achievement Award in 1982, and in 2008 he was awarded an honorary doctorate in humane letters from UNI.

For the Yager Exemplary Teaching and Learning Recognition Award, UNI faculty will nominate their best graduates who are in at least their fifth year of teaching in a K-12 classroom. Awardees will be selected on the basis of teaching materials and student performance. They will confer with science education faculty on the UNI campus and receive a \$2,000 honorarium. The Yager Science Education Fund for Excellence will serve a key role in supporting UNI's leadership of the Iowa Mathematics and Science Education Partnership and reflects the importance of private support as part of the university's current Imagine the Impact campaign.

## Alumni News

### 1950s

**Patricia (DeKoster) Echelberger**, BA '50, is retired but still serves as a Girl Scout leader and participates in church activities. She and her husband, Ken, have traveled extensively in the U.S., Europe and the Caribbean.

**Richard Mitchell**, BA '58, retired in '93 from the Joliet, IL, schools after 27 years of teaching earth science. He also spent eight years in Iowa teaching math and science. He enjoys reading, watching TV, computing and traveling to visit his children and grandchildren.

**Marilyn Stafford Hanson**, BA '59, taught mathematics 47 years at Ames High School before retiring in '06. Since her retirement, she volunteers in the Math Study Center at Ames High School, where students can come for additional help with their assignments and make up tests.

### 1960s

**Paul D. Jones**, BA '62, spent the winter of 2008-09 working at McMurdo Station Antarctica (summer time there) operating the water plant. He has worked two summer seasons operating the water

plant and two summer seasons operating the power plant for this U.S. science station of approximately 1,200 people. His first visit to McMurdo was in '97 as a National Science Foundation Teacher Experiencing Antarctica (TEA), when he and his team spent four weeks monitoring glacier stream measurements to determine weather fluctuations. Once he retired in '98, after 36 years of teaching biology, chemistry and physics in Montezuma, he realized he wanted to return to McMurdo. He decided that operating the utilities would be his best chance, and for the last four years he has been replacing a utilities worker when she takes a leave. He generally works 10-12 weeks (November, December, January) during each trip.



Paul Jones at McMurdo Station Antarctica.

**William E. Ashby**, BA '63, MA '68, retired in '96 after 33 years teaching math and serving as a high school principal and the last 17 years as an AEA educational consultant for computer-assisted education. After teaching math at Upper Iowa University and Kirkwood Community College and working in sales, he retired again and is now scoring standardized statewide tests for grades 3-12 for Pearson. Reading about John Peterson in Connections reminded him of how much he learned from Drs. Trimble, Lott and other leaders in the math revolution.

**David Montz**, BA '63, has sold his company and retired to New Mexico.

**Walter F. Kreimeyer**, BA '64, retired in '98 from teaching ninth grade earth science in Ankeny after 32 years. He was one of 75 lead teachers for the Earth Science Curriculum Project in the mid-'60s. Both of his daughters graduated from UNI with majors in art and teaching: Steffany King (BFA '90) teaches at Dubuque Senior High, and Elizabeth Rowe (BFA '93) recently moved from Vanderbilt University to the University of Texas, San Antonio.

# Alumni News cont.

**Paul Heuer**, MA '69, works in customer service for a large company, writes books, paints pictures and cuts gemstones. He started and ran a greenhouse/garden center from '72 to '03.

## 1970s

**William J. Desmarais**, BA '72, MA '85, retired in June '07 from Cedar Rapids Schools after 33 years of teaching environmental and earth sciences. He was named EPA Environmental Teacher of the Year for 2007 for Region 7 and now volunteers for Indian Creek Nature Center, the Science Station and Cedar Rapids Schools. He worked on dinosaur digs in Wyoming and Alberta in 2006-08.

**William A. Kunzman**, MA '73, retired in '97 as a science teacher at Nashua-Plainfield High School. He winters in Mission, TX, and builds homes for needy people in Mexico.

**Geraldine Weymouth**, MA '76, is the owner of Rainbow Greetings and Gifts in Downey, CA, which had its grand opening Feb. 20, '09.

## 1980s

**Dr. Christopher Bryant**, BA '82, is vice president and chief operating officer of ProMetic Biotherapeutics, Inc., in Rockville, MD. He holds MS and PhD degrees from the University of California, San Diego, and is married to Renee Vaughn, RN, BSN (U of I, '85). They have three children: Erin, born in '85, Adrienne, born in '88, and Keenan, born in '90.

**Matt G. Dacres**, BA '85, has been a claims representative with EMC Insurance in Sioux City for two years. He has been in claims since '91, starting out with Hurricane Andrew home damage evaluation. He was a production supervisor manager at Teledyne Micro-Electronics running an LED production line before that.

## 1990s

**Dr. Guang Jin**, MA '92, DIT '95, began a new position at Deere & Company on Aug. 1: global manufacturing engineering manager. She will have direct responsibility for manufacturing engineering processes in the large tractor product line, including the Waterloo Works in Iowa and the Montenegro factory in Brazil. She was formerly drive train assembly manager at the Waterloo Works. Jin and her husband, **Dr. Zifan Ju**, MA '92, DIT '96, recently pledged \$15,000 to establish an Undergraduate Research Assistantship in Industrial Technology, which will begin in 2010, and they continue to support their fund for faculty professional development. Jin recently received the 2009 UNI Young Alumna Award, one of the Heritage Honours Awards, which recognizes graduates 40 years of age or younger who have excelled in their profession in a short amount of time.



**Dr. Michael S. Lee**, BS '92, was named president-elect of the American College of Foot and Ankle Surgeons in March of '09. He practices with Capital Orthopaedics & Sports Medicine in Des Moines, with a focus on the diagnosis and treatment of all musculoskeletal foot and ankle conditions including reconstruction, trauma and sports injuries. He is a graduate of the College of Podiatric Medicine and Surgery at Des Moines University and is certified in foot surgery and reconstructive rearfoot/ankle surgery by the American Board of Podiatric Surgery.

**Jeffrey F. Klein**, BS '95, is a supply management specialist at John Deere Waterloo Works, Service Parts Operations. His wife, Melissa Seible Klein, BA '96, is a special needs counselor at Hawkeye Community College, and their daughter, Audra, is 4.

**Erik Nieuwenhuis**, BS '95, is a physical therapist at St. Luke's Regional Medical Center in Sioux City, where he is a work injury prevention specialist in ergonomics and a wellness consultant. In May '08 he and his wife, Jenilyn, adopted Abigail Ann, who was 3 in February '09. He leads the wellness ministry at Sunny Brook Community Church and a wellness challenge for small groups. In '08 he assisted the Sara Lee plant in South Sioux City, NE, to be number 1 of 40 plants in safety/ergo/injury prevention.

**Justin Dams**, BA '99, MBA '01, is vice president of Members Financial Services at Veridian Credit Union, where he offers retirement and investment advice to individuals and businesses. He earned a CRPC designation from the College for Financial Planning. He and his wife have three children.

**Megan (Schmidt) Farnsworth**, BA '99, an inpatient neuroscience staff nurse at the University of Iowa Hospital in Iowa City, was recently certified as a neuroscience registered nurse (CNRN). She and her husband, Aaron Farnsworth, BA '00, have two children, Cole, born 5/06, and Ashley, born 7/08.

## 2000s

**Lori Covington**, BS '00, MS '02, became director of radiologic technology at San Diego (CA) Mesa College in '08.

**Dr. Stacy (Dubbett) Carlin**, BA '04, opened Family Health Chiropractic, P.C., in Waterloo in December '08 after graduating from Palmer College of Chiropractic in Davenport.

**Bradley Kennedy**, BA '04, taught in the biology department at Iowa Western Community College in Council Bluffs after receiving his MS in clinical anatomy from Creighton University in Omaha, NE, in '07. In fall '09, he began a doctoral program in clinical anatomy at Penn State, where he was awarded a research assistantship. He is married to **Lindsey Rentz**, BA '05.

**Benjamin Matthies**, BA '04, is teaching in an at-risk program at Ames High School and also teaches at Sylvan Learning Center in Ames and at Des Moines Area Community College in Boone.

**Caroline (McSorley) Simons**, BA '04, has been working as a horticulturist at Omaha's Henry Doorley Zoo since August '07. She married Tony Simons in August '05, and their daughter, Annika Jo, was born in December '08.

**Kelly (McNaughton) Raney**, BA '05, was accepted into the Duke University physical therapy program and began classes in the fall '09 semester.

**Justin Woodlief**, BA '06, began medical school at the University of North Carolina at Chapel Hill in fall '09.

**Robert Charles Barber**, BA '07, is a research biologist in aquaculture market development for Varied Industries Corp. in Mason City. He expresses special thanks to Drs. Berendzen, Tamplin, Gerrath, Thurman, Groves and Brant for inspiring him every day.

**Matthew Giese**, BS '08, is an estimator/project manager for Giese Companies of Dubuque.

**Kathleen J. Klier**, BA '08, is a consumer safety officer/investigator with the Des Moines office of the U.S. Food and Drug Administration.

**Alexa Warwick**, BA, BS '09, was awarded a \$3,585 Merchant Scholarship, to be applied toward a recipient's graduate studies during the 2009-10 academic year. She plans to earn her PhD in conservation biology/conservation genetics and conduct applied research within areas in critical need of conservation. Warwick was a UNI Symposium Scholar, a member of the University Honors Program and a recipient of the prestigious Barry M. Goldwater Scholarship.

## Marriages

**Jenny McElmeel-Bryant**, BT '93, a purchasing manager for castings at Caterpillar in Peoria, IL, married Cary Bryant in May of '08.

## Births

**Jeremy and Dr. Melissa Beyer**, both BA '02, have a daughter, Emily Ann, born February '08. Jeremy is a metering analyst with MidAmerican Energy and Melissa is an associate veterinarian with the South Des Moines Vet Center.

**Stacy Kaye (Felderman) Hirsch**, BA '03, and her husband, Jim, have a son, Quintin James, born November '08. She is a graphic designer with the Weitz Sign Co. in Dubuque.

## Deaths

**Vincent G. Lampe**, BA '51, of Kirksville, MO, died May 12, '08.

**Charles R. Anderson**, MA '56, of South St. Paul, MN, died May 29, '08. He was a biology teacher in Duluth, MN, from '56 to '64, and in South St. Paul from '64 to '87. His widow is Mary Jane VanderBerg Anderson, BA '56.

**Eli H. Keeran**, MA '60, of Elma, WA, died May 16, '05.

**David A. Andersen**, BA '66, of Green Valley, AZ, and Hayward, WI, died Oct. 10, '07.

**David F. Deel**, BA '69, of Bassett, VA, died Dec. 10, '08.



# CNS Advisory Board

The College of Natural Sciences Advisory Board provides advice, guidance, support and advocacy for the college's undergraduate and graduate programs. The board members help to align the college's curricular offerings with changing educational needs; help to identify outside funding sources for the college and internship and other professional opportunities for students; and serve as advocates for the college by promoting positive relations with the external community.

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