

Growing

A HEALTHY FUTURE



Combating
Obesity

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Researching
Viruses

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Building
the Campus

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IANR

FOOD • FUEL • WATER • LANDSCAPES • PEOPLE

Campus Under Construction



Ronnie D. Green,

We chose the title “Growing” for this magazine, because that is exactly what we are doing and expect to do for some time in the future.

IANR is growing like no other time in our history — our student body, our expanding research enterprise, and our outreach efforts through Nebraska Extension!

One of the most exciting parts of that growth is at Nebraska Innovation Campus (NIC). Strategically located adjacent to the University of Nebraska–Lincoln, NIC provides a collaborative space for students, faculty, staff, and private partners. The state’s generous initial \$25 million investment in NIC, combined with private-sector investments, provided a critical jumpstart, including the renovation of the former 4-H Building into a state-of-the-art conference center. Innovation Commons, which is adjacent to the conference center, provides office space for the Innovation Campus staff, as well as the Robert B. Daugherty Water for Food Institute, NuTech Ventures, and various private companies.

This spring we are opening the Greenhouse Phenomics Center, which provides 15,000 square feet of greenhouse and headhouse space. The facility features state-of-the-art computer environmental controls and 22-foot eave heights to allow for optimal air circulation. The Center houses a LemnaTec high-throughput plant phenotyping system, which uses specialized conveyors and a camera system to take high-resolution images of plants as they grow in varied conditions. The system, one of only a few in the world, can identify phenotypes of food crops that display beneficial characteristics, such as drought tolerance. We are excited to host a PhenoSummit in October to expand our potential partners in the new phenomics area. At full build-out, the NIC Greenhouse Innovation Center will include 60,000 square feet of greenhouse

space connected to 80,000 square feet of office and wet lab space.

This summer we will open the Food Innovation Center, a 178,000-square-foot complex that will house our UNL Food Science and Technology Department, ConAgra Foods, Inc., and other private companies. A state-of-the-art distance education classroom, wet/dry lab research space, food grade/nonfood grade pilot plant space, and office space will all provide the type of collaborative learning space our campus needs. One example of the type of collaboration that is occurring thanks to NIC is the Nebraska Alliance for Advanced Food Sanitation, which brings together companies such as ConAgra, Nestle, Neogen, Kellogg’s, Hershey’s, Ecolab, Cargill, and 3M to develop ways to further secure our food system. As our Food Science and Technology faculty and staff vacate the Food Industry Complex, a domino effect will occur. With Biochemistry Hall being demolished to make room for the new East Campus dormitory and a number of new hires, thanks to the completion of Phase 1 of our hiring plan, every square inch of the Food Industry Complex will be repopulated. All of this moving is exciting and labor intensive. Thanks for everyone’s patience as we are growing to better serve you!

Ronnie D. Green, Ph.D.
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Cover: The new marker entry serves as the symbolic entrance to East Campus. For more, see page 8.

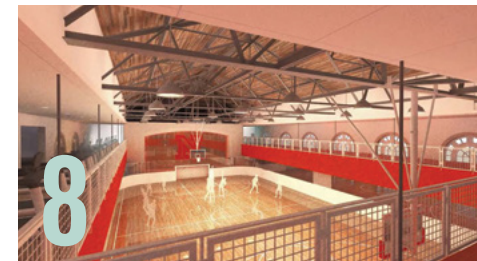
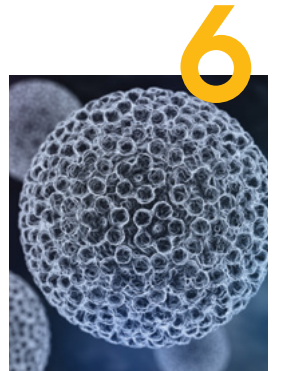
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Growing A Healthy Future

Spring 2015

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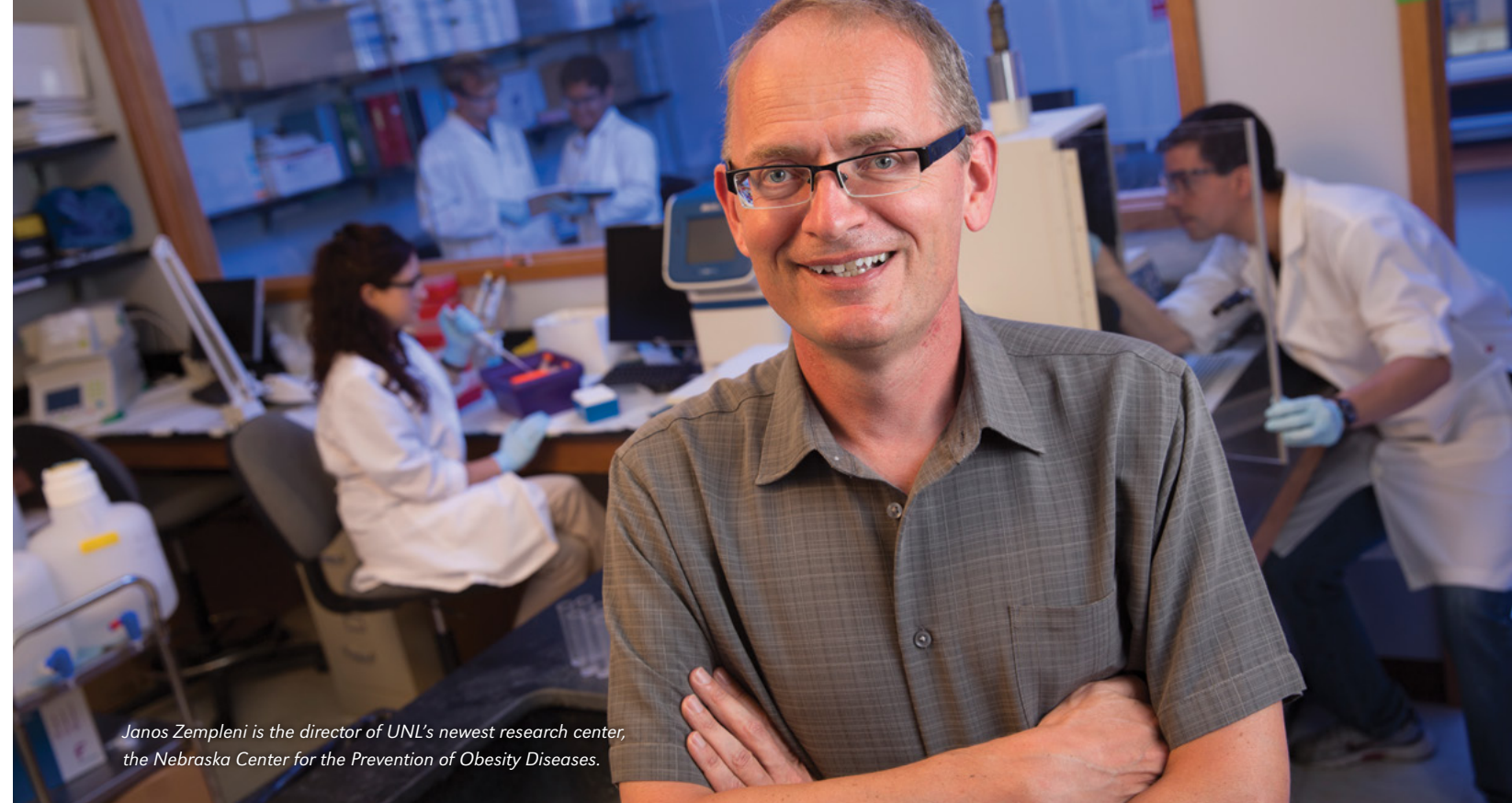


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EXAMINING HOW CERTAIN NUTRIENTS IN FOOD PREVENT OBESITY



Janos Zempleni is the director of UNL's newest research center, the Nebraska Center for the Prevention of Obesity Diseases.

The name of the University of Nebraska–Lincoln’s newest research center is a mouthful — the Nebraska Center for the Prevention of Obesity Diseases through Dietary Molecules. But the center’s purpose can be summarized in a few words — molecular-level examination of how certain nutrients in food prevents obesity.

There is no magic bullet for losing weight. Most people know that eating less and exercising more aids weight loss, but some people who are overweight can’t — or don’t want to — do that. Answering molecular-level questions about obesity and related diseases is a crucial first step in combating the obesity epidemic, the largest health threat in this country, said Janos Zempleni, center director and professor of molecular nutrition in the Department of Nutrition and Health Sciences.

Building on UNL’s strength in nutrition and health research, the Nebraska Center for the Prevention of Obesity Diseases or NPOD is establishing a community of nationally recognized researchers in nutrition, genetics, biochemistry, food science, immunology and computer science. The center is a collaboration of the University of Nebraska Medical Center and UNL.

NPOD’s long-term goal is to become a leader in nutrient signaling and the prevention of obesity and obesity-related diseases, including cardiovascular disease, stroke, type 2 diabetes and nonalcoholic fatty liver disease, Zempleni said.

“This combined focus makes NPOD unique in the United States and globally,” he said.

Nutrient signaling research explores how nutrients initiate biochemical chain reactions that cause a cellular response, including fat storage and disease-causing inflammation. Many nutrient-dependent signaling pathways have not yet been discovered and are promising targets for consumer-friendly, cost-effective methods to prevent and treat obesity-related diseases.

“This new center is at the cutting edge of research to prevent obesity-related diseases.”

The activities of the center go beyond traditional laboratory science. NPOD is interested in translating research discoveries into patient care and consumer behavior. “All of

our discoveries relate to nutrients that are present in the average person’s diet,” Zempleni said. “Through this center, we will develop science-based strategies using dietary compounds to improve human health.”

To achieve this, some of the scientists are studying how certain dietary fatty acids activate molecular pathways that turn fat-storing white cells into beige fat cells, which burn calories. Others are investigating how good fatty acids prevent nonalcoholic fatty liver disease; and how diet contributes to the gut microbial flora, which, in turn, inhibit inflammation.

NPOD was launched in August 2014 as a Center of Biomedical Excellence (COBRE) with an \$11.3 million grant from the National Institutes of Health. The COBRE program is

funded through the Institutional Development Award (IDeA) Program, which supports health-related research and fosters faculty development and research infrastructure. To build research expertise, experienced faculty are mentoring top-notch early career scientists who were recruited from Georgia, Florida, Iowa, Minnesota and Canada to Nebraska. The center also provides learning and work opportunities for students.

“This new center puts UNL at the cutting edge of new research approaches to preventing obesity-related diseases. It also provides resources for expanding our faculty and facilities,” said Prem Paul, UNL vice chancellor for research and economic development.

As part of the grant, UNL added four faculty positions and renovated laboratory space to develop a centralized research facility in Leverton Hall, where the Department of Nutrition and Health Sciences is located. The center researchers all share the vision to combat obesity through tweaking the nutrient content in diets, Zempleni said.

NPOD is UNL’s third NIH Center for Biomedical Research Excellence. Competition for federal funding is fierce and obtaining the five-year grant to establish NPOD required a lot of work and collaboration that began in 2008, but is well worth the effort, he said.

Obesity is a national health crisis that costs the U.S. hundreds of billions of dollars annually in health care expenses and lost productivity, Zempleni said. “Our research will help address these issues.”

FAST FACTS

- **More than one-third (78.6 million) of U.S. adults are obese.**
- **Nebraska had the nation’s 23rd highest adult obesity rate in 2013.**
- **Approximately 12 million, or 17 percent, of U.S. children and adolescents are considered obese.**
- **The estimated annual medical cost of obesity in the U.S. was \$147 billion in 2008.**
- **The medical costs for people who are obese were \$1,429 higher than those of normal weight.**

Nebraska Center for Virology has unique niche

After 15 years, the Nebraska Center for Virology, one of the state's leading research centers, is entering a new phase.

Charles Wood, a molecular virologist who led creation of the center, is stepping down as director.

"We've grown tremendously," he said. "I am very hopeful that with a new, visionary director the center will continue to grow."

The Nebraska Center for Virology was established in 2000 with a five-year, \$10.7 million grant from the National Institutes of Health as a Center of Biomedical Excellence. At that time, it was the largest grant ever awarded to Nebraska by the NIH. In 2005, NIH awarded an additional \$10.6 million, and in 2009, another \$8 million.

These grants, a lead gift from the late Ken Morrison, a long-time UNL supporter, and other sources helped fund the center and the construction of the center's home, the Ken Morrison Life Sciences Research Center on UNL's East Campus.

"The center has a unique niche because our researchers study human, animal and plant viruses," Wood said.

It links scientists who study viruses at Nebraska's three major biomedical research institutions: UNL, the University of Nebraska Medical Center and Creighton University. The faculty includes virologists, immunologists, plant pathologists, cell biologists, neurobiologists, microbiologists and geneticists.

Early career and established researchers who are part of the center conduct innovative and collaborative research, and provide an environment to attract and promote the development

of promising investigators. Through its strong mentoring environment, the center has attracted a number of outstanding virologists to Nebraska.

"The common theme uniting our research is our attempt to understand the molecular mechanisms by which diverse viral infectious agents cause persistent or chronic diseases in humans, animals and plants," Wood said.

Emerging and re-emerging human viral infections such as Ebola, SARS, West Nile and the monkeypox virus, together with the ongoing AIDS epidemic, indicate an urgent need for continued research on these infections, he said.

Some of the research has focused on the biological properties of HIV and Kaposi's sarcoma-associated herpesvirus, or HHV-8, a virus closely associated with AIDS. Among the many scientific achievements was demonstrating that most HHV-8 infections occur during early childhood through caregiver contact. HHV-8, together with HIV, contributes to the high rate of Kaposi's sarcoma, a rare cancer, in African children.

Breakthroughs in understanding how diseases spread are helping to develop strategies to prevent transmission, Wood said.

Center scientists also study human cancer viruses such as papilloma virus, a major cause of cervical cancer; Epstein Barr virus, which is linked to lymphomas; and neurodegenerative diseases such as Alzheimer's and Parkinson's.

"The center is unique because researchers study human, animal and plant viruses."

Animal virus research at the center includes work on the Porcine Reproductive and Respiratory Syndrome Virus, a major problem

in the swine industry worldwide. PRRSV is a complex disease that is characterized by reproductive failure in pregnant sows or respiratory failure, particularly in piglets.

Center researchers believe that one major approach to PRRSV prevention is the use of more efficient vaccines that would be more effective than the ones currently available. To improve the vaccines, it is essential to understand the basis of protective immunity against PRRSV. Center researchers have produced new information that contributes to better understanding of



the basic knowledge of this immunity.

Among the plant viruses being studied are viruses that infect the green algae found in freshwater worldwide. This group of viruses is among some of the largest viruses ever discovered. This

group, which serves as models for mechanistic and structural studies, is thought to have a long evolutionary history, possibly more than a billion years. Research on these viruses is revealing interesting aspects about the evolution of genes and genomes.

UNL Office of Research and Economic Development



Charles Wood is a virologist who led creation of the Nebraska Center for Virology.

Virus research requires the specialized equipment and laboratories housed in the Ken Morrison Life Sciences Research Center. In addition to the center's "state-of-the-science" core facilities, the BSL-3 suite expanded research opportunities for work with infectious disease agents requiring containment, Wood said.

The building was constructed at a cost of \$21 million in 2008. The original 68,741-square-foot building was designed to accommodate expansion. The \$8 million NIH grant in 2009 funded the 26,000-square-foot wing on the north side of the building, which has enabled the center to pursue new research and to recruit new faculty and students.

"This building has enabled people to collaborate, interact, and develop better ideas and perform better research, all under one roof," Wood said.

CONSTRUCTION EAST CAMPUS

GIVING A NEW LOOK

A new campus entry marker and building construction are giving East Campus a new look.

Walk this way

The new East Campus entry markers off Holdrege Street provide a collegial, formalized pedestrian entrance to the campus.



Craig Chandler

The monuments are aligned with the historic East Campus Mall. They are constructed of building materials found in campus building architecture, including limestone and buff-colored brick.

Other elements of the monuments are inspired by historic or significant campus site elements, including the black fencing, which is modeled after the original campus fence along R Street on City Campus, and the lighting, which can be found on the west side of Memorial Stadium.

This spring, the turf around the monuments will be restored; new trees will fill in the existing tree line along the mall; and

the entrance will be planted with hydrangeas, red roses, boxwood, grasses and annuals.

“This new UNL East Campus Entry Marker will serve as the symbolic entrance to East Campus,” said Barry Shull, IANR facilities director. “Landscape Services did a beautiful design for the entry marker and landscaping that enhances the vista from Holdrege Street down East Campus Mall to Chase Hall.”

A better fit(ness)

Built in 1926, the East Campus Recreation Center is undergoing a major renovation.

Although previous studies recommended tearing down this historically significant building, the HOK architectural planning and design firm created a design that melds the historic character of the existing building with a modern glass structure that will house a new fitness space and showcase the recreation activities inside.

The exterior of the original stone and brick building has decorative eaves and brackets, and large Palladian windows. A running track will highlight the juxtaposition of old and new by winding around the existing gymnasium through the glass addition and back into the old building.



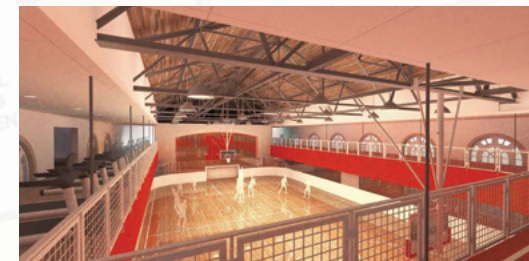
A cardio loft, weight training areas and group fitness studios will be on the perimeter of the glass addition. In the core spaces, an open layout will increase visibility between programs and the two multipurpose gymnasiums.

Locker rooms, offices and the original gymnasium within the existing building are being renovated to maintain the historic charm of the space. A small portion of the addition that blends with the existing building has office space and a terrace roof.

An expanded lobby area and a new wellness clinic with a demonstration kitchen will provide staff with more opportunities for customer service, wellness programs and education.

“It will be a brand new, beautiful facility and will be a real enhancement to East Campus,” Shull said. It also will have a new name — the East Campus Recreation and Wellness Center.

The project is expected to be completed this summer. HOK, an international firm headquartered in St. Louis, Mo., worked with Sinclair Hille Architects of Lincoln on the project.



Sinclair Hille Architects

A NEW HOME AWAY FROM HOME

This summer, Biochemistry Hall will be torn down to make room for a new residence hall slated for completion by the fall semester of 2017.

The current undergraduate residence halls on East Campus are Burr Hall and Fedde Hall, and the female-only cooperative Love Hall, which were built during the early 1950s. The Board of Regents requires that all residence halls meet fire code regulations with sprinkler fire suppression systems and automated safety systems. Burr and Fedde Halls do not meet these UNL regulations so they either have to be renovated or brought off-line by 2017. University officials determined that building a new residence hall is more cost-effective.

The new East Campus residence hall will have four floors and two wings. One wing will have traditional-style rooms with 240 beds. The other wing will have apartment-style rooms with 130 beds.

There will be a front desk area, a multipurpose room that will act as a gathering place for students, a laundry room on each floor and an elevator, something that the old residence halls don't provide.



2+2 equals success

Chad Buzek teaches skilled and technical sciences at North Star High School. He received his bachelor's degree in agricultural education along with his skilled and technical sciences professional endorsement and certification from ALEC.

Learning the ups and downs of commodities market

Agricultural economics students in the College of Agricultural Sciences and Natural Resources learned hands-on techniques for trading futures in the CME Group Trading Challenge. The trading challenge is a four-week electronic trading competition in which teams of undergraduate and graduate students trade a variety of CME Group products in a simulated trading environment on a real-time professional trading platform.

Teams consist of three to five members from the same university. Two CASNR teams participated in 2013 and 2014. This year three teams competed, with a total of 13 students in the challenge.

Each team started with \$100,000. One of the CASNR teams ended the competition with \$131,285 and ranked 57th out of 503 teams. The teams represented 226 universities in 37 countries. A total of 2,014 students participated.

The 2015 competition contracts included agriculture, energy, metals, equity index, interest rates and foreign exchange.

The CASNR teams focused on corn, soybean and live cattle futures, and crude oil and natural gas futures, said Fabio Mattos, assistant professor in the Department of Agricultural Economics.

“The competition offers a fun, hands-on opportunity for students to learn more

about how markets work for different commodities,” he said. “The objective of the competition is to make money, and you have to learn the markets and what drives prices up and down to do that. In addition, it is a good experience to realize how difficult it can be to make buying or selling decisions.”

Learning how the commodities market works and how to make decisions will be useful whether the students go back to the farm or work in an ag-related industry, Mattos said.

CME Group is the world's leading and most diverse derivatives marketplace. The company comprises four designated contract markets, which are commodities, currencies, interest rates and stock indexes.



It's 7 a.m. and a group of students in the College of Agricultural Sciences and Natural Resources aren't still snoozing in bed. Nor are they drinking their first cup of coffee while they trudge to class.

This group of students, who participated in the CME Trading Challenge, met at 7 a.m. for 35 minutes to an hour nearly every day during the four weeks of the competition to learn about trading futures and to assess the corn and live cattle markets. A mix of agricultural economics, agriculture business and animal science majors, they also checked the news and monitored the markets throughout the day.

The competition was much more intense than what the students had experienced previously in the classroom.

“Sometimes it was tough to decide whether to sell or hold on, and we learned from our mistakes,” said Ben Halvorson, a junior in agricultural economics.

“It was a great experience,” added Halvorson, who hopes to work in a beef cattle feedlot after graduation. “We worked as a team and we all learned from it.”

It's not your father's shop class.

Skilled and technical sciences, also called “industrial technology,” is much more than nailing two-by-fours or tearing an engine apart. It is work-based learning with an emphasis on science, technology, engineering and math.

Currently, there are 450 skilled and technical sciences teachers in Nebraska middle schools and high schools. There are expected to be 20-30 openings for these teachers each year for the next five years.

The 2+2 Skilled and Technical Sciences Program in the Department of Agricultural Leadership, Education and

Communication is designed to help fill that need. In this program, students attend a community college for their first two years, getting their technical education and an associate's degree. Then they attend UNL for two years to learn the teaching component. They receive from UNL a bachelor's of science degree in agricultural education, as well as a professional endorsement and certification to teach skilled and technical sciences.

The program can be a win-win-win for the students, the community colleges and UNL. Students reap the benefits of experiencing two different academic environments and save money by spending the first two years of their college education at a community college. Community colleges have a new program to offer, and UNL benefits because the community colleges have the facilities to provide hands-on learning.

I wanted to make a difference. I stopped worrying about money and focused on what would make me happy. Teaching is a family-friendly career, with flexibility and change. Every day is something new.

— Chad Buzek, Skilled and Technical Sciences teacher at North Star High School

Manufacturing and other industries support skilled and technical sciences programs because they can help provide the employees industry needs. Middle school and high school students also benefit from having a skilled and technical sciences program in

their school, said Eric Knoll, ALEC assistant professor of practice.

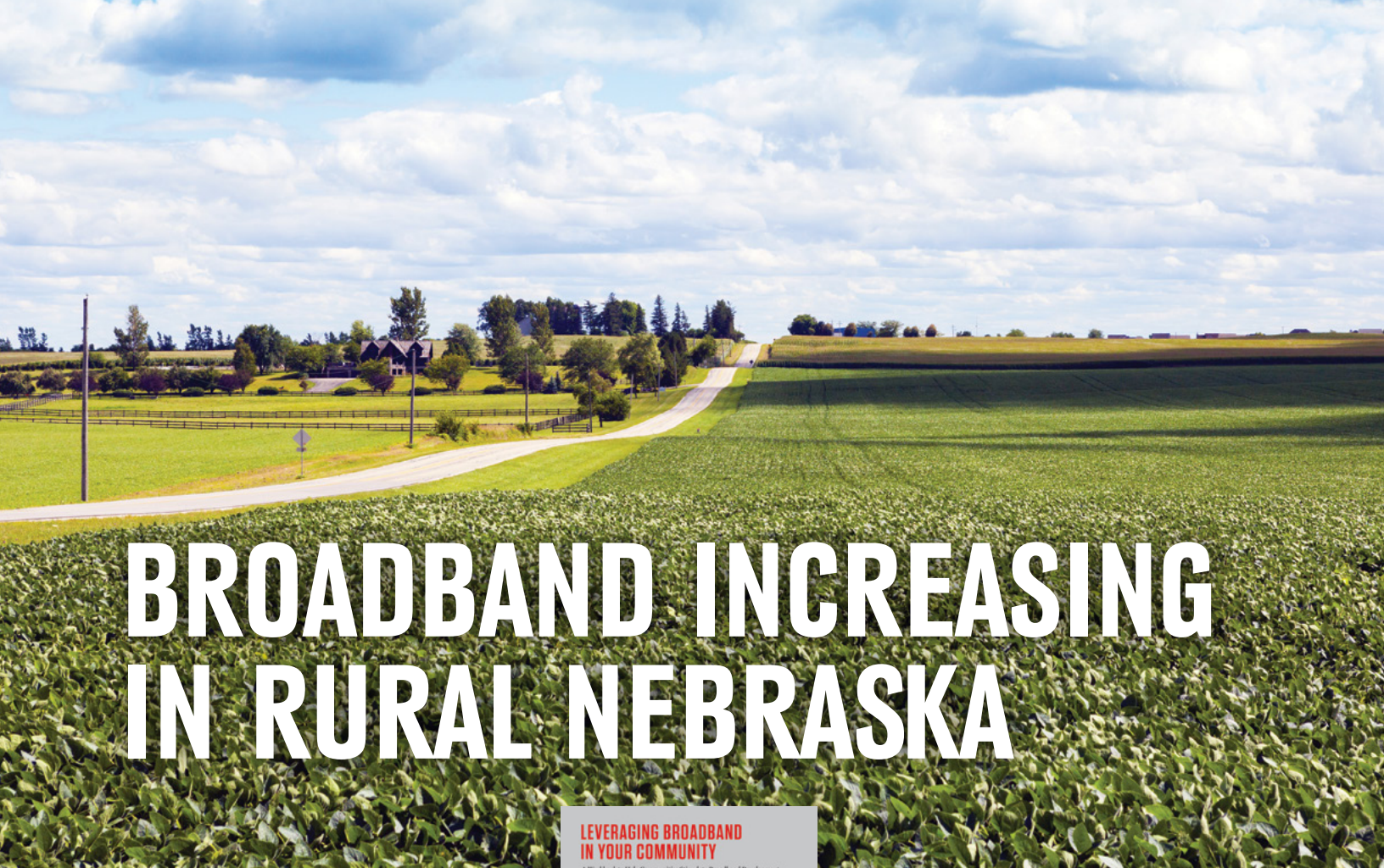
“It gives students an opportunity to explore careers, and it may help them decide at an earlier age their future career,” he added.

“Many students from rural areas want to return to their community after college. This program could provide an opportunity for them to move back home,” said Mark Balschweid, ALEC department head.



Ben Halvorson was one of the students who participated in the CME Group Trading Challenge. Fabio Mattos (right), Department of Agricultural Economics assistant professor, said the experience will be useful whether students go back to the farm or work in an ag-related industry.

Craig Chandler



BROADBAND INCREASING IN RURAL NEBRASKA



Cover page of the Broadband workbook. To access it, go to broadband.nebraska.gov/workbook

Thanks to the Nebraska Broadband Initiative, more rural Nebraskans have access to high-speed Internet than ever before, and Nebraska Extension played a key role.

In 2014, a statewide broadband plan and eight regional plans were announced with input from more than 8,000 Nebraskans, including 600 youth. Information was gathered with planning teams, surveys, focus groups and forums. Nebraska Extension drove the planning and technical assistance efforts with eight extension educators leading the regional planning teams, said Charlotte Narjes, extension project lead.

A few extension-led examples:

- Over 270 businesses attended eight regional technology fairs that brought experts to communities on topics such as remote sensing and cloud computing.
- Collaborating with the Library Commission, more than 150 librarians across Nebraska participated in a train-the-trainer program so they can more effectively provide assistance to patrons.
- Extension is currently demonstrating how drones can enhance agriculture.

- The Latino Business Conference brought over 150 individuals together to explore how technology can enhance their businesses. “Perhaps the biggest accomplishments of the initiative are the increased awareness and knowledge of broadband, and the collaboration of those working to increase broadband capacity,” Narjes said.

Community outreach activities are essential to building awareness, she added. Over 2,500 individuals and businesses participated in events such as the Connecting Nebraska Broadband Conference, webinars and tech fairs. Best practice videos have been viewed over 5,500 times and the broadband website was visited more than 27,000 times.

A revised online community workbook will be available in the near future that communities can work through on their own or with a facilitator to improve their broadband access.

Nebraska Extension collaborated with the Nebraska Public Service Commission, Nebraska Information Technology Commission, the Nebraska Department of Economic Development and others on the broadband initiative.

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Appplied climate science, a new undergraduate major in the College of Agricultural Sciences and Natural Resources, aims to educate the next generation of climatologists and policymakers. “In the last decade we have seen international, national, regional and state discussions of climate and an interest in Congress about how to address climate services and climate impacts,” said Ken Hubbard, professor of applied climate science. “The applied climate science faculty see a need for climatologists who can contribute to an informed and interdisciplinary approach to addressing climate issues.”

Applied climate science involves the study of short-term climate variability, long-term climate changes and how those impact everyday life. Students in the major take courses in biology, chemistry, soils, water, ecology, mathematics and geographic information science as well as courses in communications and social sciences. Math and statistics courses underpin the core courses in meteorology and climatology.

While the applied climate science program has been open to graduate students for several years, opening it to undergraduates enables students to jump-start their careers early on.

“We could see that employment opportunities were expanding in the area of applied climate science and wanted to be ahead of the curve in helping students see this emerging area of employment,” said Ken Dewey, professor of climatology. “It excites me to know that new job opportunities abound for students in this area of study and these jobs exist all over the world.”

As trained climate science professionals, students will be able to address natural hazard management, climate change,

New major educating next generation of climatologists



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changing frequency and severity of extreme climatic events, environmental degradation and deforestation, and the increased demand for water and other natural resources.

Potential opportunities include positions with environmental consulting firms, agribusinesses, planning agencies, nongovernmental organizations and governmental agencies addressing climate issues.

“I cannot imagine society becoming less impacted by climate,” Dewey said. “There will always be a need to better understand our climate system and how it impacts all of our human activities.”

Collection isn't for the birds, but for everyone

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A remarkable collection of mounted game birds from around the world is nesting in Hardin Hall on East Campus.

Dr. Everett "Buzz" Madson, a retired ophthalmologist who lives in Omaha, gifted the birds to the University of Nebraska State Museum. The collection includes 163 individual game birds representing 103 species ranging from the greater prairie-chickens found in Nebraska prairies to the white-faced whistling ducks that live in Africa and South America.



The gift honors Paul Johnsgard, professor emeritus of the School of Biological Sciences. Madson and his wife Percy took an introductory zoology class taught by Johnsgard. The professor's lectures, especially on parasite life histories, influenced Madson's decision to pursue medicine as a career.

The collection, on loan to the School of Natural Resources, is displayed throughout Hardin Hall, including some offices, said Patricia Freeman, professor in the School of Natural Resources and head of the museum's Biodiversity Laboratory of Zoology. "I have spent nearly 50 years among museums and natural history collections, both small and large," she said. "Never before have I seen birds so beautifully and thoughtfully arranged in such natural, graceful poses."

Most of the birds are in plexiglass cases that protect their fragile feathers. They are mounted on wood bases in settings



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Dr. Everett "Buzz" Madson and his wife Percy

that resemble their natural habitats, although some of the larger birds aren't enclosed because their tails are too long to fit on the bases. Troy Garner, who lives in Utah, did the expert taxidermy work.

Hardin Hall is the perfect place to display the birds, Freeman said.

"Many of the undergraduate students that I have taught have a keen interest in wildlife, ecology and conservation, and a passion for hunting and fishing," she said. "Faculty, staff, students and visitors notice them, enjoy them, and are excited and delighted by them."

Freeman hopes anyone interested in the natural world and its beauty will enjoy seeing the birds.

"It is a magnificent sight," she said.

"I wanted a meaningful way of displaying these birds for the students, the faculty and the public, so people would be able to see them in perpetuity," Madson said.

Growing a community

The population of many rural communities in the Great Plains continues to dwindle, but a Nebraska Extension program aims to help communities create a vision to grow.

"Marketing Hometown America is a program designed to help rural communities look at themselves and the recruitment and retention of residents in a new way," said Cheryl Burkhardt-Kriesel, community vitality specialist at the Panhandle Research and Extension Center.

Neligh, a community of 1,542 in northeast Nebraska, and Kimball, population 2,425, in western Nebraska, piloted the program in 2013-14. Both communities say it has produced positive results.

"In a nutshell, the program led our Kimball participants to a place where they could agree on a single, generalized goal – that of marketing our community to newcomers. We're still early in process but we've made more progress since last fall than in the previous 20 years," said Shaun Evertson, steering committee chair of the Kimball Recruitment Coalition.

Marketing Hometown America uses small groups, called Study Circles, which are formed and led by locally trained facilitators. The groups of eight to 12 people meet four times for about 2 ½ hours. A guidebook directs participants through discussion questions and activities.

After the fourth session, the circles and other members of the community participate in an Action Forum. During the forum everyone votes on their favorite proposed plans and activities, and community members volunteer to help lead further action.

"Marketing Hometown America helps a community with decisions about how to market themselves to potential new residents. When new residents find a good community 'match,' they stay and everyone benefits – the new residents, the current citizens and the community as a whole," Burkhardt-Kriesel said.

In addition to Nebraska Extension, the Marketing Hometown America sponsors are the Rural Futures

Institute in the Institute of Agriculture and Natural Resources, North Dakota State University Extension and South Dakota State University Extension.

Funded by a University of Nebraska Rural Futures Institute grant, the program was built on previous research conducted by Extension professionals in Nebraska, South Dakota and North Dakota.

The Neligh "flagship" video is an example of what can be done to promote small communities:

This is MY Neligh – Not Too Small To Have It All

<https://youtu.be/A5QEQLvwHmA>



Leave your mark at the College of Agricultural Sciences and Natural Resources. Purchase a brick that will help future students while telling everyone who walks by, you were here. Your brick can be engraved with your name or that of a friend, favorite professor, family member—anyone who you would like honored. Order before August 1 and your brick will be included in the fall of 2015 installation.

nufoundation.org/casnrbuyabrick



Potential first-generation college students navigate their way with Five Star Program

It can seem overwhelming to try to be the first person in your family to attend college.

Leo Gonzales knows from personal experience how tough it can be. Gonzalez, originally from Miami, grew up in a single parent home. An athletic scholarship to Wayne State College was the first step that enabled him to be the first in his family to graduate from college.

Now he's helping underserved students navigate the path to college. Gonzalez, an Extension educator, helps these high school and middle school students through the Five Star Leadership Program at the Northeast Research and Extension Center. The program's goal is to reduce the gaps in college access and to increase the academic performance and motivation of potential first-generation students so they graduate from high school and successfully pursue post-secondary education.

"Many of these students have the capabilities to attend college but they need guidance," Gonzalez said.

Preparing for entrance exams, and applying for scholarships and financial aid can seem daunting. Many of the terms and acronyms aren't familiar. The Five Star Program provides the resources to guide students in the step-by-step process of preparing for and being accepted into a two- or four-year college program.

Three-hour sessions at Norfolk Senior High School and Madison Senior High School provide academic, financial and personal counseling for potential first-generation college students. The students also visit colleges, explore careers, develop leadership skills and participate in cultural enrichment activities.

Parents, as well as the students, need to know that a college education is attainable for their child and that they can help their children become college graduates.

"We work with the parents as much as the students," Gonzalez said.

During the 2013-2014 academic year, 27 students at Norfolk Senior High School, 24 students at Madison Senior High School and eight students at Madison Junior High were enrolled in Five Star. Three are attending the University of Nebraska-Lincoln, two are studying at the University of Nebraska at Omaha, 10 are at Northeast Community College and two are at Metro Community College. Six of the students received Susan Buffett full tuition scholarships and nine others also were awarded scholarships. Almost all received some form of financial aid.

Some of the most important advice Gonzalez gives students: "Stay focused. Be confident and trust yourself."



Nebraska 4-H hosting Shooting Sports National Championships



Nebraska 4-H is on target to bring the top 4-H shooters from across the country to Grand Island to compete in the 4-H Shooting Sports National Championships June 21-26.

Nebraska has hosted the event five times and is hosting it again this year at the Heartland Public Shooting Park and Heartland Event Center. The shoot features 27 events in nine disciplines: Compound Archery, Recurve

Archery, Air Rifle, Air Pistol, .22 Rifle, .22 Pistol, Shotgun, Muzzleloading and Hunting Skills. Fifty-four national 4-H champions, individual and team, will be named during the competition.

"This is a once-in-a-lifetime opportunity for a young person to compete in a given event," said Steve Pritchard, Nebraska Shooting Sports coordinator. This means that if a youth competes in air pistol this year, for example,

it is the only time she or he can compete in the 4-H national air pistol event.

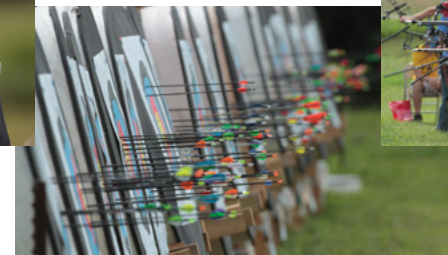
Participants in the 4-H Shooting Sports Program learn more than how to safely use firearms and archery equipment. They learn about wildlife conservation, ethics, game laws, calling and wildlife management. Perhaps more important, they further develop their decision-making and problem-solving skills, self-concept and character, and experience personal growth.

States can send up to nine teams to compete, a maximum of 36 youth representing their state 4-H shooting sports program. About 500 competitors, their families and 100-150 coaches add up to about 1,500 people attending the shoot, a boom to the economy of

Grand Island and the state, said Pritchard, a Nebraska Extension educator at the University of Nebraska-Lincoln Northeast Research and Extension Center.

"The event's success is thanks to a great group of about 125 volunteers from Nebraska and many other states who help conduct the event," he said. "It's almost like a family reunion when all these volunteers return to Grand Island for the 4-H National Championships. Many of them have assisted several years to help out with the various events."

The free event is open to the public. For more information, visit the website at 4h.unl.edu/4hssnationalchamp



Extension expertise helps producers make farm bill decisions



Brad Lubben

The federal farm bill is never simple, but the 2014 farm bill is especially complicated. Nebraska Extension provided information about the bill to thousands of producers so they could make the best decisions for their operations.

“The farm bill and the farm income safety net are extremely complex, and crop producers had to make some complex decisions,” said Brad Lubben, extension public policy specialist in the Department of Agricultural Economics at the University of Nebraska-Lincoln.

The decisions involved not just an understanding of farm program mechanics but also crop insurance options, individual farm data and history, and a perspective on the outlook for commodity market prices through the 2018 crop year.

“The 2014 farm bill was written in a time of record United States farm income and record federal budget deficits. That dynamic created a focus on reforming farm programs and cutting support levels within a larger effort to cut overall spending,” Lubben said. The farm bill also set federal farm and food policy through 2018.

Nebraska Extension collaborated with federal Farm Service Agency offices across the state to conduct more than 70 three-hour educational farm bill meetings in October through December 2014 with many more follow-up meetings in October through March 2015. The 15,000-plus producers,

landowners and agricultural professionals who attended the meetings estimated the economic impact of the information they learned at substantially more than \$100 million. The focus of the meetings was the portfolio of new farm programs, producer decisions and economic analysis.

Meetings were coordinated by team leader Lubben and extension educators Jim Jansen of Hartington, Jessica Johnson of Scottsbluff, Tim Lemmons of Norfolk, Robert Tigner of McCook, Monte Vandever of Syracuse and Allan Vyhnaek of Columbus. Farm Service Agency personnel and other experts also participated.

Many other extension educators and specialists provided information and one-on-one consultations with individual producers. A website, webinars, workshops, a training video

and online farm program decision tools also were available.

In addition to the substantial commitments of Extension personnel and resources, funding support was provided by the Farm Service Agency, the North



A federal farm bill meeting in Hastings was one of 70 such meetings conducted by Nebraska Extension and the federal Farm Service Agency.

Allan Vyhnaek

Central Extension Risk Management Education Center at the University of Nebraska-Lincoln, Farm Credit Services of America, Nebraska Farm Bureau, Nebraska Soybean Board and other agencies and organizations.

Extension, NCTA classes target urban food production

The Nebraska College of Technical Agriculture in Curtis and Nebraska Extension are bringing agriculture to Omaha so urban farmers can raise homegrown produce for city consumers.

Adult learners, beginning farmers and even some high

school students interested in gaining knowledge of horticulture and farm production can enroll in courses offered by University of Nebraska Extension and the Nebraska College of Technical Agriculture (NCTA) with support from the Omaha Home for Boys.

Vegetable and small crop plots at the Cooper Memorial Farm serve as the teaching and production ground for urban growers and consumers. The farm, which is 3 miles north of downtown Omaha, is owned by the home, which was founded in 1920 as an

orphanage.

“Urban agriculture is for anyone in the Omaha area. It is designed to support locally-produced food, prepare job-ready agricultural graduates, and foster social and economic development for youth and adults,” said Ron Rosati, NCTA dean.

“Omaha Home for Boys is a real gem in guiding young men and women on their life path. This wonderful marriage with Nebraska Extension allows us to reach a broad range of constituencies in the city of Omaha, including 4-H youth, college students and working adults interested in local food production.”

The tandem University of Nebraska entities (NCTA and

Extension) are fortunate to be part of the new academic venture with the Omaha Home for Boys by providing hands-on learning in gardening, horticulture and eventually in animal science, he added.

“Increased agricultural literacy is important across Nebraska,” Rosati said. “This initiative will help people have a greater understanding how food is produced

and where food comes from.”

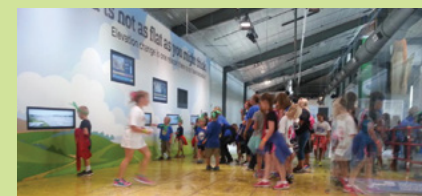
Courses offered this spring feature Saturday morning classes in agricultural entrepreneurship (Farm Beginnings), and agricultural carpentry.

Connie Fisk joined the team in March in a split appointment between NCTA and Douglas-Sarpy County Extension. As part of her

community education role, she will oversee large-scale garden plots this summer at the Cooper Memorial Farm. Consumers can purchase the produce this fall at farmers markets.

Also, urban farmers can market their produce to retailers, local restaurants or even school lunch programs.

RAISING NEBRASKA a winner



The Raising Nebraska exhibit, which debuted at the 2014 Nebraska State Fair, took top honors in two categories in an awards competition conducted by the International Association of Fairs & Exhibitions.

Raising Nebraska took top honors in its division (250,000-500,000 fair attendance) for the best overall agricultural exhibit. The exhibit was also recognized with a first place award in the category for best new exhibit designed to promote agriculture.

The exhibit also won a Gold Apex Installation award for Nanonation at the Digital Signage Expo, an international education conference and trade show. Nanonation, a digital signage and interactive software provider, created the digital signage and interactive experiences for the exhibit.

Raising Nebraska is a 25,000-square-foot interactive experience focused on “Your Food and the Families Who Grow It.” It includes a theater inside a grain bin, a virtual combine ride, a 50-foot walkable map of Nebraska, videos featuring farmers and ranchers, an interactive touch screen dinner table, a modern



demonstration kitchen and many other interactive and educational presentations.

“Raising Nebraska was recognized for its unique and creative approach to helping consumers better understand how food gets from the farm to their tables and the responsible choices that farmers and ranchers make every day to assure high-quality, safe food,” said Chuck Hibberd, dean of Nebraska Extension.

The exhibit will continue to evolve. For example, an outdoor learning space is being planned for the 2015 fair.

“This effort was truly a collaboration of agricultural leaders, advocates and stakeholders across Nebraska, and we could not have done it without each and every one of them,” Hibberd said.

The Institute of Agriculture and Natural Resources, the Nebraska State Fair and the Nebraska Department of Agriculture collaborated to create Raising Nebraska. It is available year-round for educational groups and tours.

For more information on Raising Nebraska, visit RaisingNebraska.net.





Siberts GIVE BACK to UNL

Frank and Shirley Sibert enjoy visiting with a group of students who received Sibert scholarships for the 2014-2015 academic year.

Ann Bruntz

Frank Sibert is a philanthropist who likes to support organizations that have helped him and his wife Shirley. Sibert, who earned his bachelor's degree in animal husbandry — now called animal science — in 1952, has provided leadership and generous financial support to the University of Nebraska—Lincoln, the communities he's lived in and many organizations. The Siberts, who live in Kearney, established the Frank J. and Shirley Sibert Scholarship and Fellowship Fund to support UNL and the College of Agricultural Sciences and Natural Resources. The Nebraska LEAD program also benefits from an endowment they established. "We are both UNL graduates and it's been a big help to us throughout our lives," Sibert said.

The Siberts also have endowed scholarships through the Nebraska Cattlemen Research and Education Foundation. During his tenure as board chairman Sibert led the effort to establish a \$200,000 endowment for the UNL Nebraska Cattle Industry Professor of Animal Science to help keep and attract top researchers and professors. And he is particularly proud of his leadership in working with the foundation to raise money to preserve the CASNR livestock judging teams when they were in danger of being eliminated.

"I was on the livestock judging team, and that's where I learned how to think on my feet and express my views. I learned a lot," Sibert said.

Sibert has been a rancher, farmer, assistant county extension agent in

Dawson County, manager of the Sandhills Cattle Association, and agricultural loan officer and senior vice president at Stockyards Bank in Omaha.

He has enjoyed all his work with one small exception. When he worked for the 4-H rural youth program, part of his duties included teaching square dancing, which he just wasn't very good at, he said.

Ann Bruntz



Shirley and Frank Sibert with CASNR Dean Steve Waller (right) and Ty Schurr, CASNR Alumni Board Member.

One of Sibert's most satisfying activities was "getting in on the ground floor" of the Nebraska Community Foundation and serving as a board member. "I learned a lot and we got a lot done," he said. "It does a lot of good."

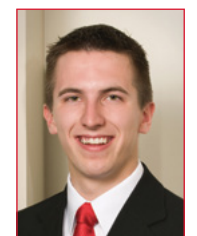
Sibert led a group of 30 investors in purchasing the old Valentine Livestock Auction Market and replacing it with a modern facility, which was completed in 2003, and he contributed to a much-needed renovation of the Auld Public Library in

Red Cloud, because, he said, his mother was a librarian there for many years. Doane College, the University of Nebraska at Kearney, and the Red Cloud Community Foundation also have benefited from his financial support.

Through 62 years of marriage, Shirley has been a good companion, Sibert said. "She deserves a lot of credit," he said. "She is very conservative in spending and that has enabled us to help others."

The Sower

You're invited



Spring is a time for growth, and that is exactly what is happening in CASNR. New buildings, new professors, new traditions, and even a new Husker football coach are adding to this milestone year. The CASNR Alumni Association has several upcoming opportunities for you to help participate in our positive growth.

Come enjoy a UNL Dairy Store ice cream cone with us at the Nebraska State Fair Sunday, September 6th, from 1 p.m. -3 p.m. in the Hospitality Loft, Five Points Bank Livestock Arena. Also, stop by the #UNLREDOUT

pep rally at 3 p.m. in the Family Fun Zone. You do not need to RSVP for either event.

Our annual CASNR Alumni Football Tailgate and Silent Auction Scholarship Fundraiser will be held Saturday, September 26th, four hours prior to kick-off of the Nebraska vs Southern Mississippi Homecoming football game. The event will take place in the Great Plains Room, Nebraska East Union. A silent auction will be held during the tailgate to raise money for student scholarships. If you are interested in donating items for the

silent auction fundraiser, please contact Jill Brown at 402-472-3224, jbrown14@unl.edu, or Meg Kester at 402-472-7909, mkester2@unl.edu. No RSVP is needed for this event.

Thank you to everyone who purchased a CASNR brick for our inaugural installation. There is still time to join in the fun. Buy a brick for yourself, a friend, a college graduate, or anyone who appreciates CASNR and wants to leave a lasting legacy. Funds raised will be used to create an endowment for scholarships to be awarded to incoming CASNR freshmen.

All bricks purchased by August 1 will be included in the annual brick installation which will take place at the start of the CASNR Alumni Football Tailgate. To request an order form or for more information about the CASNR Alumni Brick Program, please go to <http://nufoundation.org/casnrbuy-abrick>.

As always, thank you for your ongoing support of CASNR. Your continued commitment ensures sustained growth and accomplishment of our mission, to cultivate and enhance our CASNR network.

Steve Kaiser
CASNR Alumni Association
President



Angela Pannier,
Associate Professor and
William E. Brooks Fellow.

*Biological Systems
Engineering*

Employing DNA that codes for genes to correct genetic problems, treat disease or aid healing holds tremendous potential, but finding an effective, safe method of delivering genes to cells remains a significant hurdle.

Angela Pannier, associate professor of biological systems engineering and William E. Brooks fellow, is using nanotechnology to develop a gene delivery tool that could unleash the power of gene therapy. She earned a five-year, \$419,051 Faculty Early Career Development Program Award from the National Science Foundation to continue her research. These prestigious awards, also known as CAREER awards, support junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent teaching and the integration of education and research.

Pannier is developing 3-D nanostructured surfaces that use the spaces between nano-sized columns to hold large amounts of DNA. Touching the nanostructure to the cell unloads the DNA.

She's also designing the surfaces so that touching the ends of the columns, or bristles, to the cell alters it in ways that make it more or less receptive to receiving genes. The genes could come from the nanostructured surface itself, or elsewhere, such as the bloodstream.

"We think these surfaces are going to change the field of biomaterials and drug and gene delivery because you can deliver so many different things. It's unlimited, really," Pannier said.

With her CAREER award, Pannier also is developing courses to enhance UNL's biomedical engineering curriculum by emphasizing learning through primary literature and hands-on laboratory exercises. She also will provide research experiences for high school and undergraduate students, as well as design outreach workshops and curriculums for high school teachers to use in their classrooms.



Howard Buffett,
CASNR lecturer

Feeding the world's hungry is an extremely complex social, cultural and political issue.

And it is a task that demands unprecedented innovation, sustainable solutions and a focus on creating social value,

said Howard W. Buffett, who taught a course about food and agricultural development in the College of Agricultural Sciences and Natural Resources. The course focused on both global systems and local solutions.

"My hope is that students came away with an understanding of how interconnected our global food systems are, with in-depth insights into the critical role that Nebraska plays as part of that system," Buffett said. "Many topics covered over the semester – ranging from international trade and finance to multi-sector partnerships – will be crucial for students as they graduate from UNL and enter an increasingly complex workforce."

The textbook was "40 Chances: Finding Hope in a Hungry World," an examination of global agriculture and food system challenges, which Buffett co-authored with his father, Howard G. Buffett. In addition to lectures by Buffett, the class included international case studies and presentations from Nebraska food, nutrition and agricultural experts. Using their new knowledge, students were given the opportunity to make a \$10,000 collaborative grant to a local organization working on food or agricultural issues.

Buffett, who lives in Omaha, also is a lecturer in international and public affairs at Columbia University, where he teaches management techniques for improving the effectiveness of foreign aid and global philanthropy. He earned his bachelor's degree from Northwestern University, and his master's degree in public administration with a focus on advanced

management and finance from Columbia. Buffett previously served as executive director of the Howard G. Buffett Foundation, which reduces poverty and strengthens food security for vulnerable populations throughout the world.

Teaching at UNL has been a positive experience for him.

"I could not be more impressed with the caliber, knowledge and interest of these students. They are eager to learn and engage, and they represent the best of Nebraska's future," Buffett said.

"We are so very fortunate to have Howard on our faculty. His message is not about name or resources; it's about passion and commitment. It's about the ability each of us possesses to make a difference," said Steve Waller, CASNR dean. "What an inspirational and empowering lesson for our students."



Tamra Jackson-Ziems,
Associate Professor and
Extension Specialist

Agronomy and Horticulture

Tamra Jackson-Ziems finds her work rewarding because she is able to help grain producers by sharing the university's work and discoveries in modern agricultural sciences.

Jackson-Ziems, Nebraska Extension specialist and associate professor, joined the faculty of the Department of Plant Pathology in 2005.

As extension specialist, she has statewide responsibility for diseases of corn and grain sorghum and works with extension clientele to decrease disease and maximize production.

Her research includes the biology and management of diseases of corn and sorghum; corn nematode survey and management; management of foliar diseases of corn with fungicides; investigation into the reemergence of Goss's wilt and leaf blight of corn; and survey of mycotoxins in ethanol distillers grains.

In addition, Jackson-Ziems leads a graduate course on field plant pathology in which students observe diseases and production practices of agricultural, specialty and horticultural crops and trees during a statewide tour.

She has received the Institute of Agriculture and Natural

Resources Dinsdale Family Faculty Teaching Award and the Nebraska Extension Distinguished New Employee Award.

"Truly enjoying my work makes it easy to be enthusiastic while teaching students and clients," Jackson-Ziems said.



Trenton Franz,
Hydrogeophysicist
School of Natural Resources

A cosmic-ray neutron rover may sound like something from a science-fiction film, but Trenton Franz, a UNL hydrogeophysicist, is

developing the high-tech tool to help the military better understand the harsh environment in which it operates.

Franz is exploring ways to use a soil moisture detector he helped create for agriculture to enable the military to quickly and reliably survey, monitor and map soils.

"Soil water content affects a range of processes and decision making, from irrigation management to optimize water usage to weather forecasting," said Franz, a Robert B. Daugherty Water for Food Institute Faculty Fellow. "The military, like many other sectors, needs better datasets."

When considering whether to deploy soldiers in remote locations, for example, a critical factor is travel time to that destination. Poor soil stability can cause tanks and other heavy machinery to get stuck in mud. Franz's cosmic-ray neutron rover would allow the military to make soil maps on-the-fly to better predict how long it will take to get somewhere with large equipment.

The tool is also being used to advance the military's climate modeling and weather forecasting capabilities. Data from the rover is fed into weather and climate models developed by the U.S. Army Engineer Research and Development Center's Cold Regions Research and Engineering Laboratory (CRREL) and the Air Force Weather Agency to refine and validate their models.

Franz first developed the tool to create more efficient irrigation systems, enabling farmers to better manage water resources. To explore military applications, Franz received a one-year exploratory grant funded by CRREL in association with UNL's Great Plains Cooperative Ecosystems Studies Unit.

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WHO'S NEW AT IANR



Don Reynolds

Director, School of Veterinary Medicine and Biomedical Sciences

Associate Dean, College of Agricultural Sciences and Natural Resources

Previous Experience:

- Dean of the Atlantic Veterinary College, University of Prince Edward Island in Canada
- Associate Dean for Research and Graduate Studies at Iowa State University

Ph.D. and Doctor of Veterinary Medicine from Ohio State University. Board certified in Veterinary Microbiology

Started on November 1, 2014

“There is a sense of pride and excitement at UNL and IANR. ... I believe there is a healthy appetite for program growth and development. I am most excited about (and looking forward to) how I can help our School of Veterinary Medicine and Biomedical Sciences transcend into its next stage of growth and development. I am enthusiastic about the many possibilities that exist

and moving forward to making some of these possibilities into realities. We are embarking on a visioning and strategic planning exercise for our school. We will be asking for help and input from all our stakeholders. After we conclude with this exercise, we believe we will have a definitive idea on what we can become and what we will look like in the next five years. I sense a very positive, energetic and collegial environment in our school as well as in the IANR and UNL.”



Jack Whittier

Director, Panhandle Research and Extension Center

Previous Experience:

- Extension Beef Specialist and Professor of Animal Science at Colorado State University
- Extension Cow-Calf Specialist at University of Missouri
- Active in applied research related to beef cattle nutrition and reproductive management

Ph.D. from University of Nebraska

Started on June 1, 2014

“I look forward to being back among the wonderful people in Nebraska who recognize the value of hard work, honesty and the importance of family values in raising the next generation. It is also great to be located in the Panhandle with its diverse crop and livestock production systems. The energy and optimism present in IANR and across the university is exciting to me, and I look forward to doing all I can to contribute my part.”



Josh Davis

Assistant Vice Chancellor Global Engagement

Previous Experience

- NU Assistant Vice President for Global Strategy & International Initiatives. Worked with all four NU campuses to provide vision and strategic direction to NU’s global engagement efforts
- U.S. Department of State in Washington D.C. where his focus was on Middle East Policy.

- Foreign Policy Advisor in the office of a U.S. Senator on the Foreign Relations and Armed Service Committees
- Office of the Secretary of Defense in the Pentagon on Middle East Policy

Law Degree from University of Akron School of Law specializing in Public International Law.

Started on January 15, 2015

“IANR has a long history of global engagement, and I’m excited to have the opportunity to build on and expand this tradition, especially with key partners in places like Brazil and China. The world is interconnected in a way that it never has been before, and it is more important than ever that our students are ready to live, work and serve in this new reality and that our faculty receive the support they need to engage with their counterparts around the world. I look forward to working to help establish new partnerships that facilitate this kind of engagement and ensure that IANR has a seat at the table when policymakers and scientists from around the world gather to discuss some of the great challenges of the 21st century, such as how do we feed a growing population in a sustainable manner. It is exciting to come to work every day when you have a mission like that.”

\$137.8

million donated in private giving in support of IANR since 2010

16

new endowed faculty – 3 Presidential Chairs, 3 Endowed Chairs, and 10 Professorships

3

new institutes – Robert B. Daugherty Water for Food, Rural Futures, and Yeutter International Trade and Finance

1,225

scholarships given by CASNR last year

\$1.46

million of scholarships awarded through CASNR last year

40%

of CASNR students receive college or department scholarships

275

bricks sold to date for the CASNR Alumni brick program

22

funds created to benefit NCTA during the campaign

1

internationally renowned Heurmann Lecture series

countless

hours spent by IANR campaign volunteers to make the above numbers a reality



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