

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

AG NEWS

A man wearing a light-colored short-sleeved shirt, tan pants, and a green baseball cap is standing in a shallow stream. He is holding a long, thin measuring rod vertically in the water. The background is a dense forest of tall evergreen trees. The scene is brightly lit, suggesting a sunny day.

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Associate Professor Scott Miller one of many helping build the infrastructure for discovery in University of Wyoming's largest-ever grant.
SEE STORY PAGE 9



UNIVERSITY OF WYOMING



Dean Frank Galey

“The secret of getting ahead is getting started.”

Mark Twain

Dear Friends and Colleagues,

Human capital is critical to the success of the College of Agriculture and Natural Resources. As many of you in industry are aware, the Baby Boomer retirement wave is causing major effects in the workforce. This college is no exception. In 2013, the college bid farewell to long-time faculty members **Doug Hixon**, **Dale Menkhaus**, and **Steve Williams**. This is in addition to faculty vacancies that occurred for other reasons. The college welcomed six new faculty members last fall to fill these gaps. Newcomers include two in our Department of Animal Science and one each in family and consumer sciences, plant sciences, ecosystem science and management, and agricultural and applied economics.

Assistant Professors **Wei Guo** and **Bledar Bisha** are the newest members of the Department of Animal Science. Wei will teach meat science and will conduct his research program focusing on muscle biology, development, and regeneration. Bledar's area of expertise is food microbiology and food safety. His research includes work on developing rapid detection techniques for foodborne pathogens, exploring novel control methods to reduce pathogens in food and livestock, and studying the ecology of antibiotic resistant *E. coli*. No stranger to animal health, Bledar received his veterinary medicine degree before pursuing advanced degrees at Iowa State University.

Economist **Chian Jones Ritten** is the newest member of the Department of Agricultural and Applied Economics. She has been busy teaching introductory economics courses and pursuing her research. Much of her work focuses on how race or gender impacts economic decisions or policies. Her work has implications for identifying potentially profitable niche markets and broader food purchasing and agricultural policy behaviors.

Erin Irick is the new face in the textiles and merchandising area of family and consumer sciences. Irick recently completed her doctorate at Oklahoma State University and is teaching the introductory clothing and textile classes previously taught by **Donna Brown** and **Sonya Meyer**.

Randa Jabbour has joined the Department of Plant Sciences and will teach many of the agroecology classes previous taught by **David Wilson**. She and her family came to UW from Maine, and her research focus is in the areas of pest management and agroecology. She has a special interest in working with producers in the field. **Mike Zhu**, a soil chemist in the Department of Ecosystem Science and Management, is filling the void left by **George Vance** and **Steve Williams**. He recently completed a post-doctorate at Lawrence Berkley Laboratory and is a welcome addition to our soils and reclamation programs.

Our faculty and staff members are the college's most valuable assets. For those readers who live in Wyoming, I want to encourage you to support the University of Wyoming's request for pay raises that will be part of this year's legislative budget session. As dean, I know how often other institutions poach our best people. The proposed 5-percent raise over the next two years will be the first campus-wide increase in six years. Additional information about UW's budget request can be found at <http://bit.ly/uwbudgetrequest>.

Other stories in this issue highlight our top-notch research programs. The college has led the university in research dollars awarded per faculty member for many years. The new \$20 million grant focusing on water involving our Department of Ecosystem Science and Management, our work on using pine beetle-killed wood for biofuels, the efforts by faculty members in veterinary sciences and agricultural and applied economics on developing a vaccine for bluetongue, and Assistant Professor **Jay Gatlin's** article that appeared in the November issue of *Science* magazine all attest to our outstanding research programs.

Research, outreach, and education are all part of our land-grant mission. Our college continues to excel in each of these areas, and I hope each of you take pride in being associated with the College of Agriculture and Natural Resources.

Dean Frank Galey

College of Agriculture and Natural Resources

CATTLE PUBLICATION SELECTS CAMMACK TOP 10 INDUSTRY LEADER

*Courtesy Kindra Gordon
The Cattle Business Weekly*

Associate Professor Kristi Cammack in the Department of Animal Science was selected to the Top 10 Industry Leaders by the *Cattle Business Weekly*.

The special section is at <http://bit.ly/toptenindustry>.

"I enjoy getting to work on challenges facing the beef industry," says Cammack.

Cammack's efforts include researching quantitative and molecular genetics, currently with a focus on feed efficiency, as well as teaching undergraduate courses and advising graduate students.

It's apparent she approaches her career with dedication and enthusiasm because she has roots in the cattle industry – she and her husband own a small herd of cattle – and during her college experience she was positively influenced by her professors.

While at South Dakota State University as an undergrad, she worked with animal science Professor Don Marshall on various research projects and enjoyed the work. Marshall suggested she go on to graduate school. For her master's, she worked with Merlyn Nielsen at the University of Nebraska on a quantitative genetics project with the Meat Animal Research Center (MARC).

After completing her Ph.D. and postdoc – with a focus on toxicity issues – at the University of Missouri, she joined the faculty at the University of Wyoming in 2006. Early on, her research projects included studying nitrates in forages, especially prevalent during drought conditions,



Associate Professor Kristi Cammack

as well as studying sulfate toxicity in water and feed – a project on which she partnered with her alma mater SDSU.

Cammack has turned her research focus to feed efficiency and looking at a variety of ways to find markers to predict feed efficiency.

One study she is involved with is looking at rumen microbes to determine if they provide an indicator of feed efficiency. In her research work, Cammack usually has three or four graduate students working on projects throughout the year.

Cammack believes progress is being made in the industry's feed efficiency research efforts.

"There are a lot of different groups working on it in different ways," she says. "I'm pretty confident eventually we'll have a useful marker or indicator. We just don't

know yet exactly what it will look like."

Cammack relishes her teaching role in addition to her research. She co-teaches both an introductory animal science course for freshmen and a topics and issues animal science course in which students must write a paper on an industry topic of their choice. Each fall she also teaches an animal breeding and genetics class to upperclassmen.

Cammack recognizes that starting out in production agriculture can be very daunting for a young person. In addition to their college coursework, she encourages her students to talk to experienced beef producers and learn from them.

"There are a lot of ranchers who want to share and teach," she notes.

She says the enthusiasm of the graduate and undergraduate students she works with fuels her.

"Students definitely teach us, too."

She has especially found that undergraduates offer a different perspective as they learn things about the industry – which often prompts her to consider research questions from a different viewpoint.

As the beef industry prepares for the future, Cammack underscores that everyone working in the industry needs to continue working on effective communication with the public.

"We must always make sure we are putting our best face forward," she says. "The beef industry is a valuable resource and a key part of the feeding the world's global population growth. If people better understand how we are doing things, we can bridge some of the gaps that exist."

FIRST CUTTING

COLLEGE PARTICIPATES IN RANGELAND CAREER

University of Wyoming Extension and the College of Agriculture and Natural Resources offered a helping hand at the Western National Rangeland Career Development Expo near Evanston in November.

The competition is a chance for FFA team members from Wyoming, Idaho, Utah, and Nevada to prove their knowledge in various aspects of range management including plant identification, ecological site description, forage estimation, stocking rates, and habitat improvement.

Students have the opportunity to improve their skills with help from natural resource professionals and students on the first day before competition starts.

Extension range specialist Rachel Mealor and educator Windy Kelley explained estimating forage production and habitat evaluation. Plant sciences graduate student Julia Workman helped students with plant identification, and agroecology undergraduate Amanda Preddice demonstrated soil texturing. Ecosystem Science and Management department head John Tanaka helped coordinate UW's involvement and represented the College of Agriculture and Natural Resources during a career fair for FFA students.



Plant sciences master's student Julia Workman prepares FFA competitors for the Western National Rangeland Competition outside of Evanston. The competition raises rangeland science awareness and introduces career opportunities to high school students from Wyoming, Utah, Nevada, and Idaho.



Extension range specialist Rachel Mealor and educator Windy Kelley helped FFA competitors evaluate habitat and production.

Extension range specialist educator Rachel Mealor, right, and Lovina Roselle, coordinator of the Western National Rangeland Competition, review FFA guidelines and judging standards.



DEVELOPMENT EXPO



Ecosystem Science and Management department head John Tanaka helped coordinate the University of Wyoming's involvement in the Western National Rangeland Competition.



Agroecology student Amanda Preddice teaches soil texturing to FFA competitors.



Kim Reaman, left, and Warren Crawford, center, receive the Diversity Enhancement Recognition Award from Glen Whipple, UW Extension director.

Wyoming 4-H specialists receive diversity enhancement award

Two specialists in the Wyoming State 4-H Office have received recognition for their efforts to expose youths to different cultures.

Volunteer development specialist Kim Reaman and youth development specialist Warren Crawford received University of Wyoming Extension's Diversity Enhancement Recognition Award. The pair received the honor during the organization's training conference in Casper in November.

4-H is the youth arm of UW Extension, and its state offices are in the College of Agriculture and Natural Resources.

Reaman and Crawford developed 4-H youth exchanges in 2011 and 2012 with Mongolia through the American Youth Leadership Program funded by the United States Department of State Bureau of Educational and Cultural Affairs. Participants from several states traveled to Mongolia, and Mongolian 4-H'ers spent about three weeks in Wyoming this summer. The exchanges were so well received that additional funding was obtained for a cultural exchange to Samoa in December and January.

The visits helped participants "get comfortable with being uncomfortable," according to the nomination information. The 4-H'ers were taken beyond the customs, language, and food and immersed into first-hand experiences of the challenges and opportunities Mongolian citizens face today as the country's natural, human, and technological resources are being developed.

Reaman joined UW Extension in 2008, and Crawford joined in 1998.

SHERIDAN COUNTY EDUCATOR RECEIVES UW EXTENSION'S MOST PRESTIGIOUS AWARD



Scott Hininger

A 26-year educator in Sheridan County received University of Wyoming Extension's highest honor.

Scott Hininger received the Jim DeBree Excellence in Extension Award during the organization's training conference in Casper in November.

The award, named in honor of the retired extension administrator, is given to those who demonstrate a high level of professional performance and leadership within their program areas and communities.

Hininger joined UW Extension in 1987 and specializes in agricultural economics, horticulture, and range monitoring. He is a member of extension's profitable and sustainable agricultural systems team.

Hininger has strong connections with his clientele, his nomination states, and is a respected horticultural resource, plays a role in extension's "From the Ground Up" film series, has good rapport with agricultural groups, and applies his expertise in town beautification projects.

Hininger received his bachelor's degree in agricultural education and his master's degree in agricultural economics from Oklahoma State University.

GRANTS COORDINATOR SEEKS TO ENCOURAGE GRANTSMANSHIP

David Perry began as the college's grants coordinator in September in the Agricultural Experiment Station.

Perry has been at the University of Wyoming 18 years – first in the reproductive biology laboratory in the animal science department then in former UW Professor Randy Lewis' spider laboratory. He was director of the Macromolecular Analysis Core the past two years.

"The core has been moved out of the Berry Center and downsized over the summer, and, with the exception of the DNA sequencing, is no longer a fee-for-service facility," he notes.

Perry says he sees his role as making the grants submission process easier for faculty members.

"In the increasingly competitive environment we face in obtaining grant funding, the

college hopes to encourage more grantsmanship and extramural funding," says Perry. "As many projects become multidisciplinary, the trend in grants is toward multi-investigator proposals. Rounding up multiple faculty members to work together on a grant submission is often a daunting task for any one investigator, and the hope is that I can ease that burden as well."

He notes the position is a major shift from his career as a research scientist.

"While we are still in the process of more precisely defining the parameters of the position, I would welcome comments and suggestions from faculty members who have worked with grants coordinators at other institutions," Perry says.

Perry can be reached at (307) 766-3688 or at DPerry@uwyo.edu. He is in room 107.



David Perry

Recruitment coordinator joins Office of Academic and Student Programs

Kerry Casper began as the new recruitment coordinator in September in the Office of Academic and Student Programs.

Casper was an enrollment adviser in the admissions office at Ottawa University in Ottawa, Kansas, prior to moving to Laramie. Her husband, Bob, is the assistant women's soccer coach at UW.

She received her bachelor's degree in sport and recreation management from the University of Minnesota-Crookston and her master's in sports studies from Bemidji State University (Minnesota).

Casper says she applied for the position because the responsibilities expand on those at her previous positions.

"Once I interviewed, it became even more clear that this position would be something I'd really enjoy," she says. "I accepted this position because of how highly the College of Agriculture and Natural Resources is spoken of, and after becoming aware of who I would be working with both in the office and with students, I knew I really wanted to be a part of it."

Casper says she wanted to be a part of higher education ever since she graduated from college.

"The level of professionalism and all of the departments and people it takes to run a college just so a student can receive her or his degree and hopefully make a difference in the world is something I have always wanted to be associated with," she says. "Fastpitch softball was my passion as a college athlete, and I continued that in various college coaching positions for seven years. As a coach, sometimes you find yourself being more of an academic adviser or counselor more than you actually coach the sport. And after my seventh year of coaching, I knew it was time to focus more on helping students off the field, which is great because our tagline is 'Students: The reason we're here!'"

She says she has always been part of a recruiting process – either as a student or in the role of a recruiter.

"I enjoy meeting new people and have a blast getting to know all of the students I'm fortunate to work with," she says. "I'm grateful to Kelly Wiseman and Professor Donna Brown for the opportunity to work in the Office of Academic and Student Programs and really look forward to diving into all of the events and working with everyone."



Kerry Casper



David Keto, left, receives the Creative Excellence Recognition Award from extension director Glen Whipple.

KETO RECEIVES UW EXTENSION CREATIVE EXCELLENCE HONOR

Providing a vision and encouraging University of Wyoming Extension educators to think beyond the status quo has earned extension's videographer the Creative Excellence Recognition Award.

David Keto, who joined UW Extension in 2011, received the award during the organization's training conference in Casper in November. UW Extension has offices in every county and the Wind River Reservation.

Keto shares his enthusiasm for videography as a science, an art, and as a teaching tool, according to his nomination. He encourages and trains educators to produce their own videos through workshops and by working with educators during filming.

Keto produces extension's "From the Ground Up" video series, which includes subjects ranging from horticulture to range management. The educational videos air on KCWY-TV Casper and are posted on YouTube at <http://youtube.com/uwyoextension>. He also produces videos for various departments in the College of Agriculture and Natural Resources and the University of Wyoming.

Keto received his bachelor's degree in biological sciences and his master's degree in science and natural history film from Montana State University.

Brown accepted into food systems leadership program

Professor Donna Brown, associate dean and director of the Office of Academic and Student Programs, was accepted into the Fall 2013 Food Systems Leadership Institute (FSLI) as Wyoming's first participant.

Brown is one of 27 students accepted into the ninth cohort that officially began last September.

FSLI is a program of the Association of Public and Land-Grant Universities with support from the W.K. Kellogg Foundation.

The program is two years long with the first consisting of three residential sessions in North Carolina, Ohio, and California, coupled with an extensive amount of reading, homework, and teleconference meetings, she says. The second focuses on leadership skill and professional development through an independent project and mentorship with a professional coach.

"It's not just information on the industry, it's not just being told how to be a leader, it's looking at where we are, what we need to work on, and how we can be better," Brown explains.

The goal is to advance and strengthen food systems "by preparing a set of new leaders with the skills and knowledge necessary to invent and reinvent the food systems of the future," according to FSLI.

Brown says she's already been able to identify some of the skills she's learned in the past three months and looks forward to using her knowledge to improve the experience of agricultural and natural resource students.

"In my role as associate dean and looking forward to the future, I'm looking at some of the things we need to be looking for in terms of our students, in terms of preparing the future leaders of the food systems industry – which we are. That's ultimately what we're supposed to be doing," says Brown.



Professor Donna Brown

RANGE SPECIALIST RECEIVES NEWER EMPLOYEE AWARD

The University of Wyoming Extension has recognized a range specialist known for her high level of activity.

Rachel Mealor received the Newer Employee Recognition Award during the organization's training conference in Casper in November.

Mealor, a Rock Springs native, received her bachelor's and master's degrees from the University of Wyoming. She joined extension in 2007.

Mealor made 20 invited presentations in Wyoming and neighboring states last year and received the Outstanding Young Range Professional Award from the Society for Range Management. She has been a guest lecturer and written or co-written journal articles and extension publications and is active in extension's sustainable management of rangeland resources team.



Extension director Glen Whipple presents Rachel Mealor the Newer Employee Recognition Award.

Wyoming Section Society for Range Management honors Smith

Mike Smith received the Distinguished Lifetime Achievement Award at the Wyoming Section Society for Range Management meeting in Sheridan in November.

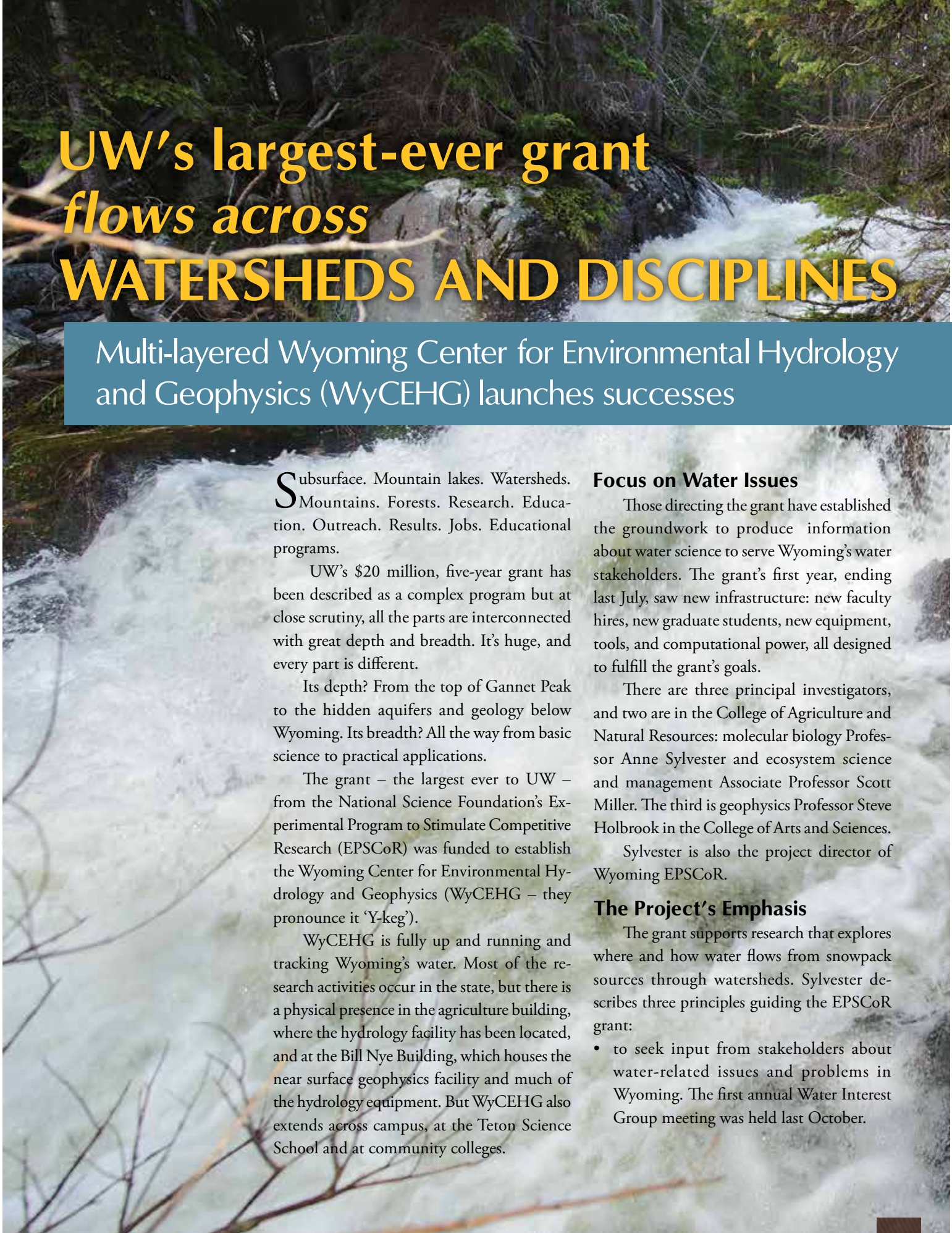
Smith, a professor in the Department of Ecosystem Science and Management and an extension range specialist, has been a member of SRM since 1965.

The award recognizes SRM members for long-term contributions to SRM and range management. Recipients show sustained, outstanding lifetime contributions to the art and science of range management and continued SRM involvement at the section and society level.

Smith announced he will retire from the college in March 2014.



Professor Mike Smith



UW's largest-ever grant *flows across* WATERSHEDS AND DISCIPLINES

Multi-layered Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG) launches successes

Subsurface. Mountain lakes. Watersheds. Mountains. Forests. Research. Education. Outreach. Results. Jobs. Educational programs.

UW's \$20 million, five-year grant has been described as a complex program but at close scrutiny, all the parts are interconnected with great depth and breadth. It's huge, and every part is different.

Its depth? From the top of Gannet Peak to the hidden aquifers and geology below Wyoming. Its breadth? All the way from basic science to practical applications.

The grant – the largest ever to UW – from the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) was funded to establish the Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG – they pronounce it 'Y-keg').

WyCEHG is fully up and running and tracking Wyoming's water. Most of the research activities occur in the state, but there is a physical presence in the agriculture building, where the hydrology facility has been located, and at the Bill Nye Building, which houses the near surface geophysics facility and much of the hydrology equipment. But WyCEHG also extends across campus, at the Teton Science School and at community colleges.

Focus on Water Issues

Those directing the grant have established the groundwork to produce information about water science to serve Wyoming's water stakeholders. The grant's first year, ending last July, saw new infrastructure: new faculty hires, new graduate students, new equipment, tools, and computational power, all designed to fulfill the grant's goals.

There are three principal investigators, and two are in the College of Agriculture and Natural Resources: molecular biology Professor Anne Sylvester and ecosystem science and management Associate Professor Scott Miller. The third is geophysics Professor Steve Holbrook in the College of Arts and Sciences.

Sylvester is also the project director of Wyoming EPSCoR.

The Project's Emphasis

The grant supports research that explores where and how water flows from snowpack sources through watersheds. Sylvester describes three principles guiding the EPSCoR grant:

- to seek input from stakeholders about water-related issues and problems in Wyoming. The first annual Water Interest Group meeting was held last October.

“The goal is to build sustainable infrastructure in water science in Wyoming. And we contend that diversity of people, approaches, ideas, and disciplines improves the product.”

— Professor Anne Sylvester



EPSCoR director Professor Anne Sylvester

- to build infrastructure in the form of equipment, people, and new research capabilities to address water-related problems
- to establish an educational arm to ensure a pipeline of students on their way to science careers.

“After the first year, I’m absolutely convinced these visionary goals will bear fruit,” she says.

There are many novel elements to WyCEHG because the project brings together different ways of doing science. All

the goals require a new type of communication across scientific disciplines, she says.

“Someone in a water basin group is worried about a problem with water and a scientist is doing geophysical investigation of the subsurface to see where the water is – they may naturally speak a different language,” Sylvester says. “To make this project work, we want to bridge communication to facilitate progress.”

Cross-Disciplinary Communication

“UW already had strength in the hydrology and geophysical disciplines through Steve and Scott, along with many other contributing scientists,” she says.

Both are renowned scientists: Miller in hydrology and watershed research, and Holbrook in geology and geophysics. “This group is bringing the two disciplines together here at UW. Both disciplines are needed to answer the questions that come to us from the state,” she notes.

For example: someone has concerns about water flows changing with diminished river flows. “Without the right tools to answer some questions, not much progress can be made,” says Sylvester. “Geophysical equipment and analytical methods are highly practical and powerful tools.”

One such tool is Nuclear Magnetic Resonance technology. Researchers use the NMR, an equivalent of medical MRI tools, to peer beneath the soil and, as the researchers describe their tasks, “see the unseen water.” The MRI at your local hospital peers inside you while the NMR peers into the ground to reveal what cannot be seen from the outside.

WyCEHG communication also needs to extend across different landscapes.

Goals of the Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG) are:

- **To improve understanding of mountain front hydrology** by characterizing the processes that partition water into streams, soils, plants, rivers, and aquifers in several locations throughout the state
- **To improve understanding of how disturbances affect water flux** by studying effects on hydrological systems from climate change, bark beetle infestations, and energy extraction.
- **To improve integrated modeling of the fate and transport of water** by creating integrated computer models that will provide the scientific knowledge and tools for improved prediction of hydrological processes.
- **To provide cutting-edge resources and tools** for educators and watershed managers in the state

(From <http://www.uwyo.edu/epscor/wycehg/>)

“It’s a physical center as well as a virtual center,” Sylvester says. More than 27 different faculty members from several departments in four different colleges are involved. “They’re not all sitting in one place but all meet regularly to interact and plan for successful projects,” she says.

The grant brought unique and novel instrumentation for use across the state to study hydrology and near-surface geophysics. For example, the Geometrics G-858 MagMapper and Knudsen Pinger CHIRP echosounder just sound cool. The WyCEHG website (uwyo.edu/wycehg) has links to view the various equipment, from pickups to the CHIRP.

There are numerous collaborations. WyCEHG is working with Aarhus University in Denmark (they brought SkyTEM, a helicopter-borne instrument to characterize the subsurface structure of the Laramie and Snowy ranges). And, there is CI-WATER, a Utah-Wyoming cyberinfrastructure water modeling collaboration.



Professor Steve Holbrook



Associate Professor Scott Miller

Pipeline for Education

Educational outreach efforts include providing professional development for high school teachers in water science, supporting community colleges through research awards for students and faculty, initiating summer science opportunities for high school students, funding research fellowships for UW undergrads, and establishing collaborative efforts with Jackson State College in Jackson, Mississippi, which brings an urban eye to Wyoming’s definite non-urban landscape and vice-versa.

The grant concerns itself with water but also wants to make sure there is a diverse, well-balanced workforce for Wyoming, says Sylvester. For balance and diversity, the grant aims to improve the visibility of women in science and improve everyone’s awareness that disabilities can be accommodated in science, she notes.

“The goal is to build sustainable infrastructure in water science in Wyoming. And we contend that diversity of people, approaches, ideas, and disciplines improves the product,” says Sylvester. “The product is WyCEHG.”

SCIENCE TEAMS

Wyoming Center for Environmental Hydrology and Geophysics has nine science teams.

- Integrated modeling
- Component modeling
- Critical Zone processes
- Geophysical modeling
- Hydrogeophysics
- Disturbances and fluxes
- Geochemical tracers
- Snowmelt partitioning
- Bark beetle impacts

EPSCoR STUDENT PROGRAMS AND FELLOWSHIPS

Summer Research Apprentice Program (SRAP) is an intensive, six-week, paid summer research program for high school students that targets minorities, first-generation college-bound, and females.

Undergraduate fellowships are provided up to 25 students at the University of Wyoming in the fall and spring semesters for \$750 and in the summer for \$3,500. Students must apply with a proposal addressing their intended research and have the support of a faculty member. (From <http://www.uwyo.edu/epscor/fellowships-and-student-programs/>)



*Associate Professor
Ginger Paige*

Grant joins equipment with expertise

There have been dramatic “AH-HAHs!” coming from some sectors of the WyCEHG research community a year and a half after initiation of the grant, but there have also been many “mini” ah-hahs, says Ginger Paige, associate professor and University of Wyoming Extension water resources specialist.

Paige has been studying water basin watersheds since joining the Department of Ecosystem Science and Management in 2004. She’s the leader of the Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG – they pronounce it Y-keg) outreach team and is co-leader of the disturbances and fluxes team with Associate Professor Scott Miller, also in the department.

Going with the Flow

Joining surface and subsurface watershed hydrology and geophysics within WyCEHG has affirmed some of the researchers’ theories on water flow.

WyCEHG is an innovator and an enabler – it joined specialized equipment with expertise and brought together new ideas in hydrogeophysics for the state of Wyoming.

“We can now map in the near subsurface what we think is happening,” says Paige. “We can now say, ‘Yes, there is a con-

nection there. This explains some of what we thought was going on in watersheds.’ We are in the early phase of putting the pieces together. During the field campaigns, it has been great to see those links being made.”

Anne Sylvester, director of Wyoming’s Experimental Program to Stimulate Competitive Research (EPSCoR), within which WyCEHG is housed, says having the public know the group is addressing issues vital to the state’s future is the most important element of the project.

Such as:

- how research can assist in the effective management and use of water, and
- how Wyoming’s water interests are joined to surrounding states that have conflicting demands for water

“Water is the primary resource in this region,” notes Sylvester. “This project is designed to bring together the scientific tools and resources to study where the water is, where it is going, how it is affecting downstream communities, and where the watersheds are and how they are changing.”

Outreach Emphasis

Paige, representing WyCEHG, pulls up a chair at the monthly Wyoming Water Forum meetings. State and federal agency

personnel share information on water resources in Wyoming and insights of their specific programs.

Sylvester says having top-notch extension specialists who are highly connected in the state is extremely valuable to the group’s outreach arm.

Paige met with many water stakeholders during WyCEHG’s first year, and that interaction continues. She received positive responses about WyCEHG and its goals from county commissioners and water basin group representatives at meetings. “In general, they indicated the need to better understand interactions between surface water and groundwater,” says Paige.

Sylvester says many of the research subjects or activities of WyCEHG are new, and Paige points out that several aspects of WyCEHG are important extensions of work already ongoing.

“WyCEHG represents a concerted effort to build the capacity to make these different components stronger,” Paige says. “We are trying to get the capacity and infrastructure and improved and streamlined methodologies for improving these processes, whether education or the collection of scientific information or getting data of use out to the decision makers.”



Vet sciences, agricultural economics scientists combine to study bluetongue virus

“We have already tested the vaccines, and we know that they are effective. But we can’t advise a rancher to vaccinate if there is a 25-percent chance of an outbreak every five years, and that is the kind of information a rancher needs to have.”

— Assistant Professor
Myrna Miller

By Carolyn Hageman

Two departments are joining efforts to offer Wyoming sheep producers better recommendations regarding bluetongue virus and their flocks.

Carried by a tiny biting midge, BTV affects wild ruminants such as deer and pronghorn and domestic ruminants such as sheep and cattle. Although cattle can be infected, sheep are the most susceptible. An animal exposed to the virus can become antibody positive and makes the likelihood of that animal contracting BTV again very low.

Researchers from the departments of veterinary sciences and agricultural and applied economics seek to create a cost-benefit analysis for BTV across the state.

“I am thrilled to have the opportunity to have the veterinary sciences department pair with the agricultural economics department and do this cost-benefit analysis,” says Myrna Miller, assistant professor in veterinary sciences.

Researchers want to recommend to producers how to protect flocks from bluetongue, and whether or not the benefits of different management practices outweigh the costs of using them.

Devastates Flocks

During typical years, instances of BTV are mild, but outbreaks of bluetongue virus (BTV type 17) can devastate flocks. Infected animals become lame, feverish, and lose appetite due to mouth sores and a blue-colored, swollen tongue.

The most recent outbreak in Wyoming was in 2007 in the Big Horn Basin. It appeared that those sheep had not previously been exposed to BTV and were lacking the antibody needed to resist the virus. The impacts were severe, with more than 36 percent of the flocks becoming sick and 12 percent dying.

A vaccine for BTV type 17 is on the market but not readily available in Wyoming. After the 2007 outbreak, some of Wyoming's woolgrowers voiced concerns about its lack of availability, and this project hopes to make a sense of a difficult decision.

"It's like flood insurance. There is potential catastrophic costs but is it going to happen or not going to happen?" says Miller. "We have already tested the vaccines, and we know that they are effective. But we can't advise a rancher to vaccinate if there is a 25-percent chance of an outbreak every five years, and that is the kind of information a rancher needs to have."

Vaccinating versus Not Vaccinating

The biggest question ranchers need answered is how much risk they are taking by not vaccinating flocks. What are the costs of an outbreak versus the cost of vaccination?

Miller and agricultural economics As-



Assistant Professor Myrna Miller

sociate Professor Dannele Peck are working together in hopes of receiving funding so they can answer these questions.

Miller has extensively examined the disease to identify patterns of outbreaks and allowing researchers to predict good and bad years for the virus. Peck wants to use her expertise to put together a cost-benefit analysis of different management plans sheep producers could potentially use to determine if vaccination is more costly than not vaccinating.

"Dannele's part of it will be to capture what those costs are and how much does it cost the rancher during those outbreaks," says Miller.



Associate Professor Dannele Peck

Using the 2007 outbreak as an example, Miller explained that time, energy, and treatment can add up to a large expense. "Economically, there was cost of treatment, mortality, cost of time, loss of wool production, and loss of weight gain."

Can Coincide with Marketing Lambs

Also concerning is the timing of most outbreaks.

"Bluetongue tends to hit in the fall right at about the same time that people are starting to think about marketing their lambs," says Peck. "Once the first frost hits, most of the midges die, but from late summer leading up until the first frost animals are at high risk of catching it."

Miller predicts Wyoming woolgrowers and sheep producers are going to have to custom order the vaccine after deciding how much they might need for that given year. To successfully make that decision, they will need the information the study is designed to provide.

Carolyn Hageman is an agricultural communications major and was an intern the fall semester in the Office of Communications and Technology.





MEAT — it's what's for dinner!

Thanks to UW Meat Lab director, students

By Carolyn Hageman

Students of all majors have the opportunity to work and gain real-world skills at the University of Wyoming's Meat Lab – a full packing plant on campus.

Kelcey Christensen has managed the UW Meat Lab for five years and is responsible for teaching students the entire process of a packing plant – from slaughtering the animals to cutting and packaging the meat. Christensen hires about 10 students during the year and generally only two students during the summer.

"Ninety-nine percent of people who work in the meat lab have no experience in the field," says Christensen.

The 10,000-square foot lab in the Animal Science/Molecular Biology Building offers all meat-processing services for university-related activities. Students obtain experience that will be with them the rest of their lives.

"There is a huge need for people in the food industry," says Christensen. "Not just meats, but in any food industry. It helps to have that experience."

Safety is a huge consideration at the meat lab, and as manager Christensen provides the training.

"There is an inspector in the plant every day. He's there all day with them, and this is to make sure that they are doing what they say they are doing," he says. "I am certified for Hazard Analysis Critical Control Point (HACCP), which is a system that the government and some corporations have put together to identify hazards within a plant,

and those hazards could be anywhere from biological pathogens to physical hazards or chemicals."

The UW Livestock Farm near Laramie provides most of the animals for the meat lab. About 50 head each of beef, hogs, and lambs are slaughtered between the fall and spring semesters.

"That is solely for teaching purposes, some extension work, and when it comes to research, the number could vary," notes Christensen. "Those carcasses go directly to the cooler. We chill them, and they are used extensively for teaching purposes. Our beef will hang between 21 and 34 days in the cooler before it's frozen, pigs are a maximum of 21 days, lambs are a little bit less (18 days). They tend to dry out in our climate here."

According to Christensen, the carcasses are hung in the cooler before frozen to allow the meat to tenderize. Beef is required to hang 14 days to obtain the greatest natural tenderization of meat.

"The longer the meat ages in a cooler, the stronger the beef flavor will become," he explains.

After freezing, the meat is cut into steaks, roasts, ham, and bacon, while the leftover trim is processed into ground beef or pork sausage. Undergraduates do all the work through each step of the process.

"For the most part, I oversee what the students do, and I teach them, but I cannot be out there all the time," Christensen said. "They are out there, and they do all the work for the most part."



Wade Allnutt of Walden, Colorado, removes the hide from the hindquarter of a beef animal during a recent research slaughter. Wade is a May 2013 graduate and has started his own cattle ranching operation in the Walden area.

The meat lab packages and sells various products to the public, both locally and statewide, and is also heavily involved on campus. It supplies some of its meat to Resident Life and Dining Services at UW, and contracts with the UW Meat Judging Team for prime rib and rib eye steaks.

“The meat lab processes all of that, and then the meat judging team pays the meat lab to produce all that, then they turn around and sell it to make a profit and that allows them to travel,” says Christensen.

The meat lab is also responsible for supplying and organizing all state FFA and 4-H meat judging contests. The lab prepares meat for a practice contest for students and also provides for the state FFA competition, which is held in Laramie.

The Food Science Club at UW works considerably with the meat lab in support of different activities. Every year, lab em-

ployees and club members prepare for the annual Ag Day Barbecue with proceeds funding student organizations and scholarships in the College of Agriculture and Natural Resources.

Animal and veterinary sciences major Kayla Foster has been in the Food Science Club for three years. Foster, of Cheyenne, has worked in the meat lab for two years and is serving as the club president from January to December.

“In the past, some of my duties to prepare for the Ag Day Barbecue include shopping for the food and supplies needed, making sure we have enough members to work at the barbecue, as well as cooking and preparing the food,” says Foster.

Jennifer Anders, also a club member and animal and veterinary sciences major, has been involved over the years in helping with the barbecue.

“We’ve put barbecue in squirt bottles, mixed spices for the meat, prepared gallons upon gallons of beverages, gathered gloves, hairnets, and coats for the members helping, cooked beans or other side dishes in large quantities, prepared everything for travel, and then loaded up the Food Science Club trailer,” explains Anders.

The Fort Lupton, Colorado, native is also extremely involved in all meat lab activities and responsibilities.

“I’ve never worked for the meat lab officially, but I’ve been on the meat judging team before. I’ve helped with slaughtering, fabrication, doing dishes, vacuum packaging cuts, setting up FFA and 4H contests, leading those contests and then grading those contests, and anything else that needed to be done,” says Anders.

The University Meat Lab conducts sales through the Department of Animal Science Meat Sales page found at <http://bit.ly/uwmeatlab>. For more information, contact Christensen at kelceyc@uwyo.edu.

***Note:** Hageman is an agricultural communications major and was an intern in the Office of Communications and Technology the fall semester.*

“There is a huge need for people in the food industry. Not just meats, but in any food industry. It helps to have that experience.”

— Kelcey Christensen,
UW Meat Lab manager

Students serve more than 740 at Ag Day Barbecue

By McCall Linke

Sixty-three students representing more than 13 clubs and organizations in the College of Agriculture and Natural Resources served about 740 during the annual Ag Day Barbecue Saturday, October 19.

The fund-raising barbecue at Tailgate Park was postponed from September 14 due to heavy rains that week.

Proceeds fund student organizations and a scholarship.

"Everyone shows their appreciation by gathering for a tailgate before the game – enjoying good food and company," says Lara Allnut of Walden, Colorado, an agricultural business major. Allnut is the 2013-14 scholarship recipient.

Without student volunteers, there would not be enough manpower to setup, serve, and cleanup the event. Students work two-hour shifts, and the clubs they represent receive a percentage of the total earnings.

Many individuals, organizations, and businesses donate food, and the Food Science Club prepares the meal. The 27 members put in at least 60 hours preparing the 180 pounds of beef and pork and 75 pounds of lamb.

"The Ag Day Barbecue is an excellent way to celebrate the College of Agriculture and Natural Resources and its many Recognized Student Organizations," says Allnut, a member of the club. The club has used funds from the barbecue to attend the Chicago Processing Convention, John Morrell Pork Processing Plant in Sioux Falls, and Calico Skies Vineyard and Winery in Iowa.

"There is always so much to learn, so we feed our hungry minds," she says.



Students served more than 180 pounds of beef and pork and 75 pounds of lamb.

Funding from working the Ag Day Barbecue has been used in some cases to pay for travel to competitions. The Range Club used the money last year to travel to Oklahoma City for the International Society for Range Management. Twenty-four of the members competed in four competitions.

Mandy O'Donnell, a senior member of the Range Club, believes the meeting is extremely valuable.

"It is an opportunity to network with current professionals and discuss relevant studies taking place," she says. O'Donnell, a rangeland and ecology watershed major from Spring Creek, Nevada, plans to attend the 2014 meeting in February in Orlando.

McCall Linke is a student worker in the Office of Academic and Student Programs and is an agricultural communications major.



Clubs receive a portion of the proceeds based upon student participation.

Gatlin paper exploring mitotic spindle assembly published in *Science*

University of Wyoming research efforts have spanned two colleges in hopes of better understanding how cells replicate – in particular, how they control size.

This research is one step closer to understanding cellular mutations and malfunctions common to many forms of cancer, the researchers say.

After attending an interdisciplinary meeting, molecular biology Assistant Professor Jay Gatlin from the College of Agriculture and Natural Resources became interested in the fluid manipulation skills of chemical and petroleum engineering Assistant Professor John Oakey.

“We’re interested in understanding how a structure within a cell forms, and that structure is what’s called the mitotic spindle,” explains Gatlin. “It’s made out of a polymer called microtubules. And these microtubules actually form this American-football shaped-like thing called the spindle. It’s what physically separates your chromosomes during cell division.”

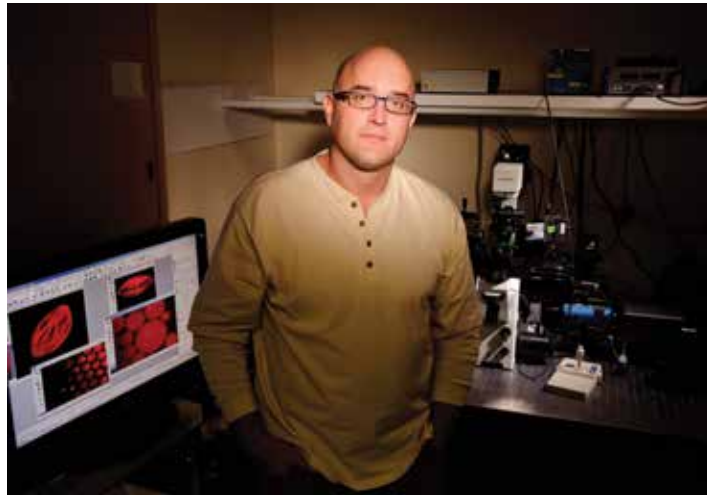
Gatlin explains the shape and size of the spindle is incredibly important to its function, similar to any properly working machine with several moving parts.

Previously, Gatlin had used an extract made from the liquid portion of African Clawed Frog eggs but was limited to studying spindles outside of a membrane, which restrained the testing that could be done.

That was before he learned of Oakey’s micro-fluid technology expertise.

“I’ve got this (extract) that I can use to recapitulate the cell cycle. John has this really exquisite ability to control fluids,” says Gatlin. “So all we did was combine those two things, and we asked a very simple question.”

They wanted to know if making a



Assistant Professor Jay Gatlin, with Assistant Professor John Oakey in chemical and petroleum engineering, found the volume of droplets determines mitotic spindle size.

spindle within a droplet using Oakey’s droplet-forming devices was possible.

Explaining further, Gatlin says, “You can imagine if you’ve got extract with the occasional nucleus floating around in it it’s going to become encapsulated in one of these droplets... We were able to find that using this – we were able to make a spindle in this extract.”

After droplets were formed, a microscope was used to measure the size of the droplet and the size of the spindle.

The data proved a very simple point.

“The spindle scales to the size of the droplet it’s built in,” says Gatlin. “It seems somewhat trivial... This scaling has to happen, they’ve known it happens for a while, but no one has gotten at the mechanism.”

Now that scaling has been proven, it’s time to move on to the instrument responsible for it.

“What we hypothesize – and we’re still trying to figure out the component – is that there’s something floating around in the cytoplasm,” Gatlin continued, “either a protein or some other type of molecule

that is required to build this structure. As you encapsulate your DNA into a very small droplet, you have less of that ‘stuff,’ so, therefore, the cell compensates by making the spindle smaller.”

Understanding size and the ability to scale has implications reaching into the health field.

Gatlin says this regulation is key in creating and maintaining a properly functioning cell. He says it is so important that some cancer progression is classified into stages by determining the size of the nuclei of cancerous cells – the larger the nuclei, the more severe the stage.

If the scale-inducing-mechanism can be better understood, scientists and researchers may be able to advance treatments such as organelle directed therapy, says Gatlin.

The research of Gatlin and Oakey was published in the November issue of *Science*, a prestigious international, scientific journal. Within the same issue, Berkley University published similar research, verifying the credibility of both studies.

UW Extension partnership member studying biofuel production from beetle-killed trees

University of Wyoming Extension (UWE) is participating in a \$10 million, five-year study of sustainable biofuel production using beetle-killed trees.

UW Extension's share will be \$250,000.

Colorado State University researchers lead the project. Included are UW, the University of Montana, Montana State University, University of Idaho, and the U.S. Forest Service. The group has partnered with Cool Planet Energy System to form the Bioenergy Alliance Network of the Rockies (BANR). This research is funded through the U.S. Department of Agriculture's National Institute of Food and Agriculture.

Sustainable Fuel Source

BANR's research will strive to develop millions of beetle-killed, Rocky Mountain trees into a sustainable fuel source. While Cool Planet focuses on the actual production, other BANR participants will focus on social, environmental, and economic impacts of this potential fuel source.

UW Extension will provide communication to community stakeholders.

Extension energy coordinator Milton Geiger says most of extension's efforts will occur in the last years of the project after research is initiated.

Stakeholders will include land managers, landowners, and rural communities near forests, Geiger says.

Extension's mission is to offer both the merits and drawbacks.

"Extension will primarily synthesize research products into a more publicly understandable format," he explains. "Extension is uniquely suited to provide this information. UWE will partner with



Extension energy coordinator Milt Geiger

extension services from Montana and Colorado to deliver unbiased information to stakeholders."

One partner has already developed technology to solve one of the most noticeable and immediate logistical concerns.

Produce Fuel, Bio-char

The distance from forests and production sites (urban areas) could be overcome using Cool Planet's technology of bio-fractionation stations. According to the company's website, stations are placed near concentrated sources of biomass, are capable of producing 10 million gallons a year of clean renewable fuel, and can stimulate local economies and produce biochar, a soil-enhancing byproduct.

Geiger says extension is involved because there is promise in this research.

"If the conversion technology is economically, environmentally, and socially viable, Wyoming communities could be producing a product that reduces our need for imported petroleum, improves agricultural productivity, mitigates greenhouse gas emissions, creates local jobs and taxes, and improves forest health," he says.



Mountain pine beetle has affected more than 3.4 million acres in Colorado and 3.4 million acres in Wyoming since 1996, according to 2012 figures from the U.S. Forest Service.



Buildings behind the College of Agriculture and Natural Resources housed equipment from several college departments.

Building demolition prompts moving wool laboratory equipment

Wool laboratory and other equipment housed in buildings demolished behind the College of Agriculture and Natural Resources have been moved.

Several departments stored equipment in the buildings.

The Department of Animal Science housed a wool processing operation in one of the buildings. The equipment was used extensively for numerous years. This equipment is stored at the Laramie Research and Extension Center (LREC) Livestock Farm.

“That equipment was considered unique in that it was one of only a very few that exist in the country and had historical significance,” notes Doug Zalesky, LREC director.

The equipment will be preserved for possible display for educational and historical purposes or reassembled to process wool. “As for the wool processing equipment, once the decision was made to keep the equipment because of its historical significance, we knew we needed to store much of the equipment indoors,” says Zalesky.

Equipment used as part of a soil processing lab was part of the Department Eco-



Crews demolish the buildings behind the College of Agriculture Building.

system Science and Management. Development of a new soil processing lab is taking place at the LREC Livestock Farm. Faculty members in the department also stored field equipment used to collect research data. That equipment was also moved to the LREC Livestock Farm. “Once we knew the space requirements and the utility requirements, we were fortunate enough to have a

building at the LREC Livestock Farm that met those needs,” says Zalesky.

All equipment disposed of was either not being used or was not needed. For more information about this relocation, contact Agricultural Experiment Station director Bret Hess at brethess@uwyo.edu or Zalesky at dzalesky@uwyo.edu.

PROGRAM NOTES

Agricultural and Applied Economics

Choong Kim has been chosen to receive the 2013-2014 Andrew and Connie Vanvig Fellowship. The fellowship is made possible by a generous endowment from former department head Professor Andy Vanvig and his wife, Connie.

Choong is the department's first international recipient of the Vanvig award. He is from Chun-Cheon, South Korea (about two hours east of Seoul).

The fellowship, which includes \$5,000 to support the winner's graduate studies, is given annually to an outstanding graduate student in agricultural and applied economics.

Faculty members within the department nominate students, and the graduate committee selects from the nominees. Selecting the Vanvig awardee is a challenging process, notes **Tom Foulke**, senior research scientist in the department and representing the graduate committee.

The committee seeks nominees who contribute to the overall excellence of the program. Selection is based on attributes such as GPA, quality of research, initiative, and collegiality. Graduate students come from diverse backgrounds and study a variety of topics within the economics field. They have a myriad of accomplishments both inside and outside of the classroom, says Foulke. "This makes the committee's job all the more challenging, but enjoyable as well, since it is a pleasure to have such a talented



Choong Kim

pool to choose from," he says.

Here is a sample from among the nomination forms showing what faculty members said about Choong.

"Choong is a refreshingly well-balanced and amazingly talented student. He is genuinely passionate about learning, and excited to master economic concepts both mathematically and intuitively. I foresee Choong accomplishing great things in our profession because he brings such a complete set of skills to the table: math, economic intuition, intellectual curiosity, strong work ethic, ability to communicate, and willingness to engage/embrace/contribute to a friendly work environment..."

After receiving his bachelor's degree in math from the University of Wyoming in 2010, Choong joined the master's program in 2012. His graduate research centers on subsidy incidence in energy markets, with his graduate committee chaired by Associate Professor **Chris Bastian**. Choong plans to pursue a Ph.D. after completing his master's degree.

Ecosystem Science and Management

The department welcomed **Michelle Nieters** as office associate and **Alison Shaver** as accountant. Alison replaces **Cindy Wood**, who moved to the college's business office.

Rachel Mealor, extension rangeland specialist, was elected as a director of the Wyoming Section of the Society for Range Management.

Graduate student **Renée Gebault King** (Ph.D. student working with Associate Professor **Jay Norton**) attended the Soil Science Society of America annual meeting in Tampa, Florida, and won second place in the oral presentation (soil fertility division) competition.

Professor **K.J. Reddy** is going on sabbatical. He will split his time between Harvard and India working with other scientists on his patented arsenic removal from drinking water processes.

Things have been busy since the summer at the Wyoming Reclamation and Restoration Center (WRRC), notes Professor **John Tanaka**, head of the department. "After hosting the Second Wyoming Reclamation and Restoration Symposium in Laramie with the American Society of Mining and Reclamation, we went on the road through the state with the Regional Wyoming Reclamation Schools in July," says Tanaka.



Professor K.J. Reddy

Back in Laramie this past fall, the center funded four new graduate students to work on soil, erosion, weed, and sage-grouse issues as related to land reclamation and habitat restoration. The WRRC has become involved in the Douglas Core Area Habitat Restoration projects proposed as part of the development plan for that region. We participated in a large sagebrush seed collecting effort and are cleaning and drying those seed for use in the Douglas Core area.

WRRC just attended the BLM Resource Advisory Council meeting in Laramie and reported on the collaborative reclamation database project and made suggestions for improving bond rollover requirements and monitoring regulations. WRRC participated in the Petroleum Association of Wyoming Meeting in December and made some requests of members to improve quality of monitoring data provided to U.S. Fish and Wildlife Service for consideration in the sage-grouse listing decision.

PROGRAM NOTES

Family and Consumer Sciences

Erin Irick is a new assistant professor in the department who began in August. Erin is originally from Derby, Kansas. She completed her undergraduate degree in apparel and textile marketing from Kansas State University in 2000 and her master's degree in apparel design also from Kansas State University in 2006. She is completing her Ph.D. in apparel design at Oklahoma State University.

"Erin has several years of industry experience in retail management and visual merchandising and had the experience of teaching at several universities as a graduate assistant, an adjunct instructor, and a lecturer before coming to the University of Wyoming," notes Associate Professor **Bruce Cameron**, head of the department. "Her teaching experience includes merchandising classes such as retail store operations and visual merchandising, as well as history of dress and design theory."

Erin's research interests include sustainability as it relates to the apparel industry, specifically, apparel design using recycled materials. Her dissertation research examined the development of a design process for the production of repurposed apparel and accessories. She also has an active creative scholarship agenda using recycled and alternative materials in her designs and an interest in textile design with digital printing and dyeing with natural dyes.

Five dietetics students, **Jessica Badaracco**, **Anna Harrower**, **Jamie Kearns**, **Paige Wollenzein** and **Candace Wollert**, attended



Assistant Professor Erin Irick

the Food and Nutrition Conference and Expo in Houston in October. This annual meeting is the world's largest meeting for food and nutrition professionals where key issues relevant to dietitians and nutrition professionals are presented. While at the meeting, students had the opportunity to attend an internship fair, network with career professionals, and to attend the student session of the Academy of Nutrition and Dietetics.

Molecular Biology

New faculty member Assistant Professor **Jay Gatlin** has recently published a paper entitled, "Changes in Cytoplasmic Volume Are Sufficient to Drive Spindle Scaling" in *Science*, the top scientific journal in the United States. This paper explores the structure and function of the cellular spindle apparatus and thus provides insight into mechanisms of cell division, says Associate Professor **Mark Stayton**, department chair.

He is the senior author and his doctoral student, **James Ha-**



Assistant Professor Jay Gatlin

zel, is lead author. The complete citation is James Hazel, Kaspars Krutkramelis, Paul Mooney, Miroslav Tomschik, Ken Gerow, John Oakey, and **J.C. Gatlin** *Science* 15 November 2013: 342 (6160), 853-856.

A second faculty member published a major research paper in *PLOS Genetics*, a prominent scientific journal in cell and molecular biology. Associate Professor **Dan Wall's** paper was widely reported in the scientific press. Entitled, "Molecular recognition by a polymorphic cell surface receptor governs cooperative behaviors in bacteria", this paper uniquely describes how cell-cell recognition helps myxobacteria transition from a single cell lifestyle to a coherent multicellular organism as found in fruiting bodies.

This work led to seminar invitations in China, Mexico, and the United States. Again, Wall serves as senior author while his doctoral students **Darshankumar T. Pathak** and postdoctoral fellow **Xueming Wei** are lead authors.

Faculty members in the department have received multiple grants to support research and teaching activities and published widely in these areas, notes Stayton.

Plant Sciences

The Department of Plant Sciences is excited to welcome office associate **Kassandra Thomas**, who joined us in November. Kassandra comes to the university from positions at the Albany County Circuit Court and WyoTech, where she served as the assistant to the registrar. She has a bachelor's degree in biological sciences from UW and a Master's of Business Administration from Everest University Online. She is in room 50.

Associate Professor **Andrew Kniss** received a National Institute of Food and Agriculture grant to analyze methods of weed control other than herbicides, and will use kochia in a five-year study to help find a solution to weed-resistance to herbicides. Experimental kochia populations will be seeded in fields without major infestations, and all sites will be sprinkler irrigated. The populations will have herbicide-resistant and susceptible strains at a known ratio. The fields will be exposed to various treatments including crop rotation and tillage. Soil samples collected each fall will be used to record management practice data relative to kochia. The sites are at research stations near Powell, Scottsbluff, Nebraska, and Huntley, Montana. The sites represent three



Associate Professor Andrew Kniss

different regions significantly affected by the study's weed-of-choice.

UW Extension

This is a truly historic time for UW Extension, notes **Glen Whipple**, associate dean and director. Two thousand thirteen and 2014 each mark a centennial for UW Extension. The first Wyoming county agent was appointed in May 1913 with duties covering Fremont County; the second was appointed in July 1913 for Sheridan County. The funding for salary and operating support for these agents came from a mix of county government, railroad, farmer associations, and USDA funds. Even in its earliest beginnings, UW Extension was a federal, state, and local partnership. In 1914, the funding partnership for the national Cooperative Extension system was created by the passage of the Smith-Lever Act. The Smith-Lever Act provides that "Extension work shall consist of the giving of instructions and practical demonstrations in



Extension director Glen Whipple

Agriculture and Home Economics...in such a manner mutually agreed upon by the Secretary of Agriculture and the State Agricultural College ..." The act established the funding partnership by providing USDA funds if matched by appropriations from state and local government, cementing the relationship that has funded the work of UW Extension for the past century.

Adding to this centennial year is the 100-year anniversary of University of Wyoming 4-H, notes Whipple. The first 4-H club was organized in 1913 under the sponsorship of the UW College of Agriculture. By 1915, 625 4-H'ers participated in the program statewide. As a kick off to UW Extension's centennial year recognition, a 100-years-of-4-H was celebrated with a birthday party at the 2013 Wyoming State Fair and Rodeo. Governor Mead, Representative Cynthia Lummis, Senator Enzi, and recent 4-H alum Kate Barlow, each spoke to the group reflecting on their experiences and impressions of the impact of the 4-H program on the lives of Wyoming youths and

their families. Their comments are posted on the UW Extension website <http://www.uwyo.edu/4-h/>. "I encourage anyone interested in 4-H to give a listen to their comments," says Whipple.

"UW Extension's centennial celebration will end with the 2014 Wyoming state fair, during which we will celebrate the county/UW/USDA partnership that has provided a foundation for UW Extension's strength, staying power, and success," he says.

If you have suggestions or thoughts regarding UW Extension's centennial celebration, extension programs, or UW 4-H, call or email Whipple at (307) 766-5124 or glen@uwyo.edu.

Academic and Student Programs

Academic and student programs welcomes the college's new recruiting coordinator, **Kerry Casper**, who started September 16. Kerry comes to UW and the college from her previous position as an enrollment advisor in the admissions office at Ottawa University in Ottawa Kansas, says **Donna Brown**, associate dean and director of the office. Kerry is originally from East Grand Forks, Minnesota. Kerry has a bachelor's degree in sport and recreation management from the University of Minnesota-Crookston and a master's degree in sports studies from Bemidji State University in Minnesota. Kerry was involved in fast-pitch softball as a college athlete and spent seven years coaching the sport; however, during her time



Kerry Casper

as a coach, she discovered a passion for advising and working with students and redirected her career toward student recruiting. Kerry says she is excited to work in a college whose tagline is "Students: The reason we're here."

Three faculty members were recently honored as Mortar Board Top Profs for 2013 at an event hosted by Interim Vice-President Dick McGinity. Mortar Board is the senior class honorary – students are selected for membership into this prestigious group based on demonstrated excellence in scholarship, leadership, and service. Each fall, these students get to recognize as their Top Profs faculty members who have made a difference for them during their time at UW. This year, **Rachel Watson** was selected by Ashley Creager and Joshua Messer; **Shane Broughton** by Cassandra Hoang; and **Paul Ludden** by Jennifer Parker. Each Top Prof received a certificate and an engraved glass paperweight in recognition of their contributions to UW students.



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College Relations

The University of Wyoming, UW Extension, and the Agricultural Experiment Station will celebrate February 4 the new home for UW programs in Sheridan County – the Joe and Arlene Watt Agriculture Center on the Sheridan College campus, notes **Anne Leonard**, College Relations director. The building was remodeled this past year to accommodate various University of Wyoming offices spread across the county: the UW Extension program, 4-H Youth program, the Sheridan Research and Extension Center (a division of the Agricultural Experiment Station), the UW Outreach School, and the Educational Opportunity

Center funded through two grants from the U.S. Department of Education.

UW's expanded partnership with Sheridan College will give UW researchers and students access to the Adams Ranch just south of Sheridan College in addition to the existing 250 acres of dry-land property, notes Leonard. The Adams Ranch is owned by Whitney Benefits and will jointly support the research and teaching missions of Sheridan College, extension programming in Sheridan County, and applied research projects by Sheridan Research and Extension Center researchers. "I would like to extend an invitation to our alumni and friends in the area to attend the

rededication ceremony," says Leonard.

This year the college relations office also expanded the number of internship opportunities for students interested in public relations. This fall, Carolyn Hageman, a senior from Lingle majoring in agricultural communications, completed an internship with *Ag News* editor Steve Miller and will work with Ann Tanaka, our webmaster, during the spring semester.

"Since starting a summer internship program in our office a few years ago, I have come to appreciate how much I learn from our students," says Leonard. "It is always helpful to see a project through a fresh pair of eyes and to share ideas



Anne Leonard

with someone with a different generational perspective. I hope to continue and expand our office's internship opportunities."