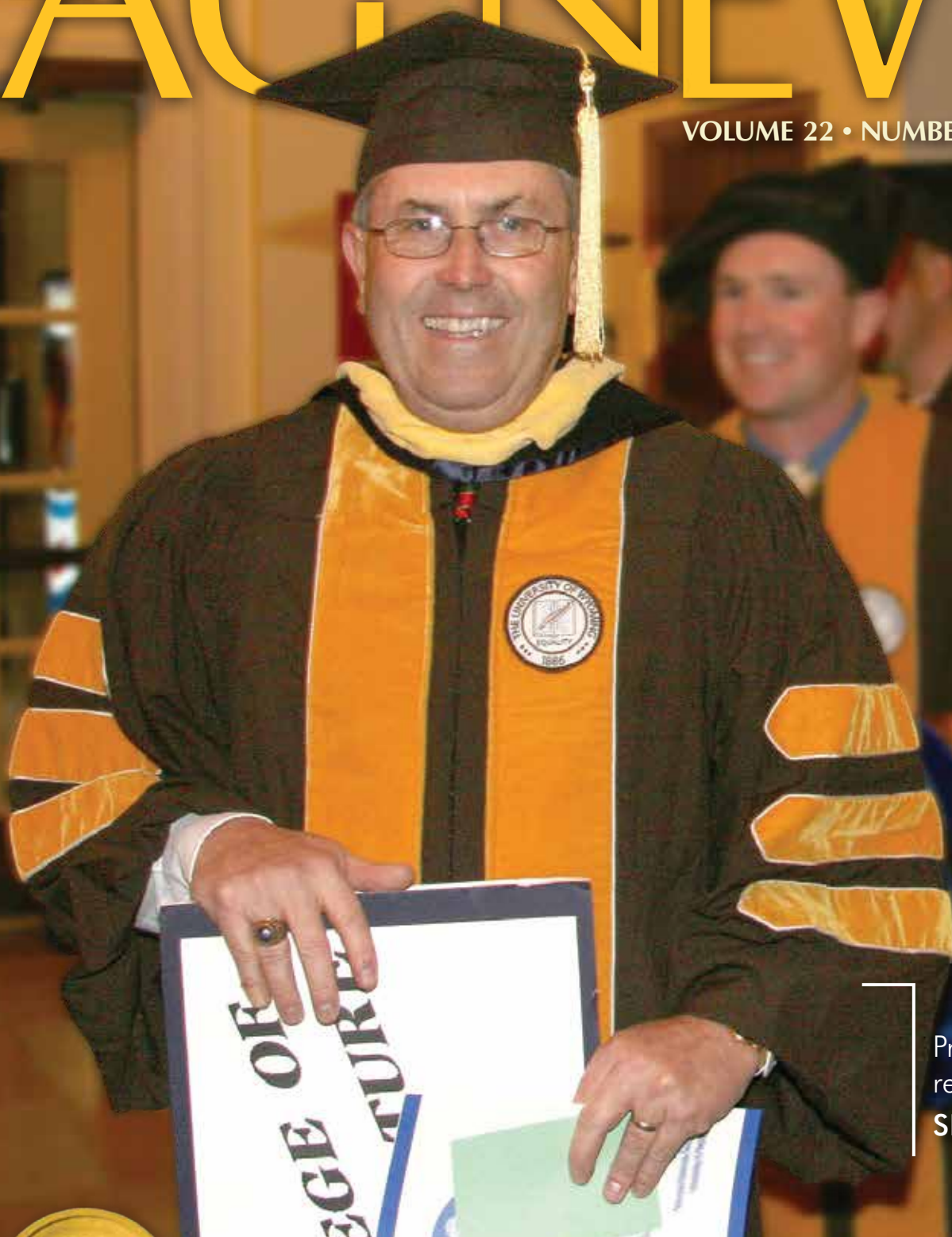


# AG<sup>uw</sup> NEWS

VOLUME 22 • NUMBER 2 • SUMMER 2013



Professor Doug Hixon  
retires.

SEE STORY PAGE 11



UNIVERSITY OF WYOMING

COLLEGE OF AGRICULTURE  
AND NATURAL RESOURCES





Dean Frank Galey

“Sound farming is of direct interest not only to farmers, but to consumers. To the extent that the new plan succeeds in its aim of preserving and improving farm lands, consumers will share substantially in the benefits. In years of surplus, consumers may lightly take for granted the continuance of adequate supplies of food and fibre; but the recurring dust storms and rivers yellow with silt are a warning that Nature’s resources will not indefinitely withstand exploitation or negligence. The only permanent protection which can be given consumers must come from conservation practiced by farmers.”

—Franklin D. Roosevelt: “Statement on Signing the Soil Conservation and Domestic Allotment Act,” March 1, 1936.



## Dear friends and colleagues,

Last fall, 6.6 million Americans viewed Ken Burns’ documentary *The Dust Bowl*. In addition to highlighting the critical role of soil conservation, the program also focused attention on the importance of sound agricultural production practices founded on sound science.

Henry Howard Finnell, highlighted in the program as the person responsible for introducing terraces and contour planting methods that eventually helped reverse the soil erosion of the Dust Bowl, was the first director of the then-Panhandle A&M Experiment Station at Amarillo, Texas. There he conducted a series of studies on better farming methods for the semi-arid southern plains.

Soil, water, and production research into ranching, farming, and natural resource conservation methods is as important today as in 1936. Researchers like Henry Finnell continue to improve America’s agricultural enterprise by developing better production techniques and improving water, soil, and natural resource conservation methods. Today, the national network of agricultural experiment stations and extension offices are still actively engaged in this important work.

In America, dollars from a group of four national land-grant programs, working in tandem with land-grant universities, help ensure a vibrant agricultural economy. A recent agro-economic study demonstrated that each public dollar invested in agricultural research or extension generates \$20 or more in public benefits. In this issue of *Ag News*, Professor Bret Hess, director of Wyoming’s Agricultural Experiment Station, cites examples of how federal dollars for agricultural research have benefited Wyoming’s citizens and the region (see page 25).

In the past few years, drought, disease, and wildfires have decimated thousands of acres of forests. Throughout the Rocky Mountain West, faculty members and graduate students, supported in part by America’s national network of state and federally supported agricultural research laboratories, are working on stabilizing forest soils at risk after wildfires and addressing pine beetle infestations.

College of Agriculture and Natural Resources scientists are working on vaccines for livestock diseases, integrated pest management strategies for range and croplands, developing better economic decision making tools for ranchers and farmers, and formulating effective methods to reclaim land disturbed by energy development, wildfires, or other natural or manmade events.

Eleven percent of the College of Agriculture and Natural Resources budget, including salaries for faculty members, extension educators, and research laboratories, comes from federal funds.

The argument supporting public investment in agricultural research is simple: Food is a necessity of life. Sustainable agriculture demands a balance between production, natural resource management, food safety, and health. All of society benefits and properly shares in the cost of this investment in national food security and health. Current estimates are that global food production will have to increase 70 to 100 percent by 2050 to feed the world’s predicted nine billion people. Continued investment in America’s land-grant universities and agricultural experiment stations is crucial to meeting this need.

University-based research programs are powerful tools. The tools developed help blunt the impact of disease, pioneer technologies that benefit society, and help drive the American economy. I urge each of you to support the research, outreach, and educational mission of our land-grant universities. During the Great Depression, America spent money on research to combat soil erosion. Eighty years later, Americans still reap the benefits. Research dollars are a solid investment in the future.

Dean Frank Galey  
College of Agriculture and Natural Resources

# FIRST CUTTING



*Agricultural Experiment Station director Bret Hess, left, presented Professor Bill Murdoch of the Department of Animal Science the Outstanding Research Award, with department head Professor Doug Hixon and Dean Frank Galey.*



*Assistant Professor Kristi Cammack received the Early Career Research Achievement Award.*

## CELLULAR RESEARCH, FEED EFFICIENCY STUDIES EARN UW AWARDS

Studying methods that regulate cell growth and research looking at feed efficiency in ruminant livestock netted scientists outstanding research awards from the Wyoming Agricultural Experiment Station (AES).

Department of Animal Science Professor Bill Murdoch received the Outstanding Research Award, and Assistant Professor Kristi Cammack was presented the Early Career Research Achievement Award during the February awards banquet in Laramie.

"The Wyoming Agricultural Experiment Station is proud to honor both professors Cammack and Murdoch for their tremendous efforts," says Bret Hess, AES director and associate dean of research in the college. "It is a pleasure to recognize these two very productive researchers for their accomplishments."

### Outstanding Research

The Outstanding Research Award recognizes accomplishments of established scientists in the college.

Murdoch's program has focused on mechanisms that regulate ovarian function and has evolved into the investigation and discovery of methods to regulate cell growth, says Doug Hixon, professor and head of the animal science department.

"The merit of his innovative hypotheses and approaches in cancer research are widely recognized – as evidenced by his numerous invited presentations and successful grantsmanship," Hixon notes.

Murdoch has attracted \$4.9 million in funding during his 30 years at UW and wrote or co-wrote 152 journal manuscripts, review articles, and book chapters.

His teaching has been recognized by numerous awards, says Hixon, and he has directed 18 theses and dissertations and trained three post-doctoral fellows.

### Early Career Research Achievement

The Early Career Achievement Award recognizes achievements by junior scientists in the college.

Cammack quickly established her lab upon arrival in the Department of Animal Science in 2006 and continues to develop independent and collaborative research based on her expertise in quantitative and molecular genetics, says Hixon.

Cammack's research focused on changes in gene expression induced by toxins in the diet and is now looking at feed efficiency in ruminant livestock.

She is collaborating with scientists in the United States and in New Zealand, Brazil, and South Africa. She has received \$4.1 million in funding and has 23 journal articles either as primary or collaborating author.

She is advising three master's students and has finished four master's students and one Ph.D. student.

"Kristi has proven to be an excellent graduate student mentor and teacher and was selected Top Prof by her students in two separate years," says Hixon.



## HORTICULTURE ASSISTANT PROFESSOR RECEIVES AWARD

Research and commitment to teaching has earned assistant professor of horticulture Sadanand Dhekney the 2013 Young Scientist Award from the Society for In Vitro Biology.

The current research of Dhekney focuses on expanding grape production in Wyoming. He was to receive the award during the 2013 In Vitro Biology meeting in Providence, Rhode Island, in June.

"I'm honored by the recognition and feel very proud to represent UW at the SIVB awards presentation," says Dhekney, who is stationed at the UW Sheridan Research and Extension Center. He also holds the E.A. Whitney Professorship in Agriculture position. The position, which implements the enhanced degree program with UW's agroecology curriculum, is endowed by Whitney Benefits in Sheridan.

"I am very happy for Sadanand," notes Bret Hess, associate dean of research in the College of Agriculture and Natural Resources and director of the Wyoming Agricultural Experiment Station, which oversees four research and extension centers in Wyoming. "He is a very kind and genuine person whose



*Assistant Professor Sadanand Dhekney*

research has potential to revolutionize plant breeding. It is a true honor to have such an award bestowed for his contributions to an emerging field of science. It is exciting to have a scientist of Sadanand's caliber on our college's research team."

The Young Scientist Award is given to scientists who are SIVB members and conduct research in the disciplines of in vitro plant and animal biology. Nominations for the Young Scientist Award come from academia worldwide.

Dhekney, who is also a faculty member in the plant sciences department, says the SIVB awards committee strongly considers nominees' research but also their commitment to teaching.

"I've been involved with teaching and mentoring a number of graduate, undergraduate, and high school students," he says. "I owe this award to the mentors and students I've worked with."

In addition to expanding grape production in Wyoming, Dhekney's research also focuses on determining varieties and rootstocks that will grow well in Wyoming's challenging climate and improving existing elite varieties for drought and salinity tolerance using genetic engineering technology. He studies mostly wine-grape varieties and some table-grape varieties. He also teaches classes.

Dhekney credited AES and the plant sciences department for their roles in providing facilities for his research.

"They deserve credit for any honors or awards that I receive," he notes. "I'm also fortunate to collaborate with faculty members and students from Sheridan College."



From left, Bret Hess, associate dean of research and director of the Agricultural Experiment Station, Dean Frank Galey, Senator John Barrasso, Bob Kidd, and Shane Schultz met with Senator Barrasso to thank him for supporting federal agricultural research funding. Kidd and Schultz are Wyoming's representatives for the Council for Agricultural Research Extension and Teaching.



*From left, coach Zeb Gray, Emilee Brinton, Austin Buzanoswki, Katie Ferree, McKensie Harris, Chris Block, Lara Allnutt, Jaris Baker, Frankie Domenico.*

## UW MEAT JUDGING TEAM HAS RECORD-BREAKING SPRING

The University of Wyoming Meat Judging Team broke its placings record and a member topped a reasons record she had set only one week earlier during spring competition.

Team members consistently hovered near record scores.

"The individuals who comprise the team were great representatives of the University of Wyoming," says coach Zeb Gray. "They sacrificed, worked hard, competed with success, and exhibited the character of champions."

Team members were Lara Allnutt, Walden, Colorado, Austin Buzanowski, Pompey's Pillar, Montana, Chris Block, Gothenburg, Nebraska, Emilee Brinton, Newnan, Georgia, Jaris Baker, Minnies Gap, Frankie Domenico, Denver, Katie Ferree, Thermopolis, and McKensie Harris, Laramie.

Competitions and placings were:

- January: National Western Stock Show – Team fifth. The team won placings and lamb judging, which had not been done by a UW team in almost 15 years, notes Gray. Brinton was high individual in both divisions with teammate Block earning second in lamb judging and fourth in placings. Harris finished second in pork judging, fourth in beef judging, and fifth in reasons.
- January: Fort Worth Stock Show and Rodeo. Team sixth. The team broke the UW team placings record with Allnutt posting the second-highest individual placing score in team history. The team posted the second-highest pork judging score in its history, and Harris earned the third-highest individual score in team history. Domenico posted the sixth-highest individual total score by a UW judge, says Gray.
- February: Iowa State Invitational Contest. Team fourth. Buzanowski led the team winning high individual honors in beef judging and overall beef. The team finished second in reasons with the third-highest score in UW history. Harris led the team in this category posting the second-highest reasons score in team history.
- March: Houston Livestock Show and Rodeo contest. Team 10th. The team was recognized for its second-place finish in lamb judging with Allnutt, Domenico, and Harris tied for eighth out of more than 100 contestants. Harris again finished second in reasons while breaking her week-old UW record.

For more information, contact Gray at [zgray2@uwyo.edu](mailto:zgray2@uwyo.edu).



# FIRST CUTTING

## GAMMA SIGMA DELTA HONORS TOP STUDENTS



*Professor Ed Bradley, left, and Associate Professor Dannele Peck presented the Outstanding Agricultural Business Senior award to Troy Randall, second from left, and the Western Agricultural Economics Association Outstanding Senior award to Mark Flegel.*



*Professor Doug Hixon presents animal science Honor Books to Kelsey Tramp, left, and Christina Appel.*



*Jamie Marchetti, left, and Lisa Baldock received family and consumer sciences Honor Book awards from Associate Professor Bruce Cameron.*



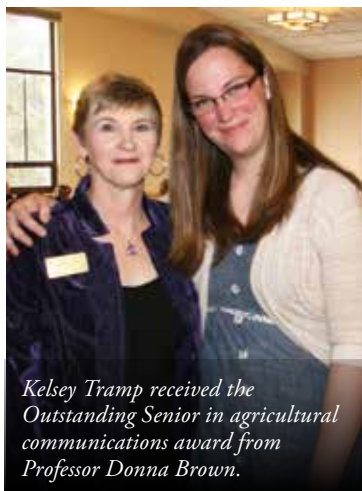
*Professor Steve Williams presented the ecosystem science and management Outstanding Junior Award to Catherine-Jane Angwin.*



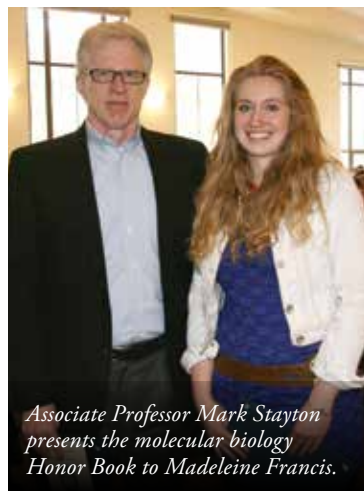
*Amarina Wuenschel receives the ecosystem science and management Outstanding Graduate Student of Merit Award from Professor Steve Williams.*



*Gamma Sigma Delta historian and Professor Emeritus Connie Kercher visits with Bill Stump.*



*Kelsey Tramp received the Outstanding Senior in agricultural communications award from Professor Donna Brown.*



*Associate Professor Mark Stayton presents the molecular biology Honor Book to Madeleine Francis.*



*Emily Schroeder received the Outstanding Junior Award from Associate Professor Bruce Cameron.*



*Outstanding Junior Perry Baptista received the award from Kristi Cammack.*





*Plant sciences Honor Book recipients Sarah Legg, left, and Blaise Allen receive the award from Assistant Professor Urszula Norton.*



*Kelsey Welter receives the Outstanding Freshman Award from Professors Steve Williams, left, and John Tanaka.*



*More than 110 attend the brunch ceremony in the Wyoming Union.*



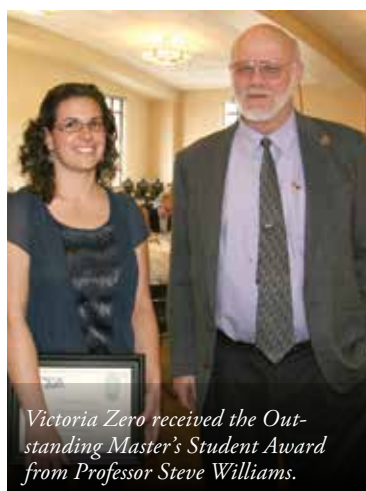
*Mariel Pfeifer receives the Microbiology Honor Book Award from Associate Professor Gerry Andrews.*



*Emilee Brinton receives the Outstanding Sophomore Award from Professor Doug Hixon.*



*Hannah Shoults was presented the Outstanding Freshman Award by Assistant Professor Kristi Cammack.*



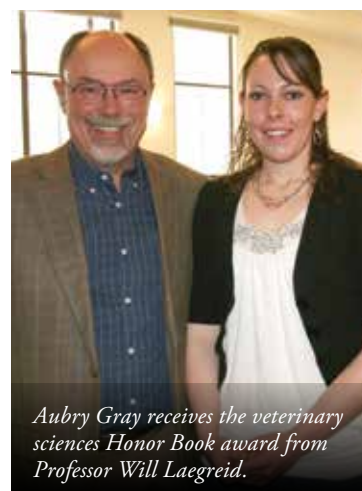
*Victoria Zero received the Outstanding Master's Student Award from Professor Steve Williams.*



*Assistant Professor Urszula Norton presents the Outstanding Senior Award to Erin Anders.*



*Mariel Pfeifer was presented the Outstanding Senior Award by senior lecturer Rachel Watson.*



*Aubry Gray receives the veterinary sciences Honor Book award from Professor Will Laegreid.*



# FIRST CUTTING

## FACULTY, STAFF MEMBERS RECEIVE HONORS AT RECOG

Professor Dan Rule in the Department of Animal Science and UW Extension educator Bill Taylor, based in Weston County, received Outstanding Educator Awards during the college's annual Faculty and Staff Recognition Program in December.

Each received \$2,500. An anonymous donor established the award to recognize classroom and extension educators in the college. Nominations are peer-reviewed by a committee comprised of a dean's office representative, an academic department head, and a previous award recipient.

Students present two awards through the Office of Academic and Student Programs. Professor Larry Munn in the Department of Ecosystem Science and Management received the Lawrence Meeboer Agricultural Classroom Teaching Award. Students also presented Assistant Professor Brian Mealor in the Department of Plant Sciences the Outstanding Adviser Award. Each received \$500.

In other awards, Kelcey Christensen, Steve Miller, and David Moore received Dean's Outstanding Staff awards. Christensen is manager of the meat laboratory in the animal science department; Miller is an editor in the Office of Communications and Technology; and Moore is farm manager in the Laramie Research and Extension Center. Each received \$500.

Nominations are solicited from faculty and staff members and a committee makes the final selections.



*Brian Mealor receives the Outstanding Adviser Award from Dean Frank Galey. The award is from students through the Office of Academic and Student Programs.*



*Dean Frank Galey, left, and Professor Doug Hixon congratulate Dan Rule for his selection for an Outstanding Educator Award. Nominations are peer-reviewed by a committee with final recommendations to the dean.*



*Kelcey Christensen receives a Dean's Outstanding Staff Award from Dean Frank Galey.*



*Dean Frank Galey congratulates Larry Munn, right, during the Faculty and Staff Recognition Program for being chosen for the Lawrence Meeboer Agricultural Classroom Teaching Award. The award is given by the students through the Office of Academic and Student Programs.*



## NITION PROGRAM



*Dean Frank Galey presents a Dean's Outstanding Staff Award to Dave Moore.*



*Steve Miller receives a Dean's Outstanding Staff Award from Dean Frank Galey.*



*Milt Geiger*



*Stan Skrabut*

## UW EXTENSION ENGAGES ASK AN EXPERT TOOL



There is a way for Wyoming residents – anyone – to get answers quickly and easily from University of Wyoming Extension experts and be linked to a national database of expertise and information.

Extension's Ask an Expert tool is integrated into its own webpage, and the number of available experts to address the questions in Wyoming continues to expand.

"We're trying to streamline our approach to get answers back sooner," says Stan Skrabut, an instructional technology educational specialist.

Ask an Expert is available at <http://bit.ly/UWaskanexpert>.

A form on the webpage allows people to title and type their questions, enter their locations, upload images, and enter their email addresses. They can also click a box to make their questions public or their questions will remain private if they do not click the box. Then, users simply click the "Ask" button.

UW Extension has experts in areas including energy, family and health, community development, food and agriculture, programs for young people, and gardening.

"The tool is an easy way to start engaging the expertise of extension," says Milt Geiger, extension energy coordinator based in Laramie. "Perhaps your local extension office is closed when you are seeking information or you don't know who to ask; you can simply enter your questions and generally get answers within 24 hours. With so much information available on the Web, it is valuable to be able to access research-based information backed by a real person."

For more information, contact Skrabut at (307) 766-3722 or email him at [Skrabut@uwyo.edu](mailto:Skrabut@uwyo.edu).



## UW COUPLE LANDS OUTSTANDING YOUNG RANGE PROFESSIONAL AWARD

Brian and Rachel Mealor were Outstanding Young Range Professional Award recipients at the 2013 Society for Range Management Honor and Student Awards Ceremony in February in Oklahoma City.

Brian Mealor, from Gainesville, Georgia, is an assistant professor in the Department of Plant Science and extension weed specialist.

“It was an honor to be recognized by SRM and to be included with all the other award winners, past and present,” says Mealor.

Mealor focuses on understanding the long-term impacts of invasive plants on natural systems, developing cost-effective strategies and tactics for managing invasive weeds and restoring degraded rangelands, and investigating how native plant populations respond to weed invasion.

“It was an honor to be recognized by SRM and to be included with all the other award winners, past and present”

— Brian Mealor



*Assistant Professor Brian Mealor and range management specialist Rachel Mealor*

He received a bachelor's of science in biology from North Georgia College and State University, a master's of science in rangeland ecology and watershed management from UW, and a Ph.D. in rangeland ecology and watershed management at UW.

Rachel Mealor, from Rock Springs, is a rangeland extension specialist in the Department of Ecosystem Science and Management.

“It was such an honor to be given this award and recognized at the SRM meeting,” says Mealor. “When looking at other individuals who have been given the award, it is humbling to be a part of that group.”

Mealor works closely with numerous land managers and various natural resource professionals throughout Wyoming on issues related to management of public and private rangelands.

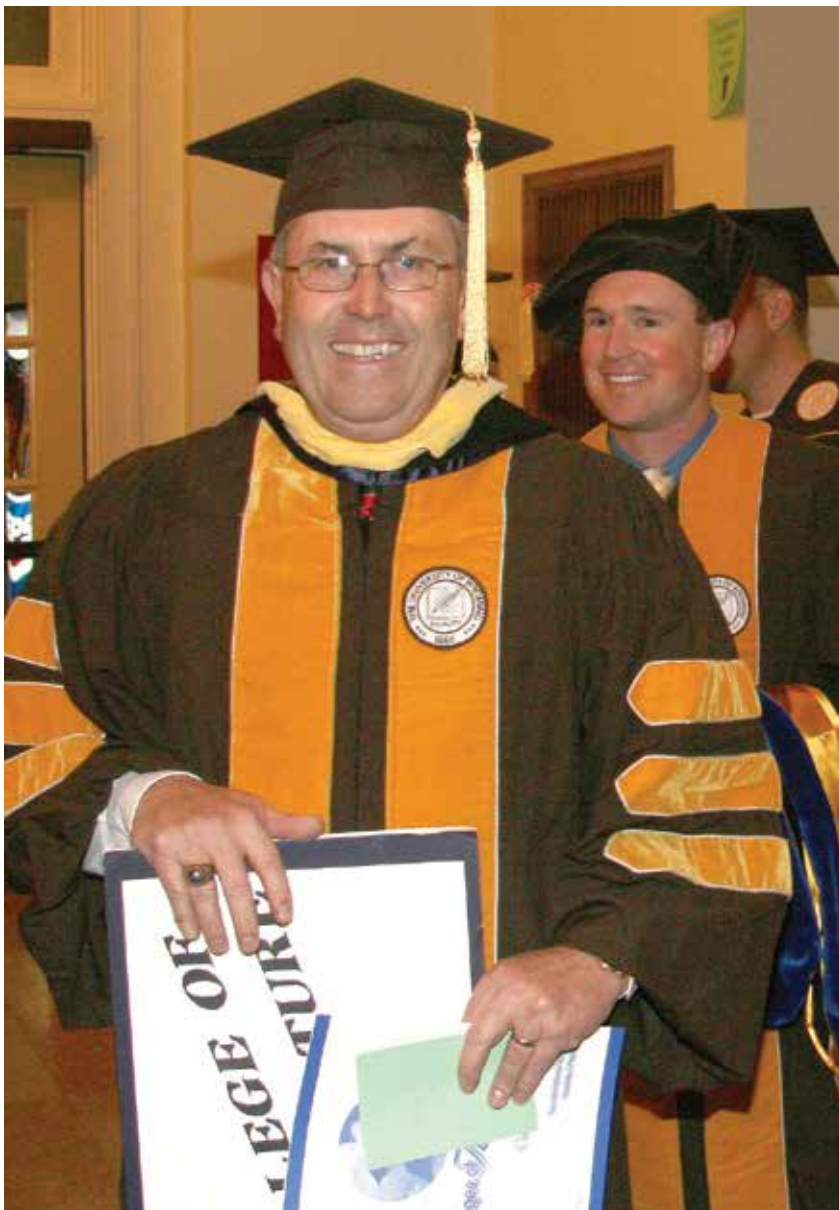
“I focus my extension and research efforts on grazing management planning, rangeland assessment and monitoring, rangeland reclamation, and small-acreage land management,” she notes.

Mealor received a bachelor's and master's degree in rangeland ecology and watershed management at UW.

“Attending the University of Wyoming and being a Wyoming native, the university has always been an institution that I hold dear to my heart,” says Mealor. “The position that I currently have was actually held by my graduate adviser, so I was fortunate enough to see what the job entailed, at least from his perspective. Needless to say, I was very excited when offered the position.”

The Mealors organize and run the SRM Rangeland Cup competition, which is a team problem-solving competition for undergraduate and graduate students at the SRM international meeting. They proposed the competition to SRM in 2006 while still graduate students.





Professor Doug Hixon, head of the Department of Animal Science, is retiring this year. He joined the University of Wyoming as an assistant professor and beef cattle extension specialist in 1982 and was named head of the department in 2001. Hixon discusses his career, the Department of Animal Science, and agriculture's relevance to the University of Wyoming.

## Animal science department head retiring

### ON HOW TIME HAS FLOWN

I think I've been really blessed. My position has always been extremely enjoyable to me. I think if a person wasn't enjoying their job, maybe the time wouldn't go as fast. I guess about the only thing I would say to a young person maybe in their mid- or late 20s

getting a Ph.D. is just to make sure they really enjoy what they want to do and if that happens then it will go awfully fast. I tell people, it's not at this stage what I've done but the people and relationships you build over the years that make a career what it is.

"It's not what you've done, but the people and relationships you build over the years that make a career what it is."

### FIRST STEPS ACROSS WYOMING

When I first came to Wyoming, I was traveling the state and working with producers and helping identify problems and then trying to develop some sort of research project or have someone else look at addressing it with a research project or finding data that could be used to help answer their questions. I got to see the entire state, and I got to meet producers all over the state, and that was an extremely rewarding experience.



## ABOUT HIS DEPARTMENT MEETING THE NEEDS OF THE STUDENTS

I feel we are doing a pretty good job of preparing students to address societal issues once they get out of our program, whether in ag or some other career path. We've worked real hard at identifying student learning outcomes. What is it besides the degree they get from our program? As a department, we felt there were three things critically important to student success.

1. Students have to be able to communicate. Written communication is part of USP but is also embedded into our curriculum. Writing skills, oral communication, and listening skills are part of communications.

2. It's important for students to have a depth of knowledge within our discipline. Within our discipline are core courses in which they are required to get at least a C to graduate from our program, and that is not difficult for most students. But that's where we feel they get the depth of knowledge within the discipline.

3. No matter what the profession, people who are really good at what they do are people who can critically evaluate information and solve problems. Communication skills, a depth of knowledge in the discipline, and critical evaluation of information and problem solving are what we've embedded into our curriculum, and I believe if we impart those qualities in students they can go out and contribute to society no matter what career paths they follow.



## AGRICULTURE'S RELEVANCE TO THE UNIVERSITY OF WYOMING

Food production is so critical to our existence, and there are multiple projects that would suggest between now and 2050 we have to essentially double food production. To me, agriculture is going to be carrying much of the load of that and so I think agriculture should be one of the areas of distinction that we talk about in the academic plan. Food production in general should be an area of distinction. With a large portion of Wyoming being range forage, a natural resource that is a renewable natural resource, I guess I

believe it ought to have more relevance in our academic plan than what the original position paper had given it. People usually talk about tourism and agriculture following energy. I see agriculture, based on what I know about Wyoming, as being the fabric that holds these small communities together. Energy industry can blow in and blow out pretty fast, but agriculture is I think the fabric that holds these rural communities together. I think it plays a role there as well as food production.

## JIM MAGAGNA, EXECUTIVE VICE PRESIDENT OF THE WYOMING STOCK GROWERS ASSOCIATION, ON HIXON'S RETIREMENT

Doug has been particularly successful in bridging the gap, often perceived but at times real, that exists between the academic community and production agriculture in Wyoming. Doug's passion for the cattle business and his ability to connect with students have undoubtedly inspired numerous students to embrace a future in cattle ranching in spite of its many challenges. Doug's leadership and advocacy for the Department of Animal Science has been critical at a time when other departments have been seen by some to be more "glamorous" or "relevant to modern agriculture" and therefore more deserving of emphasis and resources.

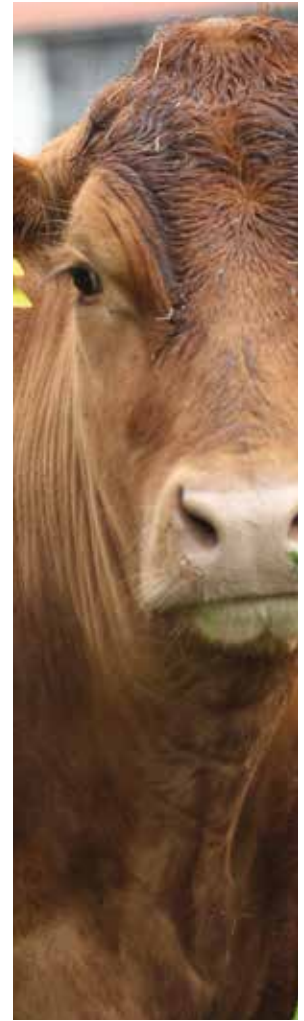


## MOST-VALUED DURING HIS CAREER

A real blessing in my mind from a career standpoint is the great people I've gotten to know and become friends with and the work with the excellent students we've had largely due to, I think, a connection to agriculture. Agricultural people are hard working and genuine and you know their kids are much the same way. And so, we've had lots of good students. There is just no substitute for good people at any level you want to talk about.



Bang's disease,  
Crimean fever,  
Gibraltar fever,  
Malta fever,  
Maltese fever,  
Mediterranean  
fever, rock fever,  
undulant fever



Neither name nor locale matter. Brucellosis poses misery worldwide. Veterinary sciences researchers showed six scientists from Africa how the disease is diagnosed and managed in Wyoming, Idaho, and Montana.

Nothing like communication and collaboration to pass along tools created in Wyoming to help combat a disease and improve human condition in faraway lands.

Six visiting scientists from Tanzania, Uganda, and Kenya spent more than a month with Wyoming counterparts at the Wyoming State Veterinary Laboratory and the BSL-3 lab. They also spent time in the Greater Yellowstone Area rubbing shoulders with Idaho and Montana personnel observing how brucellosis is being detected, surveyed, and managed.

They hope to apply applicable tech-

niques in their home countries. The visit accomplished what Walt Cook, brucellosis coordinator in the college, had hoped.

"It has and more," he says.

### SCIENTISTS UP TO SPEED

The visit was intended as a training program to teach the African scientists about brucellosis epidemiology, diagnostics, and control, he says.

"What we've found is that the Africans are up to speed scientifically," he observed. "What they lack is the infrastructure: tools and equipment to properly implement a

brucellosis program. As a result, they also lack basic data on brucellosis prevalence in humans, livestock, and wildlife. We recognize the potential for us to assist them in this regard. Perhaps even more importantly, they want answers to many of the same basic research questions we do: can we create a better vaccine or diagnostic test?"

### STRAIN 19, RB 51

That's something for which veterinarian Gabriel Shirima of Tanzania is searching. He's been reading information relevant to the GYA for several years and is seeking





*Visiting scientists conducted diagnostics they are unable to do in their home countries. Evalyn Mwihi is a veterinarian surgeon in Kenya.*

how to detect, diagnose, and respond to the disease and its effects. His budget was \$1,000 to develop a strain 19 (the old vaccine formerly used in the U.S. but still being used in Africa) vaccination program.

He's learned how to develop a testing scheme.

"It will not be the same as the USA's, but we have to look at our conditions and which test is suitable for our environment," notes Shirima.

His hopes were high for strain 19, but that optimism waned. "I thought strain 19 was perfect. From this training, I see strain 19 has shortcomings. One of the most is

serological tests. If you use serological tests on any animal, you may think the animal has brucellosis when it may not. Strain 19 is difficult to make, and you risk the infection of people working with the vaccine. We realize RB 51 (used in the U.S.) has been used for quite some time and has some advantages or is more robust than S 19, but it also has shortcomings."

Cook says the Africans have been able to see the issue of using strain 19 and the resulting confusing serologic diagnostics.

"They have also told me that they really valued being able to actually conduct diagnostic necropsies, bacterial culture and

"They want answers to many of the same basic research questions we do: can we create a better vaccine or diagnostic test?"

*Walt Cook*

serologic tests, which they have heard about but never been able to see, not to mention do, themselves," he says.

Two cows were vaccinated with B. abortus S19 vaccine then serological testing conducted.

"We also tested two other brucella reactor cattle in our research herd," says Assistant Professor Jeff Adamovicz, science director at the BSL-3 Laboratory and director of regulatory and diagnostic serology. "The training in brucellosis serology was well received, and our African colleagues were able to successfully run our assays and detect the exposure in the tested cattle."

## NOT ONLY LIVESTOCK BUT HUMANS

The human factor also needs to be addressed in Evalyn Mwihi's home country of Kenya. Mwihi, a veterinarian surgeon, participated in the visit to see if she and her colleagues were on the right track in studying the disease.

"I've learned new techniques that we do not carry out at home," she says. "I've also learned that brucellosis is not a very easy disease to diagnose, control, and prevent. We have not done much research on brucellosis in my home country. There are a lot of grey areas we have not tackled, and we have to learn quality management in the laboratory."

Quality management is also a concern of Shirima.

"We don't have a good system in the diagnostics lab yet," he says.

# Wyoming, Idaho, Montana cooperation impresses scientists

Brucellosis is a moving target in Uganda – home country of Paul Boma.

“The region I work in is inhabited by pastoralists – these folks move from place to place depending upon the season looking for pastures and water for their animals,” says Boma, a veterinarian. “It’s a relatively dry place having rain for four months and a dry season of eight months. Their habits expose them to many zoonotic diseases – brucellosis being one of them.”

The area is a hotbed of the disease, as is another in which a tribe keeps large numbers of livestock together.

“We are having problems with so many human cases of brucellosis,” he says.

## DISEASE MANAGEMENT STRATEGIES

How Wyoming, Montana, and Idaho are trying to manage the disease impressed the visiting scientists, whose countries are divided into counties resembling states, and who also work with colleagues across national borders.

“Idaho gave us very interesting scenarios to control the problem,” Boma says.

By testing and culling some elk and the elimination of feed grounds, Idaho has managed to control the prevalence of the disease in elk to 3 percent.

Idaho’s solution concentrating on the major carrier would be difficult and expensive for Uganda, he says. Test and slaughter of the positive cattle would be a good strategy, he notes.

“The biggest problem is how are we going to convince a farmer we are taking away his animal to slaughter because it tested positive without any compensation? There is no law that requires compensation.”

Evalyn Mwihi of Kenya says the three states conduct activities differently but work together.

“I like the way the three states are trying to control the disease in their own ways yet they still communicate,” she says. “There is still a lot of interaction. Some activities are done in different ways but not too different as to nullify one state’s activities. That is very commendable and something I can also borrow from the U.S.”

Her country has been reorganized into 47 counties, similar to states in the U.S., the result of a recent national election.

## SEE POSSIBILITY OF COOPERATION

The disease and herds traverse county borders. “We need to be as counties very interactive in communicating the activities taking place in each of the counties,” she notes. “It actually is possible to work as different groups of counties or states but still achieve one common goal.”



Boma, after observing how elk, and bison to a lesser extent, were identified as the carriers, says Wyoming, Idaho, and Montana try to separate elk from livestock then lessen the time elk are in contact with cattle.

The other strategy, vaccinating elk, probably would not be successful in Uganda. “For us, what we can do, borrowing from Wyoming, is getting the cattle and other livestock vaccinated against brucellosis and limit the contact between cattle and wildlife.”

Another strategy, borrowed from Montana, is reducing herd size and thus limiting the number of animals that could be infected.

“If we encourage farmers to keep their cattle (broken) into smaller management herds, that could cause a large impact in reducing the prevalence and spread of brucellosis,” he says.



*The visiting scientists on the elk feeding grounds near Jackson.*





*Portas Olwande from Kenya and Assistant Professor Brant Schumaker.*

## Cooperation, collaboration, connection

One of the perks from the visiting scientist program will be collaboration.

Gabriel Shirima knows who he will contact.

“For diagnostics, Jeff Adamovicz is very helpful and is the right person to contact,” he says. “Also, Brant Schumaker and Walt Cook for surveillance and management of the disease in the field. These are the people from here we think could be contact persons when we have an issue we want to address. They have been sharing since we came here.”

Adamovicz hopes to expand collaboration not only on brucellosis but to other zoonotic diseases.

“This includes getting a better definition of the brucellosis problem in the respective countries, implementation of expanded testing schemes, creation of strain repositories, and conducting vaccine trials,” he says.

Cook says he, Schumaker, and Adamovicz each plan to visit at least one of the East African nations involved to observe their situations and offer suggestions how to improve them.

“But we hope to go further and develop cooperative research projects that can benefit both east Africa and Wyoming,” he says. “We can help them set up better surveillance, diagnostics, and control of brucellosis. This will ultimately lead to an improvement in human and animal health in their countries, and that should be very rewarding to all involved. But, in so doing, we are also being made more aware of the limitations and areas for improvement within our own brucellosis program.”

There is also another benefit.

“The long-term, ultimate solution for brucellosis in both this country and east Africa requires more research,” Cook says. “Much of that required research is impossible to conduct in the U.S. due to the select agent restrictions. However, we can collaborate on this research in east Africa where no restrictions exist. This will benefit us all.”



Wyoming’s Big Horn Mountains in north-central Wyoming contain a resource that is in high international demand.

Valtcho Jeliaskov, director of the Sheridan Research and Extension Center (ShREC), discovered that accessions of Rocky Mountain juniper and creeping junipers contain relatively high concentrations of podophyllotoxin, a chemical used to facilitate production of several anti-cancer drugs: etoposide, etopophos, and teniposide.

Those drugs are used to treat lung and testicular cancer, neuroblastoma, hepatoma, and other tumors. Other derivatives of podophyllotoxin are used to treat psoriasis and malaria and are being tested as a treatment for rheumatoid arthritis. Podophyllotoxin has also demonstrated antiviral activity.

## LONG-TIME INTEREST IN BOTANICALS

“I have been interested in plant natural products since I was an undergraduate student,” says Jeliaskov. “Podophyllotoxin was found in eastern red cedar (*Juniperus virginiana* L.) a long time ago. In my previous position, Archana Gawde was a graduate student working with me on eastern red cedar. Archana, Charles Cantrell from USDA, other collaborators, and I, published several papers on podophyllotoxin in eastern red cedar.” Cantrell is a research scientist.

Then, a few years ago, Jeliaskov, Cantrell, and their team started looking at other species, including Rocky Mountain juniper (*Juniperus scopulorum* Sarg.) and creeping juniper (*Juniperus horizontalis* Moench), which are two natural species that grow in the Big Horn Mountains.

“It is well known that plants that belong to the same family (closely related botanically) may have similar natural products,” he notes. “When I came to UW, we continued our research on Rocky Mountain juniper, on creeping juniper, and on common juniper (*Juniperus communis* L.).”

Jeliaskov found that common juniper does not contain podophyllotoxin, but almost all accessions of Rocky Mountain juniper and creeping juniper did. Jeliaskov and Cantrell were the first to report the presence of podophyllotoxin in *Juniperus horizontalis*.



# Research and extension center director studies anti-cancer drug resource in Big Horn Mountains

## FIELD AND LAB WORK

Jeliazkov and Lyn Ciampa, an undergraduate student at Sheridan College and UW, collected samples of healthy, naturally occurring *Juniperus* away from major roads in 2011 and 2012 at elevations from 4,500 feet to 10,000 feet – not an easy task at the time for Jeliazkov.

“Lyn helped me extensively with the collection of the plant material,” recalls Jeliazkov. “At one point in late 2011, my leg was in a cast; however, we continued to collect in the Big Horn Mountains.”

Representative subsamples from each sample were identified by Bonnie Heidel, a botanist at UW’s Wyoming Natural Diversity Database. Subsamples from each collection site were deposited in the UW Rocky Mountain Herbarium.

Podophyllotoxin was then extracted and purified from subsamples, and concentrations were then determined by Cantrell and his team.

## HIGH DEMAND FOR PODOPHYLLOTOXIN

Discovering podophyllotoxin in Wyoming could have big ramifications; there is a large international demand for it, according to Jeliazkov.

“However, at this point we do not know if the junipers in the Big Horn Mountains contain the highest amount of podophyllotoxin,” says Jeliazkov. “We are sampling other areas of Wyoming and in other states. This is a continuing project; we might find accessions with higher podophyllotoxin concentrations elsewhere.”

Podophyllotoxin is currently extracted from the Himalayan mayapple (*Podophyllum hexandrum* Royle), an endangered species in Asia. There have been numerous investigations on American mayapple, which is a native plant in North America, notes Jeliazkov. However, Himalayan and

the American mayapple are small plants producing only one or two leaves per plant (in early spring), and are not economically feasible to be developed as a cash crop in North America.

Junipers, on the other hand, contain less podophyllotoxin than the Himalayan or the American mayapple; nonetheless, junipers provide much higher biomass, have wide ecological adaptation, and are well-suited for growing in many regions of North America.

“Our goal is to develop juniper cultivars for commercial production of podophyllotoxin,” says Jeliazkov. “I believe we can develop a cultivar for commercial production of podophyllotoxin.”

Jeliazkov will continue his bio-prospecting work in the Big Horn Mountains, and beyond, after the snow recedes this summer.

## Studies published in three articles

Valtcho Jeliazkov’s research on podophyllotoxin in Wyoming were published in three recent articles:

- “Bioprospecting for Podophyllotoxin in the Big Horn Mountains, Wyoming.” *Industrial Crops and Products*, 43:787-790. <http://dx.doi.org/10.1016/j.indcrop.2012.08.024>
- “Podophyllotoxin and essential oil profile of *Juniperus* and related species.” *Industrial Crops and Products*. 43:668-676. <http://dx.doi.org/10.1016/j.indcrop.2012.07.075>.
- “Podophyllotoxin Concentration in Junipers in the Big Horn Mountains in Wyoming.” Zheljaskov, V.D., C.L. Cantrell, M.A. Donega, T. Astatkie, and B. Heidel. 2012. *HortScience* 47(12):1696-1697.





# Prolific in patents

Faculty members, researchers top all colleges on campus

Researchers in the College of Agriculture and Natural Resources have an intrinsic ability to generate patents from their innovative ideas.

The United States Patent and Trademark Office or foreign patent offices have issued 60 patents based on the intellectual property (IP) developed by researchers in the college.

Commercializing IP is a deeply rooted characteristic of the college.

"I think a big part of it is our culture," says Dean Frank Galey. "We're the land-grant college within the land-grant university. A core mission for us is linking the laboratory with the field. I think that is something our researchers concentrate on. We have bright people; I'm certainly proud of our people."

Although the smallest college on campus, the college leads the university in research dollars awarded per faculty member.

"It's that outreach extension culture, and always thinking about what might be needed in the field, and what our constituents might need," says Galey. "We try to focus on linking our innovation with what people need."

## TURNING IDEAS INTO BUSINESSES

College researchers have a proclivity for turning their intellectual property into commercial products.

"We have an energetic entrepreneurial culture in the college," says Galey.

Bright Agrotech, LLC is an example.

Nate Storey, from Cheyenne, and Paul Bennick, from Gillette, founded Bright Agrotech, LLC, which manufactures and sells vertical hydroponic towers for greenhouse vegetable production.

Bright Agrotech has developed several products to encourage people to farm including the Hanging ZipGrow Tower and ZipGrow Matrix Media Replacement.

Storey and Bennick tied for first place in the 2011 annual UW \$10K Entrepreneurship Competition sponsored by the College of Business, a program that encourages UW students to develop new businesses based on their IP.

**Christoph Geisler**, molecular biology student from Heerlen, The Netherlands, tied for first in the 2011 competition and went on to co-found GlycoBac LLC with molecular biology Professor Don Jarvis. GlycoBac offers custom glyco-engineered insect cells for the production of biotherapeutics used in products such as cancer-fighting antibodies.



*Christoph Geisler co-founded GlycoBac, LLC.*

“The things that make it go are the support systems available to faculty and students that allow you to submit invention disclosures and patent applications and the opportunities available to students through the entrepreneurial competitions,” says Jarvis. “Without that we probably wouldn’t have a company.”

Geisler and Storey were students in the college. Each received \$10,000 to launch their companies.

“I think the main thing is this is a way we’re trying to serve the state and community by bringing innovations to the marketplace,” says Galey.

## THE COMMERCIALIZATION PROCESS

The aforementioned support systems Jarvis notes that facilitate the development of ideas into patents and ultimately into commercial products include the Office of Research and Economic Development and the Research Products Center; both play an integral role in the commercialization process.

“People who drive the process are Vice President Bill Gern and Davona Douglass, the director of RPC,” says Jarvis. “And Davona is solely responsible for seeing to it that anything of value that we discover and the intellectual property that we generate gets protected. If I have a discovery today, she is one of the first people I want to contact.”

RPC is UW’s technology transfer office and also engages in an outreach mission to assist any Wyoming entrepreneur or inventor statewide.

The RPC supports Wyoming individuals and organizations in technology transfer - the protection, marketing, and ultimate transfer of their intellectual property to industry.



*Nate Storey co-founded Bright Agrotech, LLC. The company manufactures and sells vertical hydroponic towers for greenhouse vegetable production.*

“Long-term, we’re hoping that this spirit will draw more people to the college of agriculture,” says Galey. “I think the main thing is this is a way we’re trying to serve the state and community by bringing innovations to the marketplace.”

## IDEAS ARE THE FUEL

But the support systems only work when UW researchers continue to innovate and create IP. Ideas fuel the entrepreneurial energy that has always thrived in the College of Agriculture and Natural Resources.

“I think it’s always been there, but I think it’s ramped up,” says Galey. “We’ve hired people with a lot of energy. Certainly we’ve had some leaders who’ve been very active like Don Jarvis. We’ve had leadership encouraging this and that’s really caught on. That willingness to connect with people has always been there, but the entrepreneurial energy has really ramped up.”

“This is a way we’re trying to serve the state and community by bringing innovations to the marketplace.”

*Dean Frank Galey*

## COLLEGE OF AG PATENTS BY DEPARTMENT:

Animal Science	2
Family and Consumer Sciences	3
Molecular Biology	48
Renewable Resources	6
Veterinary Sciences	1
<b>Total</b>	<b>60</b>



# Jarvis receives UW's top faculty award

A world-class scientist and entrepreneur who goes out of his way to help his students and colleagues won the University of Wyoming's highest faculty honor.

Molecular biology Professor Don Jarvis was chosen the 2013 recipient of the George Duke Humphrey Distinguished Faculty Award named for UW's 13th president.

"Don embodies all of the qualities that one would associate with an outstanding academic, including excellence in research, teaching, and service," wrote David Fay, professor of molecular biology and director of UW's Molecular and Cellular Life Sciences Program. "In addition, Don is an incredibly generous colleague who takes time to assist anyone in need."

## INTERNATIONAL REPUTATION

Jarvis, who joined the UW faculty as an associate professor in 1998 and became a professor in 2000, is internationally renowned for his work on using genetically engineered insect cells for manufacturing vaccines, diagnostics, or therapeutics for use in human and veterinary medicine.

"Don has built the reputation of being the 'go to' man worldwide on all matters concerning glycoprotein expression in insect cells, both in academic research labs and in industry," wrote Loy Volkman, professor emerita in plant and microbial biology at the University of California-Berkeley. "His outstanding expertise in both virology and glycobiology is in evidence by his service on editorial review boards of journals dedicated to these two topics... It is a rare person who can successfully achieve such breadth in their professional expertise."



*University of Wyoming molecular biology Professor Don Jarvis is the recipient of the 2013 George Duke Humphrey Award – UW's highest faculty honor. (UW Photo)*

## THIRTY GRANTS, EIGHT PATENTS

Jarvis has received more than 30 grants from the National Institutes of Health and other entities for his research. He holds eight patents and has filed 10 patent applications and invention disclosures. He was the recipient of UW's 2012 Outstanding Research Award.

"In addition to publishing more papers in top journals than anyone at Wyoming of whom I am aware, Don has consistently had an astonishingly high level of support for his work," Fay wrote. "In fact, he is one of the very few faculty members at UW whose salary is consistently more than paid for by the indirect costs of his extramural grants."

"Part of the reason that Don has enjoyed such a high level of funding success is the quality and impact of his science. But it also has much to do with Don's work ethic. Don continues to work with the urgency of a first-year assistant professor who has yet to land their first grant."

## FORMS COMPANY

Jarvis' scientific expertise not only is of academic interest but also is relevant to

solutions for real-world problems. In 2011, he helped form GlycoBac, which is working to produce glycoprotein drugs using insect cells. The company will commercialize his academic laboratory group's research and promises to further diversify Wyoming's economy, with the ultimate goal of helping find treatments for human diseases.

"I believe that if you were to ask any scientist for their ideal career arc, they would describe one that resembles Don's – make important discoveries that push forward the frontiers of science and

use that knowledge to improve the human condition," wrote fellow molecular biology Professor Peter Thorsness.

## PRAISED AS MENTOR

His colleagues also describe Jarvis as an outstanding mentor to young scientists, including undergraduate and graduate students, postdoctoral fellows, and young faculty members.

He has developed a "capstone" seminar course for graduate students in molecular biology, as well as a course that allows all undergraduate majors to meet and speak with visiting scientists. Jarvis' students consistently give him high marks in their evaluations of his classes.

"As a teacher, Don is outstanding," Fay wrote. "He has the highest standards of any instructor I have known. He pushes students very hard and extracts the very best from them."

Jarvis earned bachelor's and master's degrees in microbiology from Idaho State University before receiving his Ph.D. in virology at the Baylor College of Medicine in Houston, Texas, in 1986. Before coming to UW, he worked as a research scientist, assistant professor, and associate professor at Texas A&M University.

# Assistant professor awarded Laura and Arthur Colwin Endowed Summer Research Fellowship

Jay Gatlin, assistant professor in the Department of Molecular Biology, was awarded in early April the Laura and Arthur Colwin Endowed Summer Research Fellowship, a highly selective eight-week summer research fellowship at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts, Cape Cod.

"I was thrilled," says Gatlin. "I'm really excited about the opportunity to conduct research in Woods Hole again. I spent a lot of time there during my post-doc."

The award is \$17,743, which provides Gatlin with a fully equipped laboratory at MBL for his research and covers his housing during the two-month fellowship this summer.

## MITOTIC SPINDLE

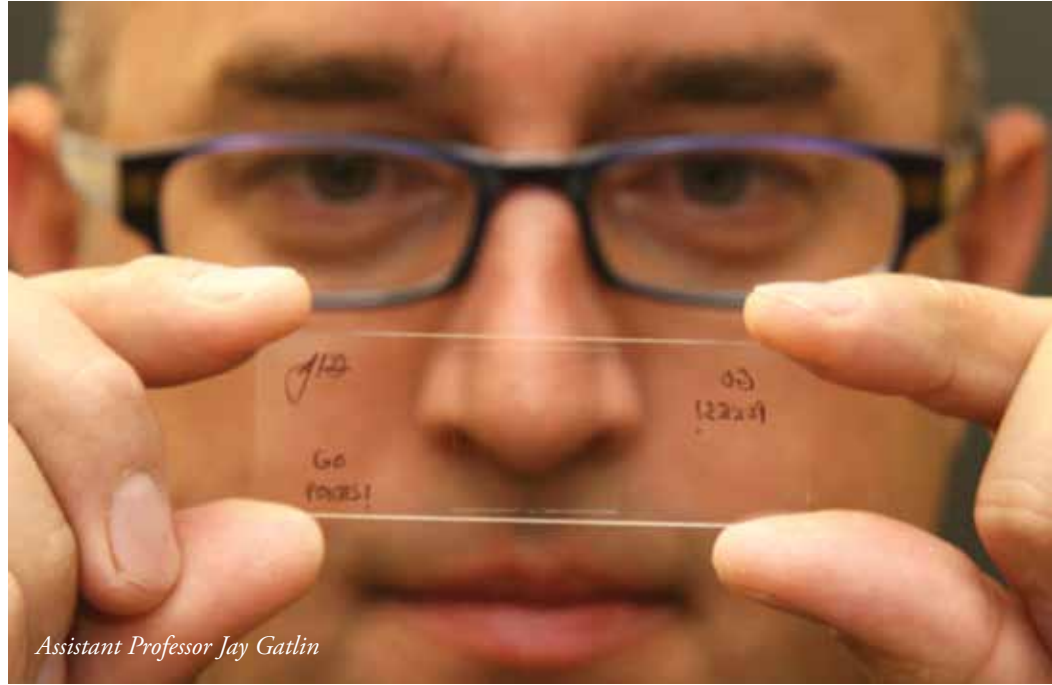
Gatlin's research focuses on how chromosomes get segregated during cell division. Specifically, he studies the molecular machine responsible for physically pulling the chromosomes apart.

"That machine is called the mitotic spindle," says Gatlin. "When the process of chromosome segregation goes awry, it results in an abnormal number of chromosomes in each daughter cell. Called aneuploidy, this condition is hallmark of many cancer cells and is thought to play a causative role in progression of the disease."

Gatlin hopes to gain a better understanding of how mitotic spindles are assembled and then identify potential therapeutic targets to combat diseases related to improper spindle function.

## WORKING AT WOODS HOLE

"That is the over-arching subject of study in the lab," he says. "What we're doing this summer is using a new system developed here at UW in collaboration with John Oakey's lab to investigate previously



*Assistant Professor Jay Gatlin*

intractable questions regarding the assembly of this structure."

Thanks to his fellowship, Gatlin will be utilizing the prestigious MBL at Woods Hole, an internationally recognized center for research, education, and training in biology, biomedicine, and ecology. Founded in 1888, the lab is a private, non-profit corporation.

"The labs are a summer destination for many prominent researchers in my field," notes Gatlin. "I was fortunate enough to spend several summers at the MBL while I was a post-doc in Ted Salmon's Lab at the University of North Carolina at Chapel Hill. During those summers, Ted and I worked closely with Tim Mitchison and his group from the Department of Systems Biology at the Harvard School of Medicine. This is a great opportunity to again work with these same tremendous scientists and for my students to work with them as well; this is perhaps the biggest draw for doing research at the MBL."

According to the MBL, a corps of more than 270 scientists and support personnel pursue research year-round. The staff is joined each year by more than 300 visiting scientists, summer staff, and research associates from hundreds of institutions around the world. The MBL Corporation has 436 members.

"It's a great opportunity," notes Mark Stayton, chair of the department in the College of Agriculture and Natural Resources.

Among the scientists with a significant affiliation with the MBL (scientists, course faculty, and students) are 55 Nobel Prize winners (since 1929); 118 Howard Hughes Medical Institute investigators, early career scientists, international researchers, and professors (since 1960); 202 Members of the National Academy of Sciences (since 1960); and 178 Members of the American Academy of Arts and Sciences (since 1960).



# PROGRAM NOTES

## AGRICULTURAL AND APPLIED ECONOMICS

Associate Professors **Don McLeod** and **Chris Bastian** are coauthors of *Wyoming Landowners' Characteristics and Preferences Regarding Conservation Easements: Results from a Survey*. Other authors are Graham McGaffin, a former graduate student in the department, and Catherine Keske and Dana Hoagg of the Colorado State University Department of Agricultural and Resource Economics. The publication, B-1241, was published in March. A survey mailed to 4,935 landowners in Colorado and Wyoming, with 2,270 responding, elicited responses to a variety of questions pertaining to landowner characteristics as well as preferences for land conservation and conservation easements. The results presented target responses from Wyoming landowners to improve the understanding of landowner attributes and their interests and concerns related to land use and to conservation easements. Results indicate Wyoming landowners feel a strong attachment to the land they own or manage; that Wyoming landowners believe their land provides excellent habitat and diversity for plants and animals; and that Wyoming landowners have comparatively less experience with conservation easements compared to landowners elsewhere. Survey results also suggest Wyoming landown-



Associate Professor  
Don McLeod

ers may be less likely to accept conservation easements than landowners elsewhere. Overall, results indicate Wyoming landowners may benefit from information regarding conservation easements.

## ANIMAL SCIENCE

Professor **Bill Murdoch**, who conducts research in reproductive biology, was the 2013 Agricultural Experiment Station Outstanding Research Award recipient. Murdoch has been an extremely productive faculty member in the Department of Animal Science for more than 30 years, says Professor **Doug Hixon**, head of the department. Early in his career, he researched the relation of ovarian functions to uterine and ovarian secretion of hormones during the estrus cycle and early pregnancy of the cow and ewe. Some of this research was the basis for the development of many of the successful estrous synchroniza-



Associate Professor  
Steve Paisley

tion protocols used in the livestock industries today, Hixon says. "More recently, Bill uses the sheep and mouse models in biomedical research associated with ovarian cancer and the development of potential protocols related to the subsequent treatment of the disease."

Murdoch also trains graduate students and teaches a core course in reproductive physiology in the animal science curriculum.

Assistant Professor **Kristi Cammack**, in the department since 2006, received the 2013 AES Early Career Research Achievement Award. Cammack, a South Dakota native who received her Ph.D. from the University of Missouri, has expertise in quantitative and molecular genetics. Her initial research focused on the changes in gene expression induced by toxins in the diet. Her current research focuses mainly on the genetic control of feed efficiency in ruminant livestock at the

molecular level. "Kristi also effectively mentors graduate students and has extensive teaching responsibilities including principles of animal breeding, a course that is part of our animal science core," notes Hixon.

Associate Professor **Steve Paisley** received the Advanced Degree Graduate of Distinction Award from Oklahoma State University at its Animal Science Annual Awards Banquet in Stillwater, Oklahoma. Paisley joined the department in October of 2001. He received his bachelor's and master's degrees from the University of Wyoming before receiving his Ph.D. in animal nutrition from OSU in 1998. He is also the beef cattle extension specialist based at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle.

**Hannah Cunningham**, a master's student from Kaycee, working with Assistant Professor **Allison Meyer**, placed third in the 2013 Midwestern Section, American Society of Animal Science Graduate Student Poster Competition in Des Moines, Iowa. Cunningham, a second semester graduate student who was competing against students who were an additional year into their programs, presented her research evaluating the effects of beef cow maternal nutrition in early to mid-gestation on the gastrointestinal development of their offspring and the resulting impact on feed intake and efficiency. "Also known as fetal programming, the in utero ef-

fects on the developing fetus is an exciting and relatively new area of research,” says Hixon.

## ECOSYSTEM SCIENCE AND MANAGEMENT

At recent Society for Range Management annual meetings, three UW faculty members received international awards. Assistant Professor **Jeff Beck** received the Range Science Education Council/Society for Range Management Early Career Teaching Award. This award goes to an instructor with fewer than 10 years of experience. **Rachel** and **Brian Mealor**, extension range specialist and plant sciences assistant professor respectively, each received the Society for Range Management Outstanding Young Professional Award presented to early career professionals who have shown outstanding promise to contribute to the profession of rangeland ecology and management. “While Brian is on the faculty of the plant sciences department, he works extensively on rangelands, and it seemed appropriate to nominate both Rachel and he for this award at the same time,” says Professor **John Tanaka**, head of the department. “We are proud of all three of these early career faculty members and their accomplishments.”

Twenty-five undergraduate students attended the Society for Range Management meeting held in Oklahoma City in Feb-



*Professor  
Steve Williams*

ruary. They competed in several undergraduate competitions and were able to interact with professionals from around the world.

The department is in the process of hiring a soil chemist position to take over from where Professor **George Vance** left off. Professor **Steve Williams** announced his retirement for this May. He has been with UW for 37 years. In addition to his professorship, he has served as the department head of Plant, Soil, and Insect Sciences, dean of the Graduate School, and director of the Wyoming Reclamation and Restoration Center. “In recent years, he has been teaching our forest and range soils course, took a group of students to New Zealand, and is developing research plans for the Rogers Research Site on Laramie Peak,” notes Tanaka. “He plans to stay around Laramie and continue writing manuscripts, finish a book, and stay involved in some on-going research as his time allows. Professor **Tom Thurow** also left at the end of

the semester. Thurow was a former department head. He has been teaching watershed management, forest resources, and a freshman seminar for the environment and natural resources degree.

Several faculty members are involved in the newly formed and funded Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG). Associate Professor **Scott Miller** is one of the lead principal investigators. Professor **Dave Williams** serves on the executive committee. Associate Professor **Thijs Kelleners**, Miller, Associate Professor **Ginger Paige**, and Dave Williams each lead one of the research teams. **Elizabeth Travers** is the Surface and Sub-surface Hydrology Lab Manager. Read more at <http://www.uwyo.edu/epscor/wycehg/>

## FAMILY AND CONSUMER SCIENCES

The department has been involved with academic planning, notes department head and Associate Professor **Bruce Cameron**. “As part of the department’s involvement with academic planning, we have created a new mission statement,” he says.

“Our mission is to enhance the physical, social, and economic well-being of individuals, families, and communities, emphasizing healthy and sustainable living across the lifespan. We fulfill our mission through



*Associate Professor  
Bruce Cameron*

instruction, research, scholarship, outreach, and extension efforts that challenge, motivate, and inspire.

“Family and consumer sciences integrates the fundamental components of human life – food, shelter, clothing, human relationships, and family – with larger societal systems. Through programs in textiles, apparel and design, food and nutrition, and human development and family sciences, our department prepares learners to meet the opportunities and challenges of today’s complex world.”

**Michelle Felts**, a senior in dietetics, attended the Sports, Cardiovascular, and Wellness Nutrition (SCAN) Symposium in Chicago in April. The SCAN symposium is one of the largest and well-known practice groups that is part of the Academy of Nutrition and Dietetics. Michelle gave a poster presentation at the symposium on “Lipid Profile Changes in Postpartum and Lactating Women.”



# PROGRAM NOTES

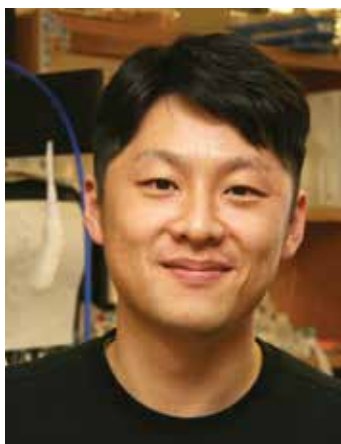
**Mary Mills**, a senior in textiles and merchandising, **Paul Ditty**, a junior in textiles and merchandising, and **Jacque Lahr**, a senior in art, who participated in Professor **Donna Brown's** design submissions class during fall semester, had their garment designs selected for presentation at the Apparel, Textiles and Design Juried Design Showcase during the American Association of Family and Consumer Sciences (AAFCS) national conference in Houston in June.

## MOLECULAR BIOLOGY

Molecular biology Ph.D. student **Min-Hyung Ryu** of Seoul, South Korea, won the top graduate oral presentation award at the spring meeting of the Rocky Mountain Branch of American Society for Microbiology (RMB ASM) April 12-13 at Colorado State University in Fort Collins.

Ryu's talk was "Synthetic light-activated modules for gene expression control in vivo." Ryu's adviser, molecular biology Professor and RMB ASM president **Mark Gomelsky**, says that presentation at this regional meeting was good practice for Min-Hyung, whose abstract was selected for a short oral presentation at the general ASM meeting.

Another Gomelsky advisee, Molecular and Cellular Life Sciences Ph.D. student **Cindy**



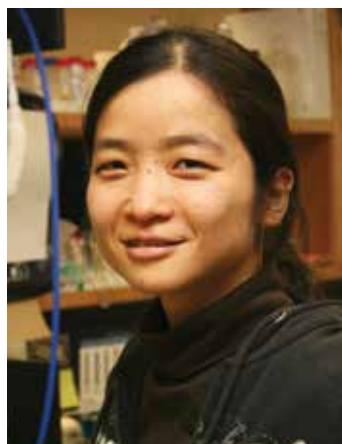
*Min-Hyung Ryu*

**Fang** of Hangzhou, China, won second prize in graduate oral presentations with "YdiV, a modulator of mucoid phenotype in *E. coli*."

**Jia Hu** of Wuhan, China, an animal science Ph.D. student, won second prize in the graduate student poster competition. Her adviser is Associate Professor Meijun Zhu, who recently moved to Washington State University.

RMB ASM encompasses Colorado and Wyoming. Its mission is embodied in two annual meetings at which undergraduate, graduate, and postdoctoral students and faculty members present results of their research and participate in informal discussions with colleagues from the region, notes Gomelsky.

Each RMB meeting also features prominent microbiology scientists as invited speakers. Last meeting featured Mary Johnson, director of the Tuberculosis Laboratories at CSU, and



*Cindy Fang*



*Jia Hu*

a Distinguished ASM Lecturer, Joseph Petrosino, director of Alkek Center of Metagenomics and Microbiome Research, at Baylor College of Medicine. For more information, visit the RMB ASM website <https://sites.google.com/site/asmrmb/home>.

## PLANT SCIENCES

The department continues to undergo changes in personnel. After five years of service as head of the department, Associate Professor **Stephen Herbert** has returned to his faculty role to focus on his teaching and research. Herbert began a sabbatical at the Plant Biology Department of the Carnegie Institute for Science at Stanford University during spring semester. Herbert has joined Arthur Grossman's lab in the Green Cut initiative, which is an effort to learn the function of every gene plants need for photosynthesis.

"The genomes of green plants and algae indicate they use about 600 genes to perform photosynthesis," says Herbert. "The science community knows what roughly half these genes do but that leaves at least 300 genes that are a mystery."

The Green Cut initiative will discover practical knowledge about the many thousands of genes discovered by genome sequencing projects. "We already depend on photosynthesis for food, fuels, materials, and medicines," notes Herbert. "If we can learn a little more about how photosynthesis makes these products in plants, we can be more efficient in creating new lines of plants and algae that are more useful and valuable."

Working in a busy lab full of graduate students and post-docs has been a rejuvenating experience for Herbert. "I'm the old man in the lab here and



*Associate Professor  
Steve Herbert*

working hard to keep up. If the experience doesn't kill me, I'll be a lot younger when I come back," he quips.

While department members are excited about ongoing and upcoming searches for positions such as the small grains agronomist/breeder to be at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle, an agro-ecologist, and an extension plant pathologist, they are also saddened to announce the departure of colleagues **Augustine Obour** and **Thomas Hill**. Obour, a research scientist at SAREC, joined the soil science faculty at Kansas State University in June. Hill, a post-doctoral research associate who has worked with the late Professor **Gary Franc** and research scientist **Bill Stump**, joined the Department of Atmospheric Sciences at Colorado State University in June.

## VETERINARY SCIENCES

The Pre-Vet Club organized and hosted a diverse group of veterinarians for a panel discussion on the changing nature of veterinary medicine. Participating were Joe Wakshlag, MS, DVM, Ph.D., associate professor/section chief of clinical nutrition, Cornell University College of Veterinary Medicine; Kurt Venator, DVM, Ph.D., manager of Veterinary Marketing, Nestle Purina Pet Care; and Justin Milizio, DVM, small animal/emergency medicine practitioner from Englewood, Colorado.

The wide-ranging discussion covered topics from admissions to veterinary career options, says Professor **Will Laegreid**, head of the department. "The important topic of how to fund a veterinary education in today's economy, with rising tuition and increasing student loan debt, was of particular interest to students," notes Laegreid. "The panel also provided insight on their view of non-academic considerations for veterinary school admissions, undergraduate coursework they found particularly useful in their professional education, and tips on successfully choosing a first position in veterinary medicine."

Research on the population dynamics of infectious diseases of livestock and wildlife was featured in presentations by veterinary sciences graduate students **Melia DeVivo**, **Mandy Kaufmann**, **Kelsie Speiser**, and



*Professor  
Will Laegreid*

**Dave Edmunds** at the annual meeting of the Wildlife Society, Wyoming Chapter. Topics included "Epidemiological effects of CWD on white-tailed deer population vital rates in Southeast Wyoming" (Edmunds), "Susceptibility of mule deer to chronic wasting disease based on PrP genotype" (DeVivo), "Update on cost-benefit analysis of elk brucellosis seroprevalence reduction in the southern Greater Yellowstone Area" (Kaufmann and **Kari Boroff**, graduate student in agricultural and applied economics), and "Risk analysis of bluetongue virus infection in wild and domestic ungulates in Wyoming using GIS" (Speiser). Several of these studies utilized hybrid ecological and population modeling approaches to predict the probability of and course disease in wildlife populations.

Staff member **Rebecca Ashley** has moved from regulatory serology to fill a long-standing opening in the histopathology

section in the Wyoming State Veterinary Laboratory within the veterinary sciences department.

## AGRICULTURAL EXPERIMENT STATION

The Wyoming Agricultural Experiment Station (WAES) administered several competitive grant programs this past quarter continuing its ongoing competitive grant projects and has more programs to come this summer.

"Research projects funded by the WAES competitive grants programs are mostly allocated by setting aside a portion of federal dollars to support the college's research capacity," notes **Bret Hess**, associate dean of research at the college and WAES director. Projects addressing the Production Agriculture Research Priorities ([http://www.uwyo.edu/uwexpstn/\\_files/docs/production-ag-research-priorities.pdf](http://www.uwyo.edu/uwexpstn/_files/docs/production-ag-research-priorities.pdf)) identified by Wyoming stakeholders are given special consideration. Two examples of grants funded during this past round of competition that specifically address these priorities are:

"Strategic Cheatgrass Management in Wyoming – Landscape-scale Prioritization and Evaluation of Targeted Grazing," and "Economic Impacts of Climate Change and Drought on Wyoming Ranchers: A Critical Evaluation." Three recently funded graduate student projects also address the production



# PROGRAM NOTES



*AES Director Bret Hess*

agriculture research priorities: “Effects of Deficit Irrigation on Growth, Yield, and Quality of Confection Sunflower,” “Winter Forage Crops as a Supplement to Corn Stalk Grazing in Integrated Crop/Livestock Systems in Southeast Wyoming,” and “Productivity, Quality, Water Use Efficiency, and Benefit-Cost Ratios of Irrigated Grass-Legume Mixtures.”

Progress on these and many other projects are presented in the 2013 WAES Field Days Bulletin – available at UW Research and Extension (R&E) Center field days (also available online at <http://www.uwyo.edu/uwexpstn/publications>).

This year’s R&E center field day schedule is June 15 in Sheridan; July 19 in Powell; August 22 at the James C. Hageman Sustainable Agriculture R&E Center (SAREC) near Lingle; and August 29 in Laramie.

Renovations to the newly acquired Watt Agriculture Cen-

ter and construction of a research greenhouse are under way at the Sheridan R&E Center.

“We anticipate having all of UW’s programs in Sheridan operating out of the Watt Agriculture Center this fall semester,” notes Hess.

## UW EXTENSION

Campbell County has a new part-time assistant 4-H educator. **Kimberly Bell** started the position January 8. Bell grew up in Campbell County and brings more than 19 years of involvement with the 4-H program. She has been a Cloverbud member, summer intern (for three summers) and most recently, an adult volunteer. Bell earned her bachelor’s degree in theater arts, with a minor in extension education, from the University of Idaho. She joins **Jessica Gladson** in Campbell County’s youth development program. Bell will be working with the fabric and fashion project, afterschool programs, and other outreach 4-H youth development efforts.

**Missey Dunaetz** began in January as the 4-H educator in the Converse County extension office in Douglas. Dunaetz was an instructor at Shasta College in Redding, California, prior to joining extension. She taught programs in career planning for agriculture. Dunaetz is a 1997 graduate of California State University in Chico, California, with a bachelor’s degree in agricultural science/education.



*Missey Dunaetz*

She received a master’s degree in animal/equine science in 2007 from Sul Ross State University in Alpine, Texas. Dunaetz brings experience working with youth on a variety of natural resource programs. “As a past 4-H member, parent, and volunteer, living in rural Wyoming is a great fit as she continues her career in youth development,” notes **Susan James**, federal relations and staff development coordinator with extension.

## ACADEMIC AND STUDENT PROGRAMS

Official fall semester 2012 figures reveal that enrollment in the College of Agriculture and Natural Resources has continued to increase.

Undergraduate enrollment in the college for fall 2012 was 846, and graduate enrollment was 195, for a total of 1,041 students.



*Director Donna Brown*

“We are excited about this continuing trend for increased enrollment, and we look forward each year to welcoming an increasing number of new students to the College of Agriculture and Natural Resources,” notes **Donna Brown**, associate dean and director of Academic and Student Programs in the college.

The college initiated the first call for student proposals for the Student Engagement and Networking Drive (SEND) program last fall. Undergraduate students planning to travel during fall semester 2012 through spring break 2013 were invited to submit proposals for funding (not to exceed \$500 per individual grant). The initial call for proposals garnered 29 student proposals requesting grants for a total amount of \$14,125. The SEND program ultimately provided grants to 24 students for a total expenditure of \$4,542. Individual grants awarded ranged from \$161- \$500. Grants funded included:

- Travel for students to the Annual Society for Range Management (SRM) meeting in Oklahoma City February 2-8
- Travel for a student to the Galapagos Islands as part of a winter study-abroad experience from January 2-14
- Travel for a student to Kenya as part of a continuing independent research experience

To receive reimbursement for travel, each student is required to provide written feedback on the benefits of her or his SEND-assisted experience.

"The feedback from students about their experiences provided encouraging results, and it was clear that SEND enhanced students' academic goals and professional development," notes Brown.

Recently, the SEND program released its second request for proposals for students planning travel April through August. The SEND program has been funded by the Ellbogen Foundation, the Natural Resources Conservation Service (NRCS), and a number of private donors.

## COLLEGE RELATIONS

Earlier this spring, **Anne Leonard**, director of College Relations, participated in mock interview sessions for UW students who wanted to practice their interview skills.

UW's Center for Advising and Career Services (CACS) asked businesses and UW departments to help with their first mock interview forum.



*Director of College Relations  
Anne Leonard*

"Envision a format similar to speed dating," says Leonard. "Each 'employer' participant was assigned a table and a few commonly encountered interview questions relating to work styles, future career goals, and why they would want to work

in a particular industry. As a prospective employer, I greeted each student 'applicant' and then spent approximately five to seven minutes asking one or two interview questions. At the end of that time, each student would move to the next mock-interview station."

Leonard says the experience was wonderful, and, according to the feedback she received, participating students also found it worthwhile.

"Those who had not had much experience with formal interviews appreciated the practice," she says. "They also received feedback on their answers, demeanor, or other interview tips. Students told me later that they appreciated hearing from people who have experience with human resources and the hiring process where their interview

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skills were on the mark and learning where they might improve.”

**Ann Jones**, one of the event organizers and associate director for CACS, is passionate about helping students succeed in the job market, notes Leonard. Jones is available to help students with their resume, interview skills, or explore career options.

CACS and the college maintain information on internships, open positions, and other career-related resources.

Career Services offers a wide range of services and workshops including How to Dress for Success, Interviewing 101, Resume Round-up, Federal Resume Building, and information sessions for international students seeking employment in the U.S.

CACS also hosts two large annual job fairs. One is in the fall and another in February. Fairs

are advertised to all UW students, and prospective employers can link with students seeking academically related internships, summer employment related to their fields of study, or full-time employment opportunities.

“During the fairs, some employers also offer on-campus interviews,” notes Leonard. “If your business would like to have a greater presence on campus or you would like more information about recruiting awesome University of Wyoming graduates, please contact Ann Jones.”

Those interested in advertising a position within their company are encouraged to call Jones at (307) 766-2398 or email her [ajones@uwyo.edu](mailto:ajones@uwyo.edu). For advertising a position on the college’s Web page, call the Office of Academic and Student Programs at (307) 766-4135.

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