

ANIMAL SCIENCES

Spring 2012

# The Inside Scoop

APPLIED RESEARCH • EXTENSION & OUTREACH • INNOVATION & TECHNOLOGY • TEACHING



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*World Class. Face to Face.*

ANIMAL SCIENCES:

# A Proud Tradition

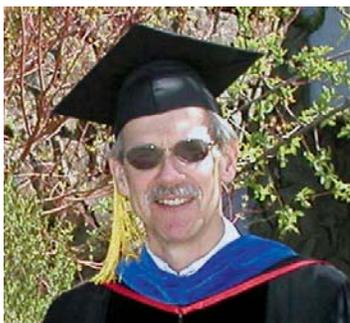


**Dr. Margaret E. Benson**

Chair, Department  
of Animal Sciences

**~GO COUGS!**

**Dr. Ron Kincaid** retired in May 2011. He received his B.S. and M.S. degrees in agricultural chemistry from the University of Missouri, and a Ph.D. in nutrition from the University of Georgia. He was a lecturer in animal nutrition at Lincoln College, New Zealand, prior to becoming a faculty member at Washington State University. He has served as Chair of the Graduate Nutrition Program, Interim Associate Dean of the College of Agriculture and Home Economics, and Chair of the Animal Sciences Department. Dr. Kincaid's research primarily focused



on mineral metabolism in animals. He conducted research experiments in New Zealand, Australia, Mali, and Sudan. At WSU he mentored 9 Ph.D. and 16 M.S. students. In retirement he and his wife are enjoying grandchildren, outdoor activities, travelling and reading.

**2011–2012** was another year filled with important accomplishments and activities for the students, faculty, and staff in the Department of Animal Sciences. A record number of undergraduates enrolled in our program, we have growing graduate student numbers, and a dedicated faculty and staff who have made outstanding contributions in research and Extension. I hope you enjoy reading about some of these accomplishments in the pages that follow.

We have seen some faculty changes in the last year. Dr. Ron Kincaid retired in May, completing a career dedicated to educating both undergraduate and graduate students in animal nutrition. Thousands of students have benefitted from Dr. Kincaid's courses and his successful research program addressed a variety of dairy nutrition questions and made major contributions in the trace element area. Dr. Jude Capper has accepted a dairy industry position in her homeland, the United Kingdom. During her three years at WSU she has been recognized as one of the most influential young scientists around the world with her very public, scientifically sound defense of production animal agriculture. We will miss both Dr. Kincaid and Dr. Capper—we thank them for their contributions to the department and WSU and wish them the best in their new adventures.

We welcome two new faculty members this year: in June, Dr. Tom Spencer joined us as the Baxter Endowed Chair for Beef Cattle Research, and in November, Dr. Min Du joined us as the Funded Chair in Meats, Genetics and Nutrition Research. They each

bring nationally recognized programs to our department and are already making important contributions to our research and teaching programs through their respective programs in reproductive biology, and meat science and muscle biology.

Our students continue to take advantage of a wide range of experiential learning activities outside the classroom. The majority of our students participate in one or more of these during their undergraduate careers. Currently the undergraduate population in Animal Sciences—350 advisees—is the largest among the agriculture majors in the college. We are pleased that, despite a difficult economic situation, our students continue to be successful in finding rewarding employment upon graduation.

Our students continue to remind us that even in rapidly changing times, we have a bright future. These talented young minds mean animal agriculture will continue to flourish. Our faculty and staff continue to respond to an ever-changing academic environment and are making outstanding and exciting contributions in the sciences that will be essential for a sustainable future in animal agriculture. With the severe economic challenges facing higher education today, delivering on the needs and expectations of our students and stakeholders is a significant challenge that we address every day. The Department of Animal Sciences is proud of our accomplishments and the contributions our faculty, staff and students make. On behalf of the entire department, we thank you for your interest and support.

## ANIMAL SCIENCES

# The Inside Scoop

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# Getting Your Hands “Dirty”

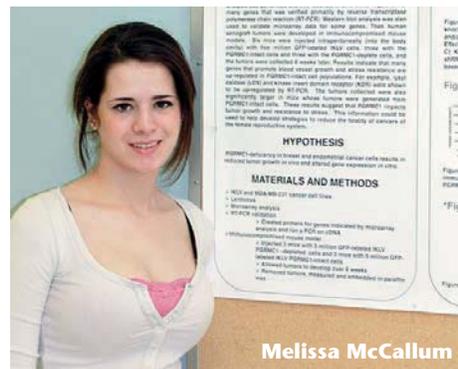
## CAHNRS UNDERGRADUATE RESEARCH PROJECTS

Through the CAHNRS Undergraduate Research and Creative Projects program, several Animal Science undergrads were provided the opportunity to immerse themselves in all aspects of research. Under the guidance of their mentors, these students designed experiments to test hypotheses and submitted their proposals to the CAHNRS committee. After review, two Animal Science students, Jaci Barbano and Melissa McCallum, were awarded grants to conduct their proposed research.

Barbano and McCallum carried out their experiments during fall 2010 and winter 2011 and presented their results at the CAHNRS Undergraduate and Creative Projects Poster Fair during Mom’s Weekend in April 2011. The quality of their work was recognized when each student placed in their respective divisions.

Melissa McCallum placed first in the Basic Agriculture and Natural Resource Sciences Division with her research, “Progesterone Receptor Membrane Component 1 (PGRMC1) and its Role in the Establishment and Progression of Female Cancers.” McCallum, an aspiring companion-animal veterinarian, worked under the guidance of Dr. Jim Pru and said, “Research is a great way to supplement what you learn in class.” McCallum cultured cancer cells that contained intact PGRMC1 or cancer cells in which she deleted the PGRMC1 gene and used molecular techniques to determine the importance of that gene in cancer devel-

opment. She found that cells with the PGRMC1 gene had greater expression of other genes that promote cancer growth and larger tumors than cells in which the PGRMC1 gene was deleted. McCal-



lum concluded that “this information could be used to help develop strategies to reduce the fatality of cancers of the female reproductive system.”

Jaci Barbano worked under the direction of Dr. Ron Kincaid, investigating “The

Feeding Value of Silage Made from Biennial Canola Forage as Part of Ecosystem Improvement in Dryland Cropping Systems.” Biennial canola takes two growing seasons to produce an oilseed crop. The forage produced in its first season is commonly not used, but Barbano hypothesized that biennial canola could be intercropped with peas and harvested in year one for dairy silage, thereby resulting in a potential cash crop for canola growers. She determined that silage made from the first year’s growth of biennial canola had a feeding value similar to alfalfa hay and could be incorporated into a total mixed ration for dairy cows. This provides the canola grower a cash crop in year one of the biennial canola life cycle while the oilseed is harvested in year two. Barbano says, “Research is a lot of work, but it is fun, too,” as she learned various methods of assessing the digestibility of canola silage for dairy cows. Her work placed second in the Applied Agricultural and Natural Resource Sciences Division.

The CAHNRS Undergraduate and Creative Project Program is active again in 2011–12 and several Animal Science students have received grant awards. Erik Walker and Eugenia Lo are working together on a project with Dr. Ruth Newberry, while Kaitlyn Kamstra has a research project with Dr. John McNamara, and Brooke Compton is conducting research in Dr. Jim Pru’s lab. Come see their results at the poster fair that will be held on April 14, 2012, during Mom’s Weekend.

## Kicking Back & Having Some Fun!








Above: Derek McLean and Tom Spencer ‘won’ Penny Wars, a graduate student-sponsored fundraiser. Students deposited pennies in their favorite professor’s jar and those with the most were honored with a pie in the face.

Left & center: The department kicks off the fall semester with a free Meet & Greet barbecue. Faculty members serve food while students check out the available clubs and activities that the Department of Animal Sciences has to offer.



# Beef Research

Two new faculty members  
Department of

**M**in Du has joined the Department of Animal Sciences as Professor and Funded Chair in Meats, Genetics and Nutrition Research. “Dr. Du’s program in meat science and muscle biology is a critical addition for our department,” says Dr. Margaret Benson, Chair. “His expertise strengthens our ability to respond to student and stakeholder needs immediately in these areas.”

Du is excited to join the WSU faculty because “WSU, in combination with [the] University of Idaho, provides abundant opportunities for collaborations. In addition, Washington State has a large beef industry, which is very conducive for beef quality research.” His program at WSU is off to a great start—he already has five graduate students!



Dr. Du studies skeletal muscle and fat tissue development in the fetus and the mechanisms that regulate stem cell differentiation. Skeletal muscle is the most economically important tissue in livestock raised for meat. Livestock have been selected for lean growth for many generations, which has consequently reduced marbling, an important component of the eating quality of meat. Since the number of muscle fibers in an animal do not increase after birth, understanding the major events that govern the formation of muscle cells and fat cells during the fetal stage is critical. Du is especially interested in understanding what occurs during this stage and how these mechanisms ultimately affect beef production and meat quality. Fundamental knowledge gained from his research will eventually allow producers to select animals with improved production efficiency, muscle growth, and marbling. His research also has application in human health because skeletal muscle plays a major role in the incidence of obesity, type II diabetes, and other metabolic diseases.

## Background

Born and raised in China, Min Du earned a B.S. in 1990 from Zhejiang University and his M.S. from China Agricultural University in 1993. He travelled to Iowa State University where he earned his Ph.D. in meat science in 2001. He was a Canadian National Sciences and Engineering Research Council (NSERC) postdoctoral fellow in biochemistry and cell signaling at the University of Alberta, after which he joined the faculty in the Animal Science Department at the University of Wyoming as an assistant professor in muscle biology.

Du has won numerous awards and honors and is a member of several scientific societies. He is particularly active in the American Society of Animal Science where he has served as an associate editor for the *Journal of Animal Science* and for which he is a member of the Early Career Achievement Award Selection Committee. In addition, Du serves on grant panels for several funding agencies, the editorial board of several peer-reviewed scientific journals and is currently an associate editor of the *Journal of Stem Cell & Therapy*.

# of the Future

## bring fresh ideas to the Animal Sciences



**Thomas Spencer** moved to Pullman in June, 2011 to begin his tenure as the Baxter Endowed Chair in Beef Cattle Research. “Tom Spencer is a nationally recognized leader among reproductive biologists and is an outstanding addition that strengthens this traditional disciplinary focus in our department,” lauds Dr. Benson.

In his research program Spencer is focused on understanding the complex hormonal, cellular, and molecular mechanisms that regulate development and function of the uterus and placenta. Using sheep, cattle, and mice as model organisms, he hopes to enhance understanding of uterine biology and pregnancy, and ultimately provide a platform for the design of therapies to treat and prevent infertility and pregnancy loss in domestic animals and humans. His three graduate students are busy designing experiments to aid in comprehension of these areas.

At Auburn University Spencer earned both his B.S. and M.S. degrees in animal science, going on to complete his Ph.D. in 1995 in physiology of reproduction at Texas A&M. After serving as an NIH post-doctoral research fellow from 1996–1997 in molecular and cell biology at Baylor College of Medicine in Houston, Dr. Spencer returned to Texas A&M as a faculty member of the Department of Animal Science. There he established a nationally and internationally recognized reputation in

Thomas Spencer’s philosophy on research and education fits well with that of the Department of Animal Sciences. Quality research and graduate education programs seek to: 1) discover fundamental biological mechanisms that can be integrated and translated into benefits to agriculture, veterinary medicine, and human medicine; 2) integrate basic and advanced concepts of physiology, biochemistry, genetics, and bioinformatics; 3) train students so that they become independent, creative, and effective in their research; 4) develop effective grantsmanship and communication skills in students; and 5) provide opportunities for graduate students to obtain teaching experience in undergraduate laboratory courses.

the field of reproductive biology. Spencer has garnered significant extramural funding and is currently the principal investigator or co-investigator on five grants awarded by the USDA and the NIH.

Spencer’s accomplishments have resulted in numerous awards and he has served as the Vice Chair and Chair of the Gordon Research Conference on Reproductive Tract Biology. In addition, Spencer is currently a member of the editorial board for the American Journal of Reproductive Immunology and Reproduction.



# On Target with David deAvila

The Department of Animal Sciences is fortunate to have David deAvila (top photo, left side) as a member of its instructional and research faculty. DeAvila is the Assay Core Coordinator for the Center for Reproductive Biology, an inter-institutional program that includes at least sixteen departments and seven colleges at WSU and the University of Idaho. One of his major duties is to develop and run hormone assays for a wide variety of species. While many samples that he analyzes are from livestock, rats, and mice, some of the most interesting assays he has developed were tests to detect leptin in frogs, melatonin in reindeer, and steroids in prehistoric fecal material.

While his work in the lab certainly keeps him busy, deAvila is also proficient at artificial insemination (AI) for cows. As a student he found the AS 454 class, Artificial Insemination and Pregnancy Detection, piqued his interest and he perfected his techniques during his undergraduate and graduate careers, as well as through experience with his own personal herd. He has come full-circle, now inspiring new generations of undergraduates as the instructor of the same class that he took as a student. DeAvila teaches students the proper techniques of semen handling, artificial insemination, and pregnancy detection in cattle. Twice weekly in the very early mornings of fall semester, students don coveralls, boots, and AI gloves to practice what David has taught them.

Meghan Munter, a student and later a TA of the class said, "David is one of those instructors who truly cares about both the student and the success of the student. He will try to explain so you can then picture [a procedure] in your head to help you get a better understanding."

Earlier this year, deAvila and Tom Cummings, WSU Beef Cattle Center Manager, identified a need in the beef cattle industry for a short course in AI and designed a course that would teach the basics. Because of those efforts, a dozen or more people gathered in the Reproduction Laboratory Barn on Grimes Way on a hot afternoon in mid-August to begin learning AI techniques. They started by familiarizing themselves with the female cow reproductive tract by using actual tracts collected from processing plants. Participants then got hands-on experience palpating live cows and two days of practice passing AI rods through a bovine cervix and into a uterine horn. In addition, deAvila taught them to correctly handle semen—one of the critical aspects for successful AI.

For some participants, AI and semen handling were totally new experiences, but for others, this course refreshed previous knowledge and skills. One participant said, "I used to AI my own cows....This course has refreshed my skills and I think I now can save some money by doing it myself rather than paying an AI technician to do it."

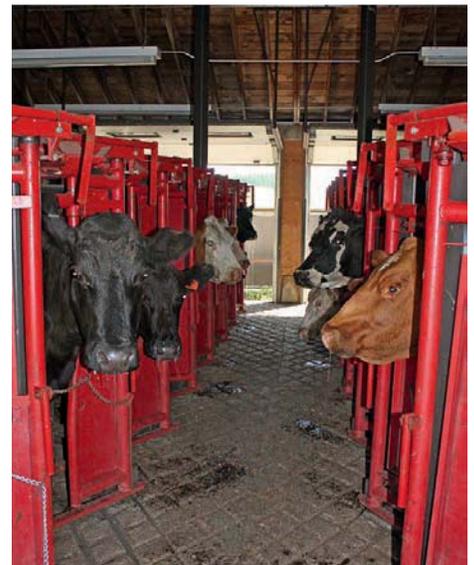
Students young and old enjoyed their experience at this course. Hannah Neibergs, a high school student who also participated said, "The AI course at WSU was definitely a learning experience. You were able to take your time and have as much practice as you pleased. Overall this was a great experience. I would recommend taking this if you are interested in artificially inseminating."

Because of positive feedback about the AI short course and continued interest from the beef cattle community, David is optimistic about future offerings.



*"David is one of those instructors who truly cares about both the student, and the success of the student on an individual basis."*

~ Meghan Munter  
undergraduate student



# With a Goal in Mind...

FROM ANIMAL SCIENCES  
TO VETERINARY MEDICINE



A graduate of North Thurston High School in Lacey, Washington, Jennifer Wilson (Jewett) came to the Department of Animal Sciences at WSU in 1998, after spending two years at Cal Poly Pomona in California. At WSU, Wilson got involved in programs such as CUDS and got a good taste of all aspects of the dairy industry. She also participated in an undergraduate research project with Dr. Kris Johnson, studying the digestibility and use of bluegrass straw pellets in beef cattle diets. Even though classes and other commitments kept her busy, Wilson found time for athletic endeavors, coaching the Men's Club Volleyball team one year and playing on the Women's Club Volleyball team her second year.

In 2000, with her B.S. in Animal Sciences in hand, Wilson joined the Peace Corps and headed to Ecuador to volunteer in large animal agriculture. Unfortunately, after six weeks in Ecuador, she returned home because large animal services were no longer required. Disappointed, Wilson "pounded the pavement" until she landed a job as herdsman at Long View Dairy in Jerome,

Idaho. Her education in Animal Sciences gave her a solid foundation and prepared her for the day-to-day duties as herdsman of the 3000-head (1200 milk cows) dairy. She was herdsman for 2½ years before being promoted to manager. In the meantime, she married Brian Wilson in 2003. They have two children, Alyssa, who is now 5½ years old, and Andrew, who is 4 years old.

Wilson had planned to return to school at some point to earn her degree in veterinary medicine, so she took a few courses at the College of Southern Idaho and, after four years as manager of Long View Dairy, she applied and was accepted to the WSU College of Veterinary Medicine.

In vet school, Wilson was involved in VSMART (Veterinary Student Mixed Animal Recruitment Team), a program to recruit, guide and mentor youth toward veterinary careers in food animal medicine. Wilson enjoyed explaining to 4-H and FFA students that their interests and successes with their show pigs or steers could be expanded to careers in animal science and veterinary medicine. Wilson was

also an active member of the Ag Animal Club and was involved in the Northwest Bovine Veterinary Experience Program (NW-BVEP), an experiential learning program for first- and second-year vet students. Through the NW-BVEP, Wilson participated in a research project at a calf ranch, where she studied the use of first choice antimicrobials for undifferentiated disease in preweaned calves and recently reported her findings at the American Association of Bovine Practitioner's (AABP) conference.

All-in-all, Wilson's education in Animal Sciences provided a solid beginning for her dairy industry career and her subsequent stint in vet school. When asked what advice she'd give students looking for careers in the dairy industry, she gave a bright smile and said, "Learn Spanish and business management. People management is important, too." For aspiring vet students she says, "Take business classes and learn to play nice with people."

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Wilson has passed her board exams and will graduate with her DVM degree in May.

# SOCIAL ACTIVITIES

Sharing Common Interests and Knowledge

*Companion Animal Club*



*Dairy Club*



*Block & Bridle*



*Entrepreneur Class*

The **Companion Animal Club** is dedicated to educating about, and providing hands-on experience with, companion animals. We provide information on many species, including: dogs, cats, rabbits, reptiles, guinea pigs, ferrets, mice, rats, and birds. We have educational field trips, interactions with live animals, animal socializing opportunities, great guest speakers, volunteering opportunities, and more. This year we worked with the Whitman County Humane Society and had doggy bandanna-making events for fundraising, plus guest speakers and dog-handling practice. Additional goals are to have a new companion animal at every meeting for our members to learn about and interact with, plus more field trips, more guest speakers, and setting up the biggest pet show WSU has ever seen. Email [wsucac@live.com](mailto:wsucac@live.com) if you are interested or would like to know more!

**Block and Bridle** is a professional and social organization for students sharing a common interest in the livestock industry. In association with the WSU Beef Center, the club provides opportunities for students to gain 'hands-on' experience within the beef cattle industry, conducts community service projects, and provides an opportunity to meet others with similar interests.

**Dairy Club** has more than 25 students who are interested in the dairy industry. Dairy Club meets every week to plan both social and educational activities for the members and the college community, as well as to participate in discussion of dairy issues with faculty or invited guest speakers. Major activities include a Cougar Cheese Sale, field trips, retreats, barbecues, maintenance of the WSU Dairy Club webpage, a fall recognition banquet, the Cougar Youth Instructional Weekend, and participation in the Student Affiliate Division (SAD) of the American Dairy Science Association (ADSA), the Hoard's Dairyman Cattle Judging Contest, and the Back-to-School Farm Olympiad. Milk and cookies are served at all meetings.

The **Animal Science Students of Entrepreneurship** provides students with experience and knowledge in developing business plans, marketing, accounting, and tapping into and serving a niche market. With many Animal Science students destined for a self-sustained career, the importance of teaching the necessary tools for success is a top priority.

*Clubs, teams and other organizations are a great way to meet other people with common interests and to learn something new about dairy or beef cows, pigs, companion animals, or even business.*

Cooperative of Dairy Students (CUDS)



Student Swine Cooperative (SSC)



Cougar Cattle Feeders

Each year students are selected for participation in the award-winning **Cooperative University Dairy Students (CUDS)** Program. Students manage a working dairy herd of registered Holstein cows and an equal number of replacement cows. Members work together as a group to make decisions regarding all phases of management in their herd. CUDS members are responsible for formulating diets and executing management decisions as well as performing the day-to-day duties of milking, feeding, record keeping, barn maintenance, heat detection, and artificial insemination. CUDS provides excellent background experience for any careers associated with the dairy industry, or other multi-dimensional careers.

The **Student Swine Cooperative (SSC)** is an Animal Sciences Club at Washington State University that owns and manages a small herd of pigs at the WSU Swine Center. The students involved in the club are responsible for all management and financial decisions for the herd, from farrow to finish. SSC provides a chance for students to learn about what the modern swine industry has to offer. This club helps students build skills and gain practical experience in livestock management. The members meet once a week in order to discuss the past

week's events as well as the upcoming week's events or reminders. Decisions made by the group are based upon reports from an appointed herdsman, plus recommendations from an advisory committee.

The **Cougar Cattle Feeders** is a selected group of undergraduate students who have a strong interest in the beef industry. Students solicit producers for donation of steers or heifers to the Cougar Pride Program, which is a way for producers to support WSU Animal Sciences. Currently, students are feeding 80 head for the Washington Cattle Feeders Association in addition to 10 to 15 donated calves. Students, in consultation with their advisor, are responsible for all aspects of feeding, caring for, and management of both donated and custom-fed animals. Students make decisions about diet formulation, health, and harvest programs and provide donors with monthly reports and a final report complete with carcass information. Students also keep detailed financial records of the complete program. Students make presentations at county cattle associations, participate in the Washington Cattlemen's Association Annual Meeting, collect carcass data at a major packing plant, and have the opportunity to make many industry contacts.

# The Future of Animal Sciences



**Graduate Students**

Back row: Carl Rogers, Justyna Filant, Piotr Dorniak, Robin White, Jonathan Broady, Chris Gambino, Shannon Shields, Xing Fu  
Front row: Megan Minten, Winnie Chan, Ting Jiang, Elizabeth Cashell, Kristy Yenick, Leticia Fanucchi, Lindsay Madden

Animal Science graduate students participate in the Animal Sciences Graduate Student Associate (ASGSA). The mission of ASGSA is to represent graduate students within the Department of Animal Sciences in the College of Agriculture, Human and Natural Resource Sciences at WSU in promoting cooperation, leadership, professionalism, and animal science both intramurally and off-campus.

**Jonathan Broady** is currently researching the dynamics of early germ cell differentiation in the testis. He is also investigating the role of a novel membrane progesterone receptor, PCRM1, in the maintenance of proper reproductive physiology in the male (PhD; McLean).

**Elizabeth Cashell** (formerly Cloninger) is using transgenic mouse models to identify a functional role for glucocorticoid signaling in the uterus during pregnancy (MS; Pru).

**Bo Ding** is interested in molecular mechanisms of autophagy involved in immunity and inflammation, and examining critical genes associated with genetic resistance to porcine reproductive and respiratory syndrome virus infection (PhD; Jiang).

**Piotr Dorniak** is determining how factors from the ovary and conceptus (embryo and associated placenta) regulate function of the endometrium of the uterus that supports growth and development of the conceptus during early pregnancy, using sheep as a model. The research is being conducted to help solve early embryo losses in ruminants (PhD; Spencer).

**Leticia Fanucchi** is studying the behavior and physiological response of adult companion dogs to grief (PhD; Newberry).

**Justyna Filant** is discovering the cellular and molecular pathways regulating differentiation, development, and function

of endometrial glands in the uterus, using mice as a model. The endometrial glands of the uterus are essential for successful pregnancy, and animals that lack endometrial glands are infertile and exhibit recurrent early pregnancy loss (PhD; Spencer).

**Xing Fu** is researching the role of ephrins (proteins) in mediating muscle cell/adipocyte interactions, and their impact on intramuscular adipogenesis (PhD; Du).

**Chris Gambino** is continuing his work on characterizing greenhouse gas and ammonia emissions from ruminant production systems in order to develop nitrogen estimation models that will identify critical control points for mitigation strategies (PhD; Johnson).

**John Griner** has learned that adipocytes are always embedded in connective tissues. Therefore, connective tissue, or the extracellular matrix, is expected to have a significant impact on adipogenesis. Griner is examining the role of lysyl oxidase, one of the enzymes critical for connective tissue synthesis, in the regulation of adipogenesis (PhD; Du).

**Shaun Harris** will use in vitro cell culture and in vivo studies to compare the difference in adipogenesis between Angus and Wagyu cattle. He hopes to shed light onto the mechanisms that lead to high marbling in Wagyu cattle (PhD; Du).

**Melissa Jackson** has recently demonstrated that blocking myostatin not only increases muscle mass in mice, but also the size of hearts. Fat mass is reduced in these animals suggesting that novel myostatin-blocking technologies, which are currently being developed in Dr. Dan Rodger's lab, could be used to repair damaged hearts and muscle as well as to reduce total fat mass. This work may have implications for human health as well (PhD; Rodgers).

**Heidi Keen** is testing a novel assessment for determining the psychological value of environmental enrichment items for animals (PhD; Newberry).

**Lindsay Madden** is evaluating the effects of human-animal interactions on adolescents in a residential treatment program. She recently presented her research findings at the International Society of Anthrozoology conference in Indianapolis, IN (PhD; Newberry).

**Megan Minten** is working to improve fertility of cattle using translational genomics based on a project where she identified beef heifers that differ in fertility with respect to artificial insemination and embryo transfer. The research focuses on identifying genetic markers of fertility in females that can be used to select replacement heifers (PhD; Spencer).

**Amanda Patterson** is working to delineate regenerative mechanisms in mammalian tissues using the uterus as a model organ. Patterson's efforts have established that epithelial regeneration that occurs as a component of the estrous cycle, as well as following parturition, occurs in part through mesenchymal-to-epithelial transition (PhD; Pru).

**Carl Rogers** knows that AMP-activated protein kinase (AMPK) inhibits adipogenesis and promotes myogenesis, but the mechanisms are unclear. So, he

is studying the role of stress signaling in linking AMPK to adipogenesis and myogenesis (PhD; Du).

**Shannon Shields** is developing a dynamic, deterministic, mechanistic bio-mathematical model that explicitly describes genetic, nutritional, and physiological controls in order to improve reproductive processes in dairy cows (PhD; McNamara).

**Fei (Figo) Sun** is focusing on the comparative losses of ammonia and greenhouse gases from land-applied dairy manure, and the effect of anaerobically digested manure on phosphorus uptake by grass. Specifically, Figo will evaluate lagoon-stored manure, reduced-solids lagoon-stored manure, and anaerobically digested low solids manure (MS; Harrison).

**Robin White** is investigating the opportunities for improving the sustainability of the beef industry by using a coupled deterministic environmental and economic model to assess the relative environmental, economic, and social welfare implications of different management practices. She is also seeking to disseminate what she learns from her model to stakeholders within the beef industry via iteratively developed teaching and Extension tools (PhD; Capper).

**Qiyang Yang** is focusing on identifying a few key genes that initiate adipogenesis and is studying epigenetic modifications that lead to the differential expression of these genes between cells undergoing adipogenesis and cells committing to other cell lineages (PhD; Du).

**Kristy Yenick** is studying and evaluating testicular cells in mice and the factors that contribute to spermatogonial stem cell fate, leading to a better understanding of adult stem cell maintenance in males (MS; McLean).

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## Recent Graduates

**Kyle Caires** is an Assistant Professor in the School of Mathematical and Natural Sciences at Berry College (PhD; McLean).

**Winnie Chan** is getting settled in Massachusetts and looking for the perfect job (PhD; Newberry).

**Ting Jiang** has been giving food safety advice while looking for employment (PhD; Nelson).

**Angela Oki** is the Vice President of Current Conceptions, Inc., in Redmond, OR (PhD; McLean).

**Kaitlin Lindhardt** (Wilson) is employed at Green Dirt Farm in Weston, MO. She and husband, Nils, celebrated the birth of their daughter, Maren in June 2011 (MS; Neibergs).

**Ricardo Zanella** is a visiting instructor in the Department of Animal Science at Berry College in Rome, GA where he is teaching Animal Breeding and Genetics as well as Introduction to Agricultural Sciences (PhD; Neibergs).



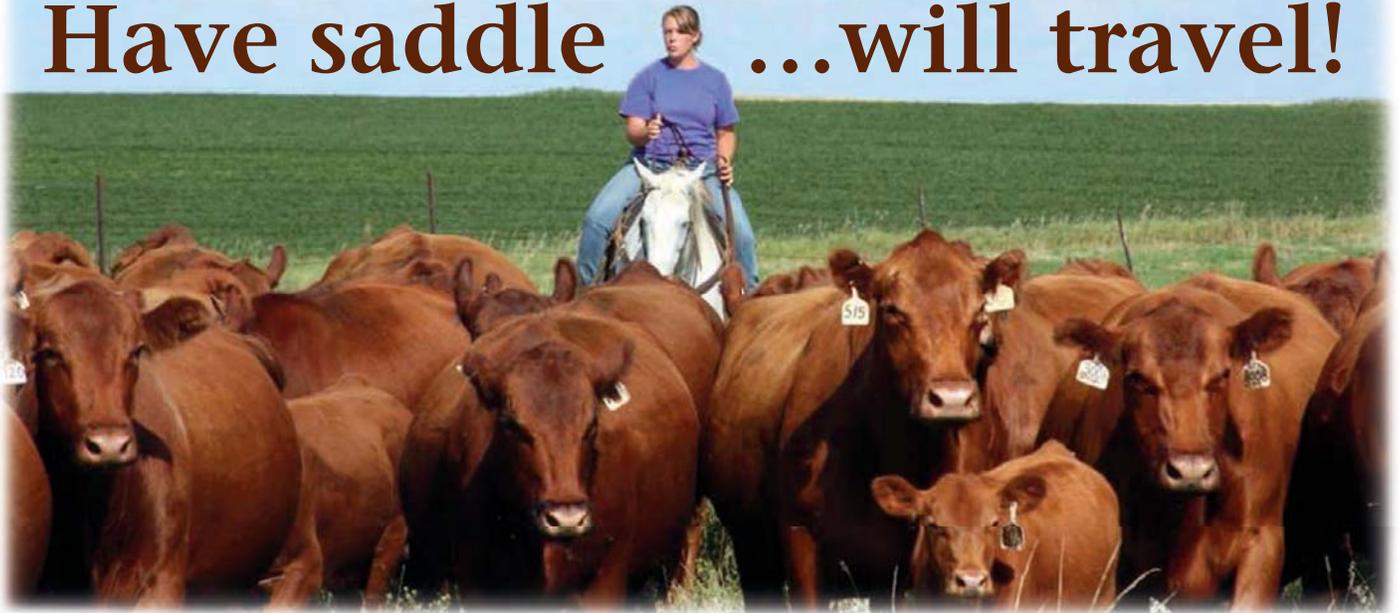
## Movin' On

Emily Terry, a Colorado native, came to the Department of Animal Sciences after finishing her undergraduate degree at the University of St. Andrews, Scotland. While at WSU, Emily researched the regulation of selenoproteins in pig and cow skeletal muscle with Dr. Ron Kincaid. Emily said, "My time at WSU definitely demonstrated to me why I want to continue in research, there is so much support and it's a great, enriching environment. Thank you to Dr. Kincaid for his support and for introducing me to the selenium/selenoprotein research fields."

Emily graduated from WSU with a M.S. degree in Animal Science in 2008, then moved to Chicago to start work on a Ph.D. in Pathology at the University of Illinois (UIC). There she continues to look into the biological importance of selenoproteins. Emily is currently in her fourth year at UIC and her research project is focused on studying alterations in antioxidant enzymes for the treatment of chronic myelogenous leukemia, a cancer of the white blood cells. So far, her efforts have resulted in the publication of a paper in the peer-reviewed journal, *Leukemia Research*. Emily's research is supported by the SMART (Science, Mathematics, and Research for Transformation) Scholarship program, offered by the Department of Defense to undergraduate and graduate students pursuing degrees in STEM (Science, Technology, Engineering, Mathematics). As a part of this program, Emily will intern this summer with the Toxicology Group within the Public Health Command, a division of the Army, at the Aberdeen Proving Grounds in Maryland. Emily is engaged to be married in September 2012. She expects to graduate in May 2013 and will continue work with the Toxicology Group as a civilian researcher.

*Congratulations, Emily!*

# Have saddle ...will travel!



**K**alynn Morcom, a junior in Animal Sciences from Arlington, WA, had never seen a soybean plant before she went to Mina, South Dakota, last summer to intern at the Lazy J Bar Ranch, a Red Angus seedstock operation owned by John and Stephanie Jung. Soybean fields were a common site around the ranch, roughly 150 miles NE of Pierre. On her first day there, Kalynn swung up on a horse and helped sort cattle to be trucked to grazing pasture. The next morning, Kalynn discovered that there were muscles in her body that hadn't been used for quite awhile! But her muscle memory quickly rebuilt as she rode out each morning to check pastures, creep feed, and refill mineral tubs. She also became adept at loading and reloading AI guns when she helped John breed 350 heifers in four days at the Diamond F Cattle Company.

Beyond working with the cattle, Kalynn also got involved with chores—building or fixing electric fences and helping put up acres and acres of alfalfa hay. Still, Kalynn had time for fun during her stay at

the Lazy J Bar Ranch, attending the Brown County Fair and several area rodeos, as well as catching Jack Ingram in concert, and meeting other Red Angus breeders.

Her internship taught Kalynn a lot about the seedstock cattle industry and she says, “The most important lessons I took from this experience [are] to keep your friends and family close, work hard for what you want, and enjoy the little things in life.”

However, all good things must come to an end even though Kalynn was “praying for anything that might delay or cancel my flight.” But on the day of her flight, the weather was good and Kalynn flew home.

Kalynn revisited the Lazy J Bar Ranch during Christmas break this year when she went to help with their production sale on New Year's Eve in Aberdeen, South Dakota. She is looking forward to the next chapter in her education this summer when she will work at the Gilcrest Feedlot in La Salle, Colorado as an intern for the JBS Five River Cattle Company.

## Dairy Challenge Team



*“The best part of dairy challenge was working with my team members. We all collaborated really well and had a lot of fun together!” ~Heather Hastings*

The “text meets the bucket” when students participate in the National North American Intercollegiate Dairy Challenge (NAIDC), a program that was developed in 2002 to help prepare students for careers in the dairy industry. After months of training and practice with coaches John Swain and Larry Fox, Phillip deVries, Heather Hastings, Brian Schoch and Jennifer Trice traveled to Hickory, NC, to compete. From March 31 to April 2, 2011, Phillip, Heather, Brian, and Jennifer visited dairies in the area, conducting walk-throughs of the dairies, inspec-

tions of on-farm records, and interviews with the producers. As a team, the students drew upon their collective classroom knowledge and presented recommendations about how the dairy owners could improve herd nutrition, reproduction, herd performance, animal health, facilities, and profitability. Their recommendations were evaluated by a panel of five judges including dairy producers, veterinarians and others in the industry. Out of 30 teams from the U.S. and Canada, the WSU team earned one of four Reserve Platinum awards.

## Awards & Recognition

**Erik Walker**, an Animal Sciences undergraduate was awarded a WSU Student Leadership Award in April 2011. This President's Award is given to the top 1% of students who display exceptional leadership and service to WSU and the community.

**Dan Rodgers** was the 2011 recipient of the R.M. Wade Teaching and Learning Award, CAHNRS.

The 2010 Community of Practice Award was presented to the Livestock and Poultry Environmental Learning Center (LPELC) at the eXtension annual meeting on June 29, 2011. **Joseph Harrison**, Animal Science faculty member in Puyallup, is one of the founders of LPELC.

**Sarah M. Smith**, an outstanding Department of Animal Science alumna and now WSU Grant/Adams County Extension Area Animal Scientist, was elected to serve on the National Pork Board's Swine Educators Executive Committee. Sarah will represent the Swine Extension/Educators in Washington state and all other Swine Extension/Educators across the country.

**Holly Neibergs**, Assistant Professor, and **Amanda Patterson**, Ph.D. candidate with Dr. Jim Pru, received Teaching Awards of Merit from the North American Colleges & Teachers of Agriculture (NACTA).

**Robin White**, an Animal Sciences graduate student with Dr. Jude Capper was the recipient of the 2011 Land O'Lakes, Purina Feed, LLC Graduate Student Poster Contest Award (MS Division) at the National American Dairy Science Association meeting held in July 2011. She presented the results of "A simulation assessment of long-term nitrogen runoff reduction from dairy pastures."

**Shannon Shields** placed second in the graduate student poster competition at the 46th Annual Pacific Northwest Animal Nutrition Conference held in October 2011 with her poster, "A mechanistic, metabolic model of regulation of reproductive processes in dairy cattle." Professor John McNamara is Shannon's PhD advisor.

**Margaret Benson**, professor and Animal Sciences department chair, is currently serving as President of the American Society of Animal Sciences.

## Reproduction Research Bolsters Production

By Heidi Keen

A large part of the success of a production facility is its ability to maximize reproduction of the animals with the most desirable genetic traits. Dr. Derek McLean works to understand the mechanisms of reproduction that can be managed to enhance this success. The majority of Dr. McLean's research focuses on the regulatory mechanisms of spermatogenesis, specifically identifying the factors that determine if a spermatogonial stem cell will self-renew or differentiate into a sperm. McLean, working with recent Animal Sciences Ph.D. graduate Kyle Caires and Dr. Andrea Cupp at University of Nebraska-Lincoln, identified vascular endothelial growth factor (VEGF) as a critical component for spermatogonial stem cell development. Treating bovine testis tissue in culture with VEGF creates large populations of germ cells that may be able to eventually be placed or transplanted into other male animals as "carriers" of the desirable genetic traits, similar to the use of embryo transfer in females. The procedure has been successful in the mouse model, and Dr. McLean sees applications in livestock production as well as infertility treatments in humans. With the support of the Nebraska Department of Health and Human Services, Dr. McLean hopes to try the procedure in livestock species in the future.

Male contributions to reproduction are only half of the picture. In females, folliculogenesis, or the development of eggs for ovulation, displays wide variation. Sheep in particular can show vast differences in the number of offspring born to a single ewe. Undergraduate Meghan Munter works with Dr. McLean in researching gene expression related to differences in folliculogenesis in sheep. The Washington State Sheep Producers support the project in hopes that finding genetic markers



*Dr. Derek McLean and Kyle Caires discuss research.*

for reproductive efficiency will allow producers to select the best ewes.

One way of discovering factors that regulate the spermatogonial stem cells or folliculogenesis is to determine what interferes with proper development. Dr. McLean is collaborating with Dr. Kwan Hee Kim in the School of Molecular Biosciences exploring environmental contaminants, such as phthalates, that act as endocrine disruptors. Phthalates are compounds from plastics that mimic hormones. If an individual is exposed to phthalates during critical periods, they can disrupt normal development of spermatogonial stem cells resulting in partial or complete infertility. This work is funded by the National Institute of Health because of its broader implications for human and animal health and its relationship to our environment.

For tackling the problem of reproductive efficiency from different angles, Derek McLean's work has been recognized by the Society for the Study of Reproduction, and bolsters WSU's and the Department of Animal Sciences' reputations for leadership in research and teaching in the field of reproductive physiology. Dr. McLean and other scientists in Animal Sciences, such as Dr. James Pru, collaborate in the WSU and University of Idaho Center for Reproductive Biology, the largest group of reproductive biologists in the U.S. McLean and Pru recently started a collaboration investigating how adult stem cells function in both the male and female reproductive systems. The outcomes of these projects can lead to both animal management and human health strategies to improve reproductive efficiency and health.

# Grand Champions

## SHOW ANIMALS FOR YOUTH

### Club Calf Sale

Block and Bridle members Tori Smith, Kalynn Morcom, Kaitlyn and Kelsey Reeck, Allie Kiehn, Jessica Zimmerman, Hannah Simmonds, and Lance Kidder, gathered at the Beef Center in August to begin preparing for the 4<sup>th</sup> Annual Club Calf Sale that was held on October 29, 2011. They halter-trained 12 premium show steers, and bathed and clipped them in preparation for the sale. In addition, the students were also responsible for organizing and marketing the event.



*Block and Bridle members organized the event*

The day of the sale was blustery, but sunny. Attendance was off the charts. Everyone gathered in the Beef Center's multipurpose room and learned what the judge is looking for in the show ring as well as how to clip a steer using methods that highlight the best and minimize the less desirable parts of its conformation. The potential buyers, which included young 4-H and FFA students, sized up each of the calves. They noted their favorite calves as the Block and Bridle crew led calves out, showing how the steers looked and moved. The 12 steers sold for an average of \$1080 each and the six replacement heifers went for \$900 each.

Calves sold last year did very well at local shows: Kaia Canon's steer was the Latah County Fair Grand Champion; Skyler Oestreich's steer was Reserve Champion in Ritzville; and Kaitlyn Reeck's steer placed third overall in Lynden.



Congratulations and thank you to everyone who has supported the Department of Animal Science Beef Cattle Program. We look forward to hearing how this year's crop of steers fared! The 5<sup>th</sup> annual WSU Club Calf Sale is scheduled for October 27, 2012. Check the WSU Animal Sciences web page (<http://www.ansci.wsu.edu/>) for updates. We hope to see you again!

### Show Pig Sale

Kids from Washington and Oregon gathered in Pullman on a cool day in January at the Cattle Feeding Laboratory for an educational program put on by members of the Student Swine Co-op (SSC) and waited for Dean Peters to arrive with a truckload of piglets.

The rumble of the engine outside announced the pigs' arrival and kids started to chatter excitedly amongst themselves and their parents. Soon, everyone was clustered around the Swine Center truck. Selection priority of the pigs was determined by a lottery and as their names were called, each youngster clambered up on the truck and selected their pig(s). Each person could purchase up to two pigs. Adult assistance in the youth's pig selection was not permitted to ensure fairness and instill a greater sense of ownership. SSC members helped catch the pigs and carried them to the awaiting transport vehicles. The pigs sold at the January sale will be ready for spring shows. Let us know how you place!



*Dean Peters, Swine Center Manager, discusses pig selection (above)*



*A happy girl with her new pig (right)*

If you know any youth who would like show pigs but missed this sale, don't despair. There will be two sales in April. February-farrowed piglets will be available for purchase on April 7, 2012, at 11:00 a.m. at the Grant County Fairgrounds in Moses Lake, and March-farrowed piglets will be for sale on April 20, 2012, at 10:00 a.m. at the Cattle Feeding Laboratory in Pullman. For more information on the show pig sales and for order forms, go to: <http://www.ansci.wsu.edu/facilities/swine/sale.aspx>

### **Best wishes on new beginnings...**

We thank **Jan Vierck** and **Jim O'Fallon** for their years of service to the Department of Animal Sciences. Jan retired in June, 2011 and Jim retired in October, 2011. We miss you!

Congratulations to **Jude Capper** on your new position in the dairy industry in the UK. The Palouse won't be the same without you!

## DEPARTMENT OF ANIMAL SCIENCES

# 27<sup>th</sup> Annual Recognition Program

The Distinguished Graduate in Science, Education and Technology will be presented to **Dr. Sandra T. Davidge** for her research contributions to the study of women's cardiovascular and reproductive health. Her research provides a unique opportunity to develop new therapeutic strategies for cardiovascular complications, especially as it relates to women.

**Dr. Mark Varner** is this year's Outstanding Alumnus. He is recognized for his contributions to the dairy industry, most notably as co-creator of Dairy-L, an Internet network of agriculture experts, and for the development of StepMetrix, a nationally and internationally marketed device that detects lameness in dairy cows.

This year we will recognize **Mr. William (Frank) Hendrix** for Distinguished Service to his community in Yakima County, where he has been an integral member of WSU Extension and has made significant contributions to the sheep industry.

## APRIL 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 <i>Plan now to attend the informal BBQ and celebrate another successful year with friends, families, and alums. Assist us in planning a great event by letting us know you'll be there.</i> Contact Kristy Olsen at (509) 335-5523 or email: kristy.olsen@wsu.edu	2	3	4	5	6	7
8			11 • Gathering begins at 4:30 pm • Program begins at 5:00 pm	12	13 <b>Ensminger Pavilion</b>	14
15	16	17	18	19	20	21

**Save the Date!**

**Ensminger Pavilion**





## *Gifts Change Lives*

Often, life-changing opportunities happen because of a single gift. A student gains from an experience or succeeds because of a scholarship. A faculty member makes a groundbreaking discovery because of generous contributions. A simple thing, really. Making a gift. Changing a life. If you would like to help us achieve our goals, please consider making a gift to the Department of Animal Sciences.

For more information or to find out how you can help, please contact:

Margaret Benson, Chair  
m\_benson@wsu.edu  
(509) 335-5523