

ANIMAL & DAIRY SCIENCES



Meat Science and Muscle Biology Laboratory



IN THIS ISSUE:

Dr. Amanda Stone &
Bearden Dairy Featured in
MAFES DISCOVERS

Horseman's Association:
T-shirt Sale

Academic Quadrathlon

Meat Chemistry & Cuisine
Showcase

Food Systems Leadership

Student Spotlight

National FFA
Vet Science Contest

Equestrian Team
Fundraiser

Upcoming Events

Publications

MSU EXTENSION SERVICE

BY JANIECE PIGG

THE BEARDEN DAIRY RESEARCH CENTER, a unit of the Mississippi Agricultural and Forestry Experiment Station, is an award winning dairy farm that flourishes around production, research, teaching, and outreach. Mississippi Agricultural and Forestry Experiment Station partners with the MSU Extension Service as an important strategic partner at the MAFES Dairy.

Dr. Amanda Stone is the MSU Extension Service's state dairy specialist and an assistant professor in the Department of Animal and Dairy Sciences in the College of Agriculture and Life Sciences. Stone has worked with the MAFES Bearden Dairy Research Center from the beginning of her appointment at Mississippi State, three years ago.

Several classes are held at the dairy to give students hands-on, experiential learning opportunities.

"We use our cattle to teach future veterinarians, dairy scientists, and animal scientists about how to work with cows," Stone said.

The dairy has ongoing research that is aimed at benefitting Mississippi producers.

"Our goal is always to conduct research that is directly applicable to Mississippi's dairy producers—things that can be implemented by our producers to improve their herds," Stone said. "We have a great herd for research and are growing it in order to have better statistical power for studies, but even more importantly, we have an amazing farm crew and graduate students that work hard to ensure our projects run smoothly" said Stone.

Extension events are an important component at the MAFES dairy.

"We have producers come out to learn what we are doing correctly, or sometimes not correctly, which is just as important," Stone added.

The MAFES dairy, in conjunction with the MSU Extension Service hosts a number of outreach events, such as Breakfast on the Farm. These events are aimed at fostering a passion for agriculture in children of all ages.

"I love working with students, from Pre-K



Dr. Amanda Stone is the MSU Extension Service's state dairy specialist and an assistant professor in the Department of Animal and Dairy Sciences in the College of Agriculture and Life Sciences. (Photo by Kevin Hudson)

to college. They are the future of agriculture and many of them are not exposed to it to understand its importance," Stone said. "Like our herd manager tells them on tours, agriculture impacts everything we do every single day. I've tried to put a lot of focus on youth in my time here with the goal that it will directly have a positive impact on those children's lives, but also with the hope that they can extend their newfound knowledge and experience onto others in order to positively impact buying preferences in the grocery store and encouraging careers in agriculture."

As a working farm, The MAFES Bearden Dairy Research Center is first and foremost a production dairy. The MAFES Sales Store sells products made from the dairy farm's most notable asset, milk.

"The milk produced at the dairy is delivered daily to the MAFES Custer Dairy Processing Plant, which in turn produces products for sale at the MAFES Sales Store,"

said Stone, who explained how the production of dairy products is able to run "full circle" from farm to table. "That helps give us protection at the dairy level, so that we always have a place to sell our milk. And the Custer Dairy Processing Plant produces great products."

As dairy farms throughout the nation are closing, the Mississippi Agricultural and Forestry Experiment Station and the MSU Extension Service partner to conduct research and outreach to help Southern producers thrive. Teaching through the College of Agriculture and Life Sciences prepares the next generation of agricultural leaders.

"I see my role not just for helping the producers and our students at Mississippi State, but also helping the dairy industry, as a whole, by shining a positive light on what dairy producers do each day to provide a safe and nutritious food to our families every single day." 🐄

HORSEMAN'S ASSOCIATION T-SHIRT SALE

If you are looking for Christmas gifts, the Horseman's Association is selling their club shirts.

Club officers assisted in designing the shirt. Shirt sales support the club's spring trip. Shirt price is \$20 with a wide range of adult sizes available.

The club will also be sponsoring a second fundraiser in the Spring with an Open Horse Show. Individuals interested in learning more about the shirt sales or the open horse show can visit the club's Facebook page at <https://www.facebook.com/msstatehorsemens/>.

Individuals can also contact the club's advisor, Dr. Molly Nicodemus, at mnicodemus@ads.msstate.edu for shirt purchases and further information on club activities.



2018-2019 Horseman's Association T-Shirt Design

Academic Quadrathlon



Malorie Humble, Hannah Kruse, Sabrina Taylor, and Jason Sousa,



Malorie Humble, Hannah Kruse, Jason Sousa, and Sabrina Taylor.

The MSU Academic Quadrathlon was held November 16, 17, & 19, 2018. There were three teams of 4 students each which competed to represent the department at the Southern Section of ASAS in Oklahoma in January, 2019.

On Friday evening (Nov. 16) the Lab practicum was administered, during which almost all of the ADS graduate students took the responsibility for conducting one lab station of 10 for the teams to complete. On Saturday morning, teams were given a written exam and participated in an oral presentation. Rhian Weimer assisted coordinating the two events, and Hunter Burnett and Zully Contreras judged the oral competition. On Monday evening the team competed in a double elimination quiz bowl. Rhian Weimer and Hunter Burnett kept score for each round of questions.

This year the three teams were very competitive, there was only one point separating each team. However, the team which won the Academic Quadrathlon and will travel to represent MSU ADS in Oklahoma consists of Malorie Humble, Hannah Kruse, Jason Sousa, and Sabrina Taylor.



FINAL PROJECT SHOWCASE

ADS Meat Chemistry and Cuisine class present their final dishes of Beef, Pork, Lamb and Goat.

They will discuss the **Anatomy, Biology and Chemical Composition (ABC's)** of their meat cuts and how they factored these into their final dish:

- ◆ Seasoning or marinade strategy
 - ◆ Cookery method and why
- ◆ Meat safety issues associated with preparation
- ◆ Relative value of the cut to the rest of the carcass

MONDAY, DEC. 3, 2018 | 5:00PM
MEAT SCIENCE & MUSCLE BIOLOGY LAB
315 WISE CENTER DRIVE

Food Systems Leadership

Congrats to our Food Systems Leadership Class 12 Association of Public Land Grant Universities MSU recipients receiving their awards: Dr. John Blanton, Mississippi State University Animal & Dairy Sciences head; Dr Gary Jackson, Mississippi State University Extension Service director; and Dr. Andy Kouba, MS State Wildlife, Fisheries and Aquaculture Department head. #MSUAg



Student Spotlight



Ann Caroline Harrell, Junior,
Animal & Dairy Sciences

"I grew up in West Point, Mississippi. Everyone in my family - from my great-great grandparents to my brothers - came to Mississippi State University. So at the time of deciding where to go to college, it seemed inevitable that I would attend MSU.

Closer to finalizing my college decision, I started looking at any other schools, though, just because I started feeling like I didn't want to go somewhere so close to home. But even after driving to 5 different states to tour 30+ colleges, the only place I could see myself at was Mississippi State University.

That is why I chose to attend MSU, and I chose to major in Animal & Dairy Sciences because I have always been passionate about animals and look forward to working with them in my future career."

National FFA Vet Science Contest

Congratulatory shout out to Animal and Dairy Sciences student, Amyjo "Red" Steichen, who participated in the 2018 National FFA Vet Science contest. Her chapter from Cullom, Illinois finished 3rd in the nation and she was the 4th place individual in the contest!



Mississippi State Equestrian Team Fundraiser

GET YOUR CHRISTMAS
GIFTS HERE!

The Mississippi State
Equestrian Team is
having a fundraiser
with Gold Canyon
Candles! The team
will receive 40% of
every candle sold!

Support the team by going to the link
to purchase your candles!

[https://fundraising.goldcanyon.com/fundraiser-candles?
fundraiser=703&seller=1713](https://fundraising.goldcanyon.com/fundraiser-candles?fundraiser=703&seller=1713)



Upcoming Events

Beef Extension - Dr. Brandi Karisch & Cobie Rutherford

Phone: (662) 325-7465 or brandi.karisch@msstate.edu (662) 325-4344 or cobie.rutherford@msstate.edu

Beef Calendar: <http://extension.msstate.edu/livestock/beef/beef-calendar>

Dairy Events - Dr. Amanda Stone

Phone: (662) 325-8773 or Email: amanda.stone@msstate.edu Website: <http://extension.msstate.edu/dairy>

4-H Events - Dr. Dean Jousan

Phone: (662) 325-2424

Email: dj230@msstate.edu [www.http://extension.msstate.edu/4-h](http://extension.msstate.edu/4-h)

Equine Events - Dr. Clay Cavinder

Contact Dr. Cavinder for information about programs and events. Phone: (662) 325-7566 or clay.cavinder@msstate.edu Website

<http://extension.msstate.edu/agriculture/livestock/equine/upcomingprograms>

2018 Refereed Publications

- Thompson, Shannon Kate, Naseer A. Kutchy, Samantha Kwok, Zulfi N. A. Rosyada, Ikhide G. Imumorin, Bambang Purwantara, and **Erdogan Memili**. Review: Sperm: Comparative morphology and function related to altered reproductive strategies and fertility in mammals. *The Professional Animal Scientist* 34:558–565 <https://doi.org/10.15232/pas.2018-01748>
- Lemley, Caleb O.**, Caitlin G. Hart, Racheal L. Lemire, E. Heath King, **Richard M. Hopper**, Seong B. Park, **Brian J. Rude**, and **Derris D. Burnett**. Maternal nutrient restriction alters uterine artery hemodynamic and placentome vascular density in *Bos indicus* and *Bos taurus*. *Journal of Animal Sciences*. 2018. 96:4823–4834. doi: 10.1093/jas/sky329.
- Holtcamp, Alexander J., Anuraj T. Sukumaran, Abigail E. Schnedler, Brandon J. McClenton, Emery Kunze, Chris R. Calkins, **Brandi B. Karisch**, **Derris D. Burnett**, **Thu T.N. Dinh**. Effects of feeding endophyte-infected tall fescue seeds to stocker Angus steers on retail quality attributes of beef strip steaks. *Meat Science* 149 (2019) 31-39. <https://doi.org/10.1016/j.meatsci.2018.11.007>
- KAYA, Abdullah, Erdoğan GÜNEŞ, **Erdoğan MEMİLİ**. Application of reproductive biotechnologies for sustainable production of livestock in Turkey. *Turkish Journal of Veterinary and Animal Sciences*. (2018) 42: doi:10.3906/vet-1706-66/
- Moura. Arlindo Alencar, Ana Luiza Cazaux Velho, **Erdogan Memili**, Antônia Moemia Rodrigues Portela, Arabela Guedes Viana, Maria Júlia Barbosa Bezerra, Fábio Róger Vasconcelos. Seminal plasma proteins and metabolites: effects on sperm function and potential as fertility markers. *Proceedings of the 10th International Ruminant Reproduction Symposium (IRRS 2018)*; Foz do Iguaçu, PR, Brazil, September 16th to 20th, 2018.
- Viana. A. G. A. , A. M. A. Martins, A. H. Pontes, W. Fontes, M. S. Castro, C. A. O. Ricart, M. V. Sousa, A. Kaya, E. Topper, **E. Memili** & A. A. Moura. Proteomic landscape of seminal plasma associated with dairy bull fertility. *Scientific Reports*. (2018) 8:16323 | DOI:10.1038/s41598-018-34152-w
- Park, Seong B., **Shecoya B. White**, Christy S. Steadman, **Clay A. Cavinder**, **Scott T. Willard**, **Peter L. Ryan**, and **Jean M. Feugang**. Real-Time Bioluminescence Analysis of *Escherichia coli* O157:H7 Survival on Livestock Meats Stored Fresh, Cold, or Frozen. *Journal of Food Protection*, Vol. 81, No. 11, 2018, Pages 1906–1912. doi:10.4315/0362-028X.JFP-18-207.
- Dinh. T.T.N.**, J.F. Legako, M.F. Miller, J.C. Brooks. Effects of USDA quality grade and cooking on water-soluble precursors of beef flavor. *Meat Science*. 146 (2018) 122-130. <https://doi.org/10.1016/j.meatsci.2018.08.008>.
- Littlejohn, Brittni P., David G. Riley, Thomas H. Welsh, Jr, Ronald D. Randel, **Scott T. Willard**, and **Rhonda C. Vann**. Use of random regression to estimate genetic parameters of temperament across an age continuum in a crossbred cattle population. *Journal of Animal Science*. 2018. 96:2607–2621. doi: 10.1093/jas/sky180.
- Vu, P. T. T., A. J. Holtcamp, A. T. Sukumaran, M. V. V. Le, D. H. Nguyen, & **T. T. N. Dinh**. (2018). Effects of market type and time of purchase on oxidative status and descriptive off-odors and off-flavors of beef in Vietnam. *Meat science*, 145, 399-406. <https://doi.org/10.1016/j.meatsci.2018.07.018>.
- Ishak, G. M. , S. T. Bashir, G. A. Dutra, G. D. A. Gastal, M. O. Gastal, **C. A. Cavinder**, **J. M. Feugang**, and E. L. Gastal. In vivo antral follicle wall biopsy: a new research technique to study ovarian function at the cellular and molecular levels. *Reproductive Biology and Endocrinology* (2018) 16:71. <https://doi.org/10.1186/s12958-018-0380-8>.

2018 Refereed Publications

- Humphrey, R. M., Z. Yang, M. S. Hasan, **M. A. Crenshaw**, **D. D. Burnett**, J. K. Htoo and **S. F. Liao**. The compensatorily-gained pigs resulted from feeding a methionine-deficient diet had more fat and less lean body mass. *Journal of Applied Animal Nutrition*, Vol. 6; e6; page 1 of 7. <https://doi.org/10.1017/JAN.2018.5>.
- Griffin, Courtney M. , BS; Jenna A. Scott, BS; **Brandi B. Karisch, MS, PhD**; Amelia R. Woolums, DVM, MVSc, PhD, DACVIM, DACVM; **John R. Blanton, MS, PhD**; Ray M. Kaplan, DVM, PhD, DEVPC, DACVM; William B. Epperson, DVM, MS, DACVPM (Epidemiology); David R. Smith, DVM, PhD, DACVPM (Epidemiology). A randomized controlled trial to test the effect of on-arrival vaccination and deworming on stocker cattle health and growth performance. *The Bovine Practitioner*, Vol. 52, No. 1.
- Sun, Yuhang , Jin Liu, Gengping Ye, Fang Gan, Mohammed Hamid, **Shengfa Liao**, Kehe Huang. Protective effects of zymosan on heat stress-induced immunosuppression and apoptosis in dairy cows and peripheral blood mononuclear cells. *Cell Stress and Chaperones*. <https://doi.org/10.1007/s12192-018-0916-z>.
- Woolums, Amelia R., **Brandi B. Karisch**, Jonathan G. Frye, William Epperson, David R. Smith, **John Blanton Jr.**, Frank Austin, Ray Kaplan, Lari Hiott, Tiffanie Woodley, Sushim K. Gupta, Charlene R. Jackson, Michael McClelland. Multidrug-resistant *Mannheimia haemolytica* isolated from high-risk beef stocker cattle after antimicrobial metaphylaxis and treatment of bovine respiratory disease. *Veterinary Microbiology* 221 (2018) 143-152. <https://doi.org/10.1016/j.vetmic.2018.06.005>.
- Sukumaran, Anuraj T., Alexander J. Holtcamp, Yan L. Campbell, **Derris Burnett**, Mark W. Schilling, **Thu T.N. Dinh**. Technological characteristics of pre- and post-rigor deboned beef mixtures from Holstein steers and quality attributes of cooked beef sausage. *Meat Science*. 145 (2018) 71–78. <https://doi.org/10.1016/j.meatsci.2018.06.001>.
- Hart, CG, BE Voelz, KE Brockus, **CO Lemley**. Hepatic steroid inactivating enzymes, hepatic portal blood flow and corpus luteum blood perfusion in cattle. *Reproduction in Domestic Animals*. 2018;53:751–758.
- Camacho, L.E., **C.O. Lemley**, S.T. Dorsam, K.C. Swanson, K.A. Vonnahme. Effects of maternal nutrient restriction followed by realimentation during early and mid-gestation in beef cows. II. Placental development, umbilical blood flow, and uterine blood flow responses to diet alterations. *Theriogenology*. <https://doi.org/10.1016/j.theriogenology.2018.04.013>.
- Lemley, C.O.**, L.E. Camacho, D.M. Hallford, K.A. Vonnahme. Uteroplacental secretion of progesterone and estradiol 17beta in an ovine model of intrauterine growth restriction. *Animal Reproduction Science*. 193 (2018) 68-78. <https://doi.org/10.1016/j.anireprosci.2018.04.001>.
- T. Williams, **B. Rude**, **S. Liao**, C. Mochal-King, **M. Nicodemus**. Effects of fat supplementation on plasma glucose, insulin and fatty acid analysis in ponies maintained on a forage- based diet. *Journal of Animal Physiology and Animal Nutrition*. 2018;1–8.DOI: 10.1111/jpn.12905.
- Gastal, G.D.A., **J.M. Feugang**, F.L.N. Aguiar, A.P.R. Rodrigues, J.M. Scimeca, G.A. Apgar, W.J. Banz, E.L. Gastal. Cryopreservation and in vitro culture of white-tailed deer ovarian tissue. *Theriogenology*. 113 (2018) 253-260.
- Velho, Ana Luiza Cazaux, Einko Topper, Erika Menezes, **Thu Dinh**, Abdullah Kaya, Arlindo Alencar Moura, **Erdogan Memili**. Metabolomic markers of fertility in bull seminal plasma. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0195279>.

2018 Refereed Publications

- Owen, MPT , EN Ferjak, **CA Cavinder**, KJ McCarty, KC Yankey, CG Hart, **DD Burnett**, **TTN Dinh**, **CO Lemley**. Effects of body condition score (BCS) on steroid- and eicosanoid- metabolizing enzyme activity in various mare tissues during winter anoestrus. *Reproduction in Domestic Animals*. 2018;53:296–303. <https://doi.org/10.1111/rda.13104>.
- Park, Seong B., **Scott T. Willard**, Christy S. Steadman, Atul A. Chaudhari, Shreekumar R. Pillai, Shree R. Singh, **Peter L. Ryan** and **Jean M. Feugang**. Proteomic analysis of antimicrobial effects of pegylated silver coated carbon nanotubes in Salmonella enterica serovar Typhimurium. *Journal of Nanobiotechnology*. (2018) 16:31 <https://doi.org/10.1186/s12951-018-0355-0>.
- Cavinder, C. A., PAS**, E. N. Ferjak, C. A. Phillips, **D. D. Burnett**, and **T. T. N. Dinh**. REVIEW: The importance of overall body fat content in horses. *The Professional Animal Scientist* 34:125–132. <https://doi.org/10.15232/pas.2017-01708>.
- Sukumaran, Anuraj T. , Alexander J. Holtcamp, April K. Englishbey, Yan L. Campbell, Taejo Kim, Mark W. Schilling, **Thu T.N. Dinh**. Effect of deboning time on the growth of Salmonella, E. coli, aerobic, and lactic acid bacteria during beef sausage processing and storage. *Meat Science* 139 (2018) 49–55.
- Wang, T., **M. A. Crenshaw**, N. Regmi, **B. J. Rude**, M. S. Hasan, A. T. Sukumaran, **T. Dinh**, and **S. F. Liao**. 2018. Effects of dietary lysine level on the content and fatty acid composition of the intramuscular fat in late-stage finishing pigs. *Canadian Journal of Animal Science*. 98: 241-249. DOI: [dx.doi.org/10.1139/cjas-2017-0083](https://doi.org/10.1139/cjas-2017-0083).
- Owen, M.P.T., K.J. McCarty, C.G. Hart, C.S. Steadman, **C.O. Lemley**. Endometrial blood perfusion as assessed using a novel laser Doppler technique in Angus cows. *Animal Reproduction Science*. 190 (2018) 119-126. <https://doi.org/10.1016/j.anireprosci.2018.01.015>.
- Feugang, Jean M. , Shengfa F. Liao, Scott T. Willard**, and **Peter L. Ryan**. In-depth proteomic analysis of boar spermatozoa through shotgun and gel-based methods. *BMC Genomics*. (2018) 19:62 DOI 10.1186/s12864-018-4442-2.
- Liao, Shengfa F.**, Naresh Regmi, Guoyao Wu. Homeostatic Regulation of Plasma Amino Acid Concentrations. *Frontiers in Bioscience, Landmark*. 23, 640-655, January 1, 2018.
- Feugang, Jean M. , Shengfa F. Liao, Scott T. Willard**, and **Peter L. Ryan**. In-depth proteomic analysis of boar spermatozoa through shotgun and gel-based methods. *BMC Genomics*. (2018) 19:62 DOI 10.1186/s12864-018-4442-2.
- Liao, Shengfa F.**, Naresh Regmi, Guoyao Wu. Homeostatic Regulation of Plasma Amino Acid Concentrations. *Frontiers in Bioscience, Landmark*. 23, 640-655, January 1, 2018.

2018 Book Chapters:

Jain, Sapna, Seong B. Park, Shreekmar R. Pillai, **Peter L. Ryan**, **Scott T. Willard** and **Jean M. Feugang**. Applications of Fluorescent Quantum Dots for Reproductive Medicine and Disease Detection. In *Unraveling the Safety Profile of Nanoscale Particles and Materials—From Biomedical to Environmental Applications*, Chapter 6, pp. 133-148, <http://dx.doi.org/10.5772/intechopen.72978>.