

# Animal and Dairy Sciences



## OUR MISSION:

Our faculty are committed to serving the citizens of this state through teaching, research and extension programs. Research and extension centers are located strategically throughout the state.

Animal research facilities at Leveck Animal Research Center, Bearden Dairy Cattle Research Center, Prairie Research Unit, Brown Loam Research Station, and the White Sands Unit give faculty opportunities to investigate the challenges facing the livestock industry.

Our Mission is to provide science-based solutions for animal agriculture through innovative and effective education, research and extension programming. Our Vision is Building the Future of Agriculture.

## In This Issue:

**Agri-King Outstanding Graduate Student Award**

**MAS 3rd Annual Summer Student Science Symposium**

**Graduate Student Research Award**

**Welcome New Beef Unit Staff**

**International Conference Representation**

**Upcoming Extension Events**

**2019 Refereed Publications**

# Winner of Agri-King Outstanding Graduate Student Award

Dr. Brittni Littlejohn was presented with the Agri-King Outstanding Graduate Student Award by Dr. David Jones at the 2019 ASAS-CSAS Annual Meeting.

Along with the award, Dr. Littlejohn gave an invited presentation in the Physiology Session on her graduate research, titled "Prenatal transportation stress alters physiology of suckling Brahman calves as mediated by changes in DNA methylation."



Inside the pre-  
summer issue:

Draft Camp - 2  
Supply Review - 3





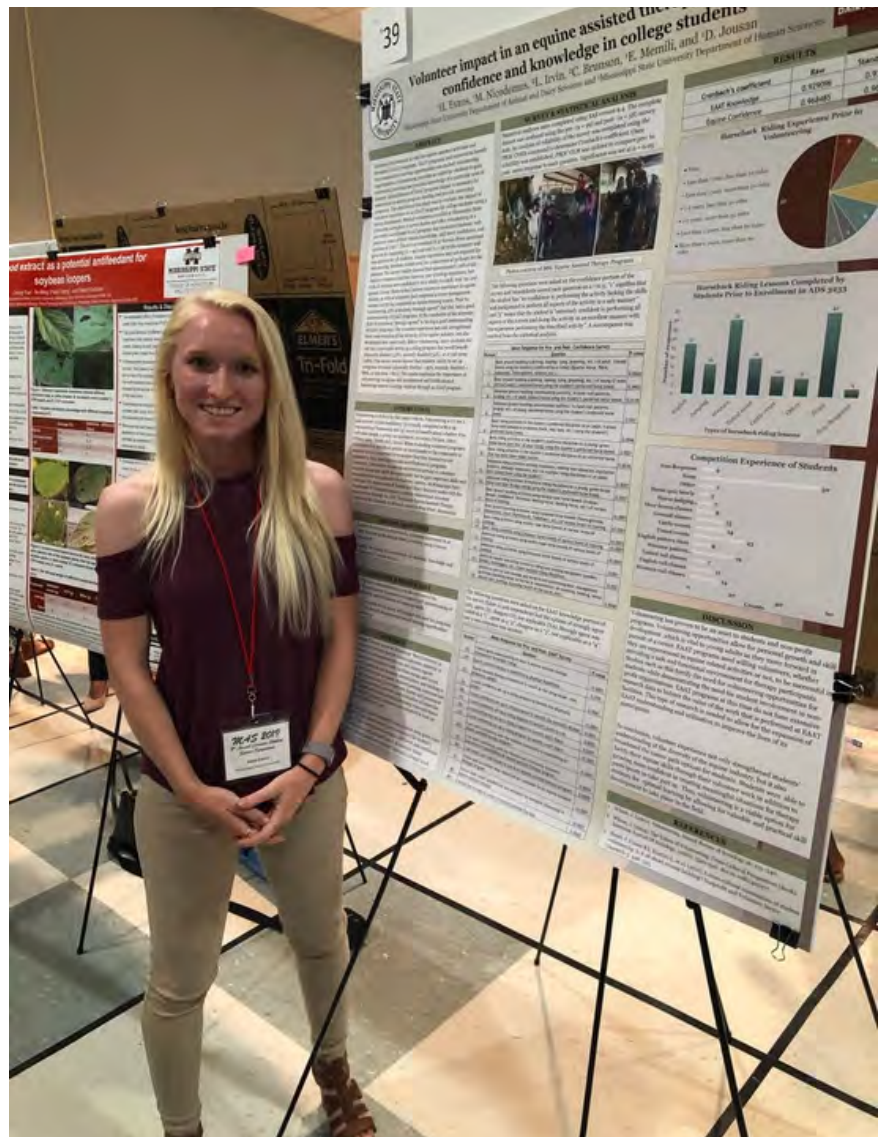
## Equine Program Represented at the MAS 3rd Annual Summer Student Science Symposium



Mississippi State University graduate students this summer had the opportunity to showcase their research on the benefits of student-horse interactions. Holly Evans, an ADS MS student and MAFES Horse Unit Assistant Manager with Katie Cagle-Holtcamp, an Animal Physiology PhD student and 2019 Gamma Sigma Delta International Graduate Scholarship recipient, presented posters this month on their research on equine assisted activities and therapy at the Mississippi Academy of Sciences 3rd Annual Summer Student Science Symposium held at the Bost Conference Center at Mississippi State University.

Ms. Evans also presented a collaborative study focused on equine coursework at MSU with ADS MS student Alicia Gilmore. All three students had recently returned from presenting their research at the 2019 Equine Science Society Symposium in North Carolina and are currently working on publications concerning these studies.

Individuals interested in learning more about these projects can contact ADS faculty member Dr. Molly Nicodemus at [mnicodemus@ads.msstate.edu](mailto:mnicodemus@ads.msstate.edu).



# Graduate Student Research Award



**Courtney Heaton, Ph.D. candidate, attended the 2019 American Society of Animal Science meeting in Austin, TX.**

**She received the award of the 2019 Dr. Josie Coverdale Graduate Student Research Award.**

**She is pictured here with Mark Coverdale.**

**Inside the pre-  
summer issue:**

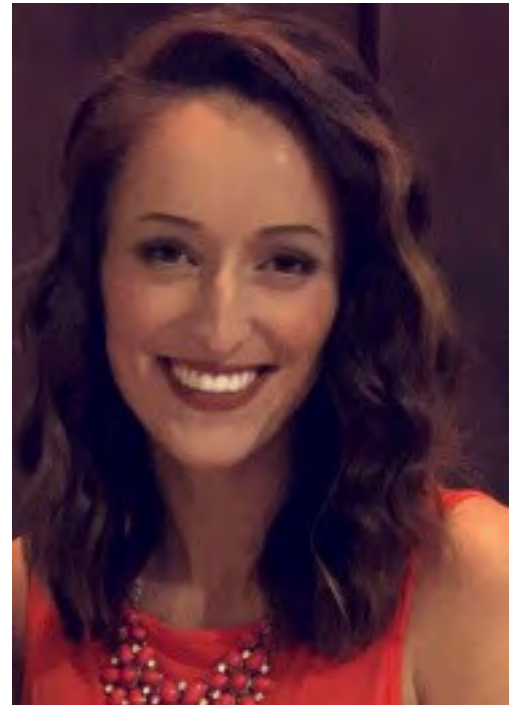
Craft Camp - 2

Supply Review - 3

# Welcome to ADS Beef Unit



Sarah Montgomery is a native to Northeast Ohio, raised on small farm in Petersburg. Sarah has had an interest in agriculture at a young age and grew up being heavily involved in 4-H taking on market livestock projects, showing horses, and also being a part of several rodeo associations. Sarah had an interest in continuing to learn more about agriculture outside of her own state so she decided to move south to Northwest, Tennessee. This is where she attended and completed her undergrad at The University of Tennessee at Martin with a degree in Agriculture Science Production and took on an interest in learning more about cattle and forage production. She was also a member the women's rodeo team at UTM where she competed in breakaway, goat tying and team roping.



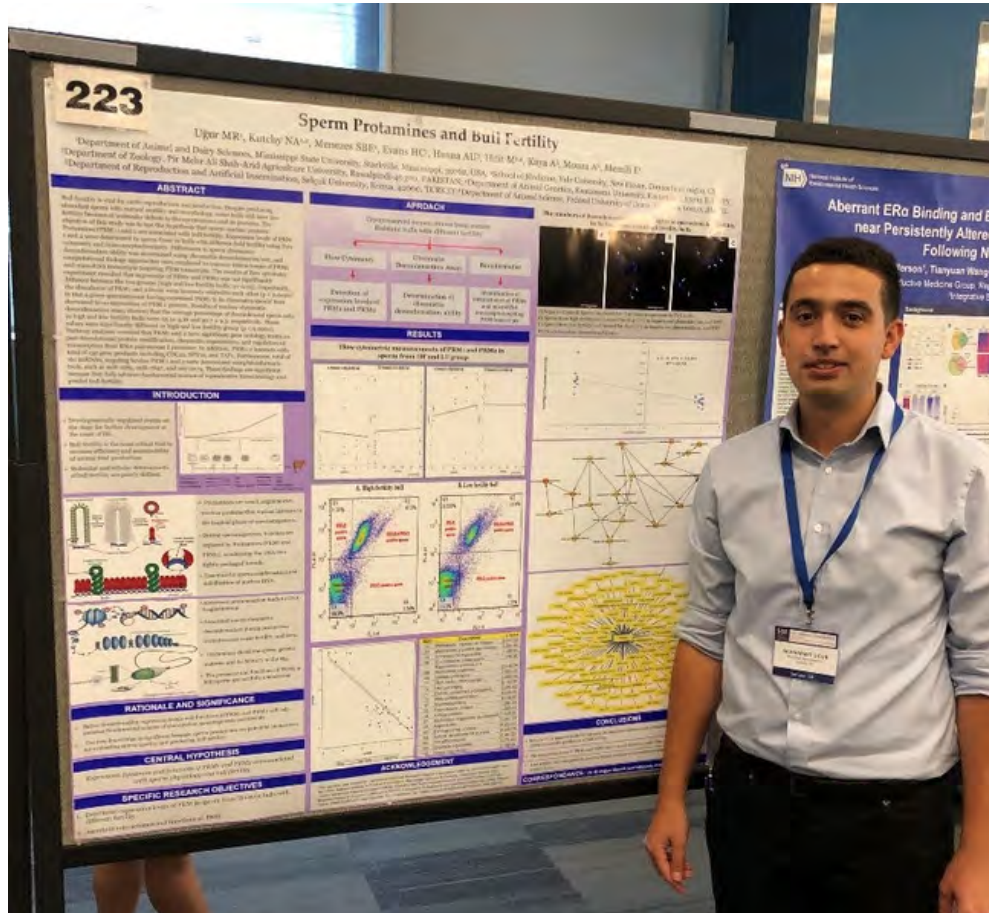
After undergrad, Sarah was interested in continuing on her education and came to Mississippi State University to learn more about utilization of forages in cattle production. She went on to complete her master's in the Department of Plant and Soil Sciences under Dr. Jesse Morrison and Dr. Brian Baldwin. Her master's thesis work evaluated the effects of annual ryegrass cytotype on herbage mass, nutritive value and cattle performance. While finishing up her master's, she worked as a research technician at the MAFES Prairie Research Unit where she helped with managing forages and cattle on the 2500 acre experiment station. She is now currently pursuing her doctorate in the Department of Animal and Dairy Sciences under Dr. Brandi Karisch as well as being the assistant herdsman on South farm.



# Ugur Serves for and Communicates Science at International Conferences

Muhammet Rasit Ugur, Ph.D. student in the Department of Animal and Dairy Sciences disseminated his dissertation research “Sperm Protamines and Bull Fertility” through a poster presentation at the international conference of the Society for the Study of Reproduction (SSR) in San Jose, CA between July 18 and 21, 2019 (<https://www.ssr.org/news-events/annual-meeting>).

In addition, Muhammet worked as a discussion leader at the Gordon Research Seminar on Fertilization and Activation of Development with a focus on “Gametes, Fertilization and the Tissues in Which They Develop in Humans, Animals and Plants” in Holderness, NH on July 27 and 28, 2019 (<https://www.grc.org/fertilization-and-activation-of-development-grs-conference/2019/>).



Finally, Muhammet communicated his research “Sperm functional genome and epigenome regulating bull fertility and sperm freezability” through a poster presentation at the Gordon Research Conference on Fertilization and Activation of Development with a focus on “Gametes, Fertilization and the Tissues in which they Develop in Humans, Animals and Plants” in Holderness, NH between July 28 and August 2, 2019 (<https://www.grc.org/fertilization-and-activation-of-development-conference/2019/>).

**KEEP UP WITH US ON  
FACEBOOK**



**ANIMAL AND  
DAIRY SCIENCES**

**<https://www.facebook.com/Mississippi-State-University-Animal-Dairy-Sciences-153818701305363/>**

# Upcoming Extension Events

## **Dr. Brandi Karisch, Extension Beef Specialist**

Oct. 24-26 - Mississippi State University Artificial Insemination School, Animal and Dairy Sciences Department, Mississippi State, MS

---

## **Dr. Amanda Stone, Extension Dairy Specialist**

Oct. 17-19 - Breakfast on the Farm, Bearden Dairy, Starkville

---

## **Dr. Dean Jousan, Extension 4-H Livestock Specialist**

Aug. 9-10 - 4-H/FFA Replacement Beef Heifer Development Contest, Hinds Community College, Raymond

Sept. 29 - Oct. 2 - National 4-H Dairy Conference, Madison, Wisconsin

---

## **Dr. Clay Cavinder, Extension Equine Specialist**

[clay.cavinder@msstate.edu](mailto:clay.cavinder@msstate.edu)

(662) 325-7466



## 2019 Refereed Publications

Ugur, Muhammet Rasit, Naseer Ahmad Kutchy, Erika Bezerra de Menezes, Asma Ul-Husna, Bethany Peyton Haynes, Alper Uzun, Abdullah Kaya, Einko Topper, Arlindo Moura and **Erdogan Memili**. Retained Acetylated Histone Four in Bull Sperm Associated With Fertility. *Frontiers in Veterinary Science*, July 2019 | Volume 6 | Article 223, doi: 10.3389/fvets.2019.00223.

Retained Acetylated Histone Four in Bull Sperm Associated with Fertility. *Frontiers in Veterinary Science*, **Feugang, Jean M.**, Carley E. Rhoads, Popoola A. Mustapha, Steve Tardif, John J. Parrish, **Scott T. Willard**, **Peter L. Ryan**. Treatment of boar sperm with nanoparticles for improved fertility. *Theriogenology*, 137 (2019) 75-81, <https://doi.org/10.1016/j.theriogenology.2019.05.040>.

Chilling, M. W. S, A. J. Pham-Mondala, N. Dhowlaghar, Y. L. Campbell, **T. T. Dinh**, A.C. Tolentino, J. B. Williams, Y. L. Xiong. Changes in the Volatile Composition of Fresh Pork Sausage with Natural Antioxidants During Long-Term Frozen Storage. *Meat Science and Muscle Biology*, 3(1):194–209 (2019), doi:10.22175/mmb2019.03.0007.

Sukumaran, Anuraj T., Kalyn Coatney, Jack Ellington, Alexander J. Holtcamp, M. Wes Schilling, and **Thu T. N. Dinh**. Consumer Acceptability and Demand for Cooked Beef Sausage Formulated with Pre- and Post-Rigor Beef. *Meat Science and Muscle Biology*, 3(1):210–218 (2019), doi:10.22175/mmb2019.03.0008

Hatcher, Jillian, **Clay Cavinder**, Courtney P. Heaton, Lesli Figueredo, Alex Holtcamp and **Thu Dinh**. Physiological and Physical Benefits of Interactions with Horses. *Journal of Extension*, 2019, Vol 57, Number 3, Article # 3RIB6.

Zoller, Jennifer L. , **Clay A. Cavinder**, Dennis Sigler, Luis O. Tedeschi, and Julie Harlin. Development of a mathematical model for predicting digestible energy intake to meet desired body condition parameters in exercising horses. *Journal of Animal Science* 2019.97:1945–1955. doi: 10.1093/jas/skz041.

Yang, Zhongyue and **Shengfa F. Liao**. Physiological Effects of Dietary Amino Acids on Gut Health and Functions of Swine. *Frontiers in Veterinary Science* 6:169. doi: 10.3389/fvets.2019.00169.

Ferguson, Treena L. , **Brian J. Rude**, and D. Tommy King. American White Pelican (*Pelecanus erythrorhynchos*) Growth, Nutrition, and Immunology. *BioOne Complete*. Waterbirds, 42(1) : 61-69. URL: <https://doi.org/10.1675/063.042.0107>.

Julien, Allison R. , Andrew J. Kouba, David Kabelik, **Jean M. Feugang**, **Scott T. Willard**, and Carrie K. Kouba. Nasal administration of gonadotropin releasing hormone (GnRH) elicits sperm production in Fowlers Toads (*Anaxyrus fowleri*). *BMC Zoology* (2019) 4:3. <https://doi.org/10.1186/s40850-019-0040-2>.

## 2019 Refereed Publications

- Aldridge, Mildred Elizabeth, Jasmyn Elaine Fearon, Bethany Peyton Haynes, Hannah Marie Miller, Katie Yvonne Sanford, Rachel Rebecca Scott, William Wess Anglin, Lauren Susanne Blalock, Briana Lashun Burkes, Olivia Lucienne Cohn-White, Brittany Renee Franks, Haleigh Margaret Giles, Ashley Lorraine Greene, Riley Dawn Hanby, Anna Grace Holliman, John Mark Kirby, Austin William Klein, Courtney Ann Lehmann, Grace Jennette Llyod, Cody Triston Lore, Tyler B. McMurray, Zachary Vinz Moody, Brianna Nicole Palmer, Lindsey Virginia Pansano, Ryan Matthew Pickle, Laura Marie Schaeffer, Jeneva Ruth Seidl, James Dean Smith, Hannah Faith Stepp, Faisal Amri Satrio, Naseer Ahmad Kutchy, Ed Dechert, Cobie Rutherford, Kipp Brown, Bambang Purwantara, **Erdogan Memili**. Review: Solutions for grand challenges in goat and sheep production industry. *Biotropia*. Vol. 26 No. 1, 2019: 56 - 64. DOI: 10.11598/btb.2019.26.1.944.
- Velho, Ana, Hongfeng Wang, Leslie Koenig, Kamilah E. Grant, Erika S. Menezes, Abdullah Kaya, Arlindo Moura, **Erdogan Memili**. Expression dynamics of integrin subunit beta 5 in bovine gametes and embryos imply functions in male fertility and early embryonic development. *Andrologia*. 2019;00:e13305. <https://doi.org/10.1111/and.13305>
- Carlisle, MS, Leif D., **Erdogan Memili, DVM, PhD**, Robert L. Linford, DVM, PhD, ACVS, Kristen A. Slater, DVM, **Molly C. Nicodemus, PhD**. Relationship between Gate Mechanics and the Speed of the Trot in the Weimaraner Dog Breed. *Topics in Companion Animal Medicine* 35 (2019) 26-30. <http://dx.doi.org/10.1053/j.tcam.2019.03.003>
- El Debaky, Hazem A., Naseer A. Kutchy, Asma Ul-Husna, Rhesti Indriastuti, Shamim Akhter, Bambang Purwantara, and **Erdogan Memili**. Review: Potential of water buffalo in world agriculture: Challenges and opportunities. *Applied Animal Science* 35:255–268. <https://doi.org/10.15232/aas.2018-01810>.
- Ferjak, E.N., **C.A. Cavinder**, A.T. Sukumaran, **D.D. Burnett**, **C.O. Lemley**, **T.T.N. Dinh**. Fatty acid composition of mesenteric, cardiac, abdominal, intermuscular, and subcutaneous adipose tissues from horses of three body composition scores. *Livestock Science* 223 (2019) 116-123. <https://doi.org/10.1016/j.livsci.2019.02.01>
- Dutra, G. A., G. M. Ishak, O. Pechanova, T. Pechan, D. G. Peterson, J. C. F. Jacob, **S. T. Willard**, **P. L. Ryan**, E. L. Gastal, and **J. M. Feugang**. Seasonal variation in equine follicular fluid proteome. *Reproductive Biology and Endocrinology*. (2019) 17:29. <https://doi.org/10.1186/s12958-019-0473-z>
- Casey L. Durfey, Sabrina E. Swistek, **Shengfa F. Liao**, **Mark A. Crenshaw**, Henry J. Clemente, Rooban V. K. G. Thirumalai, Christy S. Steadman, **Peter L. Ryan**, **Scott T. Willard** and **Jean M. Feugang**. Nanotechnology-based approach for safer enrichment of semen with best spermatozoa. *Journal of Animal Science and Biotechnology*. (2019) 10:14. <https://doi.org/10.1186/s40104-018-0307-4>.
- Mayo, L. M., W. J. Silvia, D. L. Ray, B. W. Jones, **A. E. Stone**, I. C. Tsai, J. D. Clark, J. M. Bewley, and G. Heersche Jr. Automated estrous detection using multiple commercial precision dairy monitoring technologies in synchronized dairy cows. *Journal of Dairy Sciences*. 2019. J. Dairy Sci. 102:1–12. <https://doi.org/10.3168/jds.2018-14738>.

## 2019 Refereed Publications

Yang, Zhongyue, Md. Shamimul Hasan, John K. Htoo, **Derris D. Burnett**, **Jean M. Feugang**, **Mark A. Crenshaw**, and **Shengfa F. Liao**. Effects of dietary supplementation of L-methionine vs. DL-methionine on performance, plasma concentrations of free amino acids and other metabolites, and myogenesis gene expression in young growing pigs. *Translational Animal Science*. Transl. Anim. Sci. 2019.3:113–123. doi: 10.1093/tas/txy109.

Gastal, G.D.A., **J.M. Feugang**, F.L.N. Aguiar, G.M. Ishak, **C.A. Cavinder**, **S.T. Willard**, **P.L. Ryan**, E.L. Gastal. Effect of cryopreservation techniques on proliferation and apoptosis of cultured equine ovarian tissue. *Theriogenology*. <https://doi.org/10.1016/j.theriogenology.2018.11.034>.