

ANIMAL & DAIRY SCIENCES

Mississippi State University



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 the 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.



MISSISSIPPI STATE UNIVERSITY™
DEPARTMENT OF ANIMAL
AND DAIRY SCIENCES

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FEEDING ON FESCUE: SCIENTISTS EXAMINE MEAT QUALITY FROM TOXIC FESCUE-FED CATTLE

Written by Karen Brasher



Above: Scientists in the new MAFES Meat Science and Muscle Biology building put beef strip steaks on black Styrofoam trays. They will be overwrapped with PVC film and placed under simulated retail display conditions for seven days. (Photo submitted)

Below: Graduate student Alex Holtcamp, Dr. Derris Devost-Burnett, and Thu Dinh, all in Animal and Dairy Sciences, examine steaks in the new MAFES Meat Science and Muscle Biology Laboratory. (Photo by David Ammon)

Kentucky 31 is a perennial cool-season tall fescue grass grown on an estimated 600,000 acres in the state of Mississippi. The popular forage is chosen for its drought tolerance and its adaptability across climates.

However, the forage has an unwanted host, an endophyte or fungus that lives inside the plant. This endophyte causes problems in beef cattle due to toxic chemicals found in the seed. It has been estimated that cattle grazed on endophyte-infected tall fescue costs the U.S. beef industry from \$600 million to more than \$1 billion annually.

Assistant Professor Thu Dinh set out to study these cases.

To read more about this study visit:

<http://mafes.msstate.edu/discovers/article.asp?id=139>



BUILDING SUSTAINABLE BEEF SYSTEMS: MAFES SCIENTISTS DEVELOP STRATEGIC PLAN FOR BEEF PRODUCTION

Written by Karen Brasher



Mississippi is home to almost 900,000 head of cattle, raised on nearly 16,000 farms, based on 2017 USDA estimates.

MAFES currently has 4,500 acres of pasture land and over 1,800 cows in its herd. Beef cattle research is conducted at the H. H. Leveck Animal Research Center in Starkville, the Brown Loam Branch Experiment Station in Raymond, the Coastal Plain Branch Experiment Station in Newton, the Prairie Research Unit in Monroe county, and the South Mississippi Branch Experiment Station's White Sand and McNeill Units near Poplarville.

"We are fortunate to have a great team of scientists dedicated to improving cattle production across the state and we have the facilities to demonstrate new management strategies to producers," said Dr. John Blanton, animal and dairy sciences head. The plan includes three broad areas of research: cow-calf management, stocker cattle management, and forage development and production.

Read more about this plan at:

<http://mafes.msstate.edu/discovers/article.asp?id=137>

The strategic planning committee for beef research includes John Blanton, Brandi Karisch, Jane Parish, Daniel Rivera, Brett Rushing, and Rhonda Vann.

Below: MAFES is embarking on a strategic initiative for sustainable beef production systems for the Southeast to help growers across the region including the 16,000 cattlemen and women who call Mississippi home. (Photo by David Ammon)



PROTECTING THE HERD: BREAKING THE CODE IN BOVINE RESPIRATORY DISEASE

Written by Vanessa Beeson



Bovine respiratory disease, or BRD, costs the cattle industry an estimated one billion dollars annually. The disease is usually caused by a combination of factors including stress, a viral infection, and bacteria present in the animal. Symptoms include fever, coughing, decreased appetite, and difficulty breathing, and the disease can lead to mortality. Vaccines are used to prevent the disease and treatment options include antibiotics and stress management. Despite these options, however, BRD remains the number one health problem for the cattle industry, causing widespread illness, death, and production losses.

Read more about the study performed by Dr. Florencia Meyer and Dr. Brandi Karisch

<http://mafes.msstate.edu/discovers/article.asp?id=136>

The research has been funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture, the CALS Undergraduate Research Scholars Program, and MAFES.

Above: Dr. Florencia Meyer alongside Katie Shearer, senior biochemistry major, and Hannah Bostick, junior biochemistry major, in the lab that hopes to unlock secrets about the BoHV-1 virus, a major contributor of BRD. (Photo by David Ammon)

Below: Healthy cattle graze at the MAFES H. H. Leveck Animal Research Center (South Farm). Bovine respiratory disease costs the cattle industry an estimated one billion dollars annually and Dr. Florencia Meyer focuses on a specific virus in order to discover new ways to protect cattle like these from BRD. (Photo by David Ammon)



PRECISION IN PIG REPRODUCTION: BIOPHOTONICS HELPS RESEARCHERS BETTER SEE ANIMAL PHYSIOLOGY

Written by Vanessa Beeson



More pork is consumed around the globe than any other meat. In 2017, 40 percent of the world's meat consumed was pork, according to the USDA Foreign Agricultural Service. This demand coupled with a growing global population means pork producers must be more efficient in all aspects of swine production.

One aspect that MAFES researchers are addressing involves the use of biophotonics in swine reproduction. Specifically, Dr. Jean Magloire Feugang, associate research professor and Dr. Shengfa Liao, associate professor, both in the Department of Animal and Dairy Sciences, are focused on finding ways to better utilize swine semen in artificial insemination practice.

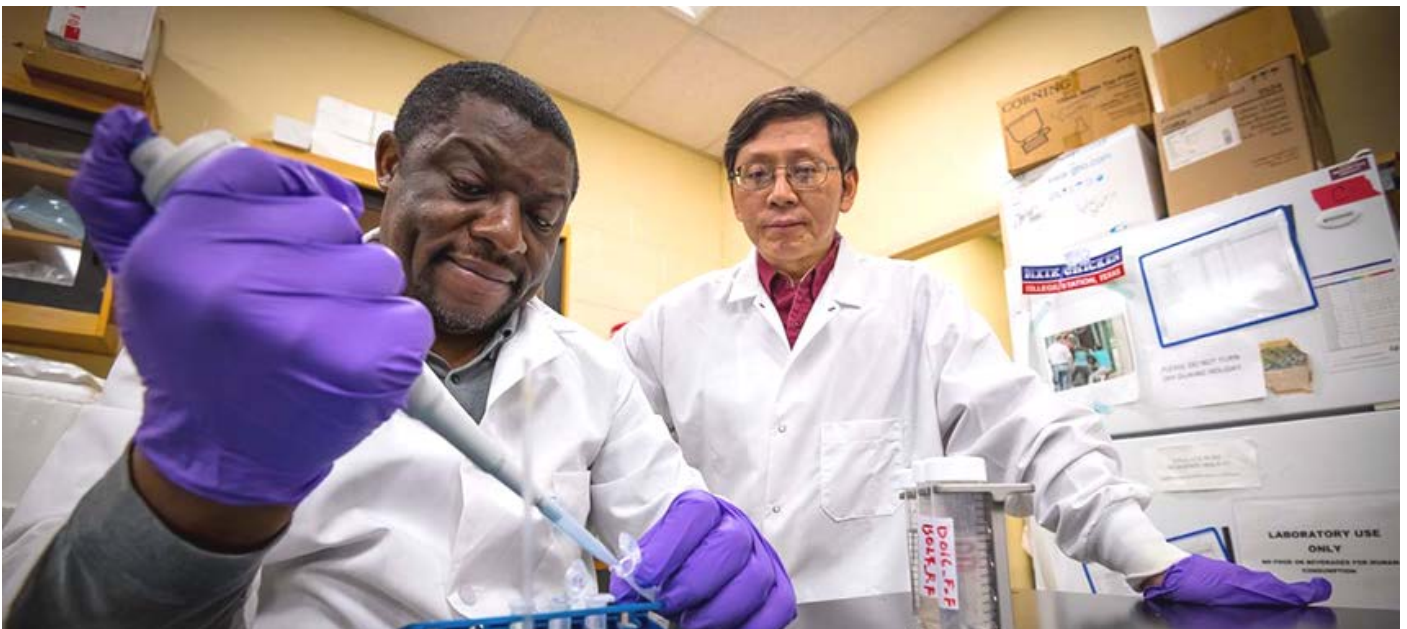
Read more about this:

<http://mafes.msstate.edu/discovers/light.asp?id=135>

Contributors include Dr. Derris Devost-Burnett, assistant professor; Casey L. Durfey, master's student; Christy Steadman, research associate; Dr. Seong B. Park, post-doctoral associate; and Dr. Mark Crenshaw, retired extension professor; all in the Department of Animal and Dairy Sciences. Henry J. Clemente with Clemente Associates, Inc., contributed to the research as well. This research was funded by the U.S. Department of Agriculture, Agricultural Research Service, Biophotonic Initiative, No. 58-6402-3-018; MAFES; and USDA-NIFA.

Above: Dr. Florencia Meyer alongside Katie Shearer, senior biochemistry major, and Hannah Bostick, junior biochemistry major, in the lab that hopes to unlock secrets about the BoHV-1 virus, a major contributor of BRD. (Photo by David Ammon)

Below: Dr. Shengfa Liao works with swine at the MAFES H.H. Leveck Animal Research Center (South Farm). (Photo by David Ammon)



GO WITH THE FLOW: BIOPHOTONICS HELPS RESEARCHERS BETTER SEE ANIMAL PHYSIOLOGY

Written by Vanessa Beeson

Two MAFES scientists, Dr. Caleb Lemley and Dr. Derris Devost-Burnett, are leading a team of researchers who are using biophotonics to study how maternal nutrient restriction affects calves.

Read more about this:

<http://mafes.msstate.edu/discover/light.asp?id=133>

Contributors include Dr. Brian Rude, professor; Caitlin Hart, former research associate; Dr. Seong Park, post-doctoral associate and Racheal Lemire, master's student, all in the Department of Animal and Dairy Sciences; along with Drs. Heath King and Richard Hopper in the College of Veterinary Medicine. The research is supported by the National Institute of Food and Agriculture and the U.S. Department of Agriculture, Hatch project under accession number 1011100. Additional funding was provided by the U.S. Department of Agriculture's Agricultural Research Service, Biophotonic Initiative number 58-6402-3-018 and a MAFES SRI grant.



Above: Derris Devost-Burnett (left) & Caleb Lemley (right)

Below: Brahman cows graze at the MSU Beef Unit on the MAFES H. H. Leveck Animal Research Center (South Farm). Brahman and Angus cows were bred with a Hereford bull in a study that determined how the fetal environment affected different breeds of calves. (Photo by David Ammon)



SOUTHEASTERN DAIRY STUDENT SYMPOSIUM: MSU DAIRY SCIENCE CLUB

Written by Dr. Amanda Stone

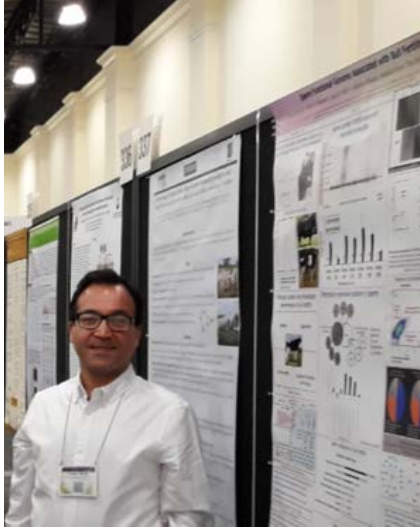
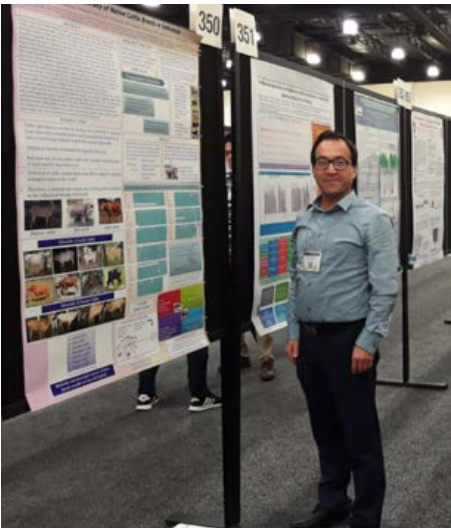


The Dairy Science Club traveled to Savannah, Georgia for the Southeastern Dairy Student Symposium on January 20th-21st. The symposium gave students the opportunity to explore career options within the dairy industry, network with other dairy students from the Southeast, and attend a trade show that hosted 34 different companies. In small breakout sessions, the students listened to a veterinarian who works for a nutrition company, a worldwide dairy trader, and a dairy cooperative manager speak about the path they took to get to the position they are currently in. The speakers gave advice on how to achieve that dream job after graduation. The students were able to use this great experience to become exposed to multiple different opportunities within the dairy industry.

Above and Below:
Mississippi State Students;
Animal and Dairy Sciences Club



MEMILI ACTIVELY PARTICIPATES, PRESENTS AND SERVES AT THE INTERNATIONAL PLANT AND ANIMAL GENOME CONFERENCE XXVII



- Presented two posters
- Delivered one platform presentation
- Attended the US NRSP8 National Animal Genome Research Program
- Attended and actively participated to the Cattle/Sheep/Goat workshop and was elected as the secretary for the workshop: He will organize and chair the Cattle/Sheep/Goat workshop in 2021 PAG conference.

Above: Dr. Memili in front of his presented work.

To read more about the conference:

<http://www.intlpag.org/2019/>

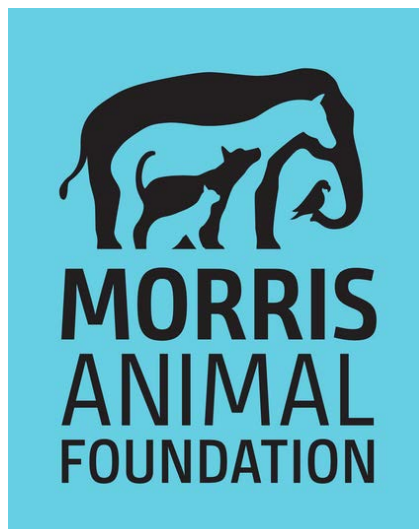
PLANT & ANIMAL GENOME XXVII

THE PREMIER AND LARGEST AG-GENOMICS MEETING IN THE WORLD

JANUARY 12-16, 2019
TOWN & COUNTRY HOTEL
SAN DIEGO, CA



2018 MORRIS ANIMAL FOUNDATION VETERINARY STUDENT SCHOLARS PROGRAM: CONGRATS CASEY DURFEY



The 2018 Morris Animal Foundation Veterinary Student Scholars program with the submission and completion of the project entitled D18ZO-608: Enhancing Wild Animal Semen Quality Through Nanotechnology Tools, submitted by Casey L Durfey, MS and mentored by Jean Feugang, PhD, were happy to report that Casey's project was selected as exemplary, and she is invited to attend the 2019 Morris Animal Foundation Scientific Advisory Board Meeting in Denver, Colorado from June 20-22, 2019. At this meeting, she will be asked to present her research in poster format and will have the opportunity to meet with other Veterinary Student Scholars, Morris Animal Foundation staff, Scientific Advisory Board members, and trustees. The finalists' posters will be judged by the Scientific Advisory Board, and cash honoraria will be awarded to the top two projects.

Again, congrats Casey!

Above: Casey Durfey (left) Morris Animal Foundation Logo (right)

Morris Animal Foundation:

We believe animals make the world a better place. Animals are our family members, our companions and our inspiration. Whether we work on staff, serve as board members or volunteer as scientific advisers, each of us strives every day to make the world a brighter place for animals — and those who love them.

UPCOMING EXTENSION EVENTS

Beef Extension - Dr. Brandi Karisch

Jan. 30 - Feb. 1, 2019: National Cattlemen's Beef Association Convention, New Orleans, LA

Jan. 31 - Feb. 11: Dixie National

Feb. 8 - Feb. 9: Mississippi Cattlemen's Association Convention, Jackson

Mar. 7: Hinds Bull Test & Spring BCIA Bull Sale, Raymond

Mar. 14 - Mar. 16: MSU Artificial Insemination School

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

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

Dairy Extension - 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

February 2 - 17, 2019: Dixie National Livestock Show and Rodeo, MS State Fairgrounds, Jackson,

February 7, 2019: 2019 Dixie National Sale of Junior Champions, MS State Fairgrounds, Jackson,

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

April 6, 2019: HANDS ON HORSES, MAFES Horse Unit, Starkville, MS

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>

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>.