

# The Department of Animal & Dairy Science

Newsletter

Summer 2021

## West's work could lead to treatments for traumatic brain injury and stroke

As featured in Southscapes by Maria M. Lameiras

Beginning with entomological treasure hunts with his father as a young child to working with pig models at the University of Georgia's Regenerative Bioscience Center, Associate Professor Franklin West (PhD — Animal and Dairy Science, '08) has led a science-filled life.

Now a global expert in stem cell biology with the Department of Animal and Dairy Science within UGA's College of Agricultural and Environmental Sciences, West has racked up an impressive list of accomplishments at the university, including producing the first live chimeric pigs from porcine-induced pluripotent stem cells, developing novel stem-cell-to-germ-cell culture systems, and creating a first-of-its-kind U.S. swine stroke model that has major implications on the treatment of human stroke patients.



Associate Professor  
Franklin D. West  
As featured in Southscapes

While his list of accomplishments in the scientific research community is lengthy, it does not stop there. West is a well-respected professor among his colleagues and students alike. Every year he teaches an undergraduate class that introduces students to regenerative medicine, and he mentors countless pre-med and pre-vet undergraduate students in meaningful research projects. West also helped catalyze the

*The complete article is available [here](#).*

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- Associate Professor Luke Mortensen
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## Department Info

### Department of Animal & Dairy Science

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College of Agricultural &  
Environmental Sciences  
UNIVERSITY OF GEORGIA

# Congratulations to our students!

Congratulations to all the PhD and MS students finishing this semester.

**Dr. Sam Spellicy**, finished her PhD in the RBC and in the ADS building received the 2021 Excellence in Research by Graduate Students Award in the Life Sciences from the Graduate School.

**Dr. Brian Jurgielewicz** finished his PhD in the RBC and in the ADS building received the 2021 Emerging Leader Award from Georgia Bio.

**Dr. Robert McKee** finished his PhD – Evaluation of pearl Millet for forage-finished beef production systems.

**Dr. Wenxin Yu** finished his PhD – Identification of a novel source of taste bud progenitors under lingual epithelium.

**Yun-Chu Chen** – Effect of evaporative cooling on systemic and mammary inflammatory responses of lactating dairy cows during

summer.

**Mary Kate Hollifield** – Persistence of genomic estimated breeding values and impact of censoring in commercial pig evaluations.

**Kristin Pisani** – The impacts of diet and predicted feed efficiency on performance, ultrasound carcass characteristics, and the gastrointestinal microbiome in growing angus heifers.

**Alyssa Pollack** – Non-thesis MS.

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The results are in for the 2021 CAES Virtual Research Symposium. This year we had a total of 48 participants who were divided into four separate sections. Half of the winners in the competition were ADSC students. Here are the student names and presentation titles.

**Chris Littlejohn:**  
Evaluation of Growth Factors

on Their Ability to Promote Proliferation and Reduce Apoptosis in Neural Stem Cells.

**Brandon Hudson:** Effects of Tannic Acid on Mixed Ruminant Microorganism Fermentation In Vitro

**Abigal Sartin:** Pre-Slaughter Fasting Effects on Gastrointestinal Microbiome

**Kassandra Kocan:** Association of Pre-treatment Somatic Cell Counts with Bacteriological Cure

Thanks to the faculty who served as research mentors: Holly Kinder, Todd Callaway, Dean Pringle, and Valerie Ryman.



*Wenxin Yu, PhD*



# From the Department Head

One of my favorite sayings is from the Greek philosopher Heraclitus, the Greek philosopher who said ‘nothing endures but change.’ This has been altered, slightly, to the modern saying ‘nothing is constant but change.’ This past year saw several retirements in Animal and Dairy Science including Johnny Hash at Eatonton, Robin Harvey here in Athens, as well as Drs. Mike Azain, John Bernard, and Joe West. Each of these individuals had tremendous impacts on the department, and Drs. Azain, Bernard, and West were all esteemed professionals who have been granted emeritus status by UGA. In Addition, Dr. Azain is the recipient of the 2021 ASAS Fellow Award for Teaching!

The UGA Athens dairy was the 21st dairy (and highest-ranking university dairy) in the most recent REAP (Registration, Equity, Appraisal, Performance) program run by the American Jersey Cattle Association. The driving force behind our dairy’s improved genetics has been Dr. Jillian Bohlen. Her dedication to

providing an exceptional student experience has been critical to our herd’s genetic prominence. Dr. Bohlen was just awarded the 2021 American Dairy Science Association’s Hoard’s Dairyman Youth Development Award for her numerous contributions to youth education, not only in Georgia but nationally!

Undergraduate students in Animal and Dairy Excelled this year, too. ‘The 2021 College of Agricultural and Environmental Sciences Undergraduate Research Symposium drew 48 participants in a virtual format that showcased students’ research findings and provided cash awards to eight first- and second-place winners... The competition was divided into four sections, including Social Sciences, Plant Sciences, and two sections on Animal Sciences.’ Winners were as follows:

‘Section 3, Animal Sciences

First place: Chris Littlejohn, “Evaluation of Growth Factors on Their Ability to Promote Proliferation and Reduce Apoptosis in Neural Stem Cells,”

with faculty mentor Holly Kinder. Second place: Brandon Hudson, “Effects of Tannic Acid on Mixed Ruminal Microorganism Fermentation In Vitro,” with faculty mentor Todd Callaway.

Section 4, Animal Sciences

First place: Abigail Sartin, “Pre-Slaughter Fasting Effects on Gastrointestinal Microbiome,” with faculty mentor Dean Pringle.

Second place: Kassandra Kocan, “Association of Pre-treatment Somatic Cell Counts with Bacteriological Cure,” with faculty mentor Valerie Ryman.’ (Source: <https://www.caes.uga.edu/news-events/news/story.html?storyid=8607&story=Undergraduate-Research-Symposium>).

So, while we salute the achievements of our retirees, we rejoice in the fact that we have tremendous faculty who are mentors to the next generation of leaders in Animal and Dairy Science.



*Francis Fluharty,  
Animal and Dairy Science  
Department Head*



# News

## Everything comes full circle in the life of Jennifer Tucker

Written by Charlene Betourney

Jennifer Tucker works at the University of Georgia's Tifton Campus as an Associate Professor of Beef Nutrition and Forage Management.

“Growing up—cattle, crops, and 4-H public speaking contests—were just things I did with my family. I never realized these experiences would play such an important role later on in life,” said Tucker. “In fact, when I graduated high school, I set out on a path far away from the farm and ag-life.”

Even though she was raised on a small beef cattle operation in South Central Kentucky—a career in agriculture wasn't always in the cards. As an undergraduate at Western Kentucky University, Tucker pursued a major in political science and a concentration in pre-law, with the aim of attending law school.

“In 2005, with a newly minted degree, I had a tough decision to make,” said Tucker. “I could go to a private out-of-state law school and be \$100,000 in debt by the age of 25 or choose a different path.”

During her undergraduate career Tucker had taken a few agriculture courses for her minor, including forages and plant physiology. Having a high degree of respect for the professor who taught the course, she set up a meeting to discuss getting a second degree in Agriculture to specialize in Ag Law. Tucker claims that “the stars aligned” at this stage when her professor offered her an alternate opportunity to work with him



*Associate Professor  
Jennifer Tucker*

and obtain a Master's in Agriculture with a concentration in Forage management and development.

“Once that ball started rolling, there was no stopping it,” said Tucker. “I knew there was no turning back.”

Tucker first realized her passion for agriculture research and outreach while working on her master's degree. Tucker said she enjoyed the challenge of figuring out practical solutions to tough questions.

“Apparently, I have always been very inquisitive, but I quickly learned how to harness that problem solving ability into something tangible,” said Tucker. “I also found that being outside was more enjoyable than being in an office.”

Tucker's first job after graduating with a Masters from Western Kentucky University and a PhD from the University of Kentucky, was as a post-doctoral researcher in the biomass for bioenergy program at UGA-Tifton, where she worked under Dr. Dewey Lee, which she called her “dream job.”



# Associate Professor Jennifer Tucker

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It was not until several years later, after securing a position at Auburn University as an assistant professor and as the Alabama State Forage Extension Specialist, she would then return to UGA-Tifton in 2016 and join the ADS Faculty as a Beef Researcher.

“Coming back to Tifton wasn’t really in the plan, however as I have learned many times now, plans and dreams can quickly change,” said Tucker.

Tucker’s new role as a beef specialist at UGA-Tifton enabled her to create a multi-collaborative, producer-focused applied research and Extension beef systems based grazing program that spanned the state and area.

“It really has become the best of both worlds,” said Tucker. “I get to do the applied research here on station and present the information through Extension programming while also training the next generation

of beef-forage crossover kids.”

During her tenure with UGA, Tucker has authored or co-authored over twenty peer-reviewed journal articles, 70+ conference abstracts, and three chapters within one co-authored book. Additionally, she has submitted over 80 grant proposals as principal or co-principal investigator, with a 58% granting success rate. Through these collaborations, Tucker has secured over \$3 million in grants, gifts, and in-kind donations to support her program. Her current research efforts are heavily focused on the utilization of alfalfa interseeded into bermudagrass and the associated effects on beef nutrition, and the utilization of crabgrass as a high-quality grazeable forage to improve summer pasture productivity.

“Yes I know people think I’m crazy, I’m told multiple times a year that alfalfa doesn’t grow in Georgia and that crabgrass is just a weed,” said

Tucker. “I just hope nobody tells them (the plant or the cows) because they sure seem to like it down here!”

Most recently, Tucker has been appointed as the UGA-Tifton Animal and Dairy Science REI coordinator, an administrative position that provides oversight to the UGA Animal Science Farms in Tifton and Alapaha and serves as liaison to the ADS Department Head in Athens. She is an ambassador for CAES, ADS, UGA, and the Tifton campus and truly understands the goals and mission of the land-grant university system.

“I get to work side by side with some of the most amazing and talented individuals—be it scientist, producers, or students,” said Tucker. “And then you add in cows and grass, what’s not to love about that?”



# News

## Associate Research Scientist

### Shogo Tsuruta

Dr. Shogo Tsuruta has been active in the field of breeding and genetics in dairy cattle for 36 years. His BS and MS degrees were from Japan, where he started his career conducting genetic evaluation for Japanese Holsteins. Then he moved to the US in search of better training. After completing his PhD at the University of Nebraska-Lincoln (UNL), Tsuruta started working at the University of Georgia (UGA), first as a postdoc and then as a research scientist. He is known for pioneering studies in dairy genetics and genomics, for developing popular yet powerful computer programs, and for his unselfish support of those programs to many junior and senior scientists. Tsuruta mostly works with dairy cattle genetics, applying very complex models to massive data sets from the American and overseas dairy industry. During the last decade, he has been essential in showing that genomic predictions can be seamlessly implemented in dairy cattle genetics. He has taught short courses in programming for animal breeding, modeling, and genomics in 16 institutions around the world. In summary, through mentoring, research, and service to the community, he is an influential dairy scientist with global name recognition.

Tsuruta has been running national genetic evaluations for the final score and 18 linear type traits in US Holsteins for 15 years and



*Associate Research Scientist  
Shogo Tsuruta*

has consulted on the issues of large-scale genomic evaluation to many institutions. He has also helped other livestock industries, such as beef cattle, swine, poultry, fish, honeybees, horses, and guide dogs to improve animal production efficiency and health. Tsuruta has applied his vast experiences from other species for the genetic improvement of dairy cattle, and vice versa. The programming support that he has been given to academia and industry is described below.

Shogo Tsuruta maintains programs from the BLUPF90 family online at [nce.ads.uga.edu](http://nce.ads.uga.edu), with most of the programs freely available. Documenting these programs is difficult in view of the many possible models and options. Tsuruta has filled his personal web page with advice and how-tos. Then moved all this information to a wiki, continuously updated, dedicated to BLUPF90 and that is very frequently read worldwide.

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# Associate Research Scientist Shogo Tsuruta

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Tsuruta actively participates in the active discussion group (blupf90 at groups.io), where he responds to hundreds of questions by quantitative geneticists and related scientists annually, mostly focusing on dairy. These questions are from established scientists and graduate students, alike, worldwide. He patiently responds to countless questions and assists as time permits, and more. Questions are not only on specifics of

programs or data quality issues but also on general modeling including genomics, which requires special skills that he possesses.

Over 1000 papers cited the manual of BLUPF90, of which about 25% are in dairy genetics. Many of them would not have been written without his support. If Tsuruta's contributions were fully reflected in published papers, his number of publications would be easily doubled.

Shogo Tsuruta has published 102 articles in peer-reviewed journals and has reviewed numerous manuscripts in over 30 scientific journals. Dr Tsuruta's work has been supported by grants at UGA totaling over \$10 million.

This year, 2021, Shogo Tsuruta has received the J. L. Lush Award in Animal Breeding.



# News

## Associate Professor Luke Mortensen

Luke Mortensen spoke excitedly as he described his goals to steer his microscope deeper and deeper into the unknown. His laser streaked around its maze of mirrors before blasting through to the sample, and glowing cells appeared on the computer screen. “I’m still amazed to see cells zipping around inside the bone,” Mortensen says, “getting to this point has been sort of an adventure.” It took more than a year after joining UGA in 2014 to build and begin using his 2 photon laser microscope to visualize living cells inside of the bone and to track the cells in mice.

Luke Mortensen is an associate professor at UGA’s Regenerative Bioscience Center (RBC) with a joint appointment in the Animal & Dairy Science Department (ADS) and the College of Engineering and seemed to relish the chance to show off his 2 photon laser microscope.

Back in his office on the third floor of the ADS building, Mortensen explained that he was attracted to the RBC by the strong community of regenerative medicine and stem cell researchers led by Steven Stice. He wanted to take his experience in microscopes and bone stem cells to find a way to improve human health- to really impact people- and had started with hypophosphatasia, a rare inherited disease in which bones have low mineral content and easily break. In severe cases, this can cause stillbirth or lifelong struggles with bone fracture and healing.

His research has the goal of replacing damaged stem cells of someone who has a



*Associate Professor  
Luke Mortensen*

genetic defect with ones that are healthy to permanently heal them, he says. This goal has provided the framework for much of Dr. Mortensen’s work. As his research program has developed it has attracted over \$2 million in support, with grants from the National Institutes of Health, National Science Foundation, and Department of Defense to create new microscopes capable of investigating cell machinery deep inside the bone and to explore technologies to enhance manufacturing of cell therapeutics for bone and immune diseases.

Being so close to the five other regenerative medicine labs stationed in the ADS building has led to multiple collaborative projects across UGA and the State of Georgia, including the federally funded Engineering Research Center for Cell Manufacturing Technologies (CMaT), a consortium based at the Georgia Institute of Technology that received \$20 million in 2018 from the National Science Foundation. With support from CMaT, Mortensen is actively working with leading experts in cell manufacturing at Georgia Institute of Technology, the

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# Associate Professor Luke Mortensen

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the University of Wisconsin, and the University of Puerto Rico, Mayaguez. This work aims to develop imaging techniques that can be used during the manufacturing of cell therapies to predict how well they will function as a treatment for disease. Imaging outcomes are being paired with mass spectrometry-based lipidomic imaging to define targets in metabolic networks of human stem cells.

Mortensen is quick to point out that the team of graduate students and undergraduates he works with has been critical to the lab's progress so far. "We have been lucky to have such a talented group of students, and a ton of support from ADS, CAES & UGA programs. I feel like this has

made it possible to provide high-quality research experiences to UGA undergrads." His lab has hosted over 20 undergraduates for multi-semester research projects, along with several high school students and even a local high school teacher. The two summers Madison County high school teacher Stan Harrison spent with Mortensen led to a new biotechnology course module that trains high school students on how to culture stem cells, a skill that could set them apart when applying for jobs in Georgia's growing biotechnology industry. For their efforts to integrate cutting-edge research into the classroom Mr. Harrison and Dr. Mortensen both won

awards through the Georgia Intern Fellowships for Teachers program. Mortensen has also been active in the classroom- developing and teaching a graduate course on therapeutic cell engineering and constructing a First-Year Odyssey course on the philosophy and engineering of fire building that he plans to teach in the fall.

Back in the lab again, Dr. Mortensen grows thoughtful "The RBC and ADS have been incredibly supportive of my growth as an associate professor, I'm so fortunate to have such amazing mentors and to be part of this academic community."



*Associate Professor  
Luke Mortensen*



# Student Spotlight

## Morgane Golan

Morgane Golan, a first-year PhD student in the Stice and West labs, will be developing a neural stem cell-derived extracellular vesicle (NSC-EV) therapy for the treatment of traumatic brain injury, using the pig as a model system. She is currently investigating the inflammatory response to neurotraumatic injury, and is also working on a method for stable, long-term storage of NSC-EVs.

Golan will be assuming the role of President of the Regenerative Bioscience Center Graduate Student Association (GSA) in the fall of 2021, and looks forward to collaborating with the Animal and Dairy Science GSA in the coming semesters!

Golan completed her BS in Pre-Veterinary/Animal Science at the University of Massachusetts Amherst in the spring of 2020, and drove 17 hours to get to Georgia (it was worth it)! In her free time, Golan raises backyard chickens and participates in a reading challenge with friends.

Golan wanted to pursue veterinary medicine, originally, but discovered the thrill of research in her second year at UMass, in the Cui Lab. She participated in a summer research fellowship, won an award on campus for her work, and was published three times as an undergraduate student. She realized that research was her true passion, and animal modeling of human diseases couldn't be a better fit for her research interests.



*Morgane Golan*



# Student Spotlight

## Justin Burt

Justin Burt joined the Department of Animal and Dairy Science during the summer of 2019 and is currently a graduate research assistant under the direction of Dr. Jennifer Tucker on the UGA-Tifton Campus. Justin has a strong agricultural background that started at a young age. Raised in Williston, South Carolina, his agricultural upbringing began with helping his “Pa” with feeding bottle calves, raising chickens, and other livestock. His love of agriculture and the beef industry have continued as, in addition to being a graduate student, he also owns his own herd of commercial beef cows back in South Carolina where he implements estrus synchronization and artificial insemination to improve his herd.

Burt’s early agricultural ties led him to pursue a Bachelor of Science degree in Animal Science from Berry College in Rome, Georgia. The rigorous hands-on-learning experience that Berry provides in the classroom, provided a means to practice what was taught in the classroom in a real world scenario. Burt worked at the Berry Rollins Beef Unit as a student worker, as well as the herd manager for the Berry College Angus Beef Student Enterprise. While at Berry, Burt was given the opportunity to participate in the 2016 Southern Section of Animal Science Academic Quadrathlon in San Antonio, Texas. These experiences provided an interest and opportunity for him to further his education in the area of ruminant nutrition.



*Justin Burt*

Upon his graduation from Berry in 2017, Burt pursued a Master’s Degree in small ruminant nutrition at Sul Ross State University in Alpine, Texas. Under the advisement of Dr. Jamie Boyd, he conducted a research trial utilizing Katahdin Sheep in a feedlot that were fed a diet that had the addition of a *Saccharomyces cerevisiae* fermentation product. In addition to leading his research project and taking a full course load, Justin served as a mentor for several undergraduate McNair Scholar research scholars, as a lab instructor for the Beef Cattle Production and Management class, and as the assistant manager of the Sul Ross State University Sheep and Goat program, where he was responsible for breeding operations and lambing. During his time in Texas, Burt received the Expanding Graduate Horizons Graduate Student Fellowship for the 2018-2019 school year and the 2019 Outstanding Animal Science Graduate Student for Sul Ross State University.

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# Justin Burt

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While Justin enjoyed his work in Texas, he had a strong desire to get back to his roots. Growing up on his family's beef cattle operation in South Carolina, he still invests significant time in making breeding and management decisions, including estrus synchronization and artificial insemination. Burt is also regularly consulted by other beef cattle producers' around his hometown to assist in making sound breeding and strategic nutritional management recommendations. Burt knows from being both a producer and a consultant, that there is not a "one-size-fits-all" solution to problems that face the industry, which has led him to further his educational endeavors and become a better advocate for

the beef industry.

In June 2019 Justin Burt began his Doctoral program under the direction of Dr. Jennifer Tucker in the UGA Department of Animal and Dairy Science at the UGA-Tifton Campus. Burt's research program has a strong emphasis in beef cattle nutrition, evaluating alternative southeastern livestock forage systems, primarily focused on the incorporation and utilization of alfalfa bermudagrass mixtures in the region. Burt has joined a producer focused applied research program that takes a team approach to accomplishing research and extension goals to help move the beef industry forward. During his time in Tifton, he manages two large grazing

evaluations, conducts analyses in the UGA Tifton campus animal nutrition and forage labs, and assists fellow graduate and undergraduate students with additional program research projects, including analysis of bahiagrass and crabgrass integration in pastures and production of high quality baleage for beef cattle. He is also an active part in the development and dissemination of un-biased researched based information through UGA Extension programming efforts and as a guest-lecturer discussing Beef-Forage livestock systems in the Southeast for undergraduate courses on the UGA-Tifton Campus.



*Assistant Professor Jennifer Tucker and Justin Burt*

