TEXAS A&M UNIVERSITY

IFRB 2025

POINTS OF INTEREST:

- **The IFRB was organized in 1990 and is one of the largest Reproductive Biology Programs in the US**
- **Membership includes 39 faculty from 11 departments, 5 colleges and 3 research centers of the Texas A&M University System.**
- **IFRB sponsored activities: 30th Annual R.O. Berry Lecture, 35 year old IFRB Repro Forum Seminar Series, 30th Texas Forum on Reproductive Sciences, and 18th Annual IFRB Retreat**

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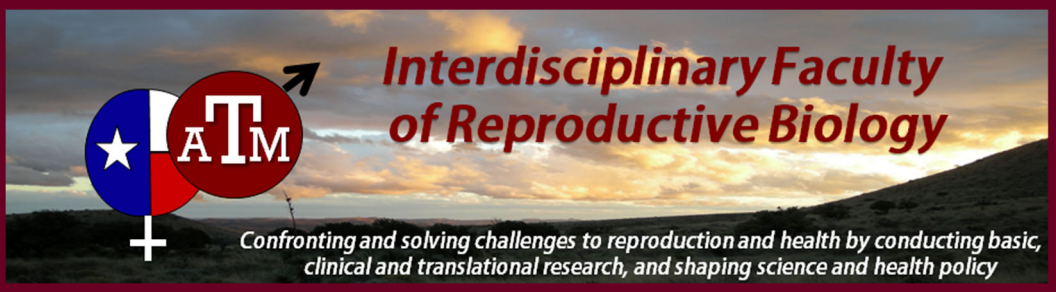

2025

New IFRB Faculty Spotlight

***Dr. Brian Davis is an Assistant Professor of Biomedical Genetics in the College of Veterinary Medicine and Biomedical Sciences.**

Dr. Davis was born in Iowa but moved to Longview, TX when he was three where he spent a considerable portion of his childhood exploring the East Texas piney woods. He took a non-traditional route in his higher education, taking six years off after high school to work, start a computer networking and training business, and raise his young son. Entering Texas A&M initially interested in Computer Science, he was disabused of that notion and landed in the Genetics undergraduate program happy to be working with biological code rather than coding in C. He worked in diverse array of labs performing animal husbandry, molecular modeling, viral cultures, and basic genetics, and graduated with B.S. degrees in Genetics, in Molecular and Cellular Biology, and in Biochemistry. Immediately after going to work in industry as a synthetic chemist designing and functionalizing buckminsterfullerenes (buckyballs) for use in photodynamic therapy for cancer treatment, genetics drew him back in.

One of his undergraduate PIs in the College of Veterinary Medicine, Dr. William J Murphy, convinced him to become his first master's, and subsequently his first Ph.D. student, where his career focus on genome evolution and reproduction began. After defending his dissertation using computational genomics and transcriptomics to characterize the genetics underlying spermatogenic failure manifesting as interspecies reproductive isolation in felines, he joined the canine genetics lab of Elaine Ostrander at the National Institutes of Health as a postdoctoral fellow. Dr. Davis introduced (new at the time) whole genome and whole transcriptome sequencing to the lab and brought these techniques to bear for a series of publications in canine domestication, phenotypic variation, population genetics, heritable disease susceptibility, and cancer.

After his postdoc, Dr. Davis sought to return to his roots and family and took an academic professional track research professorship back at TAMU CVM. This opportunity afforded him the ability to collaborate with excellent scientists such as Dr. Leif Andersson and Dr. Terje Raudsepp, along with numerous other colleagues within and outside TAMU. It was his collaborations with Dr. Raudsepp that brought him back to the reproductive biology he studied during his Ph.D.

Bringing his postdoc experience using comparative genomics to examine genome structure and its role in phenotypic variation and disease, this led to training graduate students \in their projects such as the characterization of sex chromosomes in multiple mammal species and the adaptative evolution of spawning behavior in Atlantic herring. However, a primary focus has remained on heritable disease and cancer in companion animals. His first Ph.D. student McKaela Hodge's dissertation focused on canine osteosarcoma and equine melanoma. In one publication, they tested the cellular mechanisms of chemotherapeutic resistance in an osteosarcoma cell line across two incremental concentrations of carboplatin (**see Figure 1A, page 2**). Using single cell transcriptomics, they document the cellular evolution from naïve to low (2.5 uM) and then high (10 uM) concentrations of this chemotherapeutic (**see Figure 1B, page 2**) and mark the activated cellular pathways involves in resistance such as sirtuin and pathways involved in the epithelial to mesenchymal translation.

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IFRB New Faculty Spotlight: Dr. Davis (cont'd from page 1)

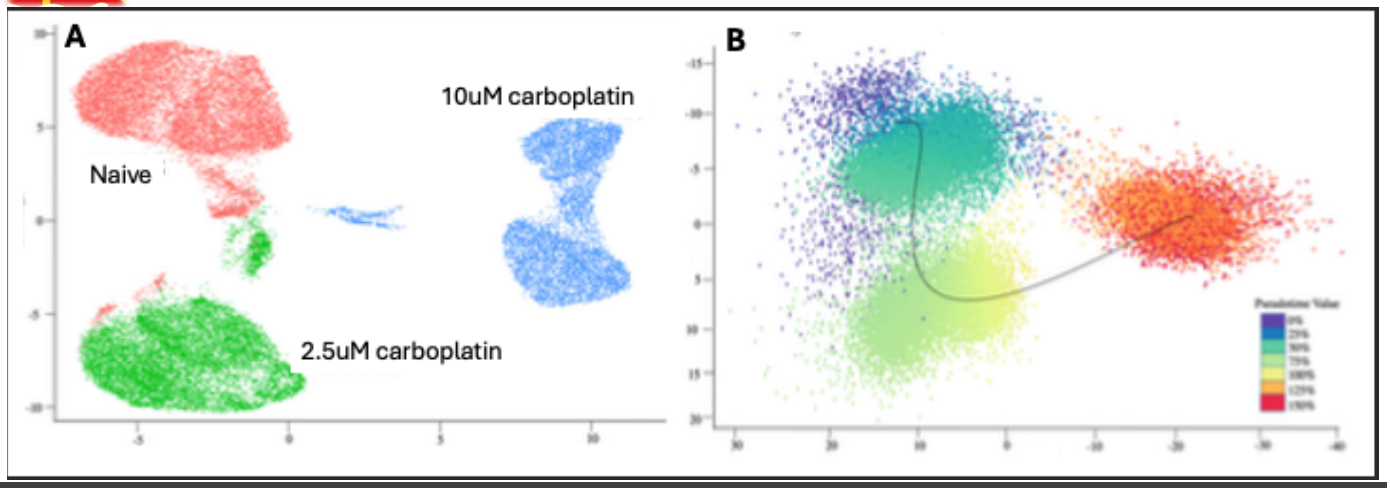

Figure 1. A) Single cell transcriptomics of naïve HMPOS osteosarcoma cells, and those treated with 2.5uM and 10uM carboplatin show distinct gene expression patterns. B) Pseudotime trajectory showing the path of cellular evolution in response to the stress of chemotherapeutic administration coincides with sirtuin and epithelial to mesenchymal pathway activation.

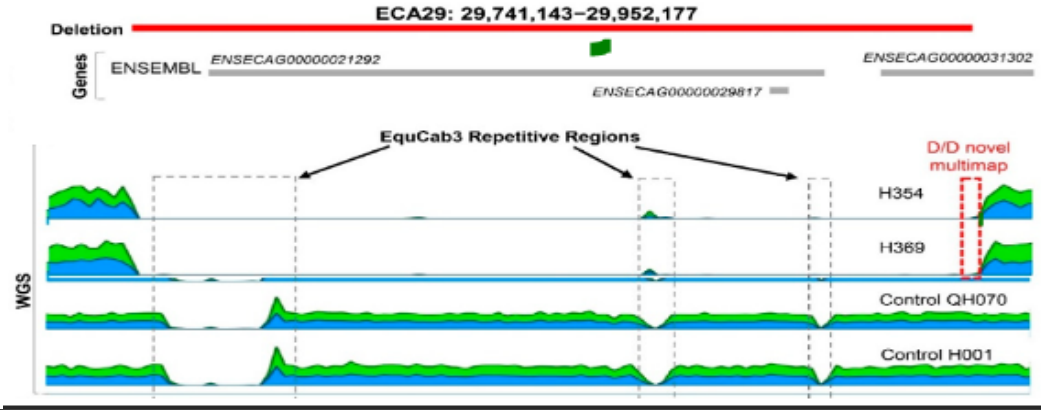

Figure 2. Whole genome alignments show a ~200kb deletion in horses with disorders of sexual development compared to control horses. This region is flanked with repeats which may facilitate the gain and loss of genomic material in the germline.

In the Fall 2023, Dr. Davis joined the faculty in a tenure-track capacity as a joint appointment in the Departments of Pathobiology and Small Animal Clinical Sciences at the CVM. His contemporary research program is as diverse as it has ever been. Currently training five Ph.D. students and two M.S. students, a primary focus is using structural variation discoverable using pangenomics to understand genome evolution and phenotype association. Pangenomics is the utilization of a series of reference genome-quality haplotypes, including those from telomere-to-telomere (T2T) across chromosomes, to accurately represent the genome structure of a population or species. Projects utilizing this approach have been funded from foundations like the American Kennel Club, EveryCat Foundation, and Morris Animal Foundation span heritable diseases like cardiac repolarization disorders in sight hounds, pectus excavatum in domestic cats, susceptibility to osteosarcoma in giant breed dogs, and type-2 tooth resorption in cats.

These opportunities allow the accumulation of data to use on a broader scale. He currently leads the canine and domestic cat pangenome consortia and co-leads the USDA funded equine consortium. With Dr. Raudsepp, their lab group is now able to explore the role that structural variation plays in the manifestation of subfertility and disorders of sexual development (DSD) in horses and dogs. Previous collaboration showed structure does play a role. As example a ~200kb deletion on chr29 in horses is associated with DSDs (**see Figure 2)**. An interesting feature of this deletion is that it is flanked by repeats, which is an aspect Dr Davis's lab is documenting across the pangenome that appears to induce gain and loss of genomic sequence, and is being tied to other diseases and phenotypes in cats, dogs, horses, and cattle.

(continued on page 3)

IFRB New Faculty Spotlight: Dr. Davis (cont'd from page 2)

Additionally, the lab curates massive databases of genomic variation for their various projects and collaborations as partners in the 10,000 dog genome consortium and 99 Lives feline genome consortium.

One of the Davis Lab's primary foci is to understand sex chromosome variation and its link to phenotypes. Until very recently, including the work done in collaboration with Dr. Raudsepp, the Y chromosome across mammals has been incomplete due to sequence complexity. His lab is currently building T2T genomes for multiple carnivore and ruminant species, with an eye both to overall genome evolution as well as changes in structure of the X and Y chromosomes. Building these genomic resources will allow the lab to explore patterns of X chromosome inactivation (XCI) across mammals.

Due to the variation in regulation of dosage compensation seen in the few species examined so far, it is expected that patterns of escape from XCI will vary widely between species, as well as between tissues. However, there is predicted to be core sets of genes that consistently escape XC I that can inform on the nature of female-specific dosage compensation regulation.

The Davis lab (Evolutionary Medicine Lab, https://evomedlab.com/) plans to continue collaboration with faculty who focus primarily on reproduction across species and apply their knowledge of comparative and pangenomics as well as cellular expression techniques to this goal. They will continue a diverse evolution and veterinary medical centric research program and generate tools and resources for the research community to apply to their projects.

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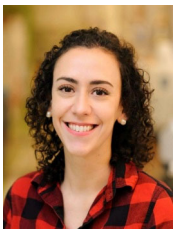
Texas Forum for Reproductive Sciences (TFRS), 2025

*__The 30h Annual Texas Forum for Reproductive Sciences__ regional reproductive biology meeting was held on April 10-11, 2025 and Hosted by: Texas Children's Hospital at the Jan and Dan Duncan Neurological Research Institute, Ting Tsung and Wei Fong Chao Foundation Conference Center in Houston.

Dr. Barbara Sanborn, Professor in the Department Biomedical Sciences and Professor Emerita at the University of Texas McGovern Medical School and Graduate School of Biomedical Sciences opened the meeting with a History of TFRS.



Plenary Speakers included Mariana Giassetti, Ph.D., Assistant Professor, Baylor University who leads a research group focused on phylogenetic multi-Omics analysis, male reproductive health, gene-edited animals, and the paternal influence on offspring.. Her presentation was titled, "Tracing Evolutionary Pathways: From Sperm Function to Embryo Development," and

Ramakrishna Kommagani, PhD Dept. of Pathology & Immunology Baylor College of Medicine, Houston whose lab seeks to decipher the molecular processes underlying the female reproductive tract functions. Specifically, we focus on the processes that are required for normal endometrial function and that are impaired in gynecological pathologies to achieve our central goal of improving women's health. The title of his presentation was "Gut Microbiota in Endometriosis: Mechanisms, Diagnostic Potential, and Treatment Approaches."

Platform Presentations from Texas A&M included:

Zachary K. Seekford, PhD, "Bovine Conceptus Secreted Products Modulate Peripheral Blood Cytokine and Chemokine Release."

Jessica F. Sustaita-Monroe, "Prenatal Testosterone in Combination with Postnatal Obesity Amplifies the LH Secretion in Response to a Neurokinin-3 Receptor Agonist in a Sheep Model of PCOS Phenotype,"

Dallas R. Soffa, "Immune Marker Localization at the Uteroplacental Interface During Early Gestation in the Beef Cattle.."

Maddison A. Olivarez, "Effects of Dietary Supplementation of Creatine at the Uterine-Placental Interface in Gilts on Days 60 and 90 of Gestation,"

Ashton Dodd, Deciphering Histone Acetylation throughout Bovine Spermatogenesis and Preimplantation Embryo Development."

Kyle Hickman served as a moderator for the platform session and also presented a poster, "Spatial and Temporal Expression of Toll-Like Receptors In the Endometrium of Pregnant Cows."

Other Posters from Texas A&M included:

Alexandra Ross, "Porcine Endometrium Responds to Conceptus IFNG and Transitions from a Nidatory Inflammatory State to Anti-Inflammatory State between Days 15 and 20 of the Peri-

Elizabeth A. Moore, "Cytokines and Products of Fructolysis in the Ovine Uterus During the Peri-Implantation Period of Pregnancy."

Thainá Minela, Ph.D. "A matched case-control study to investigate the associations between different pregnancy-associated glycoproteins and pregnancy loss in multiparous lactating dairy cow."

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Registration is now open for the 31st Annual Texas Forum for Reproductive Sciences Meeting.

This year's meeting will be held on April 9-10, 2026 at the Texas Children's Hospital Facility, Jan and Dan Duncan Neurological Research Institute, 1250 Moursund St. Houston TX 77030, *Located next to the MD Anderson, Onstead Auditorium & across from John P. McGovern Texas Medical Center Commons. Plenary lectures will be given by Dr. Jannette Dufour, Professor & Chair, Texas Tech University and Dr. Ky Pohler, Associate Professor, Texas A&M University. Short talks and poster sessions presented by students, fellows, and junior faculty. For registration/abstract submission visit the TFRS web site: https://chameleon-lute-5pbx.squarespace.com/*

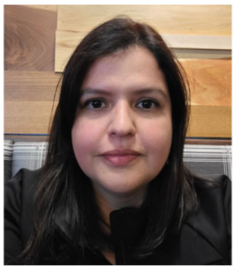
Submit your abstract by uploading it to the TFRS website by February 20, 2026

IFRB Seminar Series, 2025

March 7, **Pablo Ross Ph.D.,** Chief Scientific Officer at Inguran LLC, DBA STgenetics. *"**Accelerating Genetic Progress Using Advanced Reproductive Technologies..**"*

May 2**, Yatta Boakari, *D,V,M., Ph.D.,*** Assistant Professor. Department of Large Animal Clinical Sciences, Texas A&M University, "***Use of transcriptomics to better understand the equine placenta."***

May 20, **Daniel Matthew, Ph.D.,** Associate Professor, University of Tennessee Institute of Agriculture, "***Texas Story of Discovery Research on Nutrition and Reproduction to Improve Animal Production."***



May 23, **Sofia Ortega, Ph.D**., Assistant Professor, Department of Animal Science, Reproductive Physiology, University of Wisconsin - Madison. ***"Dissecting Paternal Contributions to Early Embryonic Development and Pregnancy in the Bovine."***

May 29, **Xiaoqiu (Churchill) Wang, Ph.D**., Associate Professor, Department of Animal Science, North Carolina State University, "***Aging Uterus, Enduring Questions : Molecular pathways shaping pregnancy outcomes."***

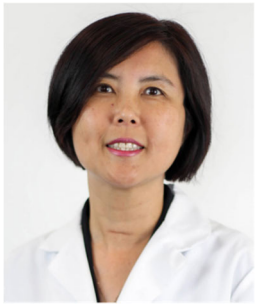
September 26. **Carleigh Fedorka, Ph.D.,** Assistant Professor, Equine Reproductive Physiology, Colorado State University, College of Agricultural Sciences. ***"Pathways to Pathogenesis: Utilizing Reproductive Immunology to Enhance Pregnancy Success."***

October 10, **Lamba Omar Sangaré, Ph.D.,** Assistant Professor, Department of Biology Texas A&M University. *"**TgMIF mediates Toxoplasma Gondii Transmigration Across Human in vitro Placental Barrier."***

October 24,, **Michela Ciccarelli, Ph.D.,** Assistant Professor Washington State University College of Veterinary Medicine. ***"Multi-species Transcriptional Cell Atlas of Perinatal Testis Development ."***

October 31, **Camilo Hernández-Avilés , Ph.D.,** Assistant Professor of Equine Theriogenology, Department of Large Animal Clinical Services Texas A&M University. ***"Cryopreservation of Stallion Sperm: What Else Do We Ask Them to Survive?***

November 7, 2025, **William Murphy, Ph.D.,** James E. Womack University Professor of Genetics Department of Veterinary Integrative Biosciences Texas A&M University. ***"Satellites, Sex Chromosomes, and Reproductive Isolation."***



November 14, 2025. **Winifred Mak, M.D., Ph.D.,** Associate Professor, Department of Obstetrics and Gynecology, U.T. Health, San Antonio. " ***It Takes 'Two to Tango' in Recurrent Pregnancy Loss -- The Role of Sperm."***

November 21, 2025. **Lisa Vrooman, Ph.D.,** Assistant Professor, Division of Reproductive and Developmental Sciences, Oregon National Primate Research Center. ***"Investigating Placental Abnormalities in a Mouse Model of in vitro Fertilization."***

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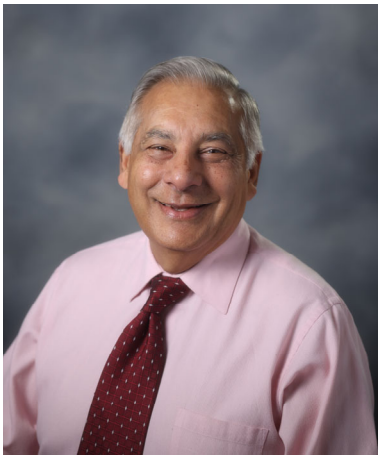
30th Annual Dr. Raymond O. Berry Memorial Lecture:

Endometriosis: A Complex Inflammatory Disease

The Thirtieth Annual Dr. Raymond O. Berry Memorial Lecture, sponsored and organized by the Interdisciplinary Faculty of Reproductive Biology, was held at the new Animal Reproductive Biotechnology Center on the Rellis Campus on October 3, 2025. Professor Asgerally T. Fazleabas was selected by a vote of the IRFB faculty to give the presentation. Dr. Fazleabas is University Distinguished Professor, Michigan State University Foundation Professor, Associate Chair for Research, Department of Obstetrics, Gynecology and Reproductive Biology, Director, Center for Women's Health Research, and Co-Director, Reproductive and Developmental Sciences Training Program, Michigan State University College of Human Medicine.



Professor Fazleabas received diplomas from St. Thomas College and Aquinas University College in Sri Lanka, the B.S. in Dairy Science from California State University at Fresno, and both the M.S. and Ph.D. degrees in Dairy Science and Reproductive Physiology from the University of Illinois, Urbana-Champaign. After his postdoctoral research in Biochemistry and Reproductive Physiology at the University of Florida, he joined the faculty in the Departments of Obstetrics and Gynecology and Physiology and Biophysics at the University of Illinois at Chicago where he rose through the ranks to Professor of Physiology. He was recruited to Michigan State University as Co-Director, Reproductive and Developmental Sciences and is now Director of the Center for Women's Health Research and Co-Director, Reproductive and Developmental Sciences Training Program. Professor Fazleabas' research focuses on cellular events that define synchrony between the developing blastocyst and the maternal uterus required for success of assisted reproductive therapies. His laboratory first identified signals from the primate conceptus that induce cell specific changes in uterine gene expression critical to synchrony between blastocyst and uterine environment required for a successful pregnancy. These include mechanisms to inhibit cellular apoptosis to protect the conceptus, hormonal and cellular requirements for decidualization and functions of uterine proteins in the establishment of pregnancy. Dr. Fazleabas' current research is on mechanisms whereby Notch signaling mediates uterine function during the establishment of pregnancy. His laboratory established a baboon model for endometriosis to understand the etiology and pathophysiology of this enigmatic disease that is the leading cause of infertility in women. His laboratory has focused on the role of miRNAs regulating cell proliferation and apoptosis and the molecular mechanisms that contribute to progesterone resistance through epigenetic modifications in both endometrial and endometriotic tissues including novel nanoparticle driven therapies to control the disease.

Dr. Fazleabas has received many awards for excellence in scholarship that include election to Fellow in the American Society for the Advancement of Science, awards from the Society of the Study of Reproduction for research, and for service, as well as the Carl Hartman Award and election to Distinguished Fellow. He also received the Career Achievement Award from the University of Illinois, Lifetime Achievement Award from Sri Lanka Foundation International, and College of Human Medicine Junior Faculty Mentoring Award, Michigan State University. He has also served as Associate Editor of Frontiers in Reproductive Health and on editorial boards for Reproductive Medicine and Biology, Scientific Reports-Nature, Endocrinology, Fertility and Sterility and Biology of Reproduction among others. Professor Fazleabas is currently PI on 3 NIH grants, 1 Burroughs Welcome Award, Co-PI on 2 NIH grants and Co-I on 3 NIH grants that have a central focus on understanding endometriosis regarding causes, regulatory mechanisms and therapeutic opportunities. He has published 247 papers in high impact refereed scientific journals, 49 book chapters, 260 presentations at scientific meetings and 287 invited lectures. Professor Fazleabas has an exceptionally strong record of graduate education involving graduate students, postdoctoral fellows, medical students and undergraduate students.

For his outstanding contributions, Texas A&M University recognizes the work of Dr. Fazleabas through the Raymond O. Berry Memorial Lecture which was established in 1994 by Dr. Fuller W. Bazer. This Lecture Series ensures that his contributions will continue to inspire students and faculty whose application of biotechnology to the field of reproductive biology contributes to animal agriculture and impacts the biomedical community. Dr. Berry's pioneering studies of genetic factors affecting reproduction contributed basic knowledge about maternal immune recognition of the fetal-placental unit. These principles are now fundamental to the discipline of reproductive immunology.

Dr. Bill Foxworth, a doctoral trainee of Dr. Duane Kraemer who was a student of Dr. Berry presented slides and comments on Dr. Berry's seminal contributions that launched the reproductive immunology field..

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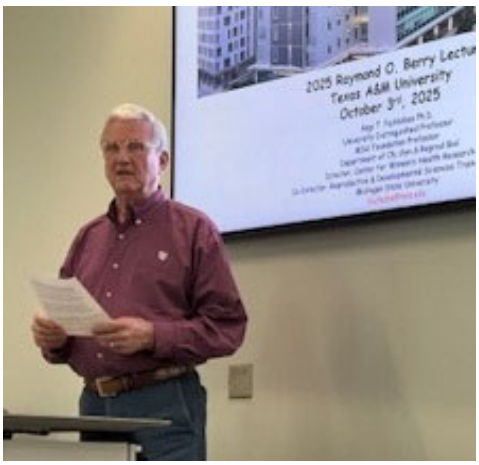

30th Annual R.O. Berry Lecture

Annual meeting organizers and contributors include:
Dr. Fuller W. Bazer, Distinguished Professor, Department of Animal Science, with joint appointments in the Departments of Veterinary Integrative Biosciences and Veterinary Physiology and Pharmacology is co-organizer of the 2025 IFRB Retreat and Dr. Raymond O. Berry Memorial Lecture. Dr. Bazer's research focuses on pregnancy recognition signals for establishment of pregnancy, uterine biology, linkages between nutrition and reproduction, and interferon tau as a potential therapeutic for treatment of inflammatory diseases.

Dr. Greg A. Johnson, Professor and Chancellor's Enhancing Development and Generating Excellence in Scholarship Fellow, Veterinary Integrative Biosciences, was co-organizer of the Retreat and a past R.O. Berry Lecturer. His research focuses on molecular, cellular, and physiological interactions between the conceptus and uterus during pregnancy recognition signaling, implantation and placental development with the goal of applying new knowledge towards clinical strategies to prevent pregnancy loss in women, livestock and companion animals.

"Dr. Berry's pioneering studies contributed basic knowledge about maternal immune recognition of the fetal -placental unit."
-Fuller W. Bazer

Dr. Rodolfo Cardoso, Associate Professor, Department of Animal Science, provided introductory comments. He is Chair of the Executive IFRB Executive Committee. Dr. Cardoso's research interests focus on understanding the impact of the prenatal and early postnatal environments on reproductive neuroendocrine function in females using sheep and cattle as animal models to benefit both the livestock industry as well as human reproductive health. His lab integrates whole animal physiology with cellular and molecular biology to elucidate the mechanisms by which the perinatal environment can modulate several reproductive processes in the offspring. Dr. Cardoso's teaching interests range from practical reproductive management of livestock to advanced reproductive neuroendocrinology." Dr. Berry's pioneering studies contributed basic knowledge about maternal immune recognition of the fetal -placental unit."

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18th Annual IFRB Retreat & Celebration of a Scientific Career

The 18th Annual IFRB Retreat was held on October 3 in conjunction with both the **30th Annual Dr. Raymond O. Berry Memorial Lecture** and a **Celebration of Dr. Robert Burghardt's 47 year scientific career at Texas A&M University**

Over 80 IRFB faculty and trainees from the College of Veterinary Medicine & Biomedical Sciences and Colleges of Agriculture and Life Sciences, Science and Medicine, participated in the Retreat which was held at the new Animal Reproductive Biotechnology Center on the Rellis Campus.

Dr. Rodolfo Cardoso, Chair of the IFRB provided Opening Remarks and **Dr. Fuller Bazer was Master of Ceremonies.** Current and former colleagues who have been affiliated with the IFRB over the years provided kind comments that were rich in humor and generosity and recounted more than 30 years of professional interactions, collaborations, teamwork and scientific synergies involving interdisciplinary faculty research, teaching, and mentoring initiatives in the reproductive sciences. Colleagues affiliated with the IFRB over the years who offered comments included:

Dr. Stephen Safe, Department of Veterinary Physiology and Pharmacology, TAMU,

Dr. Fuller Bazer, Department of Animal Science, TAMU,

Dr. Asgerally Fazleabas, Department of ObGyn, Michigan State University Health Science Center,

Dr. Michael Criscitiello, Associate Dean for Research, College of Veterinary Medicine and Biomedical Sciences

Dr. Gary Newton, Retired from Prairie View A&M University (read by Dr. Fuller Bazer),

Dr. Weston Porter, Department of Veterinary Physiology and Pharmacology

Dr. Joe Arosh, Department of Veterinary Integrative Biosciences,

Dr. Thomas Spencer, Vice President for Research, University of Missouri,

Dr. Heewon Seo (prerecorded), Department of Animal Science, University of Maryland

Dr. Troy Ott, Dean of the College of Agriculture and Life Sciences, Pennsylvania State University, and

Dr. Gregory Johnson, Assistant Dean for Research, College of Veterinary Medicine and Biomedical Sciences

Dr. Thaina Minela presided over the meeting presentations prior to the Raymond O. Berry Memorial Lecture Research scientist and trainee presenters included:

Dr. Zack Seekford "Evaluating the transmissibility of highly pathogenic avian influenza virus H5N1 following inoculation in dairy bulls."

Sierra Stephens "Optimizing Acid Extraction of Histones in Bovine Sperm"

Samantha Higgins "Dads and Genetic Diversity: Two Critical Pieces Missing from the FASD Puzzle"

Haley Weidman "Evaluation of Post-Vaccination Cytokine Response to BVDV and Bovine Herpesvirus-1 (IBR) and Their Effects on Estrous Cyclicity Following MLV Vaccination."

Retreat participants also attended a trainee poster session.

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TEXAS A&M UNIVERSITY

IFRB Trainee News

Frontiers in Reproduction Course: Molecular and Cellular Concepts and Applications

http://www.mbl.edu/fir/
Course Date: Apr 26, - Jun 07, 2026

Submission Deadline: January 12, 2026

Course Director: Daniel Bernard, McGill University

POSTDOC NEWS

***Dr. Zack Seekford** has been postdoctoral research fellow in the laboratory of **Dr. Ky Pohler since June 2024.** In July, 2025 he was awarded a USDA-NIFA-AFRI postdoctoral fellowship to study endometrial immune milieu dynamics during placentation in cattle and the functions of pregnancy associated glycoproteins in modulating the maternal immune system. The data generated from his postdoctoral fellowship will guide future investigations on the immunodynamics occurring during pregnancy.

In late July, **Dr. Seekford accepted a tenure track, Assistant Professor of Livestock Reproductive Physiology position at Washington State University in the Department of Animal Science.** His appointment is primarily research focused but will also teach undergraduate artificial insemination/palpation and graduate reproductive physiology. Additionally, he will serve on both the beef and dairy use committees at WSU and engage with stakeholders in the Pacific Northwest to translate research findings to broader audiences.

Dr. Seekford's future laboratory research efforts will focus on understanding and utilizing the immune system within the context of reproduction to improve fertility. He anticipates the three primary branches of research within his lab will 1) investigate the involvement of the immune system (maternal and embryonic) during normal pregnancy, 2) attempt to mitigate the pathophysiological effects of uterine diseases on fertility in cattle, and 3) leverage peripheral blood immune cells to generate indices predictive of pregnancy outcome.

Dr. Seekford is incredibly grateful for his time at Texas A&M and feels a deep sense of appreciation having been afforded the opportunity to work with the outstanding scientist in the IFRB. He is excited about ongoing and future collaborations with both IFRB members and faculty at Texas A&M University.

RECENT GRADUATES

Joe Cain, Ph.D.** who completed his doctoral studies with **Dr. Greg Johnson** in December 2024 is currently a Postdoctoral Research Associate at the University of Maryland. Joe was first author on the ***Biology of Reproduction article selected as the *2025 BOR Paper of the Year* titled "Pig conceptuses release extracellular vesicles containing IFNG for paracrine communication with the endometrium."

GRAD STUDENT NEWS AWARDS & HONORS:

*Dallas Soffa, Ph.D. Candidate with **Dr. Rebecca Poole** received a 1st Place award in the PhD Graduate Student Poster Competition at the American Society of Animal Science Annual Conference 2025 for her abstract titled "Influences on Bacterial Diversity of the Beef Cow Uterine Microbiome." Dallas also received a 2025 Society for the Study of Reproduction (SSR)Trainee USDA Merit Award and 3rd Place in the Pre-Doctoral SSR Trainee Research Award Poster Competition at the SSR 2025 Annual Meeting, for her abstract titled "Unraveling the Influence of Estradiol on Reproductive Tract Microbiota and Fertility in Beef Cattle." She also had two images as finalists in the 2025 ReproBioArt Competition at the SSR 2025 Annual Meeting. (see page 20)

***Brette Poliakiwski**, is a 5th year student working with mentors **Drs. Ky Pohler** and **Cliff Lamb.** Her research focuses on defining the role of prostaglandins in placentation and their contribution to pregnancy success in cattle. She hasled portions of the group's ongoing research involving Avian Influenza Virus. She recently submitted a manuscript characterizing the localization of potential avian and human influenza viral receptors throughout the male and female bovine reproductive tract to *Nature-Scientific Reports*. She received the Peter W. Farin Trainee Travel Scholarship, to support her travel to the International EmbroTechnology Society annual meeting in January, 2026 to report these findings.

***Haley Weidman,** is a graduate research assistant working with **Dr. George Perry.** Haley received one of five James W. Lauderdale Scholar awards for the Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium in North Platte, NE through the Beef Reproductive Task Force (BRTF) for 2025.

*Joelle Sfeir, PhD Candidate in the laboratory of **Dr, Heidi VandenBrink**, was awarded the Gerber Foundation Predoctoral Fellowship at the American Society of Nutrition Annual Meeting.

IRFB Faculty Activities, Awards, etc.

NEW GRANTS:

***Dr. Terje Raudsepp** is Principal Investigator on a grant from the Alpaca Research Foundation, "Contribution of genetic factors to pregnancy loss in alpacas: focus on aneuploidy and polyploidy." 1/1/2026 to 12/31/2028 $28,494.

Dr. Raudsepp is Co-Investigator with Dr. Sofia Mikko "Eyeless Equines – Machine Learning to Examine the Puzzling Genetics of Microphthalmia in Horses. Swedish-Norwegian Foundation for Equine Research, Project H-24-47-849. Duration 2025-2027.

Other ongoing grants include:

As PI "Exploring the Genomic Component of Equine Sex Development and Reproduction. USDA-NIFA2022-08309. May 2023 – April 2026. $644,320.

"Genomics of Thoroughbred stallion subfertility." Grayson-Jockey Club Research Foundation. Award announced 2/7/2023. April 1, 2023-March 31, 2026. $77,371.

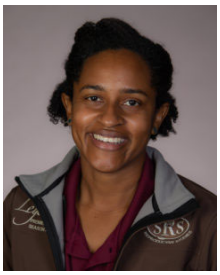
As Co-Investigator: (Gustavo Guiterrez, PI) Construction of the Llama (Lama glama) Pangenome for Comprehensive Revelation of its Genetic Diversity.

(Gustavo Guiterrez, PI). CONCYTEC (National Council for Science, Technology, and Innovation), executive branch: PROCIENCIA (National Program for Scientific Research and Advanced Studies), Duration: 30 months (2024-2026). $135,135.

As Co-Investigator (Sofia Mikko, PI). Eyeless Equines – Machine Learning to Examine the Puzzling Genetics of Microphthalmia in Horses. Swedish-Norwegian Foundation for Equine Research, Project H-24-47-849. Duration 2025-2027.

***Dr. Nancy Ing** is CoPD on a USDA funded AFRI IDEAS (Interdisciplinary Engagement in Animal Systems) grant entitled SWARM: Sustainable Ways to Advance Reproductive Management in Honey Bees. Juliana Rangel is PD in Ento. It is $999,998 for five years beginning now. That is the US budget. Collaborators in Republic of Ireland and Northern Ireland have funding from their USDA-like entities. It is pretty broad mix of activities designed to improve honey bee survival and productivity. Dr. Ing on for directing trainees in molecular biology experiments on sperm.

***Dr. Yatta Boakari** is Principal Investigator on "Impact of student demographic background on rubric assessment reliability and consistency", Co-PIs are Drs. Nicola L. Ritter, Shannon Washburn, Carly Patterson, Mariah Pearson, Kelli Beavers, International Council for Veterinary Assessment Grant (ICVA), $10,000



Dr. Boakari is Co-Investigator (PI Erica Macon) with Barbara Murphy, "Disrupting the Circadian Clock: Impacts on Equine Metabolic Health and Disease," PI: Erica Macon, Co-Investigator, Barbara Murphy, Barbara Murphy, Texas A&M AgriLife Research Institute for Equine Science Capacity Funding, $25,000.

***Drs. George A. Perry and Thomas Welsh, Jr**. received a grant from USDA Animal Health and Disease Research Capacity Program, "Immunological Mechanisms Linking Pre-Breeding Vaccination to Negative Impact of Vaccines on Beef Cattle Production Efficiency."

***Drs. Rebecca K. Poole**, PI and **Dr. Jeffrey Weigert** (CoPI) were awarded a USDA-NIFA Animal Health and Disease Research grant "Targeted Probiotic Supplementation During Lactation and After Weaning to Improve Piglet Immunity, Growth, and Gastrointestinal Health"(1/1/2026 – 12/31/2027) , $90,000.

***Drs. Poole** (PI) and **Weigert** (CoPI) received notice that their USDA-NIFA AFRI CARE grant "Improving Piglet Quality Through in Utero Microbiome Programming" for $300,000 was recommended for funding (2026-2028.)

***Dr. Poole** (PI) and doctoral trainee Dallas Soffa (CoPI) were awarded an American Embryo Transfer Association (AETA) Dr. Brad Stroud Memorial Research Award "Influence of a CIDR on vaginal microbiome composition and subsequent embryo transfer success in beef cattle", 1/1/2026 - 12/31/2026, $10,000.

***Dr. Lacey Luense** and Co-PIs, **Drs, Annie Newell-Fugate, James Cai,** and **Rodolfo Cardosa**, received a Collaborative Seed Grant from the Texas A&M Division of Research, Epigenetic Regulation of Tissue-Specific Metabolism in Polycystic Ovary Syndrome."

***Dr. Heidi Vanden Brink** (PI) and Dr. Rosaleen Bloom (Department of Nursing, Co-PI) received a grant from the Institute for Advancing Health through Agriculture Dec 2024 effective Jan 2025 titled, "The Burden of Polycystic Ovary Syndrome in Under-Represented Adolescents in Texas: Towards Early Diagnosis and Personalized Nutrition for Healthy Living."

***Dr. Vanden Brink** is Co-I on an NIH R01 that was funded in 2025 titled, Emergence of polycystic ovary syndrome (PCOS) during adolescence." (PI: Marla Lujan)

***Drs. Charles Love, Luisa Ramirez-Agamez and Camilo Hernandez-Aviles** received a grant from the Theriogenology Foundation titled "Expression of proteins related to sperm-oocyte interactions in stallion sperm.

AWARDS & HONORS:

***Dr. Fuller Bazer** was the recipient of the Marshall Medal, the highest honor awarded the Society for Reproduction and Fertility. This prestigious accolade recognizes a career with a significant impact on fertility and reproduction.

(continued on page 12)

IRFB Trainee News continued from page 7

***Allison Basel**, Ph.D. trainee in the laboratory of **Dr. Michael Golding** was the recipient of a Distinguished Graduate Student Award for Research at the 2025 Academic Awards Ceremony hosted by Faculty Affairs as an honoree of the Association of Former Students and Texas A&M University.

NEW TRAINEES

***Giovana Siqueira Camargo, DVM**, joined **Dr. Yatta Boakari's** laboratory as a visiting scholar in November 2025. She received her DVM from Ourinhos University, São Paulo, Brazil, and a master's degree in animal Reproductive Biotechnology from São Paulo State University (FMVZ/UNESP). She is currently pursuing a Ph.D. at the same institution, with her research focused on in vivo equine embryo biotechnologies.

***Marcos Eduardo Neto, DVM**, also joined **Dr. Yatta Boakari's** laboratory as a visiting scholar in November 2025. He received his DVM degree from Federal University of Santa Catarina. He then completed a residency in Equine Internal Medicine at Federal University of Pelotas. He has a M.S. degree from Federal University of Pelotas and currently is a Ph.D. student at the same institution. His research focuses on equine metabolic syndrome and its impact on reproductive and orthopedic disorders.

***Abigail Roberts** is a new master's student with **Dr. George Perry**, studying bovine reproduction. She began her program at the Overton research station in August. Abigail is from Kansas City, Missouri, and earned her B.S. in Animal Science from the University of Missouri. Abigail aims to gain the skills to be proficient in assisted reproductive technologies, as she plans to work in the industry or in extension after completing her master's program.

***Vashishta Kolla** is a Ph.D. trainee in the lab of **Dr. Sakhila Banu**. He received a Master of Biotechnology degree from TAMU in May 2023. He is the recipient of the Walter W. Lechner Estate Scholarship and the Texas Public Education Grant-International (2024). His research investigates how hexavalent chromium exposure during pregnancy disrupts uterine artery remodeling, using single-cell transcriptomics to define extracellular matrix–related alterations. He received a Second Place award for a Data Blitz oral presentation, "Hexavalent Chromium: A Hidden Threat to Maternal Vascular Health" at the 8th Annual Cancer Bioinformatics Symposium, held at the Department of Statistics.

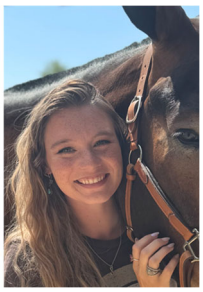
***Surayut Kluaiphanngam (Bossum),** a Ph.D. trainee in the lab of **Dr. Sakhila Banu** joined the program in 2025. He received his M.S. degree from the University of Colorado, Boulder in 2023. Bossum is the recipient of the Development and Promotion of Science and Technology Talents Project Scholarship – Thailand (2018-2029). His research investigates how hexavalent chromium [Cr(VI)] exposure disrupts ovary function and causes fibrosis, and aims to mitigate effects of this fibrosis by using a proprietary drug.

***Darshil Shah** is a Ph.D. trainee with **Dr. Greg Johnson.** Originally from Ahmedabad, India, he earned a B.S. in Biochemistry with a minor in Biotechnology before completing a M.S. in Human Assisted Reproductive Technologies at Universitat Pompeu Fabra and a M.S. in Clinical Investigation: Organ, Tissue, Cell Donation and Transplantation at the University of Barcelona, Spain. He has worked as an embryologist in fertility clinics in India and Spain, gaining cexperience in human ART. His research will focus on the metabolic adaptation of conceptuses to a hypoxic uterine environment.

***Hannah Lamar** is a new Ph.D. student in **Dr. VandenBrink's** Lab who was awarded a 2025-26 Chancellor's National Academy STEM Ph.D. Fellowship.

***Diana Kolb**, another new Ph.D. student in **Dr. VandenBrink's** lab was the Dr. Dionel E. Avilés '53 and Dr. James E. Johnson '67 Graduate Fellowship.

***Abigail Lee** joined **Dr. Karl Clark's** laboratory in 2025. She completed a B.S. in Animal Science at TAMU and an M.S. in Agricultural Leadership, Education, and Communications. As an undergraduate, she worked with veterinarians at TAMU investigating *R. equi* in foals. During M.S. training, she applied statistical methods to educational datasets to investigate student performance in an animal nutrition course, Her work was accepted for publication in the *Journal of Agricultural Education.* Current research centers on fatty acid amide hydrolase (FAAH) and its role in regulating endocannabinoid signaling associated with stress physiology and reproduction. She is developing stable mammalian cell lines that express FAAH1 and FAAH2 enzymes from multiple species, allowing for direct comparison of enzyme activity and regulatory function under controlled conditions. Her work will extend into zebrafish, which uniquely retain multiple FAAH homologs. In parallel, her research will examine FAAH and broader endocannabinoid pathway expression during key stages of mammalian reproduction, including pre- and peri-implantation periods.



***Emily Thornton** is a first-year Ph.D. student in **Dr. Karl Clark's** lab from the Interdisciplinary Graduate Program in Genetics and Genomics, studying functional, applied, and behavioral genetics in zebrafish and livestock species. Prior to joining the lab, she attended TAMU at Galveston, where she received undergraduate degrees in Marine Biology and Marine Fisheries. Following her B.S. she continued her education at TAMU Galveston, where she defended her master's thesis, "Population genomics of the Roosterfish (Nematistius pectoralis) along its endemic Eastern Pacific Ocean distribution. ***

A Snapshot of IFRB Research, 2025

The IFRB is recognized as one of the most productive interdisciplinary research and education programs in reproductive biology in the U.S. The following "snapshot" of publications illustrates the multiple investigator research activities of the IFRB, involving extensive participation of trainees during 2025:

Afzal J, Suhail Y, Du W, Liu Y, Ramasamy R, Liu Z, Goyal R, Novin A, Suhail S, Maziarz J, Wali K, Robson P, Wagner GP, Kshitiz. Evidence for coopetition at the maternal-fetal interface shaping placental invasion. Proc Natl Acad Sci U S A. 2025 Sep 9;122(36):e2323038122. doi: 10.1073/pnas.2323038122. Epub 2025 Sept 4. PMID: 40906814; PMCID: PMC12435225.

Ahmad I, Gupta S, Thomas M, Cai JJ, Heaps CL, Newell-Fugate AE. Exercise decreases the number and modifies the transcriptome of M1 macrophages and CD8+ T cells in non-occluded epicardial adipose tissue of female pigs. Am J Physiol Cell Physiol. 2025 Oct 13. doi: 10.1152/ajpcell.00135.2025. Epub ahead of print. PMID: 41083194.

Ahmad I, Gupta S, Thomas M, Cai JJ, Heaps CL, Newell-Fugate AE. Aerobic exercise decreases the number and transcript expression of inflammatory M1 macrophages and CD8+ T cells in the epicardial adipose tissue of female pigs. Am J Physiol Cell Physiol. 2025 Oct 13. doi: 10.1152/ajpcell.00135.2025. PMID: 39975127; PMCID: PMC11838430.

Andrews, T. N., K. M. Epperson, J. J. J. Rich, S. Menegatti Zoca, A. C. Kline, L. K. Quail, S. R. McCoski, C. D. Sanford, A. L. Zezeski, T. W. Geary, J. A. Walker, G. A. Perry. 2025. The interactions of change in nutrition prior to and after artificial insemination on plasma non-esterified fatty acids, plasma mineral concentrations, and uterine histotroph in beef heifers. Applied Animal Sci. 41:215-225. https://doi.org/10.15232/aas.2024-02634

Bake S, Pinson MR, Hurst DA, O'Reilly B, Samiya N, Miranda RC, Sohrabji F. Prenatal alcohol exposure worsens acute but not long-term cognitive outcomes due to stroke in middle-aged Sprague-Dawley rat offspring. Alcohol Clin Exp Res (Hoboken). 2025 Jul;49(7):1459-1472. doi: 10.1111/acer.70079. Epub 2025 Jul 6. PMID: 40618315; PMCID: PMC12285918.

Basel A, Bhadsavle SS, Scaturro KZ, Parkey GK, Jones-Hall Y, Golding MC. Parental alcohol use disrupts offspring mitochondrial activity, promoting susceptibility to toxicant-induced liver cancer. Aging Dis. 2025 Jan 31. doi: 10.14336/AD.2024.1372. Epub ahead of print. PMID: 39908263.

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Bellott DW, Skaletsky H, Hughes JF, Brown LG, Pyntikova T, Cho TJ, Koutseva N, Zaghlul S, Kizghin D, Mendoza M, Raudsepp T, Dugan S, Khan Z, Wang Q, Watt J, Worley KC, Scherer S, Muzny DM, Gibbs RA, Page DC. The SHR/Akr Y chromosome reveals repeated turnover of the rat pseudoautosomal region. bioRxiv [2025 Jun 1:2025.05.28.656580. doi: 10.1101/2025.05.28.656580. PMID: 40501880; PMCID: PMC12154609.

Bennett A, Rocha CC, Waheed A, Mesquita FS, Maia TS, Haimon ML, Hoorn QA, Sagheer M, Cuellar CJ, Sultana H, Ojeda-Rojas OA, Krisher RL, Rubessa M, Pohler KG, Hansen PJ, Moriel P, Chebel RC, Binelli M. Assessment and prediction of embryo survival in fertility-classified beef cows. Theriogenology. 2025 Jul 3;250:117560. doi: 10.1016/j.theriogenology.2025.117560. Epub ahead of print.PMID: 41086578.

Binelli M. Relationships between activity monitoring device data and ovarian, uterine, hormonal, and pregnancy variables in beef cows. Theriogenology. 2025 Mar 15;235:64-74. doi: 0.1016/j.theriogenology.2025.01.001. Epub 2025 Jan 6. PMID: 39793472.

Boakari, Y., El-Sheikh-Ali, H. E. S., Almeida, G. H. D. R., Scoggin, K. E., Fernandes, C. B., Marchio, S. P., Troedsson, M. H. T, Carreira, A. C. O. (2025). Expression pattern of the HIFα-family in equine chorioallantois during pregnancy and placental pathology. Theriogenology, 117714.

Brito LFC, Linardi RL, Rosales LAS, Balamurugan NS, Hernández-Avilés C, Ramírez-Agámez L. Evaluation of a chemically defined, long-term extender for liquid storage of stallion semen. Reprod Domest Anim. 2025 Sep;60(9):e70126. doi: 10.1111/rda.70126. PMID: 41002042; PMCID: PMC12465434.

Cain JW, Erikson DW, Seo H, Ross A, Burghardt RC, Bazer FW, Johnson GA. SPARC expression in the mouse decidua, placenta, and fetus: correlations with SPP1 expression. Placenta. 2025 Aug;168:125-134. doi: 10.1016/j.placenta.2025.06.012 Epub 2025 Jun 17. PMID: 40544540

Carter FE, Jarrett BY, Lee ND, Zaman N, Reich AM, Wilson KA, Oldfield AL, Vanden Brink H, Lujan ME. Changes in antral follicle dynamics following weight loss in women with polycystic ovary syndrome. Hum Reprod. 2025 Sep 10:deaf169. doi: 10.1093/humrep/deaf169. Epub ahead of print. PMID: 40929646.

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Cruz VA, Marques RS, Kvamme K, Limede AC, Cidrini FAA, Cidrini IA, Dos Santos Nascimento K, Mackey SJ, Cooke RF, Farmer C, Heldt J. Effects of maternal Cu, Mn, and Zn supplementation from different sources on physiological and productive responses of cows and their offspring. J Anim Sci. 2025 Jan 4;103:skae391.oi: 10.1093/jas/skae391. PMID: 39742412; PMCID: PMC11725650.

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Reproduction **Research Snapshot,** cont'd from page 10 Journal of ANIMAL SCIENCE

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IRFB Faculty Activities (continued from page 8)

***Dr. Bazer** received the Marshall medal during the 18th annual Fertility Conference in Liverpool, hosted by leading reproductive science organizations including the Association of Reproductive and Clinical Scientists along with the British Fertility Society and the Society for Reproduction and Fertility.

Dr. Bazer was also recently recognized as the top researcher in the world in the "Animal Science and Veterinary" with a D-index of 132 category by **Research.com**.

***Dr. Greg Johnson** was appointed Assistant Dean for Research and Graduate Studies in the College of Veterinary Medicine & Biomedical Sciences in 2025.

Dr. Johnson was invited to present the Top Research Article of 2024 in Biology of Reproduction titled, "Pig conceptuses utilize extracellular vesicles for interferon-gamma-Mediated Paracrine Communication with the Endometrium. It was also chosen for the 2025 Biology of Reproduction Research Paper of the Year Webinar on September 10, 2025.

Dr. Johnson was an invited speaker for the Division of Nutritional Sciences, University of Illinois, Urbana-Champaign, Illinois. The title of his presentation was "Where are we now with conceptus elongation, implantation, and placentation in livestock,"

Most recently, the journal, Reproduction, the official journal of the Society for Reproduction and Fertility (SRF), has announced that Drs. Greg Johson and Stephanie Pangas will be the new co-Editors-in-Chief, with their five-year term January 1, 2026. Dr. Johnson has been Associate Editor for Reproduction since 2018.

***Dr. Terje Raudsepp** had three invited presentations in 2025: "Camelid Chromosomes and Chromosome Disorders". 2nd Global Online Camelid Conference for Owners, January31-February1, 2025.

"Camelid Clinical Cytogenetics" at International Camelid Health Conference, March 13-15, 2025.

"Issues in Clinical Veterinary Genomics", James E. Womack Memorial Symposium, March18-19, College Station, Texas, USA.

***Dr. George A. Perry** was the recipient of the 2025 Animal Physiology and Endocrinology Award from the American Society of Animal Science.

Dr. Perry had several invited presentations including "Influence of vaccination on reproductive cyclicity and immune response in cattle" at the Midwest section of the American Society of Animal Science. https://doi.org/10.1093/jas/skaf102.218.

"Avoiding a wreck! Using diagnostics to improve cattle performance and your operation's economics." National Cattlemen's Beef Association Cattleman's College" and "Using Estrous Synchronization with Natural Service. Applied Reproductive Strategies in Beef Cattle Conference.

***Dr. Ronald Randal** was the recipient of the 2025 Retiree Service Award from the American Society of Animal Science.

***Dr. Yatta Boakari** was an invited speaker at the Southwest Veterinary Symposium, Fort Worth, TX on September 27 for the following presentations:

"Effects of Obesity and Metabolic Disorders On Reproductive Performance of Mares,"

"The Use of Transrectal Ultrasound in Mare Reproduction: Focus on Non-Pregnant Mares."

"The Use of Transrectal Ultrasound in Mare Reproduction: Focus on Pregnant Mares,"

Dr. Boakari was also an invited speaker for a West Coast Equine Reproduction Symposium, Buellton, CA, November 7, 2025, "Updates on PPID and EMS in Breeding and Pregnant Mares."

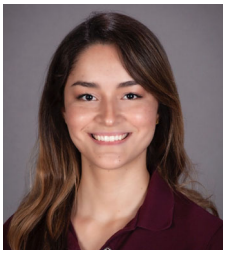
***Dr. Heidi Vandenbrink** was an invited presenter for the University of California San Diego Reproductive Endocrinology Seminar Series in April). The talk was titled, "Relevance of Bile Acid Metabolism During the Adolescent Reproductive Transition."

She was invited to give a talk as part of a special session on adolescent nutrition and reproductive health titled, "Nutrition and PCOS Risk During Adolescence" at the American Society for Nutrition Annual Meeting. June 3. Orlando, FL.

Dr. Vanden Brink also presented for the Johns Hopkins Bloomberg School of Public Health Graduate Seminar Series on Dec 9. The talk was titled, "Dietary Intake and PCOS Risk during Adolescence."

***Dr. Camilo Hernandez-Aviles** was an invited a keynote speaker for the International Symposium on Stallion Reproduction (ISSR), which occurred in Cordoba, Spain, on February 12 -14, 2025. His lecture was titled "Spermatozoal acrosome dysfunction and its role in stallion subfertility." The proceedings of this symposium, including those of his lecture, were published in the *Journal of Equine Veterinary Science*. He was also selected as the new representative for North America in the ISSR.

Dr. Hernandez-Aviles also published a chapter on the new edition of the book "Spermatogenesis: Methods and Protocols" edited by Humana Press (Springer Nature), about the analysis of motion characteristics and plasma membrane intactness in sperm from domestic animals.



***Drs. Luisa Ramírez-Agamez** and co-authors, **Jarred Crowley, Drs. Charles Love and Camilo Hernandez-Aviles** published a paper (https://doi.org/10.1016/j.theriogenology.2025.117611) in July, 2025 that is the *first to compare the use of fresh, cool-stored, or frozen/thawed stallion sperm to produce equine blastocysts by conventional in vitro fertilization cIVF*). The original study by Dr. Katrin Hinrich's group at Penn reported the use of fresh semen only (2022). After that paper, only the TAMU group, and groups at UC Davis, and U Penn have reported blastocyst production by cIVF using frozen-thawed sperm (all published in 2025). Of these, the TAMU group was the only one that explored some clinically-related factors that could affect the applicability of cIVF, and is the first peer-reviewed publication that reports on resulting pregnancies from vitrified blastocysts produced by cIVF with frozen/thawed sperm (three pregnancies were taken up to day 42 in the above referenced paper) with authors hoping for foals being born between March and April, 2026!

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IFRB Graduate Student Spotlight

***Odile Polanco Jiménez** is a PhD student whose work is helping advance the understanding of bull fertility and herd reproductive efficiency. Originally from the Dominican Republic, Odile earned her veterinary degree in 2021 before beginning her doctoral training in **Dr. Ky Pohler's lab**. Her research focuses on identifying subfertile bulls within a herd by comparing transcriptomic data of in-vitro produced (IVP) embryos generated from sires previously classified as either high- or low-fertility. By analyzing differences in embryo gene expression, she aims to identify molecular indicators associated with sire fertility potential. This type of work can help producers and reproductive specialists better predict which bulls are more likely to generate viable embryos and achieve consistent reproductive success.

Early data suggests that field fertility records might be inaccurate for bull selection to improve reproductive performance. The downregulation of important genes like, APOB, FETUB and MHC-I appear to be detrimental to pregnancy success and could be responsible for variation seen in conception rates. It is evident that the paternal genome seems to play a much bigger role in pregnancy establishment than originally thought. Odile's efforts have also been on identifying subfertile bulls in a natural service setting in an ongoing study where bulls where repeatedly evaluated throughout the breeding season using the Breeding Soundness Evaluation (BSE), paying particular attention to physical examination factors and semen characteristics such as motility and morphology.

The main idea driving this project is that sub-fertile bulls will show a decline in their BSE scores as the season progresses, while high-fertility bulls will maintain acceptable reproductive parameters. A decrease in BSE performance among sub-fertile bulls would be expected to reduce fertilization and conception rates within the cow herd, potentially forcing producers to extend the length of their breeding season. Preliminary results suggest that bulls will have a lower sperm concentration and morphology percentage rises as the breeding season progresses. This work combines molecular insights with real world, on-farm evaluation. By linking embryo gene expression profiles with the measurable fertility performance of bulls in natural service, Odile is contributing information that can directly support producers in maximizing reproductive efficiency, calf crop size, and overall herd profitability.

Odile has presented her research at the annual Society for the Study of Reproduction (SSR) meeting, the American Society of Animal Science (ASAS) meeting, and the International Ruminant Reproductive Symposium (IRRS), as well as at several extension events. She has served on the executive team as a Member at Large for the Animal Science Graduate Student Association (ASGSA). In addition to her research work, Odile also serves as the Program Coordinator for the International Beef Cattle Academy (IBCA), a global certificate program delivered through the Texas A&M AgriLife Extension Service that provides advanced education on all phases of beef production.

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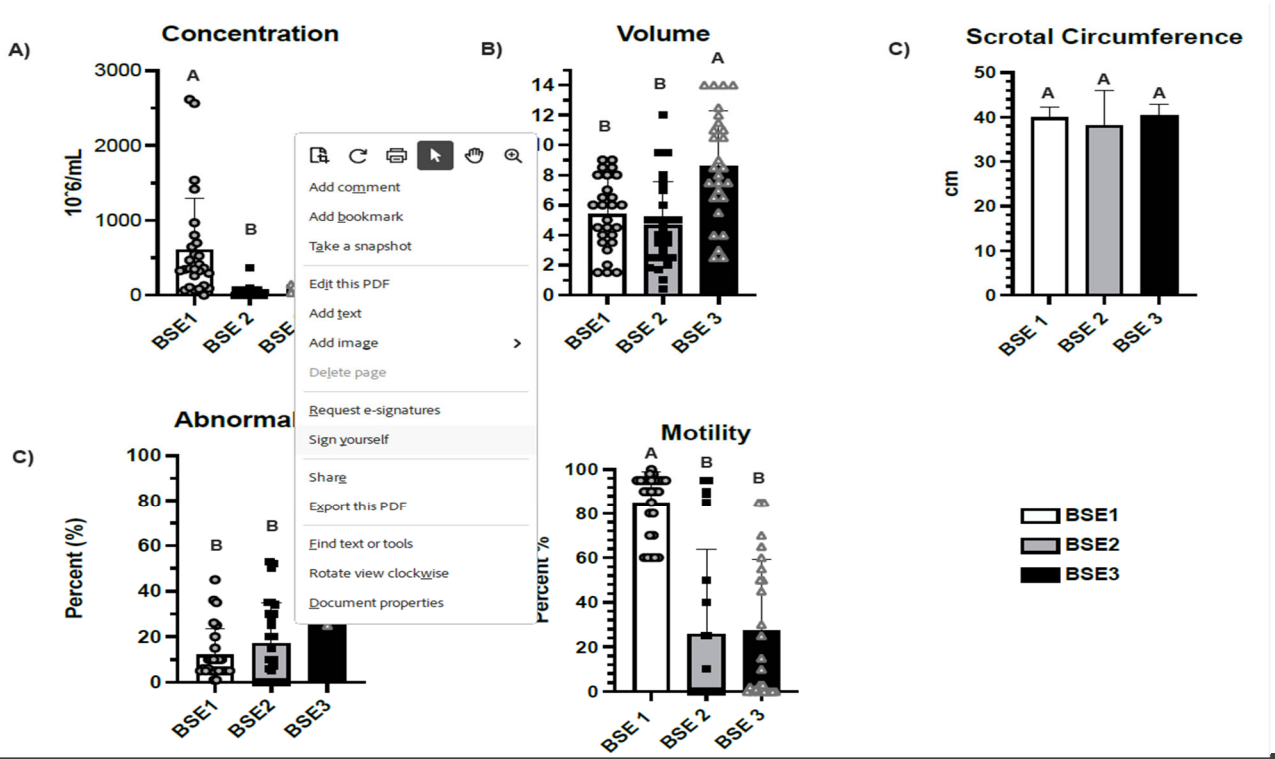

Panel of reproductive traits measured in bulls (n = 27) undergoing a breeding soundness evaluation (BSE) at three time points: BSE 1 (pre-breeding season), BSE 2 (mid-breeding season), and BSE 3 (post-breeding season). Plotted variables include (A) semen concentration, (B) ejaculate volume, (C) scrotal circumference, (D) percentage of abnormal sperm cells, and (E) sperm motility. Different letters above bars indicate statistical differences among groups ($p < 0.05$). Together, these metrics characterize ejaculate quality, testicular function, and overall reproductive potential throughout the breeding season.

Placenta Research Snapshot, continued from page 11 ENDOCRINOLOGY

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(continued on page 16)

IFRB Graduate Student Spotlight

***Kyle Hickman** is a Ph.D. student in the Department of Animal Science mentored by **Dr. Rebecca (Becky) Poole.** He received his B.S. in Animal Science from Illinois State University in 2021. He began at Texas A&M as a graduate student in Spring, 2022, where his research has focused on the reproductive microbiome in gilts and its potential effects on immune regulation and fertility. Kyle's first project characterized the entire reproductive microbiome in gilts to establish which microbial communities constitute a "healthy" reproductive tract. Kyle's research focuses on defining how innate immune receptors and microbial communities coordinate endometrial and placental function throughout the estrous cycle and gestation in gilts. It is well known that early pregnancy in pigs requires a tightly regulated proinflammatory environment to support conceptus elongation, immune-cell recruitment, and remodeling of uterine and placental membranes, Kyle investigates how Toll-like receptors (TLRs) respond to endogenous signals at the maternal–fetal interface. His work utilizes 16S rRNA sequencing with spatial and temporal analyses of TLR expression to characterize how reproductive tract microbiota shift across key gestational windows. Using immunofluorescence microscopy, he maps the temporal and cell-specific localization of TLR1, TLR4, and TLR6 proteins in uterine epithelium and conceptus-associated membranes, revealing distinct transitions from luminal epithelial expression during peri-implantation to chorionic expression as pregnancy advances.

Parallel characterization of microbiota across the vagina, cervix, endometrium, chorion, and placental fluids identifies anatomical and gestational differences in bacterial composition, further supporting a model in which dynamic microbial communities contribute to stage-specific immune signaling. Together, Kyle's work defines how microbial changes and TLR-mediated sensing shape the immunological landscape necessary for implantation, placental development, and fetal survival, while providing potential biomarkers of reproductive health and targets for microbiome-based intervention to improve swine fertility. Kyle has presented at several annual meetings, including the American Society of Animal Science (ASAS), Society for the Study of Reproduction (SSR), Texas Forum for Reproductive Sciences (TFRS), and the Interdisciplinary Faculty of Reproductive Biology (IFRB). He has served on the executive board as Treasurer for the Animal Science Graduate Student Association (ASGSA) as well as Graduate Representative for IFRB. He has served as a graduate teaching assistant for ANSC 318, ANSC 334, and ANSC 412. Kyle has enjoyed the opportunity to mentor undergraduate students in the lab and collaborate with other graduate students. In what little free time he has left, Kyle enjoys sim racing and raising his newly welcomed son, Calihan.

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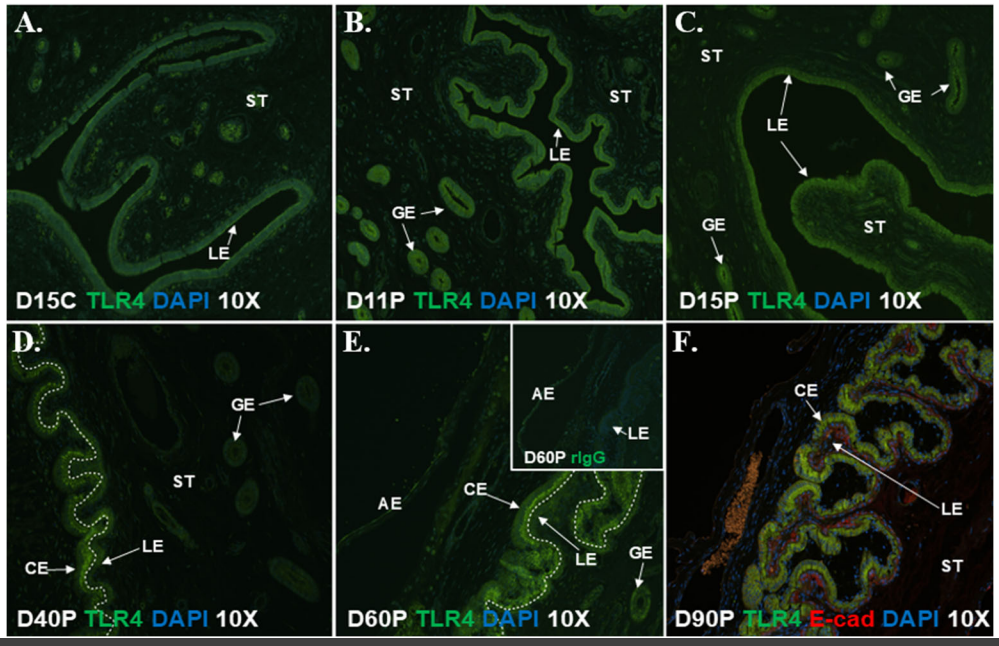

Representative images of immunolocalization of Toll-like receptor 4 (TLR4) protein in uteri and conceptuses. A) Immunoreactive TLR4 was observed at the apical surface of uterine luminal epithelium (LE) on day 15 of estrous cycle. B & C) Immunoreactive TLR4 was observed at apical surfaces of LE and glandular epithelium (GE) on days 11 and 15 of pregnancy. D) TLR4 protein was observed at the basolateral surface of chorionic epithelium (CE), but not GE on day 40 of pregnancy. E & F) Immunoreactive TLR4 was observed at basolateral surface of CE and minimal reactivity observed in allantoic epithelium (AE) on days 60 and 90 of pregnancy. E-Cadherin (red) was used as an epithelial marker.

Journal of Animal Science and Biotechnology

Research Snapshot, cont'd from page 14

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Research Snapshot, continued from p 16

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(continued on page 19)

IFRB Graduate Student Spotlight

Samantha Higgins is a Ph.D. student in the **Golding Lab** in the Department of Veterinary Physiology and Pharmacology. She received her B.S. in Genetics at Texas A&M University and joined the Ph.D. program in Genetics and Genomics in the fall of 2022. Her dissertation research focuses on understanding how fathers contribute to Fetal Alcohol Spectrum Disorders (FASDs) while simultaneously incorporating a novel, genetically diverse mouse model, created by Dr. David Threadgill at Texas A&M, to bolster research translatability to the human population. Former studies in the Golding Lab used the classical inbred C57BL/6J mouse to determine if chronic paternal alcohol exposure lead to fetoplacental abnormalities. These studies showed that paternal alcohol exposure alone caused remodeling of placental morphology, offspring craniofacial dysgenesis, and metabolic and mitochondrial perturbations. It is postulated that these phenotypes occur through an epigenetic signaling axis within the sire, which is then carried forth in the spermatozoa, causing developmental defects. The C57BL/6J strain is often used in alcohol-related research as it is known as one of the only mouse strains to voluntarily consume alcohol. However, the C57BL/6J mouse strain has genetic shortcomings such as a lesser ability to form mitochondrial supercomplexes and regenerate NADPH within mitochondria, leaving it naturally prone to oxidative stress. To better understand how the paternal contribution to FASD mechanism occurs, it is necessary to utilize a genetically heterogenous mouse population to capture the likeness of human genetic complexity. We used the Simplified Diversity Outcross (SDO) strain, generated from wild-derived founder strains from all over the globe, with a paternal only chronic alcohol exposure paradigm (Fig 1 A). In Samantha's work, it was found that the SDO mouse has a higher preference for alcohol than the C57BL/6J mice yet appear more robust to the biological consequences of alcohol intake. We suspect that the mitochondrial robustness of the SDO strain, through its ability to properly form mitochondrial supercomplexes, may contribute to the vigor of this strain post chronic alcohol exposure (Fig 1 B). However, while no blatantly disruptive effects of alcohol appear in the SDO strain, we found modest evidence of a mitochondrial effect through observing an increase in mitochondrial DNA copy number which serves as a proxy for a change in mitochondrial dynamics (Fig 1 C). To determine the epigenetic mechanism driving paternal alcohol "memory" relay to offspring, small RNAs isolated from sperm of the SDO sires were sequenced. Two differentially expressed miRNAs were observed that are involved in the oxidative stress response pathway (Fig 1 D). Oxidative stress-related small RNAs were previously seen in the ethanol exposed C57BL/6J sperm. To determine if an ethanol-treated paternal effect is seen in the genetically diverse offspring of alcohol-exposed males, the offspring and placentae were harvested at GD16.5 for investigation. Ethanol sired male fetal and placental weights significantly differed from the controls demonstrating decreased placental efficiency (Fig 1 E) (Figs 1E to 1H see page 21. Further analysis of placental morphology indicated chronic paternal ethanol consumption caused male placentae to have a decrease in the junctional zone to decidua ratio (Fig 1F). Likewise, ethanol sired male placentae showed an increase in mitochondrial DNA copy number indicating a potential mitochondrial perturbation (Fig 1 G). Facial dysmorphia is a common feature in people with FASD. Using geometric morphometrics, we discovered that despite the heterogeneous population of SDO offspring, paternal alcohol exposure induced craniofacial abnormalities, with the ethanol treated offspring clustering together (Fig 1 H). This information indicates that despite the rigorous nature and genetic complexity of the SDO model, and the lack of blatant dysfunction within sires exposed to alcohol, epigenetic signatures still arise within ethanol treated sire sperm and offspring of ethanol exposed sires still develop fetoplacental abnormalities. Collectively, we have a powerful model for research translatability and the data supporting the importance that fathers should be warned of the potential detrimental effects their drinking patterns could elicit on future generations. Samantha has presented her work at the Life Sciences Symposium and VMBS Trainee Symposium at Texas A&M as well as the Texas Genetics Society conference. She has served for several semesters as a TA for the undergraduate GENE 314 course. In her time outside of the lab, Samantha enjoys exploring nature with her husband and dogs, reading, and crafting.. (continued on page 21)

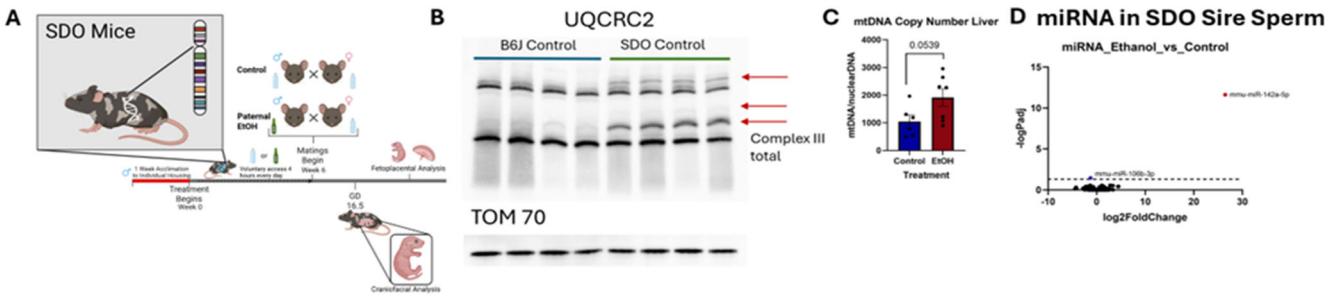

Figure 1. Paternal alcohol induced offspring abnormalities persist in a genetically heterogenous, robust mouse model.
A) Treatment and mating paradigm for the Simplified Diversity Outcross mice to investigate paternal alcohol exposure effects on offspring. B) C57BL/6J vs SDO liver UQCRC2 (mitochondrial complex III) BN-PAGE with loading control western blot of TOM70; red arrows indicate areas of absent complexes in B6J mice. C) SDO sire liver mitochondrial DNA copy number. D) Volcano plot of SDO sperm differentially expressed miRNA between control and ethanol treated sires. E) Proportion of the number of fetuses at or below the 10th percentile of the control population for male offspring placental and fetal weights. F) Micro-CT placental layer volume ratio of the junctional zone (JZ) to the decidua (Dec). G) SDO placental mtDNA copy number. H) Canonical Variate Analysis of the front facial profile for male and female SDO offspring. An unpaired T-test, chi-square test, or two-way ANOVA with Tukey's post hoc, was used where appropriate for statistical analysis. p-value shown for p-value between 0.1 and 0.05. ** p < 0.01, *** p < 0.001, **** p < 0.0001. ***See page 21 for Figures 1E to 1H***

Research Snapshot, continued from page 17

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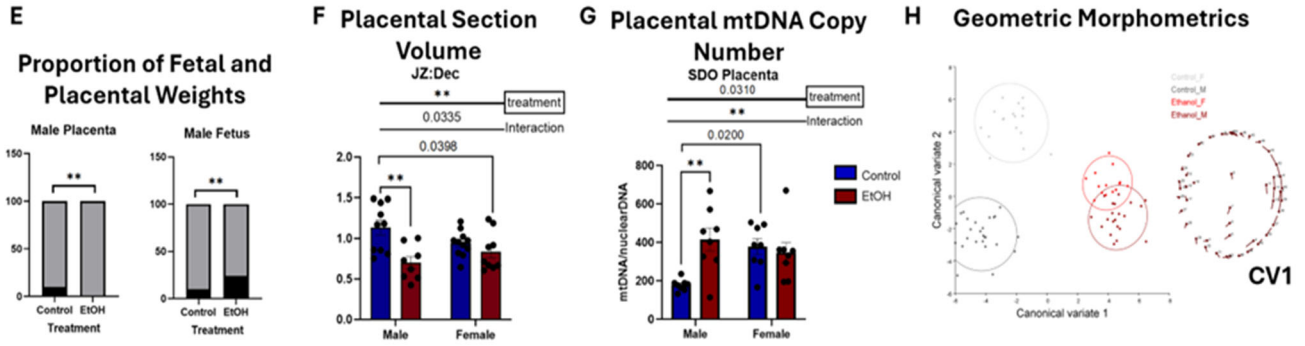
IFRB Graduate Student Spotlight continued from page 19

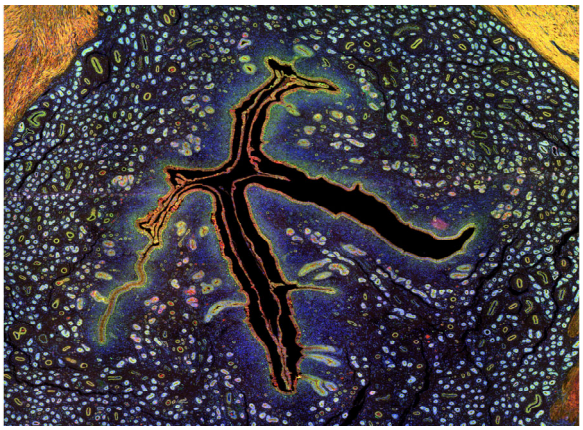


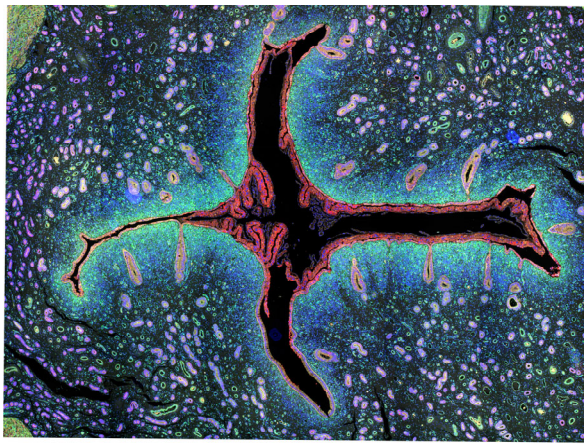
Panel of reproductive traits measured in bulls (n = 27) undergoing a breeding soundness evaluation (BSE) at three time points: BSE 1 (pre-breeding season), BSE 2 (mid-breeding season), and BSE 3 (post-breeding season). Plotted variables include (A) semen concentration, (B) ejaculate volume, (C) scrotal circumference, (D) percentage of abnormal sperm cells, and (E) sperm motility. Different letters above bars indicate statistical differences among groups ($p < 0.05$). Together, these metrics characterize ejaculate quality, testicular function, and overall reproductive potential throughout the breeding season.

IFRB Undergraduate Student Spotlight

Jillian Harnois is an undergraduate Animal Science student from Napa, California who is currently in her junior year. She will graduate in December of 2026. After graduation, she plans to attend graduate school and pursue a Master of Science degree in Reproductive Physiology. Jillan grew up on a small ranch raising and showing cattle, horses, goats, and sheep. She has spent 10 years as a mentor in a program known as "Ag 4 Youth," a nonprofit organization that teaches at-risk youth how to raise livestock and the importance of agriculture, which is where her love for livestock began.

During her years around livestock, she developed a strong interest in achieving the most ideal version of an animal, whether that be for market, breeding or another production goal. She recognized while taking Reproduction in Farm Animals with **Dr. Rebecca Poole** that reproductive biology would be the academic path for her. After completing Dr. Poole's course, Jillian began as an undergraduate research assistant supporting Dr. Poole's research projects, mainly assisting with graduate student, **Dallas Soffa's** research project investigating uterine microbiota at the time of embryo transfer in beef heifers experiencing heat stress. The project goal is to evaluate uterine microbiota, along with data regarding progesterone, ovary maps, the heat stress index, and linterferon-stimulated genes (ISGs) in order to determine their impact on pregnancy in cattle. While being educated on conducting procedures in quality research, Jillian learned how to collect blood samples, conduct ultrasounds, and record data. After enjoying all of the hands-on aspects of the project, she developed a new passion for the laboratory side of research. She is now working on her expanding laboratory techniques and analyzing data for an abstract that compares two RNA extraction protocols and and PCR results from Dallas' project with the purpose of studying various ISGs and their relevance to a successful embryo transfer. Jillian plans to submit this abstract to the American Society for Animal Science national conference for the summer of 2026. Jillian is also excited about everything she has been learning and can't wait to continue her experiences in reproductive physiology. With a strong foundation in livestock production and a deep interest in reproductive research, Jillian is motivated to continue furthering her skills and hopes to contribute to innovative reproductive technologies that optimize efficiency and productivity within the livestock industry. ***





Images selected among 12 finalists in the 2025 Repro BioArt Competition at the Society for the Study of Reproduction 2025 Annual Meeting. ***Left****: Day 20 bovine conceptus stained for TLR4 in uterine epithelium, myometrium and trophoblast.* ***Right****: Day 26 conceptus staining ISG15 (green) in stratum compactum and red staining of E-cadherin in conceptus trophoblast.*
(from Dallas Soffa)

58th Society for the Study of Reproduction Annual Meeting, 2025 American Society for Animal Science, Hollywood, Florida.

The 58th Society for the Study of Reproduction (SSR) held its 2025 Annual Meeting in Washington, D.C., from July 29 to August 1, 2025, focusing on "Uniting Scientific Disciplines for Breakthroughs in Reproduction" at the Marriott Marquis Washington D.C. hotel. Key events included trainee forums, symposia on diverse reproductive topics, and a call for proposals on diversity driving innovation.

The Society for the Study of Reproduction 59th Annual Meeting 2026 will be held in Indianapolis, IN, from Sunday, July 19, to Wednesday, July 22.

The deadline for submitting abstracts is Feb 16, 2026.

The 2025 American Society for Animal Science (ASAS) meeting was held in conjunction with the Canadian Society for Animal Science (CSAS) July 6-10, 2025 iat the Diplomat Veach Resort in Hollywood, Florida. The 2025 program listed over 100 presentations from Texas A&M University faculty and trainees. Two Texas A&M Professors were the recipients of the major 2024 American Society of Animal Science Award including **Dr. George Perry** for the **Animal Physiology and Endocrinology Award** and **Dr. Ronald D. Randel** for the **ASAS Retiree Service Award.**

The 2026 ASAS-CSAS Annual Meeting will be held in Madison, Wisconsin from Sunday, July 19 to Thursday, July 23. The call for abstracts is expected to begin in January. Original research, teaching, and extension papers are encouraged. Oral papers or posters should consist of original, completed work that has not been accepted for publication.
5 competitions are offered for student participants: 1) ASAS Graduate Student Poster Competition: MS Division (for ASAS members only); 2) ASAS Graduate Student Poster Competition: PhD Division (for ASAS members only); 3) ASAS Undergraduate Student Poster Competition (for ASAS members only).

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IFRB RESEARCH AND TRAINING MISSION:
Reproductive Biology is at the epicenter of the life sciences. Focal areas of research and graduate/postdoctoral training in the IFRB are interdisciplinary and cover both genders, encompass humans, domestic animals, laboratory animals and wildlife, and include: assisted reproductive techniques, biological clocks, cloning, conservation of endangered species, contraception, developmental biology, diseases of the reproductive tract, endocrinology, fertilization, fetal growth retardation, gametogenesis, gender-biased diseases and health issues, immunology, infertility, lactation, pregnancy and pregnancy-related disorders, premature labor, recovery of function, science and health policy, stem cell biology, systems biology and functional genomics, toxicology, and uterine biology. The outcomes of this research are impacting Texas, our nation and the world.