

IETS Foundation 2025 Early Career Achievement Award (Scientist)

Brad Daigneault



Dr. Brad Daigneault is an assistant professor in the Department of Animal Sciences at the University of Florida. Daigneault received a bachelor's degree in animal sciences from Texas A&M University and an MS in biomedical sciences from Colorado State University. He then obtained a PhD from the University of Illinois and received further training from a USDA Postdoctoral Fellowship followed by support as a NIH T32 Trainee. Daigneault's early research included optimizations to freezing stallion sperm for equine intracytoplasmic sperm injection and advancements to the adoption of frozen-thawed porcine sperm for artificial insemination through enhanced fertility prediction by identification of novel sperm traits related to fertility. His

bovine work contributed to the adaptation of CRISPR technologies for efficient gene editing in bovine embryos through zygotic microinjection.

Daigneault's current research is focused on paternal contributions to embryo origins of pregnancy with emphasis on gene-environment interactions that alter sperm function and embryo development. His research addresses a need to understand how environmental stressors alter the function and epigenome of postejaculatory sperm. He has developed an extender for prolonged incubation of bull sperm at ambient temperature to facilitate the adaptation of high-resolution respirometry assays to determine differences in mitochondrial bioenergetics of bull sperm. The Daigneault Lab has recently contributed to a gap of knowledge in stallion sperm capacitation by temporal characterization of sperm capacitation conditions to advance equine IVF. Human biomedical studies in the laboratory include utilization of the bovine model to understand effects of cannabis compounds on sperm function. Bovine embryology studies focus on identification of targets in the early embryo that are responsive to environmental stimuli as potential therapeutic and pharmacologic candidates to mitigate early embryo loss in cattle. Development of reproductive biotechnologies includes a novel delivery system for cell-lineage specific targeting of overexpression and knockout approaches in the preimplantation embryo.