Approximately 40 students are pursuing MS and PhD degrees in the disciplines of animal physiology, genetics, nutrition, management, meat science, animal behavior & welfare, cellular & molecular biology, and microbiology.

**FIVE SIGNATURE AREAS ACROSS LEARNING / RESEARCH / ENGAGEMENT MISSIONS**

**ANIMAL SCIENCES**

- **Gene Regulation, Stem Cell & Developmental Biology**
  - Epigenetics
  - Transgenic biology
  - Embryology
  - Comparative animal models of human health & disease

- **Animal Production & Management Systems**
  - Nutrient utilization
  - Environmental management
  - Efficient profitable production
  - Food animal product quality

- **Food Safety & Food Quality**
  - Pre-harvest intervention strategies
  - Pathogen transmission & ecology
  - Stress & Immunology
  - Enhance nutrient

- **Molecular Animal Physiology & Metabolism**
  - Nutrient utilization & partitioning
  - Digestive physiology and absorption
  - Obesity/Diabetes
  - Tissue growth regulation

- **Animal Health & Well-Being**
  - Physiological indicators of well-being
  - Stress response assessment
  - Impact factors of behavior
  - Facility design

- **NUTRIENT UTILIZATION & PARTITIONING**
  - Digestive physiology and absorption
  - Obesity/Diabetes
  - Tissue growth regulation

**GRADUATE PROGRAM**

Dr. Todd Applegate  
Graduate Programs Chair  
(765) 496-7769

915 W. State Street  
West Lafayette, IN 47907-2054  
http://www.ag.purdue.edu/ansc/
Layi Adeola
Professor of Animal Sciences
Monogastric nutrition; amino acid nutrition
Research emphasizes amino acid nutrition, utilization of energy, and mineral utilization by nonruminants. The total program is aimed at improving the efficiency of lean meat production in nonruminant animals and minimizing nutrient impacts on the environment.

Kolapo (Kola) Ajuwon
Assistant Professor of Animal Sciences
kajuwon@purdue.edu
Adipose biology; metabolism
Research is to determine factors that mediate the insulin resistant phenotype that occurs in the adipose tissue as it transitions from an insulin sensitive tissue to the insulin resistant state in obesity, and how nutritional manipulation can be used to prevent this transformation.

Rod Alrich
Associate Professor of Animal Sciences
rallrich@purdue.edu
Reproductive physiology; immunology
Development of innovative educational programs in Animal Sciences.

Todd Applegate
Professor of Animal Sciences
applegt@purdue.edu
Poultry nutrition and management; nutrient management
Research is focused on minimizing nitrogen and phosphorus emissions from poultry operations, and comparative development and metabolic mechanisms of the small intestine in different poultry species.

Chris Bidwell
Professor of Animal Sciences
cbidwell@purdue.edu
Molecular genetics; genetics of muscle development
Using the tools of molecular and cellular biology, research is to identify and isolate genes that are directly involved in growth in mammals based on biochemical properties, tissue-specific expression, and chromosomal location. In fish, research is on the genetics of polyploids and interspecific hybrids as well as genes involved in reproduction.

Ryan Cabot
Associate Professor of Animal Sciences
rcabot@purdue.edu
Reproductive biology; molecular genetics
Research is focused on learning how the mammalian embryo directs its development from a single cell to a complex group of differentiated tissues and ultimately a fully formed adult organism. Studies are to understand how in vitro manipulation procedures affect development of the pig embryo and how this can be circumvented to improve embryo quality and embryo viability.

Heng-Wei Cheng
Adjunct Associate Professor, USDA-ARS
hwcheng@purdue.edu
Poultry well-being; neuroanatomy
Research is to use the zebrafish as a model to study extracellular factors that regulate early vertebrate development. In related work, the zebrafish is used to study how extracellular matrix (ECM) proteins control early vertebrate development.

Candace Croney
Associate Professor of Animal Sciences
ccroney@purdue.edu
Animal Behavior & Well-Being
Research interests include the interactions between animal behavior, cognition and well-being; the effects of rearing environments and enrichment on animal behavior and welfare; the ethical implications of animal care and use decisions; and public perceptions of animal agriculture.

Mark Diekman
Professor of Animal Sciences
mdiekman@purdue.edu
Reproductive biology
A balanced applied and basic research program is to elucidate underlying physiological mechanisms associated with reproductive processes in farm animals, with a particular emphasis on attainment of puberty in swine.
Department of Animal Sciences
Graduate Faculty
with Area of Expertise, Email, and Research Interests

Shawn Donkin
Professor of Animal Sciences
sdonkin@purdue.edu
Ruminant nutrition and metabolism
Research is to determine factors which constrain the productive efficiency of livestock at the level of nutrient metabolism and to devise methods to circumvent such factors. Research integrates cell biology, molecular biology techniques and whole animal approaches to understand the processes which determine the fate of metabolizable nutrients with a goal of devising practices and technologies to enhance the efficiency of animal growth and/or milk production.

Paul Ebner
Associate Professor of Animal Sciences
pebner@purdue.edu
Microbiology; pre-harvest food safety
Research is primarily in molecular microbiology. A major focus is on pre-harvest food safety issues, such as the impact of antibiotic use on antibiotic resistance development in pathogenic bacteria. Research is to develop new strategies to more safely reduce pathogen load in food animals prior to slaughter.

Dale Forsyth
Professor of Animal Sciences
dforsyth@purdue.edu
Animal nutrition
Research involves the economic value of fat in swine diets and development of innovative animal nutrition learning methods.

Susan Eicher
Adjunct Associate Professor, USDA-ARS
spruiett@purdue.edu
Immunology, behavior and well-being
Research includes safeguarding well-being of food producing animals, and handling and transport stress interactions with pathogen biology in swine and cattle.

Shihuan Kuang
Assistant Professor of Animal Sciences
skuang@purdue.edu
Muscle biology
Research is to explore the signaling mechanisms that differentially regulate subpopulations of satellite cells and how such mechanisms are employed in muscle regeneration. In addition, research is on the mechanisms involved in the asymmetric division of muscle satellite cells. Also, research is on the identification, isolation and manipulation of highly efficient myogenic stem cells for successful stem cell-based therapies to treat neuromuscular diseases.

Donald Lay
Adjunct Assistant Professor, USDA-ARS
don.lay@ars.usda.gov
Animal well-being; research leader, USDA-ARS-LBRU
Research is to discover information that will allow for both optimum animal welfare and animal production. Areas of research include work on pre-natal stress, maternal behavior of sows, and Salmonella infection in swine.

Ron Lemenager
Professor of Animal Sciences
rpl@purdue.edu
Beef cattle nutrition and management
Research is to integrate energy and protein resources into a system that will optimize reproductive performance of beef cows. In addition, research is to evaluate nutritional and management factors that can enhance muscle accretion, marbling and tenderness of beef. This research focuses on the factors that impact and mechanisms that control muscle and adipose accretion in beef cattle.

Zoltan Machaty
Associate Professor of Animal Sciences
zmachaty@purdue.edu
Reproductive biology
Research is to improve reproductive efficiency in domestic animals by understanding the cellular and molecular mechanisms that regulate early embryonic development. The primary goal is to define the signal transduction mechanisms and identify key signaling molecules that are involved in oocyte activation.

Maja Makagon
Assistant Professor of Animal Sciences
Animal Behavior & Well-Being
Research in investigations of how animals perceive and interact with their environments, and the implications these interactions have on animal management, well-being, and productivity in commercial settings. Drawing upon theoretical and applied perspectives of animal behavior and related disciplines to provide solutions to contemporary issues.

Patricia (Scotti) Hester
Professor of Animal Sciences
phester@purdue.edu
Poultry physiology and well-being; bone growth
Research in poultry welfare is focused on osteoporosis in laying hens, which is a progressive decrease in mineralized structural bone leading to skeletal fragility and susceptibility to fracture. A long-term goal is to improve skeletal integrity in egg-type chickens by genetic selection for improved bone mineral density.
Department of Animal Sciences
Graduate Faculty
with Area of Expertise, Email, and Research Interests

Jeremy Marchant-Forde
Adjunct Assistant Professor, USDA-ARS
marchant@purdue.edu
Swine behavior and well-being
Research includes: the development and application of a novel housing system to allow continuous behavioral and physiological monitoring; understanding and reducing aggression when sows are mixed in a grouped gestation system; and studying ulceration of the gastro-intestinal tract in sows.

Alan Mathew
Department Head of Animal Sciences
agmathew@purdue.edu
Intestinal microbiology, pre-harvest food safety
Research interests include strategies to reduce or eliminate potential pathogens, including Salmonella and toxigenic E. coli, in livestock, and production practices that limit antibiotic resistance in bacteria in livestock systems.

Scott Mills
Associate Professor of Animal Sciences
smills@purdue.edu
Growth physiology
Research is on the cellular signals regulating the growth of adipose and muscle tissue for the purpose of identifying tools to modify body composition for productive purposes. Also on fat and meat quality with the goal of improving product quality in lean pigs.

William (Bill) Muir
Professor of Animal Sciences
bmuir@purdue.edu
Population genetics; behavior; transgenic risk assessment
Research consists of two major research thrusts: genetic methods to improve adaptability, stress resistance, and animal well-being; and the interface of quantitative and molecular genetics.

Mike Neary
Programmatic A/P
mneary@purdue.edu
Small ruminant management
Research areas include lamb carcass composition, grazing systems, sheep nutrition and management, and the use of by-product feeds in small ruminant diets.

Tamilee Nennich
Assistant Professor of Animal Sciences
tennich@purdue.edu
Dairy cattle nutrition; nutrient management
Research is to enhance the sustainability of the dairy industry by improving whole-farm nutrient balances through the use of new or improved feed and nutrient management practices and technologies. Research also is focused on the evaluation of co-product feeds in the diets of dairy heifers and evaluating water usage and nutrient flows on dairy operations.

John Patterson
Associate Professor of Animal Sciences
jpattens@purdue.edu
Ruminant microbiology and nutrition
Research is on the influence of dietary additions and stressors on the intestinal microbial community structure and microbial interactions influencing anaerobic digestion of waste biomass and production of hydrogen and methane. Research also is addressing the influence of diet and stressors on interactions between the intestinal microbiota, the mucosal epithelium and the mucosal immune system.

J. Scott Radcliffe
Associate Professor of Animal Sciences
jradcliffe@purdue.edu
Swine nutrition
Research focuses on “environmental nutrition” in swine and poultry. Specifically, research is investigating dietary additives that reduce nutrient excretion and that might serve as potential replacements for subtherapeutic levels of antibiotics in the diet.

Brian Richert
Associate Professor of Animal Sciences
brichert@purdue.edu
Swine nutrition and management
Research is on the use of energy by-product feeds on pig performance, products, nutrient excretion, and odor production. In addition, research is on environmental nutrition impacts and alternatives to antibiotics.

Marcos Rostagno
Adjunct Assistant Professor, USDA-ARS
rostagno@purdue.edu
Microbiology; pre-harvest food safety; well-being
Research is to determine how production variables affect the risk of pork and pork product contamination with foodborne pathogens, and developing effective pre-harvest intervention strategies for reduction of these pathogens in market pigs entering the abattoirs.
Department of Animal Sciences
Graduate Faculty
with Area of Expertise, Email, and Research Interests

Mark Russell
Professor of Animal Sciences
mrussell@purdue.edu
Horse nutrition and management
Research is on nutritional factors impacting horse health and performance. Development of leadership educational programs and career development programs in Animal Sciences.

Michael Schutz
Professor and Associate Dept. Head of Animal Sciences
mschutz@purdue.edu
Dairy management, breeding and genetics
Research is to reduce incidence of mastitis, especially in first lactation heifers, and to improve disease resistance of dairy cattle and milk quality for consumers. Research is to determine the relationships among mastitis, somatic cell counts in milk, and milk yield in first-calf heifers. Additional research includes conformation and health traits in breeding programs, and investigation of disease prevalence in dairy heifers.

Allan Schinckel
Professor of Animal Sciences
aschinck@purdue.edu
Swine breeding and genetics
Research is to genetically increase swine lean growth and model the optimal nutrition and environment to maximize lean efficiency. Research is on the evaluation of genotypes for lean growth rate, feed intake, and carcass composition. Alternative methods to estimate whole body and carcass composition are evaluated and utilized. Statistical methods to increase the accuracy of compositional growth curves and reduce genotype prediction biases are evaluated and utilized.

Terry Stewart
Professor Animal Sciences
tstewart@purdue.edu
Quantitative genetics
Research is on the optimization of genetic evaluation systems and the definition of breeding objectives to maximize the rate of improvement of domestic livestock.

Jon Schoonmaker
Assistant Professor of Animal Sciences
jschoonm@purdue.edu
Beef cattle nutrition
Research is on lifetime nutritional factors affecting intramuscular fat deposition, muscle growth, health status, and production efficiency in beef cattle.

Jolena Waddell
Assistant Professor of Animal Sciences
jnwaddell@purdue.edu
Meat Science, Growth & Development, Muscle Biology, Genetics
Applied research focuses on factors that affect meat quality in food animals including diet, growth promotants, genetics, and post-harvest processing. Other work includes public education regarding food safety and food sourcing.

For more information about Purdue Animal Sciences, please visit:
http://www.ag.purdue.edu/ansc/