

*AgriLife Research in Texas A&M University Academic Departments*



**College of Agriculture and Life Sciences**

*AgLifeSciences.tamu.edu*

**Agricultural Economics**  
*agecon.tamu.edu*

Assesses value of Texas agricultural products, including exports; predicts economic outcomes of critical issues such as water availability and immigrant farm labor. Widely published research on climate change and carbon sequestration, including impacts on animal diseases, irrigation, and croplands. Economic studies on renewable energy. Developed computer models used by thousands of U.S. farmers to increase farm income and sustainability.

**Agricultural Leadership, Education, and Communications**  
*alec.tamu.edu*

Assesses technology adoption, consumer engagement, and information dissemination in education, leadership, communication, extension, and international contexts. Works in 16+ countries to design and implement projects in sustainable food and fiber systems, natural resource management, human capital development, and STEM course integration. Leads assessment programs in state, national, and international organizations; public and private industry; and public schools.

**Animal Science**  
*animalscience.tamu.edu*

Focuses on nutrition, management, and sustainability of beef cattle. Studies fat distribution and conducts research to improve feed efficiency. Innovations in meat science and food safety. Programs to improve equine nutrition, exercise physiology, and reproduction. Extensive research on uterine biology and physiological genomics that also benefits human health and reproduction. Collaborating on transgenic technology to increase muscle mass.

**Biochemistry and Biophysics**  
*biochemistry.tamu.edu*

Studies proteins and nucleic acids to target with new drugs to help treat Alzheimer's disease, malaria, tuberculosis, certain cancers, and other diseases that are difficult to treat and can become resistant to current drugs. Working to find "smart drugs" that can be carried directly to disease sites by nanoparticles. Combines structural biology with bioinformatics to simultaneously screen thousands of potential drug compounds.

**Biological and Agricultural Engineering**  
*baen.tamu.edu*

Conducts air quality research to reduce particulate matter and greenhouse gases in farming operations. Discovered methods to decontaminate pathogens in fresh produce. Developed an edible coating to extend shelf life of fresh-cut fruits and vegetables. Produced electricity from gasification of municipal solid waste, a process now licensed and commercialized. Licensed a hybrid zero valent iron treatment that can remove more than 95% of heavy metal contaminants from industrial wastewater.

**Ecosystem Science and Management**  
*essm.tamu.edu*

Collaborated on a model that helps municipalities improve water quality; helped develop SWAT hydrologic model, now the federal standard for evaluating impacts of growing crops for biofuels. Provided data on endangered species habitats to find solutions for human-wildlife interactions at Fort Hood. Evaluates carbon sequestration potential of forests and rangelands to mitigate climate change. Participates in USDA PINEMAP project to evaluate ecosystem services provided by southeastern pine forests.

**Entomology**  
*insects.tamu.edu*

Developed Integrated Pest Management program for applying insecticides only

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when economic benefits are expected; resulted in less crop damage and 70% reduction in insecticide use, without harming the environment. Developed mobile app to identify ticks, which may carry Lyme disease bacterium. Discovered that some insecticides can affect genes that make plants more susceptible to spider mites. Maintains largest insect collection in Texas and Mid-South, with 2.7 million curated specimens.

### **Horticultural Sciences**

***hortsciences.tamu.edu***

Develops superior varieties of vegetables, fruits, and ornamental plants. Produces elite breeding lines for commercial seed companies. Developed peppers with flavonoid and ascorbic acid levels more than 400% higher than commercial cultivars. Providing “proof of concept” of the health benefits of vegetables, fruits, and nuts. Combating zebra chip disease in potato and Pierce’s disease in grapevines. Enhances the horticulture industry by developing Texas-hardy varieties.

### **Nutrition and Food Science**

***nfs.tamu.edu***

Identified plant-derived compounds that protect against gastrointestinal diseases and discovered how plant phytoestrogens suppress the formation of colon cancer. Discovering how diets modulate genes to create diseases such as type 2 diabetes. Determining how nutritional compounds can protect against environmental contaminants. Studied benefits of and helped to commercialize açai products. Collaborating on a program to increase children’s vegetable consumption and exercise.

### **Plant Pathology and Microbiology**

***plantpathology.tamu.edu***

Research programs in molecular biology and plant-microbe interactions, revealing ways to reduce mycotoxins in food and feed. Producing nano-size particles and nonthermal plasma to remove pathogens from seeds. Studies the molecular mechanisms that viruses use to control fungal plant pathogens. Cloning and studying the regulation of genes involved in enzyme production and disease resistance. Helping control plant diseases in crops and forests.

### **Poultry Science**

***posc.tamu.edu***

Intensive research into avian physiology and poultry production. Developing ways to sustainably meet the global demand for poultry meat and eggs through precision nutrition, improved animal health and well-being, and utilization of waste products. Improving nutritional quality and safety of poultry products while extending shelf life and reducing food waste through probiotic/prebiotic therapies, eBeam processing, and new technologies.

### **Recreation, Park and Tourism Sciences**

***rpts.tamu.edu***

Developed the WaterSmart Landscapes program and the Texas Coastal Watershed Program; researched headwater wetlands and mapped ecosystem resources and services. Research results were used by state and federal agencies to determine a “significant nexus” between coastal wetlands

and traditional U.S. waters. Analyzed demographic change in areas around Texas parks and will monitor growing diversity to improve parks and quality of life.

### **Soil and Crop Sciences**

***soilcrop.tamu.edu***

World-recognized improvement and production programs in grains, legumes, cotton, forage, turfgrass, and bioenergy crops. Uses molecular genetic techniques to understand plant response to drought tolerance, disease, and insect pests. Research to improve soil health, remediate contaminated soil and water, re-vegetate damaged land, and enhance environmentally sustainable production of major crops to feed and clothe a world population of 9 billion.

### **Wildlife and Fisheries Sciences**

***wfsc.tamu.edu***

Discovers and disseminates knowledge about biodiversity and natural resources, focusing on ways to accommodate human health and welfare while supporting the earth’s biota and ecosystems. Researches aquacultural production and fish ecology around the world to recommend practices for sustainable fishing. Studies land-use changes, habitat loss, invasive species, diminishing wildlife, and the overexploitation of resources, as well as social conflict.

## **College of Veterinary Medicine and Biomedical Sciences**

***vetmed.tamu.edu***

### **Veterinary Integrative Biosciences**

***vetmed.tamu.edu/vibs***

Compares domestic and feral horse populations to differentiate the effects of human and natural selection. Identifies methods for reducing pathogen contamination of produce at the pre-harvest level. Discovering novel methods for preventing Lyme disease. Developed new therapies to mitigate dietary risk factors for disease in humans and animals. Based on this work, Texas A&M University has launched two companies: Texas Enterosorbents, Inc., and Salient Pharmaceuticals, Inc.

### **Veterinary Pathobiology**

***vetmed.tamu.edu/vtpb***

Investigates genetic determinants of disease resistance in animals. Develops vaccines for economically significant infectious agents. Identifies potential targets for new antimicrobial agents. Focuses on infectious agents that affect animals and people. Investigates development of antibiotic resistance in bacteria. Genetic and nutritional basis of wildlife and exotic animal health. Studies biological and nutritional basis of cardiovascular disease.

### **Veterinary Physiology and Pharmacology**

***vetmed.tamu.edu/vtpp***

Cutting-edge research addressing the One Health concept, including studies on risk assessment, endocrine disruptors, nuclear receptors, and effects of toxicants on the gut microbiome; research on mammalian reproduction, ranging from genetic modification to developmental programming; and studies on the mechanisms underlying cardiovascular health and disease, from molecule to whole animal or human.