The Center for Bioinformatics and Genomic Systems Engineering (CBGSE) functions in the general areas of bioinformatics, computational and systems biology.

As a cooperative effort between the Texas A&M Engineering Experiment Station (TEES) and Texas A&M AgriLife Research, it constitutes both an active research group and a cross-institution graduate student training program focused on plant genomics.

The mission of the CBGSE is to develop new methodology and analytical tools for basic and applied research to benefit consumers and expand agricultural sustainability, profitability and environmental stewardship with a main emphasis related to strengthening the economy, sustaining and restoring healthy ecosystems, conserving natural resources, ensuring prosperity and enriching the quality of life for the present and future generations of Texans.

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**RESEARCH FOCUS**

**SYSTEMS BIOLOGY**

Systems biology is the coordinated study of biological systems by investigating the components of cellular networks and their interactions, by applying experimental high-throughput and whole-genome techniques, and integrating computational methods with experimental efforts.

**COMPUTATIONAL BIOLOGY**

Computational biology, focused on the development and application of analytic and theoretical methods of data processing, mathematical modeling and computational simulation techniques, toward the study of biological systems, is rooted in life sciences as well as computer and information sciences and technologies, drawing from specific disciplines such as mathematics, physics, computer science and engineering, biology, and behavioral science.

**BIOINFORMATICS**

Bioinformatics is an interdisciplinary field mainly involving molecular biology and genetics, computer science, mathematics and statistics.
TEES has a wealth of expertise in a variety of specialty areas at its disposal. That is why we are in demand across the globe for education and training in fields such as nuclear safety, process safety and machinery short courses. We also provide professional development training and workshops for industry professionals who want to know the latest developments in their fields.

By addressing multiple stages of life, TEES experts reach out to educators and industry leaders by offering a variety of training and educational opportunities to every stage of life.

**CURRENT INITIATIVES**

- Outreach
- PreK – 5th Grade Learning Modules
- ExxonMobil Texas State Science and Engineering Fair
- Career Development
- Texas A&M Engineering Academies
- Research Experiences for Undergraduates
- Continuing Education
- Advanced technical and professional trainings (certificates, conferences, short courses)
- Both in-person and remote

**RESEARCH CENTERS & INSTITUTES**

**ENERGY SYSTEMS & SERVICES**
- Texas A&M Energy Institute
- Crisman Institute for Petroleum Research
- Energy Systems Laboratory
- Gas and Fuels Research Center
- Global Petroleum Research Institute
- Smart Grid Center
- Turbomachinery Laboratory

**MATERIALS & MANUFACTURING**
- Center for Intelligent Multifunctional Materials and Structures
- Institute for Manufacturing Systems
- National Corrosion and Materials Reliability Center
- Polymer Technology Center
- Process Engineering R&D Center

**HEALTHCARE**
- Center for Bioinformatics and Genomic Systems Engineering
- Center for Remote Health Technologies and Systems
- National Center for Therapeutics Manufacturing

**INFORMATION SYSTEMS & SENSORS**
- AeroSpace Technology Research & Operations
- Center for Autonomous Vehicles and Sensor Systems
- Center for Emergency Informatics
- Texas Center for Applied Technology

**NATIONAL SECURITY & SAFETY**
- Center for Large-scale Scientific Simulations
- Institute for National Security Education and Research
- Lone Star Unmanned Aircraft Systems
- Center of Excellence and Innovation
- Mary Kay O’Connor Process Safety Center
- Nuclear Power Institute
- Nuclear Science Center
- Nuclear Security Science and Policy Institute
- Texas A&M Cybersecurity Center

**INFRASTRUCTURE**
- Offshore Technology Research Center
- Thomas and Joan Read Center for Distribution Research and Education

**EDUCATION & TRAINING**
- Institute for Engineering Education and Innovation