Insect- and tick-transmitted pathogens can infect humans, animals, and plants. Diseases caused by these pathogens result in hundreds of millions of dollars in increased health care costs, increased veterinary costs for livestock and companion animals and lost agricultural productivity.

**Program Description**
This program is designed to:
- Protect human, animal, and plant health
- Expand agricultural sustainability and profitability, and environmental stewardship

Significant research initiatives include:
- Improve detection methods for disease pathogens and vectors to predict and prevent epidemics
- Define the insect- and tick-transmitted disease cycles and find ways to eliminate or reduce transmission risk
- Develop better control tactics and management strategies
- Develop and manufacture vaccines to protect people, animals and plants against pathogens through corporate research collaborations.

Texas A&M AgriLife Research is uniquely positioned to develop solutions, including pest surveillance, public education, vaccine production, and resistant plant varieties.

Funds would be used for the following:
- Internal grants to stimulate research and provide seed money to enhance competition for federal, state and/or corporate funding, including equipment upgrades and operating funds
- An internal grants program for facilities upgrades statewide and new facilities for advanced-technology equipment
- New faculty, graduate student, and staff support
- A West Nile virus expert in the Department of Entomology
- A Plant Microbiomics faculty member in the Department of Plant Pathology and Microbiology
- Graduate/post-doc students in Plant Pathology and the interdepartmental Vector Biology Research Group
- A greenhouse for containing exotic plant pathogens to bring the current Biosafety Level 2-Ag laboratory in Weslaco up to Biosafety Level 3-Ag

**Objective**
Disrupt the spread of insect- and tick-transmitted diseases that infect humans, animals, and/or plants in Texas.

High-impact, insect- and tick-transmitted diseases in Texas include:
- West Nile virus
- Lyme disease
- Chikunguna
- Dengue hemorrhagic fever
- Chagas disease in canines
- Texas cattle fever
- St. Louis encephalitis
- Equine encephalitis
- Citrus greening
- Zebra chip disease in potatoes
- Pierce’s disease in grapevines
- Wheat streak mosaic virus
- Citrus leprosis virus
- Oak wilt
PATHOGEN LIFE CYCLE
Controlling invasive insect and tick transmitted diseases comes from eliminating one of the three points of the “disease triangle.” By understanding the entire pathogen life cycle, it makes it easier to focus on which point to disrupt/eliminate.

Because the varied landscapes and climates at our 13 regional research centers are comparable to conditions in many other parts of the world, Texas A&M AgriLife Research is the premier agency for research in the control and prevention of insect-related diseases. With the American South’s longest international border, Texas is often the first state to experience insect-borne pathogens from other parts of the world; a rapid response here can safeguard human and animal health and the flow of agricultural and other commercial trade.