Genetic Contributions to Infectious Disease Risk

Infectious disease in cattle production remains a significant threat to productivity, profitability, animal welfare, and food safety. Concerns regarding the development of resistant bacterial populations associated with antimicrobial use in food producing animals and the limitations of biocontainment and biosecurity practices in contemporary production systems underscore the need for novel approaches to disease control. One of the opportunities to mitigate infectious disease threats is to integrate genomic technologies into production practices, including marker-assisted selection for traits associated with disease resistance.

Researchers at Texas AgriLife Research are well positioned to address the challenges associated with integrating genomic technology into animal health and production. Existing collaborations including scientists in the College of Veterinary Medicine and Biomedical Sciences at Texas A&M University have begun to consolidate our expertise in ruminant health and production, genomics, and genetic epidemiology. An example of this work includes the study of paratuberculosis in beef cattle, assessing familial associations with the development of antibody in response to infection and the development of methods for defining familial aggregation of disease state in cattle populations of unknown pedigree. In addition, AgriLife Research faculty members and collaborating scientists have an established track record working with cattle producers to develop and apply new knowledge to contemporary animal production.

Objectives
- To identify genetic polymorphisms associated with infectious diseases of cattle of importance to animal production and food security
- To estimate the effects of marker-assisted selection for disease traits on ruminant health in contemporary animal production systems

Resources and Collaborators
- Diverse faculty members with expertise in veterinary medicine and ruminant health, ruminant nutrition, genetics, genetic epidemiology, and analytical epidemiology
- Strategically located in some of the most intensive cattle producing regions in the world
- Established collaborative relationships between faculty members at Texas AgriLife Research, Texas A&M University, West Texas A&M University, Texas Tech University, and USDA-ARS
- The knowledge and expertise to direct the generation of new genomic technologies at the interface of animal production and genetic discovery

http://AgriLifeResearch.tamu.edu