

# Genomics Systems Approach to Vector-borne Diseases Seed Grant Program

*All questions should be directed to Dr. Charles D. Johnson, Director of Genomics and Bioinformatics, and Executive Director of the Center for Bioinformatics and Genomic Systems Engineering.*

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Texas A&M AgriLife Research is helping lead the effort to greatly expand insect-vector borne diseases (VBD) research around the State of Texas. During the last legislative session in recognition of AgriLife Research's leadership in VBD research the Texas legislature provided funding in 2016-2017 toward basic and applied research. VBD accounts in the U.S. for more than 17% of all infectious diseases, causing more than 1 million deaths annually. Several species of exotic mosquitoes that serve as vectors for diseases now thrive in the subtropical regions including much of Texas. Other pests, such as ticks and "kissing bugs," are also prevalent in the state. The importance of insect transmission of plant diseases is in many cases greatly underestimated. Many plant diseases in the field or in harvested plant produce become much more serious and damaging in the presence of specific or non-specific insect vectors that spread the pathogen to new hosts. Diseases caused by these vectors and corresponding pathogens result in hundreds of millions of dollars in increased health care, increased veterinary costs for livestock, and loss of agricultural productivity.

Today, AgriLife Research is announcing a Genomic Seed Grant RFP (\$200k total) in VBD for humans, crops or livestock. These Seed Grants are for faculty with appointments (including joint appointments) with AgriLife Research (please read the attached RFP for details). The purpose of the Seed Grants is to provide initial, fundamental, mechanistic and biological information that can be utilized for additional funding and leveraging activities. In addition, AgriLife is purchasing a PacBio Sequel System to provide Texas A&M community with the latest long read sequencing capable as well as an updated Illumina HiSeq 4000, which represents a 40% improvement in our short read capabilities. The new equipment will place the AgriLife Genomic and Bioinformatics Service facility in an ideal position to provide faculty with the latest in sequencing technology, both now and in the coming years.

**The Goal of this RFP is to provide preliminary genomic data and bioinformatics analysis for AgriLife Scientists researching VBD's basic biology and interplay among vectors, pathogens and hosts.**

The program will fund up to 10 projects focused on the genomic interaction of vector, pathogen, and host for vector-borne diseases in humans, livestock, and crops. Each project shall include up to \$20,000 in next generation sequencing with the AgriLife Genomics and Bioinformatics Service, and bioinformatics analysis support through the Center for Bioinformatics and Genomic Systems Engineering (CBGSE).

Texas A&M AgriLife [Genomics and Bioinformatics Service \(TxGen\)](#) was established to provide access to the latest genomic technologies and associated bioinformatics expertise across AgriLife, COALS, and the Texas A&M University System, addressing a central and pressing need for access to the latest NGS technologies and world-class genomic expertise. TxGen staff have built a strong collaborative network spanning the entire Texas A&M system, along with a growing number of private sector life science and agribusiness companies. Their scientists collaborated with 147 faculty last year (2015) drawn from over 36 departments, six colleges, and multiple agencies across the system. Additionally, they have a growing national and international reputation, collaborating with scientists in over 31 different countries.

The AgriLife-TEES [Center for Bioinformatics and Genomic Systems Engineering \(CBGSE\)](#) is a cooperative effort between AgriLife and TEES that is focused on bioinformatics and computational biology research, in addition the center's faculty are part of a cross-institution bioinformatics graduate student training program involving collaborations with scientist across AgriLife. Current AgriLife funds ten students that will be working the scientists that participate in VBD genomic seed grant.

## **Criteria for the Evaluation of Proposals:**

***Program Goal: provide faculty with preliminary next generation sequencing results for future grant submissions that will allow them to begin using or expand their work in insect genomics focused on pathogen use.***

*Funds for the Texas A&M Genomics Seed Grant Program shall only be applied for next generation Illumina or PacBio sequencing and bioinformatics services from the AgriLife Genomics and Bioinformatics Services; no additional funds shall be requested through this program. Proposals will be accepted from individuals or teams of researchers. Each individual proposal should have one clearly identified principal investigator (PI). PIs may request up to \$20,000 in sequencing service credits. In addition, each project shall be assigned a graduate student from the Center for Bioinformatics and Genomic Systems Engineering for bioinformatics analysis as needed. PIs of funded projects will be expected to submit a yearly and final report, as well as take part in a symposium highlighting all the funded programs.*

Who should apply?

- All faculty who are currently not using NGS technologies for the study of vector-borne diseases but want to start using this technology, or faculty of established NGS programs that want to expand into new areas or applications. As a seed grant program, funds should not be requested to incrementally extend current research.
- AgriLife scientists working on vector-borne diseases in humans, animals, and plants.
- Disciple-wide and Interdisciplinary teams – This RFP is an opportunity to generate that primary data needed to facilitate multidisciplinary collaborations.

## **Who is Eligible to Submit a Proposal:**

**Principal Investigators:** Scientists who hold appointments (including joint appointments) with AgriLife Research may serve as a PI on any proposal. There should be one PI per proposal.

**Co-PIs:** Scientists holding appointments (including joint appointments) within the Texas A&M System are eligible to serve as Co-PIs on proposals.

**Collaborators:** Involvement of collaborators from other agencies and/or universities that enhance the competitiveness of a proposal is allowable.

**Budget and Planning:** Prior to submission, all applicants must contact Dr. Charlie Johnson ([Charlie@ag.tamu.edu](mailto:Charlie@ag.tamu.edu)) to a) determine the technology and services that are available and how they can best be used to meet the research goals, b) obtain a scope-of-work/quote for NGS, and discuss bioinformatics needs and collaborations within the CBGSE. It is best to make arrangements with Dr. Johnson as soon as possible. The quote will serve as the project budget and must be submitted with each proposal. ***Proposals without quotes will not be reviewed.***

**Deadline to Submit Proposal:** Proposals are due no later than **5:00 PM on May 2, 2016**. Please submit a single combined document in PDF format to Texas A&M AgriLife Genomics and Bioinformatics Service office. ([Click to submit: TxGen@ag.tamu.edu](mailto:TxGen@ag.tamu.edu)).

**Award Notice:** Successful proposals will receive notification after June 01, 2016.

All projects will begin June 1, 2016 and end August 31, 2017. Service credits will no longer be available after August 31, 2017. At the end of the program all funded proposals will be evaluated. Based on the performance of the seed grant program in terms of new funding, papers, etc., and funds available at the time, this program may be renewed.

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FY2016-FY2017**

**Proposal Section not to exceed three (3) pages**

**Title:**

**Principal Investigator:**

**Co-Principal Investigator(s):**

**Collaborator(s):**

**Amount Requested:** \$ \_\_\_\_\_ *Attach quote*

**Proposal Section (3 pages)**

**Project Objectives:**

**Plan of Work:**

**Research Impact:**

*PI must describe how these preliminary data will lead to major grant proposals, identifying target federal agency, program, and/or private sector sources of additional funding to be sought. General statements of intent to apply for major grants will disqualify applicants for a seed grant.*

**Selected References (1 pages)**

**Project Timeline**

**Describe role of each team member (1 page)**

**Appendix: 2-page biosketch for each PI, CoPI(s) and collaborators**