Research Development Fund – Spring 2016 Cover Page Template
SUBMISSION DEADLINE: February 15, 2016 at 12 noon CDT to rdf@tamu.edu
(All cover pages will be posted for the campus community to view at http://rdf.tamu.edu/abstracts)

Application Title: Pacific Biosciences Long-Read Genome Sequencing Technology for Advancing Animal, Plant, Human and Microbial Genomics Research at Texas A&M University.

Lead contact for RDF Application:
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Key Participating Units:
Texas A&M University College of Agriculture & Life Sciences (COALS)
Texas A&M University College of Veterinary Medicine & Biomedical Sciences (CVM)
Texas A&M Institute for Genome Sciences and Society (TIGGS)
Texas A&M University Health Science Center (TAMHSC)
Texas A&M University College of Science

Anticipated Request Amount ($):
This total budget is US$ 665,000 which includes the PacBio equipment and computer upgrades.

Executive summary of the intended application to utilize Research Development Funds.
This proposal supports a new initiative that will dramatically advance genomics research of animal, plant, and humans, and their pests and microbial symbionts at Texas A&M University (TAMU). The goal is to procure state-of-the art Pacific Biosciences (Pac-Bio) long-read DNA sequencing capabilities and associated improvements in compute infrastructure for the TAMU community. A large community of TAMU researchers currently use innovative genomics-based approaches to understand the biology of model and non-model organisms, improve understanding of host organism interactions with other organisms and their environment, and facilitate technology transfer of research findings related to diseases and human and animal wellbeing. Pac-Bio sequencing, recently upgraded to increase output 5X and reduce costs 2X, is transformative in that it can recover ~98% of a large complex (e.g. vertebrate) genome sequence. However, the new Pac-Bio Sequel sequencer is currently limited in distribution at core facilities nationwide (some national genome centers still lack the new machine) and timely access to the technology impacts competiveness. Having a machine onsite will provide rapid sequence turnaround time for campus investigators and their collaborators statewide, which is a major shortcoming of relying on outsourcing to core labs where project queues may be months, particularly for this improved, high-demand technology. Additionally, investment at the launch of this proven technology will give TAMU investigators a competitive advantage in genomics projects. This RDF investment will quickly facilitate the development of novel research and associated outcomes at TAMU based on long read sequence data for: 1) the rapid and nearly complete assembly of targeted genomes of biomedical, agricultural, and basic research interest; 2) generation of full-length RNA transcript discovery; and 3) identification of the structure and locations of epigenetic modifications genome-wide epigenetic. This proposal would bring together researchers centered at TAMU and collaborating organizations with complementary strengths in genomics, bioinformatics, entomology, veterinary parasitology, microbiology, agricultural production, animal science, wildlife, TIGGS, veterinary medicine, human medicine, and agriculture and life sciences.