Research Development Fund – Fall FY16 Cover Page Template
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Proposal Title: Translational Biomedical Research Informatics Infrastructure

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Key Participating Units: College of Medicine, College of Public Health, College of Engineering, TEES, Prairie View A&M University

Anticipated Request Amount ($): $1,000,000.00

Executive summary of the intended proposal

All phases of biomedical translational research (T1-T5) share in common the necessity to make use of data, information and knowledge from one context to another. For example, in T1 research we desire to use data, information and knowledge of normal or pathological biological processes in a model system in the context of understanding normal or pathological biological processes in humans. Similarly, in T2 translation research we wish to use information and knowledge of treatment effectiveness from a clinical trial test population of patients to the population as a whole. The scale of data and information that new high throughput technologies at each level of biological processes make available and the proliferation of digital record keeping in care settings further compound this informatics challenge. This has created an explosion of data on both the clinical and biomedical science sides.

The Translational Biomedical Research Informatics Infrastructure (TBRII) will address this multidimensional translational informatics challenge through interdisciplinary, integrative, and collaborative effort with biomedical investigators. This effort will be enhanced and enabled through the design, development and deployment of generalizable computational biology, bioinformatics, and health informatics tools and capabilities with an associated supporting IT infrastructure**.** TBRII has the overarching goal of enhancing and enabling innovative biomedical, health and translational research for understanding, diagnosing, treating and preventing human diseases.

TBRII will expand the existing A&M clinical and translational biomedical research enterprises by integrating multidisciplinary expertise and providing state-of-the-art data storage, shared access, transformation, management, and analytics capabilities for complex biomedical research datasets and digital knowledge and information resources. TBRII also will promote use of an integrated set of data resources and advanced biomedical informatics tools, key to big data analytics and translational knowledge discovery. We will coordinate and expand existing informatics infrastructure and further optimize development of novel methods to solve increasingly complex multidisciplinary research problems that integrate genotypic, phenotypic, clinical, & public health data sources.

TBRII will greatly enhance the competitive capabilities of participating units for research funding from NIH, NSF and other funding sources that increasingly require demonstration of informatics infrastructure for integration of data, information and knowledge across multiple levels of biological processes, model systems, public health contexts or clinical contexts. TBRII will enhance these activities and enable new and transformative approaches to them through the informatics and IT infrastructure. This new and expanded infrastructure will be state of the art in performing sharing, integration and analysis of genetic and omic data, imaging, and aggregated clinical data, and will certainly help put TAMU's health data analytics and translational informatics program "over the top"