

Research Development Fund – FALL 2019 Application Template

Application Title: Competitive Enhancement of the TAMU Flow Cytometry Shared Resource Facility (FCF) in Support of Interdisciplinary State-of-the-Art Research at the Single Cell Level.

Lead contact for RDF Application:

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Key Participating Units:

Colleges of Veterinary Medicine and Biomedical Sciences, Agriculture and Life Sciences, Engineering, Science, Medicine, School of Public Health, School of Pharmacy

Anticipated Request Amount (\$): \$980,576.53

Executive summary of this application to utilize Research Development Funds:

This request for funds will support our goal to competitively enhance the TAMU Flow Cytometry Shared Resource Facility (FCF) with state-of-the-art single cell analysis equipment to better serve the research community at Texas A&M University and surrounding Biotechnology companies in the Brazos Valley. This application is strategically aligned to enhance the research of the College of Veterinary Medicine, College of Science, College of Agriculture and Life Sciences, College of Medicine, College of Engineering, and One Health programs along with local biotech companies such as iBio. Investing in this endeavor will create and sustain lasting interdisciplinary collaborative research in pharmaceutical discovery and delivery systems, vaccine development, stem cell biology, cancer biology/prevention, biotechnology, tissue and organ regeneration, and biomedical engineering. Investing in this core infrastructure will greatly decrease the financial burden and competitive pressure on researchers to acquire this equipment independently, and will ensure proper utilization, management and training of the acquired equipment by experienced core personnel. The lack of equipment and technology in the FCF is currently unacceptable and way below standards for a Tier-One university flow cytometry shared resource facility. To become competitive in the current research climate and to meet the rapidly increasing demands of Texas A&M and the surrounding scientific communities within the Brazos valley, we request the acquisition of the following items to establish a competitive state-of-the-art single cell analysis shared resource facility at Texas A&M. Our goals are to secure funding to purchase: 1) An Amnis ImageStream X Mark II imaging flow cytometer that allows the simultaneous analysis of multiparameter flow cytometric data with the spatial resolution and imagery of microscopy. 2) Upgrade current, obsolete, flow cytometer capabilities with a Cytex Aurora Spectral flow cytometer that allows for high throughput analysis of up to 36 fluorescent parameters. 3) Upgrade the current primary cell Sorter (Moflo Astrios) to include a 561nm diode laser. These tools will expand the TAMU FCF while enhancing the existing collaboration between the FCF and the TAMU Institute for Genome Sciences and Society. In addition to advancing research, the tools will also be used to implement short courses designed to train users on how to properly use these tools and successfully incorporate them into relevant research, thus, enhancing graduate and undergraduate education. The requested equipment will be integrated into the existing BSL2-enhanced approved lab space, which is centrally located on the second floor of the VMR Addition. Importantly, the necessary expertise is already in place to ensure proper implementation and maintenance of the equipment. Funding of this request will enhance the competitive research and training capabilities of the TAMU campus as a whole as well as local biotech companies. Advanced state-of-the-art single cell analysis technologies are critical to many investigator's grants as evidenced by successful integration into NIH/NSF multi-investigator grants and Center grants. Bolstering the technology within the TAMU FCF will enhance Texas A&M's competitiveness for new funding and increase intradisciplinary research across campus.