

## Research Development Fund – Fall 2022 Application Template

Submission Deadline: **12:00PM CDT Monday – October 10, 2022**, to [rdf@tamu.edu](mailto:rdf@tamu.edu)

***\*\*Applications exceeding page limits for any section or do not follow the template will not be reviewed\*\****

**Application Title:** Bringing cell sorting at Texas A&M to the next level: acquisition of next generation cell sorters for the TAMU Intercollegiate Cell Analysis Facilities (TICAF)

### **Lead contact for RDF Application:**

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**Key Participating Units:** School of Medicine, School of Veterinary Medicine and Biomedical Sciences, College of Agriculture and Life Sciences, College of Engineering, College of Arts & Sciences, School of Public Health, Irma Lerma Rangel School of Pharmacy

**RDF Amount Requested (\$):** 1,095,038

## **Executive Summary**

**Overall Scope/Objective:** Advances in the biomedical and agricultural sciences require analysis of highly specific cell populations at the single cell level. New and emerging advancements in cell sorter technology make it possible to isolate and purify highly specific cell populations from a variety of tissues; these cells can then be subjected to multiple downstream single-cell analyses, providing an enormous amount of information about disease pathogenesis, stem cell-tissue engineering technologies, nutritional regulation, cancer transformation, and many other processes. Next generation cell sorters are also increasingly easy to use, able to generate purified cell populations with greater cell viability and functionality, and able to sort rare cell populations that were previously too difficult to purify, making formerly unfeasible discoveries possible. Currently, there are no **next generation** cell sorters readily available for on-campus use by Texas A&M researchers. The objective of this proposal is to acquire two next generation cell sorters, one to be located at the School of Veterinary Medicine and Biomedical Sciences and one to be located at the School of Medicine.

**Proposed Research Infrastructure Enhancement:** We propose acquisition of a Miltenyi MACSQuant Tyto microfluidics cell sorter for the School of Medicine Analytical Cytometry Core (SMACC) and a Cyttek Aurora CS full spectrum cell sorter for the School of Veterinary Medicine and Biomedical Sciences Flow Cytometry Facility (FCF). Together, the SMACC and FCF operate under the TAMU Intercollegiate Cell Analysis Facilities (TICAF) organization to strategically manage current and future cell analysis shared facility administration, user input, and expansion at TAMU.

**Anticipated Improvement to Research at Texas A&M:** As single-cell methods in genomics, transcriptomics and/or proteomics become a standard expectation for publication and extramural funding, research institutions require strategic integration and enhancement of shared resource equipment to remain competitive. The TAMU Institute for Genome Sciences and Society (TIGSS) and the Integrated Metabolomics Analysis Core (IMAC) can provide on-campus single cell analyses, but researchers must be able to provide to these facilities high quality cell samples. The addition of the Tyto and the Aurora CS to the instrument roster of the TICAF will support the ability of researchers at Texas A&M to successfully generate single-cell data using existing university core resources.