

Application Title: Interdisciplinary Regenerative Manufacturing Facility

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Departments: Biomedical Engineering, Cellular and Molecular Medicine

Key Participating Units: CoE/TEES, CoM, CoS and VMBS

Requested Amount: \$1.2M

Summary: A multidisciplinary team of PIs representing four colleges at Texas A&M University, namely, Engineering, Science, Medicine and Veterinary Medicine & Biomedical Sciences, as well as the Institute for Regenerative Medicine (IRM), Center for Cell and Organ Biotechnology (CCOB) and National Center for Therapeutics Manufacturing (NCTM), request research development funds to establish a shared **Interdisciplinary Regenerative Manufacturing Facility (IRMF)** located in the NCTM. Regenerative Engineering refers to biofabrication of engineered tissues for use as replacement tissues or as organoids for drug discovery. As a member of the newly established \$350M Advanced Regenerative Manufacturing Institute (ARMI), TAMU will have the opportunity to compete for these funds via project calls to develop enabling technologies for tissue fabrication. To enhance TAMU's competitive edge, funds are requested to equip the IRMF with instrumentation to act as testbeds for enabling technologies for cell and tissue culture.

With the establishment of the IRMF, existing and new equipment for cell expansion, biofabrication, construct incubation/maturation and product monitoring will be available within a centralized location in the NCTM. The IRMF builds upon bioprinting capabilities of the TEES Institute for Manufacturing Systems, nanofabrication facilities in AggieFab and existing pharmaceutical biomanufacturing facilities in the NCTM. The proposed facility and services will impart TAMU with the capabilities to create and commercialize bio-devices involving human cells within one or more steps of a manufacturing process for fabricating engineered tissues for implantation and organ-on-a-chip technologies for drug discovery and toxicology. The proposed IRMF is closely aligned with TAMU's strategic interdisciplinary thrusts, especially related to Healthcare Technologies and Materials & Manufacturing. The facility will fill a significant gap on campus in coordinating research activities related to biomanufacturing, attract collaborations with industry and provide international visibility to the university. Through natural interactions with ARMI and industry partners, the IRMF will provide an excellent environment for the training of undergraduate and graduate students to meet the anticipated need of a workforce trained in advanced techniques unique to the upcoming biofabrication industry.