

EXECUTIVE SUMMARY

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Committee Review and Recommendation

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Statutory/Policy Requirements

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Arizona Board of Regents

Technology and Research Innovation Fund (TRIF) Program Proposal

University: Arizona State University
 TRIF Investment Area: Improving Health
 Program Name: Biodesign Institute

Problem Statement:
 Emergent global challenges in medicine, environmental sustainability and national security continue to threaten the health of our communities and our planet. The Biodesign Institute at Arizona State University is committed to solving such challenges by developing rigorous, collaborative, nature-inspired science for the benefit of all life on Earth. By leveraging TRIF investment, Biodesign improves health, ensures security, sustains the planet and provides access and workforce development opportunities.

Program Description:
 As the premiere scientific research institute in one of the nation's fastest-growing research universities, the Biodesign Institute addresses an expansive array of global challenges by creating nature-inspired solutions to address society's greatest challenges in biomedical health, environmental sustainability and national security. Biodesign is poised to promote workforce and leadership development with academic and hands-on, laboratory enrichment experiences and education to advance research, technology and thought leadership in the state of Arizona, and to elevate and expand Arizona's highly skilled workforce. Voter-supported investment in university research pioneered at Biodesign allocates resources to promote access to highly skilled experts and technologies in state-of-the-art laboratories for high-impact research of societal value. In this way TRIF funding is a powerful driver of scientific excellence and enables multiple pathways to enrich the economy through higher education access for workforce development, with ASU Biodesign-specific programs in impactful areas.

What is the University's Advantage and/or Anticipated Funding Opportunities?
 The ASU advantage for additional funding opportunities are many, including: 1. Expansion of COVID-19 testing success to a more generalized platform for developing new ways to rapidly diagnose and detect disease. 2. Expansion of the Neurodegenerative Disease Research Center (NDRC) under the leadership of Jeff Kordower. 3. In partnership with the ASU School for Complex Adaptive Systems, expand efforts in cybersecurity, artificial intelligence, deep learning and computational biology to reduce internet security threats and measure the impact of censorship on internet architecture. 4. Leverage TRIF funding to enable the formation of spinout companies. 5. Established the Biodesign Center for Sustainable Macromolecular Materials and Manufacturing (BCSM3) to focus on sustainable manufacturing and polymer chemistry, with goals of generation of sustainable, environmentally friendly materials. 6. Development of table-top x-ray source capable of making molecular movies

Is there an Arizona Specific Benefit or Impact?
 Biodesign is committed to impactful programs to improve human health and economic opportunity in Arizona. TRIF funding to the Biodesign Institute would enhance the workforce and impact health in many areas, including: 1. Through Compact X-ray free electron laser/compact X-ray light source student internships, train the next generation of X-ray machinists, technologists and physicists. 2. Through internships and fellowships in the ASU Biodesign Clinical Testing Laboratory (ABCTL), train and educate workers to seek new technologies and solutions to respond to potential infectious viruses such as COVID-19 and its various strains. 3. Develop Biodesign workforce training opportunities in semiconductor science and sustainable manufacturing as well as other key areas of economic value.

Investment Detail

	2022	2023	2024	Total
Infrastructure	4,620,982	4,620,982	4,620,982	13,862,946
Basic Research	0	0	0	0
Applied Research	2,138,000	2,138,000	2,138,000	6,414,000
Development	2,138,000	2,138,000	2,138,000	6,414,000
Total	8,896,982			

Performance Measures

Faculty Startup Package Expenses	
Postdocs Supported	
Graduate Students	
Undergraduate Students	
Sponsored Project Funding	
Publications in Academic Peer-Reviewed Journals	
Startups	

