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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602386A / <i>Biotechnology for Materials - Applied Research</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	-	20.643	21.919	-	21.919	16.662	10.895	7.308	7.306	0.000	84.733
CP6: <i>Foundational Biotechnology Design and Dev</i>	-	-	20.643	21.919	-	21.919	16.662	10.895	7.308	7.306	0.000	84.733

A. Mission Description and Budget Item Justification

This Program Element (PE) investigates, designs, and performs research focused on novel biotechnological methods, techniques, and materials to increase the resiliency of the military supply chain. The Army is responsible for centrally managing funding for Tri-Service Biotechnology for a Resilient Supply Chain (T-BRSC) efforts. T-BRSC leverages bio-industrial manufacturing to ensure critical domestic supply chain resilience for defense needs through domestic production of raw materials and critical products. Efforts under this PE collaborate with sister Services and select allied partners to create a cohesive biotechnology architecture to enable defense needs. Applied research projects investigate and design bio-engineered materials to ensure domestic sourcing for critical supply chain resiliency. This PE designs and validates technologies to enable rapid prototyping and evaluating of bio-engineered and bio-manufactured materials. Also under this PE, efforts determine and validate a digital architecture to secure biotech data and create computer aided design software to support the safe design and enhanced biosecurity of biotechnology products and applications.

Research in this PE is coordinated with PE 0603386A (Biotechnology for Materials - Advanced Research).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this PE is performed by the United States (US) Army Futures Command (AFC).

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	20.643	0.000	-	0.000
Current President's Budget	0.000	20.643	21.919	-	21.919
Total Adjustments	0.000	0.000	21.919	-	21.919
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	21.919	-	21.919

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<u>Change Summary Explanation</u> Fiscal Year 2023 (FY23) funding increase reflects the fact that the FY22 President's Budget request did not include out-year funding.		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602386A / <i>Biotechnology for Materials - Applied Research</i>				Project (Number/Name) CP6 / <i>Foundational Biotechnology Design and Dev</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CP6: <i>Foundational Biotechnology Design and Dev</i>	-	-	20.643	21.919	-	21.919	16.662	10.895	7.308	7.306	0.000	84.733

A. Mission Description and Budget Item Justification

This Project works collaboratively with Joint Service partners to investigate and determine novel biotechnology methods and processes to establish a domestic resilient supply chain for defense needs. Applied research designs and conducts experiments on bio-derived, bio-functionalized, and bio-manufactured materials and biosynthetic precursors. Efforts under this Project investigate and validate models for design of defense applications. Areas of focus may include reclamation or sequestration of rare Earth/critical elements in the defense supply chain and drop-in replacements for currently employed military materials.

This Project is coordinated with Program Element (PE) 0603386A (Biotechnology for Materials - Advanced Research) / CP7 (Biotechnology Demonstration and Evaluation).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States (US) Army Futures Command (AFC).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2021	FY 2022	FY 2023
Title: Biotechnology Safety by Design for Defense	-	19.889	21.919
Description: This task designs and investigates novel and emerging biotechnologies related to bio-engineered or bio-manufactured materials and their precursors to address vulnerabilities in the critical material supply chain for military needs.			
FY 2022 Plans:			
? Investigate biotechnology capabilities to determine more rapid, innovative, and diverse applications of biotechnology solutions than is currently realized. Design computational models and computer aided design software to enable virtual tests of biotechnology solutions for defense needs.			
? Investigate safety-by-design measures and other biosecurity methods to protect biotechnology capabilities and products from misuse to ensure their safe and effective use in an operational environment.			
? Determine a Joint digital architecture to consolidate and secure DoD biotechnology data to promote and streamline information exchange and collaboration toward accelerating the development of innovative applications of biotechnologies for defense needs.			
FY 2023 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>? Funds research at the convergence of biotechnologies and information science to expand defense biotechnology capabilities to enable the application of biotechnology solutions for new materials. Validate computational models and computer aided design software supporting simulation of biotechnology solutions for defense needs.</p> <p>? Identify and investigate potential risks and safety concerns of biotechnology capabilities throughout the research cycle through implementation of the final product. Develop and validate biosecurity methods that can be operationalized to develop the foundation for the secure use of biotechnology solutions in the future.</p> <p>? Validate methods that control and secure DoD biotechnology data and enable their exchange with collaborators across the biotechnology ecosystem with minimal risk, facilitating development and leveraging of critical partnerships that promote responsible usages and best practices of biotechnology.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase reflects planned lifecycle of this effort.</p>				
<p>Title: SBIR/STTR Transfer</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638</p>		-	0.754	-
Accomplishments/Planned Programs Subtotals		-	20.643	21.919
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				