Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603386A *I Biotechnology for Materials - Advanced Research*

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	-	-	53.736	56.853	-	56.853	38.881	36.634	25.045	25.039	0.000	236.188
CP7: *Biotechnology Demonstration and Evaluation*	-	-	53.736	56.853	-	56.853	38.881	36.634	25.045	25.039	0.000	236.188

A. Mission Description and Budget Item Justification

This Program Element (PE) matures and demonstrates novel biotechnological methods, processes, and materials to enhance military supply chain resilience. 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. The Army supports this Tri-Service effort under this PE with collaboration among sister Services and select allied partners to support a robust pipeline for biotechnology related manufacturing. Advanced research projects optimize and rapidly demonstrate future novel biotechnologies for disruptive breakthrough capabilities. This PE provides bio-engineered and biosynthetic materials to ensure domestic sourcing of critical products in the defense supply chain. Also under this PE, efforts mature and demonstrate rapid prototyping methods for rapid testing of bio-derived materials as well as optimize models for the design and bio-security of bio-engineered materials for defense applications.

This PE is coordinated with PE 0602386A (Biotechnology for Materials - Applied 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	53.736	0.000	-	0.000
Current President's Budget	0.000	53.736	56.853	-	56.853
Total Adjustments	0.000	0.000	56.853	-	56.853
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	56.853	-	56.853

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603386A *I Biotechnology for Materials - Advanced Research*

Change Summary Explanation

Fiscal Year 2023 (FY23) funding increase reflects the fact that the FY22 President's Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603386A / *Biotechnology for Materials - Advanced Research*	Project (Number/Name) CP7 / *Biotechnology Demonstration and Evaluation*	

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
CP7: *Biotechnology Demonstration and Evaluation*	-	-	53.736	56.853	-	56.853	38.881	36.634	25.045	25.039	0.000	236.188
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project collaborates with Joint Service partners to mature, optimize, and demonstrate novel biotechnologies and related methods to establish a domestic resilient supply chain for defense needs. Advanced research validates and provides bio-derived, bio-functionalized, and bio-manufactured materials. This Project matures and demonstrates high-throughput screening and small-scale prototyping, enhances material performance, and exploits biotechnologies to provide drop-in replacements and materials with enhanced properties for defense applications. Areas of focus may include high density, high performance fuels for high speed weapons, bio-based propellants, optical materials, and bio-derived systems that sense and respond to the presence of contaminants.

This Project is coordinated with Program Element (PE) 0602386A (Biotechnology for Materials - Applied Research) / CP6 (Foundational Biotechnology Design and Dev).

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: Biosynthetic Material Demonstration	-	51.774	56.853
Description: This task matures and demonstrates novel and emerging biotechnologies related to bio-engineered or bio-manufactured materials to address vulnerabilities in the critical material supply chain for military needs.			
FY 2022 Plans: ? Provide Tri-Service rapid prototyping capability for the rapid prototyping and evaluation of bio-products for defense applications to compress the timeline for bio-material development, prototyping, and qualification in support of accelerating transitions. These capabilities include high-throughput screening and small-scale prototyping, small scale material purification, and a Department of Defense (DoD) custom capacity for rapid screening and evaluation. ? Exploit biomanufacturing to provide mission-critical materials and reduce cost and burden of logistics for supply and resupply. Mature bio-manufactured drop-in replacement of high performance fuel by optimizing and validating high density, high performance fuel blends for high speed weapons in support of hypersonic flight.			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603386A / *Biotechnology for Materials - Advanced Research*	**Project (Number/Name)** CP7 / *Biotechnology Demonstration and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
? Exploit the agility and flexibility in bio-manufacturing capabilities to address gaps in material performance and demonstrate enhanced material and system performance for ensured operational dominance in contested environments. Mature fire-resistant coating for high-temperature, fire-resistant composite materials in support of long-range missile cases and hypersonic flight. ***FY 2023 Plans:*** ? Optimize and expand the Tri-Service capability for rapid maturation, demonstration, and evaluation of bio-products for defense applications by exploiting the use of robotics for semi-autonomous capabilities. This Tri-Service capability will support the rapid assessment of biotechnology solutions and biotechnologically derived materials with cutting-edge instrumentation. ? Optimize bio-manufacturing methods and demonstrate the production of materials for defense needs at reduced cost compared to commercial sources to provide an alternative means of sourcing critical materials. Demonstrate the methods for the large scale bio-manufacture of a drop-in replacement high performance fuel blend to support high speed weapons in hypersonic flight. ? Optimize bio-manufacturing methods and capabilities for the production of a fire-resistant coating for high-temperature, fire-resistant composite materials supporting long-range missile cases and hypersonic flight. The result will be a bio-manufactured materials with improved performance that can be exploited as a viable resource for Warfighter dominance. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC ?638	-	1.962	-
Accomplishments/Planned Programs Subtotals	-	53.736	56.853

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A