Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Army	Date: March 2024
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 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	54.778	59.871	36.360	-	36.360	24.879	24.895	25.166	25.418	0.000	251.367
CP7: *Biotechnology Demonstration and Evaluation*	-	54.778	59.871	36.360	-	36.360	24.879	24.895	25.166	25.418	0.000	251.367

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.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	56.853	59.871	36.840	-	36.840
Current President's Budget	54.778	59.871	36.360	-	36.360
Total Adjustments	-2.075	0.000	-0.480	-	-0.480
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.075	-			
• Adjustments to Budget Years	-	-	-0.480	-	-0.480

Change Summary Explanation

The FY25 funding change from the previous PB to the current PB reflects an Army approved minor reduction.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army			Date: March 2024
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 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
CP7: *Biotechnology Demonstration and Evaluation*	-	54.778	59.871	36.360	-	36.360	24.879	24.895	25.166	25.418	0.000	251.367
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.

Work in this Project compliments Program Element (PE) 0602386A (Biotechnology for Materials - Applied Research) / CP6 (Foundational Biotechnology Design and Dev) and PE 0604386A (Biotechnology for Materials - Demonstration and Validation (DEV/VAL)) / CQ9 (Biotechnology for Materials - Demonstration and Validation (DEV/VAL) Dem/Val).

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Biosynthetic Material Demonstration	54.778	59.871	36.360
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 2024 Plans: * Will utilize Tri-Service capability for rapid maturation, demonstration, and optimization of bio-products for defense applications by exploiting the use of robotics for semi-autonomous capabilities to develop new biomanufacturing platform strains. Rapidly assess the ability of new strains to provide a biotechnology solutions and biotechnologically derived materials. * Scale-up the production of biomolecules for use as energetic materials in hypersonic systems at volumes suitable for advanced prototyping and testing. Validate the performance of these materials to support enhanced weapon systems range, increased speeds, potential reusability, and supply security on relevant platforms.			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
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 2023	FY 2024	FY 2025
* Mature and demonstrate the bio-manufacturing process development for domestic production of high temperature resistant bio-manufactured materials necessary for new hypersonic defense systems, unmanned aerial vehicles (UAVs) and fire-resistant casings for batteries. * Improve the performance of biotechnology product production and downstream processing activities in high hazard operations. Optimize the biotechnology production data management, and process control software. * Demonstrate the production of bio-manufactured aviation and ground vehicle critical materials from in-theater waste streams. Optimize the organic solution to provide fuel in theater to maintain a capable fighting force and persist inside actively contested spaces from a sustainable and secure production system. * Demonstrate reduced logistics through biocementation technology for expeditionary basing needs. * Mature and demonstrate a biomanufactured non-hazardous solvents for use in stripping and cleaning applications for ground, air, and marine applications. * Demonstrate optical materials for agile laser protection of goggles, vision blocks, and sensor systems.			
FY 2025 Plans: Will optimize the in-line analysis of fermentation products through biomaterial machine vision; improve the performance of high throughput strain screening and purification, downstream fermentation, bio-standards validation, and scale-up through biomaterial prototyping. Continue the scale-up production of biomolecules for use as energetic materials in hypersonic systems at volumes suitable for advanced prototyping and testing; validate the performance of these materials to support enhanced weapon systems range, increased speeds, potential reusability, and supply security on relevant platforms. Continue to mature and demonstrate the bio-manufacturing process development for domestic production of high temperature-resistant bio-manufactured materials necessary for new hypersonic defense systems, unmanned aerial vehicles (UAVs) and fire-resistant casings for munitions. Demonstrate bio-based non-hazardous paint removal cleaning solvent for aircraft, ships, and ground vehicle systems.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Demonstrate a bio-based capability to sense and detect heavy metal in water for point-of-need water safety/quality testing in denied combat operational areas. Continue the demonstration of bio-manufactured aviation and ground vehicle critical materials from in-theater waste streams; optimize the organic solution to provide fuel in theater to maintain a capable fighting force and persist inside actively contested spaces from a sustainable and secure production system. Continue the demonstration of reduced logistics through agile biocementation technology for expeditionary flight-line, taxiway, rotary aircraft pads, and base logistic foundations. Demonstrate bio-derived optical materials for agile laser protection of military goggles, vision blocks, and sensor systems. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Funding decrease reflects planned lifecycle to begin PE 0604386A (Biotechnology for Materials - Dem/Val) / Project CQ9 (Biotechnology for Materials - Dem/Val).			
Accomplishments/Planned Programs Subtotals	54.778	59.871	36.360

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A