Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army												Date: May 2021
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	-	53.736	-	53.736	-	-	-	-	-	-
CP7: *Biotechnology Demonstration and Evaluation*	-	-	-	53.736	-	53.736	-	-	-	-	-	-

Note

This is a new start in FY 2022.

In Fiscal Year (FY) 2022, this Program Element (PE) is created to focus on broad biotechnology efforts in collaboration with Joint Service partners supporting Tri-Service Biotechnology for a Resilient Supply Chain efforts.

A. Mission Description and Budget Item Justification

This 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.

Creation of this PE facilitates the Army's central management of the Joint Service T-BRSC effort and ensures traceability of funding. The coordinated strategy of T-BRSC supports a robust pipeline for biotechnology related manufacturing for defense needs. The Army recognizes emerging biotechnologies as a persistent technology that will continue to evolve to meet the anticipated challenges of the future operating environment. This PE creation is necessary for the broad planned initiatives under this effort as no existing Army S&T Project has the requisite programmatic scope of T-BRSC.

This PE is coordinated with PE 0602386A (Biotechnology for Materials - Applied Research).

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

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

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army					Date: May 2021
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 3: *Advanced Technology Development (ATD)*			R-1 Program Element (Number/Name) PE 0603386A / *Biotechnology for Materials - Advanced Research*		
B. Program Change Summary ($ in Millions)	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	53.736	-	53.736
Total Adjustments	0.000	0.000	53.736	-	53.736
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	53.736	-	53.736

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CP7: *Biotechnology Demonstration and Evaluation*	-	-	-	53.736	-	53.736	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2022.

In Fiscal Year (FY) 2022, this new Project is created to support the Army's central management of Tri-Service Biotechnology for a Resilient Supply Chain (T-BRSC) efforts.

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 PE 0602386A (Biotechnology for Materials - Applied Research) / CP6 (Foundational Biotechnology Design and Dev).

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

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Biosynthetic Material Demonstration	-	-	53.736
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 DoD custom capacity for rapid screening and evaluation.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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 2020	FY 2021	FY 2022
? 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. ? 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 2021 to FY 2022 Increase/Decrease Statement:*** This project is a new start in FY 2022.			
Accomplishments/Planned Programs Subtotals	-	-	53.736

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A