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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Defense Threat Reduction Agency **Date:** May 2021

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>					<b>R-1 Program Element (Number/Name)</b> PE 0601000BR / <i>DTRA Basic Research</i>							
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	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-
RU: <i>Basic Research for Countering WMD</i>	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-

**A. Mission Description and Budget Item Justification**

The Basic Research for Countering Weapons of Mass Destruction (CWMD) project, as the nation's primary basic research portfolio dedicated to combating threats posed by chemical, biological, or nuclear weapons and is a core strategic investor in future scientific and technological progress across the full spectrum of the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader WMD threat reduction and consequence management communities. The portfolio addresses this through fundamental research focused on making revolutionary scientific discoveries relevant to emerging and future CWMD challenges. Program managers drive interdisciplinary portfolios primarily drawing from physics, chemistry, biology, mathematics, and information and network sciences to: train the next-generation workforce; advance the fundamental knowledge and understanding in the sciences; promote university research to support the CWMD mission; and facilitate transition of research to support our warfighters.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	26.000	14.617	11.488	-	11.488
Current President's Budget	25.359	14.617	11.828	-	11.828
Total Adjustments	-0.641	0.000	0.340	-	0.340
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.641	-			
• Realignment	-	-	0.340	-	0.340

**Change Summary Explanation**

The increase in FY 2022 from the previous President's Budget is due to the realignment of funding from cross cutting research and development activities in PE 0603160BR to fund additional basic research grants as part of a portfolio rebalancing.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Defense Threat Reduction Agency										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 0400 / 1					<b>R-1 Program Element (Number/Name)</b> PE 0601000BR / DTRA Basic Research				<b>Project (Number/Name)</b> RU / Basic Research for Countering WMD			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RU: <i>Basic Research for Countering WMD</i>	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-

**A. Mission Description and Budget Item Justification**

The Basic Research for Countering WMD project, as the nation's primary basic research portfolio dedicated to countering weapons of mass destruction (CWMD), is a core strategic investor in future scientific and technological progress across the full spectrum of the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the DoD, and the broader WMD threat reduction community. The portfolio addresses this guidance through capability enhancements, projects, and Science and Technology (S&T) investments that support CWMD and reduce global nuclear dangers. Specifically, they include: accelerating the development of standoff radiological/nuclear detection capabilities; researching countermeasures and defenses to non-traditional agents; securing vulnerable materials; developing an in-depth understanding of the capabilities, values, intent, and decision making of potential adversaries, whether they are states, networks, or individuals; defeating WMD agents; researching biologically-based and inspired materials for DoD applications; and leveraging science, technology, and innovation through domestic and international partnerships and agreements.

This project solicits, coordinates, and conducts research to build a robust, forward-looking fundamental research portfolio targeting strategic, mission-focused, basic research with high potential impact for CWMD. The research projects are selected for scientific merit, technical quality, and the potential for innovation. Each research project offers opportunities to expand the knowledge base to help the warfighter, to bring to bear new science solutions with a fresh approach, or to leverage revolutionary approaches to technical surprise, building a foundation for future CWMD solutions. This research will enable new capabilities to: better understand the environment, threats and vulnerabilities; control, defeat, disable, and/or dispose of WMD threats; and safeguard the force by managing consequences.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Project RU: Basic Research for Countering WMD	25.359	14.617	11.828
<b>Description:</b> Project RU funds the exploration and discovery of fundamental scientific knowledge related to DTRA's CWMD mission by research performers from academia, government, and industry. DTRA's Basic Research University Research Alliance (URA) program conducts revolutionary CWMD scientific research with broad applicability across multiple mission areas. DTRA's basic research sets conditions for disruptive gains in the future effectiveness of technology-enabled concepts of operation not possible through evolutionary research. In FY 2021, DTRA established two URAs; Materials Science in Extreme Environments (MSEE) and Interaction of Ionizing Radiation with Matter (IIRM).			
<b>FY 2021 Plans:</b> - Establish Initial Program Plans with the two university partnerships to map the first 12 months of research in the areas of: Material Science in Extreme Environments; and Interaction of Ionizing Radiation with Matter			

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<b>Appropriation/Budget Activity</b> 0400 / 1	<b>R-1 Program Element (Number/Name)</b> PE 0601000BR / <i>DTRA Basic Research</i>	<b>Project (Number/Name)</b> RU / <i>Basic Research for Countering WMD</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> <li>- Address basic research gaps and warfighters' emerging technical needs.</li> <li>- Support the long-term development of a world-class STEM workforce focused on CWMD research.</li> <li>- Promote university research to support Counter Weapons of Mass Destruction and Improvised Threat Network (CWMDITN) challenges.</li> </ul> <p><b><i>FY 2022 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Enable new methods to disrupt WMD attacks, enhance conventional nuclear integration, and improve enhanced consequence analysis. This Materials Science in Extreme Environments (MSEE) is a URA of 18 institutions from across the nation led by Johns Hopkins University.</li> <li>- Enhance capabilities to counter nuclear threat networks, enhance WMD survivability, and improve understanding the WMD environment. Interaction of Ionizing Radiation with Matter (IIRM) URA is 15 institutions nationwide led by Penn State University.</li> </ul> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> The decrease from FY 2021 to FY 2022 is due to the residual impact of decreased investment in this project as part of a portfolio rebalancing to fund higher priority RDT&amp;E programs.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	25.359	14.617	11.828

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Procurement methods include competitive selection awards through university partnerships, DTRA's Broad Agency Announcement, and collaborative funding through other organizations.