

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2016 Defense Health Program **Date:** February 2015

<b>Appropriation/Budget Activity</b>					<b>R-1 Program Element (Number/Name)</b>							
0130: Defense Health Program I BA 2: RDT&E					PE 0601117HP I Basic Operational Medical Research Sciences							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	5.000	5.805	9.059	7.397	-	7.397	9.417	10.395	10.666	10.889	Continuing	Continuing
100A: CSI - Congressional Special Interests	2.237	-	1.578	-	-	-	-	-	-	-	Continuing	Continuing
371A: GDF-Basic Operational Medical Research Sciences	2.763	5.805	7.481	7.397	-	7.397	9.417	10.395	10.666	10.889	Continuing	Continuing

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

Guidance for Development of the Force-Basic Operational Medical Research Sciences: This program element (PE) provides support for basic medical research directed toward greater knowledge and understanding of the fundamental principles of science and medicine that are relevant to the improvement of Force Health Protection. Research in this PE is designed to address the following: Areas of interest to the Secretary of Defense regarding Wounded Warriors, capabilities identified through the Joint Capabilities Integration and Development System, and sustainment of priority investments in science, technology, research, and development as stated in the Quadrennial Defense Review. Program development is peer-reviewed and coordinated with all of the Military Services, appropriate Defense Agencies or Activities and other Federal Agencies, to include the Department of Veterans Affairs, the Department of Health and Human Services, and the Department of Homeland Security. This coordination occurs through the planning and execution activities of the Joint Program Committees (JPCs), established for the Defense Health Program Research, Development, Test and Evaluation (RDT&E) funding. Research supported by this PE includes coagulopathy of trauma (inability of blood to clot normally), polytrauma (multiple traumatic injuries) and blast injury, military infectious diseases, and operational medicine. Funds in this PE are for basic research that promises to provide important new approaches to complex military medical problems. As the research efforts mature, the most promising efforts will transition to applied research (PE 0602115HP) or technology development (PE 0603115HP) funding.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
Previous President's Budget	6.074	7.481	7.897	-	7.897
Current President's Budget	5.805	9.059	7.397	-	7.397
Total Adjustments	-0.269	1.578	-0.500	-	-0.500
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	1.578			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.269	-			
• Change Proposal Center for Rehabilitation Sciences (CRSR) - Project 371A	-	-	-0.500	-	-0.500

# UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2016 Defense Health Program		<b>Date:</b> February 2015	
<b>Appropriation/Budget Activity</b> 0130: <i>Defense Health Program I BA 2: RDT&amp;E</i>		<b>R-1 Program Element (Number/Name)</b> PE 0601117HP <i>I Basic Operational Medical Research Sciences</i>	
<b><u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u></b>		<b>FY 2014</b>	<b>FY 2015</b>
<b>Project:</b> 100A: <i>CSI - Congressional Special Interests</i>			
Congressional Add: 461A – <i>Program Increase: Restore Core Research Funding Reduction (Army)</i>		-	1.578
Congressional Add Subtotals for Project: 100A		-	1.578
Congressional Add Totals for all Projects		-	1.578
<b><u>Change Summary Explanation</u></b>			
FY 2014: Realignment from Defense Health Program, Research, Development, Test and Evaluation (DHP RDT&E), Program Element (PE) 0601117-Basic Operational Medical Research Sciences (-\$0.269 million) to DHP RDT&E, PE 0605502-Small Business Innovation Research (SBIR) Program (+\$0.269 million).			
FY 2015: Congressional Special Interest (CSI) Additions to DHP RDT&E, PE 0601101-Basic Operational Medical Research Sciences (+\$1.578 million).			
FY 2016: Realignment from Defense Health Program, Research, Development, Test and Evaluation (DHP RDT&E), Program Element (PE) 0601117-Basic Operational Medical Research Sciences (-\$0.500 million) to DHP RDT&E, PE 0601101-In-House Laboratory Independent Research (+\$0.500 million).			

# UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Health Program										Date: February 2015		
Appropriation/Budget Activity 0130 / 2					R-1 Program Element (Number/Name) PE 0601117HP / Basic Operational Medical Research Sciences				Project (Number/Name) 100A / CSI - Congressional Special Interests			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
100A: CSI - Congressional Special Interests	2.237	-	1.578	-	-	-	-	-	-	-	Continuing	Continuing

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

The FY14 DHP Congressional Special Interest (CSI) funding is directed research for TBI/PH. Because of the CSI annual structure, out-year funding is not programmed.

The FY15 DHP Congressional Special Interest (CSI) funding is directed toward core research initiatives in Program Element (PE) 0601117 - Basic Operational Medical Research Sciences. Because of the CSI annual structure, out-year funding is not programmed.

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

	FY 2014	FY 2015
<b>Congressional Add:</b> 461A – Program Increase: Restore Core Research Funding Reduction (Army)	-	1.578
<b>FY 2014 Accomplishments:</b> No funding programmed. This is an FY 2015 DHP Congressional Special Interest (CSI) spending item.		
<b>FY 2015 Plans:</b> FY 2015 DHP Congressional Special Interest (CSI) spending item directed toward the restoral of core research initiatives in the Medical Products Support and Advanced Concept Development Program Element (PE) - 0604110.		
<b>Congressional Adds Subtotals</b>	-	1.578

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Health Program										Date: February 2015		
Appropriation/Budget Activity 0130 / 2					R-1 Program Element (Number/Name) PE 0601117HP / <i>Basic Operational Medical Research Sciences</i>				Project (Number/Name) 371A / <i>GDF-Basic Operational Medical Research Sciences</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
371A: <i>GDF-Basic Operational Medical Research Sciences</i>	2.763	5.805	7.481	7.397	-	7.397	9.417	10.395	10.666	10.889	Continuing	Continuing

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

Guidance for Development of the Force-Basic Operational Medical Research Sciences: Basic research described here will be focused on enhancement of knowledge to support capabilities identified through the Joint Capabilities Integration and Development System (JCIDS) process and sustainment of priority investments in science, technology, research, and development as stated in the Quadrennial Defense Review. Within this Program Element, research will be conducted in the general categories of coagulopathy of trauma (inability of blood to clot normally), polytrauma (multiple traumatic injuries) and blast injury, military infectious diseases, and operational medicine. Polytrauma and blast injury efforts will focus on fundamental mechanisms to support devices and therapeutics for hemorrhage (bleeding) control, resuscitation and blood products, and blast injury models and performance standards for protections systems. Military infectious diseases research program is conducting basic research to identify biomarkers for detecting bacterial wound infections. Operational medicine is focusing on fundamental mechanisms to support research on prevention of training and operational injury, nutrition and dietary supplements, psychological health and resilience, operational exposure standards for cumulative mild traumatic brain injury, fatigue mechanisms, biomarkers (indicators) of inhalational exposure to toxic substances, and military operational computational modeling.

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

	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
<b>Title:</b> Project 371 GDF – Basic Operational Medical Research Sciences	5.805	7.481	7.397	-	7.397
<b>Description:</b> Provide support for basic medical research directed toward attaining greater knowledge and understanding of fundamental principles of science and medicine relevant to the improvement of medical care in operationally relevant environments.					
<b>FY 2014 Accomplishments:</b> The military operational medicine research program conducted studies to understand fundamental mechanisms of injury following exposure to blast, which will inform the development of exposure guidelines. Other research efforts included the identification of biomarkers (biological indicators of disease) for inhalation exposure to toxic substances such as burn pit emissions and sand from Afghanistan, and biomarkers indicative of neurological effects due to jet fuel exposure.					
The combat casualty care research program conducted studies on coagulopathy of trauma through a consortium of five universities.					
<b>FY 2015 Plans:</b>					

# UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Health Program			Date: February 2015				
Appropriation/Budget Activity 0130 / 2		R-1 Program Element (Number/Name) PE 0601117HP / Basic Operational Medical Research Sciences		Project (Number/Name) 371A / GDF-Basic Operational Medical Research Sciences			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Military infectious diseases research is supporting antimicrobial countermeasures to discover antibacterial agents for biofilms (a group of microorganisms in which cells stick to each other on a surface), detect multidrug-resistant organisms (MDROs), identify MDRO biomarkers, and develop new targets. These laboratory studies provide an understanding of the mechanisms that make organisms infectious and mechanisms that render the human body response effective to prevent diseases caused by infectious agents.</p> <p>Military operational medicine research is continuing studies to understand the mechanisms of multiple low level blast exposures in animal models of repeated blast and blunt impact injuries, and identify potential biomarkers of pulmonary exposure to toxic substances from burn pit emissions, natural dust from Afghanistan and the interactions between pollutants, which are associated with adverse health outcomes and lung disease. Studies in nutrition and dietary supplements are assessing dietary status of different Service member populations. Additional studies include the identification of novel pharmacological interventions to promote sleep quality, and refine algorithms that predict the effects of fatigue countermeasures, such as caffeine and naps, to optimize warfighter physical and cognitive performance.</p> <p>Combat casualty care basic research is identifying underlying pathophysiologic (functional changes associated with injury) mechanisms associated with coagulopathy (inability of blood to clot normally) of trauma, and identifying potential diagnostic and therapeutic targets of coagulopathy of trauma.</p> <p><b>FY 2016 Base Plans:</b> Military infectious diseases research will support basic research laboratory studies in wound infection prevention, treatment, and management to develop antibacterial agents targeting biofilms and MDROs, and host and microbial biomarkers for early detection of infection. Outcomes from FY15-16 laboratory studies will identify bacterial targets for prevention/treatment of diseases caused by bacterial agents.</p> <p>Military operational medicine research will identify mechanisms of blast injury that will guide the development of interventions for mitigating blast-induced brain injury. Will start studies to identify and assess anger, risky behaviors, grief, guilt, cognitive difficulties, substance abuse, and misuse of prescription medications in the military. Will start studies to identify gender-specific factors that impact military task performance, will define minimal physical requirements for entry into physically demanding military occupations, will investigate novel interventions to evaluate effectiveness in treating PTSD symptoms, will conduct basic studies to define medical standards for noise injury criteria, and will identify novel interventions to promote sleep quality and non-pharmacological approaches to reduce the need for sleep in order to sustain warfighter readiness.</p>							

# UNCLASSIFIED

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2016 Defense Health Program			<b>Date:</b> February 2015		
<b>Appropriation/Budget Activity</b> 0130 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0601117HP / <i>Basic Operational Medical Research Sciences</i>	<b>Project (Number/Name)</b> 371A / <i>GDF-Basic Operational Medical Research Sciences</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
<p>Combat casualty care basic research will define the cellular mechanisms involved in the abnormal bleeding that occurs following severe trauma. The results from these studies will be included in the design of the next generation of hemostatic (process to stop bleeding) products.</p> <p><b><i>FY 2016 OCO Plans:</i></b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	5.805	7.481	7.397	-	7.397
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A <b>Remarks</b>  <b>D. Acquisition Strategy</b> N/A  <b>E. Performance Metrics</b> <p>Research is evaluated through in-progress reviews, DHP-sponsored review &amp; analysis meetings, quarterly and annual status reports, and progress reviews to ensure that milestones are being met and deliverables are transitioned on schedule. The benchmark performance metric for transition of research conducted with basic science funding is the attainment of a maturity level that is typical of Technology Readiness Level 2 or the equivalent for knowledge products.</p>					