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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 3: Advanced Technology Development (ATD)					R-1 Program Element (Number/Name) PE 0603729N I Warfighter Protection Adv Tech							
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
Total Program Element	0.000	40.260	40.538	4.807	-	4.807	4.894	4.982	4.982	4.982	Continuing	Continuing
2914: Warfighter Protection Adv Tech	0.000	4.560	4.838	4.807	-	4.807	4.894	4.982	4.982	4.982	Continuing	Continuing
9999: Congressional Adds	0.000	35.700	35.700	-	-	-	-	-	-	-	-	71.400

A. Mission Description and Budget Item Justification

The efforts described in this Program Element (PE) are based on investment directions as defined in the Naval S&T Strategic Plan approved by the S&T Corporate Board (Sep 2011). This strategy is based on needs and capabilities from Navy and Marine Corps guidance and input from the Naval Research Enterprise (NRE) stakeholders (including the Naval enterprises, the combatant commands, the Chief of Naval Operations (CNO), and Headquarters Marine Corps). It provides the vision and key objectives for the essential science and technology efforts that will enable the continued supremacy of U.S. Naval forces in the 21st century. The Strategy focuses and aligns Naval S&T with Naval missions and future capability needs that address the complex challenges presented by both rising peer competitors and irregular/asymmetric warfare.

This program supports the development and demonstration of field medical equipment and technologies to improve warfighter safety and to enhance personnel performance under adverse conditions. Navy investment in these areas is essential because Navy/USMC mission needs are not adequately addressed by the civilian sector or other Federal agencies. These projects support funds future capabilities within the Force Health Protection Program, a Future Naval Capability (FNC) that will provide technology options for the future Navy and Marine Corps by reducing morbidity and mortality when casualties occur.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	40.460	4.838	4.812	-	4.812
Current President's Budget	40.260	40.538	4.807	-	4.807
Total Adjustments	-0.200	35.700	-0.005	-	-0.005
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	35.700			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.200	-			
• Program Adjustments	-	-	-0.005	-	-0.005

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<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>		FY 2014	FY 2015
Project: 9999: <i>Congressional Adds</i>			
Congressional Add: <i>CW Bill Young Marrow Donor Program</i>		31.500	31.500
Congressional Add: <i>Naval Special Warfare Performance and Injury Prevention Program</i>		4.200	4.200
Congressional Add Subtotals for Project: 9999		35.700	35.700
Congressional Add Totals for all Projects		35.700	35.700
<u>Change Summary Explanation</u> Technical: Not applicable. Schedule: Not applicable.			

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319 / 3					R-1 Program Element (Number/Name) PE 0603729N / Warfighter Protection Adv Tech				Project (Number/Name) 2914 / Warfighter Protection Adv Tech			
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
2914: Warfighter Protection Adv Tech	-	4.560	4.838	4.807	-	4.807	4.894	4.982	4.982	4.982	Continuing	Continuing
A. Mission Description and Budget Item Justification												
This program supports the development and demonstration of field medical equipment, diagnostic capabilities and treatments; technologies to improve warfighter safety and to enhance personnel performance under adverse conditions; and systems to prevent occupational injury and disease in hazardous, deployment environments. Navy investment in these areas is essential because Navy/USMC mission needs are not adequately addressed by the civilian sector or other Federal agencies. For example, civilian emergency medicine does not address casualty stabilization during long transit times to definitive care. The NIH focuses on the basic science of disease processes and not product development. Programs are coordinated with other Services through the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee to prevent duplication of effort. This project funds the Force Health Protection program a Future Naval Capability (FNC)that will provide technology options for future Navy and Marine Corps capabilities and supports the "Sea Warrior" component of the Naval Transformation Roadmap, medical logistics aspects of "Sea Basing" and expeditionary force medical support associated with "Sea Strike".												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: NAVAL NOISE-INDUCED HEARING LOSS (NIHL)								4.560	4.838	4.807	-	4.807
Description: The goal of this program is to reduce the incidence of NIHL by nearly 100%. This program employs a total systems engineering approach that includes advancements in medical technology, jet engine physics, personal protective equipments, and mitigation analyses.												
FY 2014 Accomplishments: Noise Induced Hearing Loss: - Continued advanced research in medical prevention and treatment of NIHL and tinnitus (ringing in the ears). - Continued advanced research to reduce noise at the source, jet engine quieting and flight deck noise reduction. - Continued advanced research to improve personal protective equipment technology. - Continued advanced research to study the incidence and susceptibility of NIHL and tinnitus, and to evaluate mitigation strategies.												
Regenerative Medicine: - Completed program with Army, in regenerative medicine (Armed Forces Institute for Regenerative Medicine (AFIRM I).												

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Initiate program with Army, in regenerative medicine (Armed Forces Institute for Regenerative Medicine (AFIRM II)). FY 2015 Plans: Noise Induced Hearing Loss: - Continue all efforts of FY 2014. Regenerative Medicine: - Continue all efforts of FY 2014, less those noted as completed above. FY 2016 Base Plans: Noise Induced Hearing Loss: - Continue all efforts of FY 2015, less those noted as completed above Regenerative Medicine: - Continue all efforts of FY 2015, less those noted as completed above FY 2016 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals		4.560	4.838	4.807	-	4.807
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						
E. Performance Metrics Efforts within this PE are measured at two levels. At the lower level, each is measured against technical and financial milestones on a monthly basis. Annually, each project is reviewed in depth for technical and transition performance by the Chief of Naval Research (CNR).						

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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
9999: Congressional Adds	-	35.700	35.700	-	-	-	-	-	-	-	-	71.400

A. Mission Description and Budget Item Justification

Congressional Interest Items not included in other Projects.

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

	FY 2014	FY 2015
<i>Congressional Add:</i> CW Bill Young Marrow Donor Program <i>FY 2014 Accomplishments:</i> NMDP continued to expand participation of transplant centers. Hospitals that participate in both the NMDP Network of treatment centers as well as the NDMS that is managed by the Department of Health and Human Services were invited to join the RITN. As a result of this targeted recruitment, eight additional transplant centers joined; unfortunately two centers were lost to attrition resulting in a total composition of: 47 transplant centers, 6 donor centers, and 7 cord blood banks. During this period, the C. W. Bill Young Marrow Donor Recruitment and Research Program, BMRD, NMRC directly contributed to donor recruitment and transplantation and science and technology developments including over 5,000 transplants coordinated by the NMDP of which over 500 were provided by DoD volunteers through the NMRC / Georgetown part of the program. The NMDP added over 700,000 volunteer donors to the national registry, of which over 40,000 were from DoD volunteers from the NMRC / Georgetown. Probe Testing Progress: The laboratory tested 17,885 new volunteers for HLA-A,-B; 17,885 for HLA-C, and 20,805 for HLA-DRB1. In the first three months the laboratory has typed 18,615 donors for HLA-DQB1 and is currently working on providing HLADPB1 typing for those donors. They are currently working on establishing and validating robust assays for DQB1 and DPB1 because of recent studies suggesting that these loci may impact outcome of transplantation; DQB1 when a mismatched donor is selected and DPB1 when a donor with a T cell epitope mismatch is selected. Sequencing Progress Report: Through this grant they continue to improve the robotics and reagents to test samples flow by typing large numbers of donors at recruitment. The PI and team are currently typing 1000 volunteers of European ancestry	31.500	31.500

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015
for the registry using a one step SBT typing method. They previously sequenced 196 loci from patients and potentially matched family members. FY 2015 Plans: National Marrow Donor Program (NMDP) will continue to expand participation of transplant centers increasing the enrollment of volunteer donors to the national registry. Hospitals that participate in both the NMDP Network of treatment centers as well as the NDMS managed by the Department of Health and Human Services. Scientific Advances: Continue improvements in accuracy of the NMDP scientific and clinical matching system, Haplogic III and linked to the NMDP clinical data system (Phoenix).		
Congressional Add: Naval Special Warfare Performance and Injury Prevention Program FY 2014 Accomplishments: This effort continued the data collection with US Naval Special Warfare at NSW Group 2 and Group 4 (Little Creek, VA), NSW Combatant-Craft Crewman (SWCC) Special Boat Team 22 (Stennis, MS) and the NSW Center/SEAL Qualification Training (Coronado, CA) to strategically maximize human capital by reducing the rate of unintentional musculoskeletal injury, sharpen battlefield performance, optimize military readiness, extend the tactical life cycle of the Operator, and enhance quality of life of the Operator after service. This effort was also expanded into the Marine Corps Special Operations Command (MARSOC), which is in early planning stages. FY 2015 Plans: Research with NSW will continue based on the current specific aims with particular emphasis on prospective injury data collection and the longitudinal testing of previously tested students. Research with MARSOC will start task and demand analyses and measures of effectiveness trials to include specific aquatics and environmental based research.	4.200	4.200
Congressional Adds Subtotals	35.700	35.700

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy N/A
E. Performance Metrics Congressional Interest Items not included in other Projects.