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Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)					PE 0603002A MEDICAL ADVANCED TECHNOLOGY					
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	299.436	321.260	72.940						Continuing	Continuing
FH4: FORCE HEALTH PROTECTION - ADV TECH DEV	1.932	2.065	1.963						Continuing	Continuing
MB1: ADV DIAGNOSTICS & THERAPEUTIC DIG TECH	1.545	.000	.000						Continuing	Continuing
MB2: BRAIN, BIOLOGY, AND MACHINE	1.933	1.594	.000						Continuing	Continuing
MB3: CENTER FOR INTEGRATION OF MEDICINE & INNOV TECH	7.729	7.975	.000						Continuing	Continuing
MB4: CENTER FOR UNTETHERED HEALTHCARE	.000	.996	.000						Continuing	Continuing
MD1: EMERGENCY TELEMED RESPONSE & ADV TECH	1.933	.000	.000						Continuing	Continuing
MF2: ADVANCED PROTEOMICS (CA)	1.158	.000	.000						Continuing	Continuing
MG5: NATIONAL FUNCTIONAL GENOMICS CENTER (CA)	8.116	5.980	.000						Continuing	Continuing
MG7: ON-LINE MEDICAL TRAINING (CA)	.000	2.791	.000						Continuing	Continuing

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2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)					PE 0603002A MEDICAL ADVANCED TECHNOLOGY					
MH4: RAPID BIO-PATHOGEN DETECTION TECHNOLOGY (CA)	3.865	.000	.000						Continuing	Continuing
MH9: ADVANCE OF NON-INVASIVE GLUCOSE MONITORING (CA)	.773	.000	.000						Continuing	Continuing
MI4: ALLIANCE FOR NANOHEALTH (CA)	3.865	3.190	.000						Continuing	Continuing
MJ2: FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)	.000	2.990	.000						Continuing	Continuing
MK1: MEDICAL M&S THROUGH SYNTHETIC DIGITAL GENES (CA)	1.545	.996	.000						Continuing	Continuing
MK7: PEDIATRIC BRAIN TUMOR & NEUROLOGICAL DISEASE PRGM	1.545	.000	.000						Continuing	Continuing
MK8: PLASMA STERILIZER (CA)	2.898	.000	.000						Continuing	Continuing
ML3: SOLDIER-MOUNTED EYE-TRACKING & CONTROL SYSTEM (CA)	2.899	4.983	.000						Continuing	Continuing
ML5: SURGICAL WOUND DISINFECTION & BIO AGENT DECON PROJ	1.545	.000	.000						Continuing	Continuing

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2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)					PE 0603002A MEDICAL ADVANCED TECHNOLOGY					
MM1: WEIGHT MEASUREMENTS & STANDARDS FOR MIL PERSONNEL	.000	1.994	.000						Continuing	Continuing
MM2: MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)	155.757	184.070	.000						Continuing	Continuing
MM3: WARFIGHTER MEDICAL PROTECTION & PERFORMANCE STDS	.000	.000	6.585						Continuing	Continuing
800: TELEMEDICINE TESTBED	5.241	4.079	.000						Continuing	Continuing
804: PROSTATE CANCER RSCH	2.319	2.392	.000						Continuing	Continuing
810: IND BASE ID VACC&DRUG	20.735	22.020	20.397						Continuing	Continuing
814: NEUROFIBROMATOSIS	7.729	9.967	.000						Continuing	Continuing
819: FLD MED PROT/HUM PERF	1.160	1.252	.000						Continuing	Continuing
840: COMBAT INJURY MGMT	22.488	29.433	43.995						Continuing	Continuing
938: Tissue Engineering	1.158	1.196	.000						Continuing	Continuing
945: BREAST CANCER STAMP PROCEEDS	2.082	.000	.000						Continuing	Continuing
954: DIGITAL X-RAY	3.092	.000	.000						Continuing	Continuing
	2.319	2.392	.000						Continuing	Continuing

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Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification							DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					
955: ASSISTIVE TECHNOLOGY										
97A: BIOSENSOR RESEARCH	1.545	.798	.000						Continuing	Continuing
97B: BLOOD SAFETY	1.933	1.595	.000						Continuing	Continuing
97D: CENTER FOR AGING EYE	1.545	1.595	.000						Continuing	Continuing
97T: NEUROTOXIN EXPOSURE TREATMENT	19.323	24.917	.000						Continuing	Continuing
97X: SYNCHROTRON-BASED SCANNING RESEARCH	7.729	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) supports development of advanced medical technologies to mature medical technology (drugs, vaccines, medical devices, and diagnostics) and doctrine to effectively protect and improve the survivability of US Forces across the entire spectrum of military operations. Tri-Service coordination and cooperative efforts are focused in four principal medical areas: Combat Casualty Care, Military Operational Medicine, Militarily Relevant Infectious Diseases, and Clinical and Rehabilitative Medicine.

Activities funded in this PE are externally peer reviewed and, to prevent unnecessary duplication, fully coordinated with the other Services and agencies.

During this phase of development, promising medical technologies are refined and validated through extensive testing, which is closely monitored by the US Food and Drug Administration (FDA), as part of their process for approving new medical products for use in humans. The FDA requires medical products to undergo extensive pre-clinical testing in animals and/or other models to obtain preliminary efficacy and toxicity information, before they can be tested in humans (clinical trials). Clinical trials are conducted in three phases, starting with Phase 1, to prove the safety of a drug, vaccine, or device for the targeted disease or medical condition in a small number of healthy volunteers. Each successive phase includes larger numbers of human subjects and requires FDA approval prior to proceeding. Work conducted in this PE primarily focuses on technology maturation activities required to obtain FDA approval prior to initiating human efficacy (Phase 2) clinical trials. Some high risk technologies may require additional maturation and FDA approval to initiate pivotal human (Phase 3) clinical trials prior to obtaining licensure and transitioning into a formal acquisition program. Activities in the PE may include completion of pre-clinical animal studies and studies involving human volunteers.

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Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification		DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE		
2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)		PE 0603002A MEDICAL ADVANCED TECHNOLOGY		
<p>The PE contains no duplication with any effort within the Military Departments, and is related to, and fully coordinated with the United States Army Natick Soldier Research, Development and Engineering Center regarding work in blast research that enables improved body armor design and rations for Soldiers. Work funded in this project is fully coordinated with efforts undertaken in PE 0602787A.</p> <p>The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.</p> <p>Work in this PE is performed by Walter Reed Army Institute of Research, Silver Spring, MD; US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD; US Army Research Institute of Environmental Medicine, Natick, MA; US Army Institute of Surgical Research, Fort Sam Houston, TX; US Army Aeromedical Research Laboratory, Fort Rucker, AL; the Naval Medical Research Center, Silver Spring, MD; US Army Center for Environmental Health Research; and US Army Medical Research Detachment, Brooks City Base, TX, and the Armed Forces Institute of Regenerative Medicine, Fort Detrick, MD.</p>				
<u>B. Program Change Summary (\$ in Millions)</u>				
	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>
Previous President's Budget	299.676	59.043	57.249	
Current BES/President's Budget	299.436	321.260	72.940	
Total Adjustments	-.240	262.217	15.691	
Congressional Program Reductions	.000	-1.063		
Congressional Rescissions	.000	.000		
Total Congressional Increases	.000	263.280		
Total Reprogrammings	8.062	.000		
SBIR/STTR Transfer	-8.302	.000		
<u>Change Summary Explanation</u>				
FY09 funding increase is due to congressional adds.				
FY10 funds were increased to fund Medical Blast Trauma Research.				

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER FH4	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
FH4: FORCE HEALTH PROTECTION - ADV TECH DEV	1.932	2.065	1.963						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project matures, validates, and supports enhanced Force Health Protection of Soldiers against threats in military operations and training. Health-monitoring tools are matured to rapidly identify deployment stressors that affect the health of Joint Forces. These databases and systems enhance the Department of Defense's (DoD's) ability to monitor and protect against adverse changes in health, especially mental health effects caused by changes in brain function. Force Health Protection work is conducted in close coordination with the Department of Veterans Affairs. The program is maturing the development of global health monitoring (e.g., development of neuropsychological test methodologies), validating clinical signs and symptoms correlating to medical records, diagnosed diseases, and mortality rates. The key databases supporting this program are the Millennium Cohort Study and the Total Army Injury and Health Outcomes Database. These databases allow for the examination of interactions of psychological stress and other deployment and occupational stressors that affect Warfighter health behaviors.

This project contains no duplication with any effort within the Military Departments and includes direct participation by other Services.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the US Army Center for Environmental Health Research, Fort Detrick, MD, the US Army Research Institute of Environmental Medicine, Natick, MA, and the Naval Health Research Center, San Diego, CA.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.058	.000	
Health Research: Includes validation of interventions developed from the Millennium Cohort study(a prospective health project in military servicemembers designed to evaluate the long-term health effects of military service, including deployments), validation of biomarkers of exposure and methods to detect environmental contamination and toxic exposure, and validation of thoracic injury prediction models of blast exposure.	1.932	2.007	1.963	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY08, completed enrollment for Millennium Cohort Study and conducted analyses on data validity, reliability, as well as mental and functional health outcomes. In FY09, conduct a systematic validation of prospective data to correlate relationships in chronic health effects and multi-symptomatic illnesses, drawing from disability database analysis to isolate causes, and implement and track results for the most promising interventions to fight chronic disabilities. In FY10, will validate thoracic blunt trauma and performance decrement models by comparing with data obtained from large animal exercise studies; will conduct data analysis to correlate relationships in Post-Traumatic Stress Disorder (PTSD), depression, and anxiety symptoms among Millennium Cohort participants in conjunction with increased mental and physical health problems; will validate prototype Environmental Sentinel Biomonitor (ESB) system for use with field drinking water production systems and transition to advanced development.				
Total	1.932	2.065	1.963	
C. Other Program Funding Summary (\$ in Millions) N/A				
D. Acquisition Strategy N/A				
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.				

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MB1	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB1: ADV DIAGNOSTICS & THERAPEUTIC DIG TECH	1.545	.000	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification										
Congressional Interest Item funding for Advanced Diagnostic and Therapeutic Digital Technologies development.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Advanced Diagnostic and Therapeutic Digital Technologies							1.545	.000	.000	
Total							1.545	.000	.000	
C. Other Program Funding Summary (\$ in Millions)										
N/A										
D. Acquisition Strategy										
N/A										
E. Performance Metrics										
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification **DATE:** May 2009

APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MB2	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB2: BRAIN, BIOLOGY, AND MACHINE	1.933	1.594	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for brain, biology and machine advanced technology development.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Brain, Biology and Machine Applied Research	1.933	1.549	.000	
SBIR/STTR	.000	.045	.000	
Total	1.933	1.594	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MB3	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB3: CENTER FOR INTEGRATION OF MEDICINE & INNOV TECH	7.729	7.975	.000						Continuing	Continuing
<u>A. Mission Description and Budget Item Justification</u>										
Congressional Interest Item funding for the Center for the Integration of Medicine and Innovative Technology.										
<u>B. Accomplishments/Planned Program (\$ in Millions)</u>						FY 2008	FY 2009	FY 2010	FY 2011	
Center for the Integration of Medicine and Innovative Technology (CIMIT)						7.729	7.752	.000		
SBIR/STTR						.000	.223	.000		
Total						7.729	7.975	.000		
<u>C. Other Program Funding Summary (\$ in Millions)</u>										
N/A										
<u>D. Acquisition Strategy</u>										
N/A										
<u>E. Performance Metrics</u>										
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MB4	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB4: CENTER FOR UNTETHERED HEALTHCARE	.000	.996	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for the Center for Untethered Health Care.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Center for Untethered Health Care							.000	.968	.000	
SBIR/STTR							.000	.028	.000	
Total							.000	.996	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification **DATE:** May 2009

APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MD1	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MD1: EMERGENCY TELEMED RESPONSE & ADV TECH	1.933	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for the National Bioterrorism Civilian Medical Response Center.

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

	FY 2008	FY 2009	FY 2010	FY 2011
National Bioterrorism Civilian Medical Response Center (CIMERC)	1.933	.000	.000	
Total	1.933	.000	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MF2: ADVANCED PROTEOMICS (CA)	1.158	.000	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Advanced Proteomics.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Advanced Proteomics Program							1.158	.000	.000	
Total							1.158	.000	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MG5: NATIONAL FUNCTIONAL GENOMICS CENTER (CA)	8.116	5.980	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Functional Genomics.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
National Functional Genomics Center							5.797	5.812	.000	
National Functional Genomics Study							2.319	.000	.000	
SBIR/STTR							.000	.168	.000	
Total							8.116	5.980	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MG7	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MG7: ON-LINE MEDICAL TRAINING (CA)	.000	2.791	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Online Medical Training.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Online Medical Training for Miliatry Personnel	.000	2.713	.000	
SBIR/STTR	.000	.078	.000	
Total	.000	2.791	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MH4: RAPID BIO-PATHOGEN DETECTION TECHNOLOGY (CA)	3.865	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Rapid Bio-pathogen Detection technology development.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Health Science Center Rapid Bio-Pathogen Detection Technology	3.865	.000	.000	
Total	3.865	.000	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MH9: ADVANCE OF NON-INVASIVE GLUCOSE MONITORING (CA)	.773	.000	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification										
Congressional Interest Item funding for Advanced Non-Invasive Glucose Monitoring.										
B. Accomplishments/Planned Program (\$ in Millions)						FY 2008	FY 2009	FY 2010	FY 2011	
Advanced Non-Invasive Glucose Monitoring						.773	.000	.000		
Total						.773	.000	.000		
C. Other Program Funding Summary (\$ in Millions)										
N/A										
D. Acquisition Strategy										
N/A										
E. Performance Metrics										
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MI4: ALLIANCE FOR NANOHEALTH (CA)	3.865	3.190	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for the Alliance for NanoHealth.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Alliance for NanoHealth	3.865	3.101	.000	
SBIR/STTR	.000	.089	.000	
Total	3.865	3.190	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MJ2	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MJ2: FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)	.000	2.990	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Fibrin Adhesive Stat (FAST) Dressing technology development.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Fibrin Adhesive Stat (FAST) Dressing	.000	2.906	.000	
SBIR/STTR	.000	.084	.000	
Total	.000	2.990	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MK1	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MK1: MEDICAL M&S THROUGH SYNTHETIC DIGITAL GENES (CA)	1.545	.996	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Medical Modeling and Simulation advanced technology development.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Medical Modeling and Simulation Through Synthetic Digital Genes	1.545	.968	.000	
SBIR/STTR	.000	.028	.000	
Total	1.545	.996	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost	
MK7: PEDIATRIC BRAIN TUMOR & NEUROLOGICAL DISEASE PRGM	1.545	.000	.000						Continuing	Continuing	
A. Mission Description and Budget Item Justification											
Congressional Interest Item funding for the Pediatric Brain Tumor & Neurological Disease Institute.											
B. Accomplishments/Planned Program (\$ in Millions)								FY 2008	FY 2009	FY 2010	FY 2011
Pediatric Brain Tumor & Neurological Disease Institute								1.545	.000	.000	
Total								1.545	.000	.000	
C. Other Program Funding Summary (\$ in Millions)											
N/A											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.											

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MK8	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MK8: PLASMA STERILIZER (CA)	2.898	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Plasma Sterilizer advanced technology development.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Plasma Sterilizer	2.898	.000	.000	
Total	2.898	.000	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER ML3	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
ML3: SOLDIER-MOUNTED EYE-TRACKING & CONTROL SYSTEM (CA)	2.899	4.983	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification										
Congressional Interest Item funding for Biosensor Communicator and Controller System advanced technology development.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Biosensor Communicator and Controller System							2.899	4.843	.000	
SBIR/STTR							.000	.140	.000	
Total							2.899	4.983	.000	
C. Other Program Funding Summary (\$ in Millions)										
N/A										
D. Acquisition Strategy										
N/A										
E. Performance Metrics										
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER ML5		
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost	
ML5: SURGICAL WOUND DISINFECTION & BIO AGENT DECON PROJ	1.545	.000	.000						Continuing	Continuing	
A. Mission Description and Budget Item Justification											
Congressional Interest Item funding for Surgical Wound Disinfection and Biological Agents.											
B. Accomplishments/Planned Program (\$ in Millions)								FY 2008	FY 2009	FY 2010	FY 2011
Surgical Wound Disinfection and Biological Agents								1.545	.000	.000	
Total								1.545	.000	.000	
C. Other Program Funding Summary (\$ in Millions)											
N/A											
D. Acquisition Strategy											
N/A											
E. Performance Metrics											
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.											

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MM1: WEIGHT MEASUREMENTS & STANDARDS FOR MIL PERSONNEL	.000	1.994	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification										
Congressional Interest Item funding for Weight Measurements and Standards for Military Personnel.										
B. Accomplishments/Planned Program (\$ in Millions)						FY 2008	FY 2009	FY 2010	FY 2011	
Weight Measurements and Standards for Military Personnel						.000	1.939	.000		
SBIR/STTR						.000	.055	.000		
Total						.000	1.994	.000		
C. Other Program Funding Summary (\$ in Millions)										
N/A										
D. Acquisition Strategy										
N/A										
E. Performance Metrics										
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER MM2	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MM2: MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)	155.757	184.070	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Medical Advanced Technology Initiatives.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Regenerative Medicine Development	1.932	.000	.000	
ALS Therapy Development for Gulf War Illness Research	1.160	.000	.000	
Cooperative International Neuromuscular Research Group (CINRG)	5.023	.000	.000	
Electronic Medical Records Technology Infrastructure	1.160	.000	.000	
COG/USOC Pediatric Cancer Center	1.546	.000	.000	
Obesity and Cancer in the Military Medical Research Program at WRAMC	1.546	.000	.000	
PBRC Four Tasks to Address Personnel Readiness and Warfighter Performance	1.933	.000	.000	
Prader-Willi Syndrome (PWS) Research	1.450	1.550	.000	
Remote Bio-Medical Detector	.967	1.938	.000	
Robotic Telesurgery Research	3.382	.000	.000	
Peoria Robotics	.967	.000	.000	
Gulf War Illness Peer Reviewed Research	9.660	7.750	.000	
Military Biomaterials Institute for Acute and Regenerative Care	.773	.000	.000	
Advanced Regenerative Medicine Therapies for Combat Injuries	.000	2.906	.000	
Portable Autonomous Fluid-less Near-infrared Non-Invasive Alcohol Testing Devices	.000	.484	.000	

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B. Accomplishments/Planned Program (\$ in Millions)			FY 2008	FY 2009	FY 2010	FY 2011
Controlled Release of Anti-Inflammatory & Tissue Repair Agents f/Prosthetic Devices & Burn Treatment			.000	5.813	.000	
Corneal Wound Repair			.000	5.328	.000	
Center of Cardiac Surgery Robotic Computerized Telemanipulation			.000	1.550	.000	
Chronic Tinnitus Treatment Program			.000	.969	.000	
Infectious and Inflammatory Disease Center at the Burham Institute for Medical Research			.000	2.325	.000	
Institute of Surgical and Interventional Simulation (ISIS)			.000	4.262	.000	
Bioelectrics Research for Casualty Care and Management			.000	1.550	.000	
Advanced Medical Multi-Missions and CASEVAC Roles			.000	.775	.000	
Automated and Portable Field System for the Rapid Detection and Diagnosis of Diseases			.000	1.550	.000	
Brain Interventional-Surgical Hybrid Initiative			.000	1.550	.000	
101st Airborne Injury Prevention & Performance Enhancement Research Initiative			.000	1.938	.000	
Blood, Medical & Food Safety Via Eco-Friendly Wireless Sensing			.000	.969	.000	
International Heart Institute/U.S. Army Vascular Graft Research Project			.000	.969	.000	
Military Burn Trauma Research Program			.000	3.875	.000	
Military Nutrition Research: Personnel Readiness and Warfighter Performance			.000	1.550	.000	
Modular Stethoscope For Harsh Environments			.000	1.163	.000	
Novel Approaches to Reduce the Severity of Battlefield Combined Tissue Injury			.000	1.550	.000	
Safe Airway Access in Combat			.000	1.938	.000	
Smart Prosthetic Hand Technology			.000	1.550	.000	
Solutions for Infection Control in Military Hospitals			.000	1.938	.000	
Staph Vaccine			.000	3.875	.000	
Biodefense Tech Transfer Initiative			.000	1.453	.000	

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2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	PE 0603002A MEDICAL ADVANCED TECHNOLOGY			MM2		
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011		
Extremity War Injury Research Foundation	.000	.775	.000			
Limb Regeneration Through Biometrics Technology	.000	.775	.000			
Linear Accelerator Cancer Research	.000	.775	.000			
Mary Bird Perkins Cancer Center	.000	2.325	.000			
Mass Scale Biosensor Threat Diagnostic for In-Theater Defense Utilization (FIU)	.000	1.550	.000			
Midwest Traumatic Injury Rehabilitation Center	.000	1.414	.000			
MUSC Cancer Genomics Research Collaborative	.000	.775	.000			
Oncology Group Pediatric Cancer Research (CH)	.000	1.550	.000			
Prostate and Ovarian Cancer Biomarkers	.000	1.163	.000			
Proteomics Project (CH-LA)	.000	1.163	.000			
Rehabilitation and Assistive Technologies to Enhance the Life of Individuals with Disabilities	.000	.775	.000			
Strattice Dermal Matrix Research	.000	2.325	.000			
Trauma Hemostat	.000	.775	.000			
Returning Soldier Adjustment Assessment Remote Monitoring System	.000	3.023	.000			
Green Environmentally Sustainable Laboratories and Clean Rooms (USAMRMC)	.000	.775	.000			
Battlefield Nursing Program	.000	1.550	.000			
Intensive Care Unit to Intensive Care Hospital	.000	2.325	.000			
Total Quality System for FDA Regulated Activities Database	.000	1.395	.000			
Accelerating Treatment for Trauma Wounds	.000	1.163	.000			
Military Adult Stem Cell Collection and Storage Project	.000	.775	.000			
Medical Errors Reduction Initiative	.000	.387	.000			
Joint Collaborative Medical Information System (JCMIS)	.000	3.100	.000			

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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE			PROJECT NUMBER		
2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	PE 0603002A MEDICAL ADVANCED TECHNOLOGY			MM2		
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011		
Southeast Nebraska Cancer Center-National Functional Genomics Center	.000	1.163	.000			
Personal Status Monitor (Nightengale)	.000	1.938	.000			
Smart Prosthetics Research	.000	1.550	.000			
Anti-Terror Medical Technology Program	.000	2.713	.000			
Hibernation Genomics	.000	1.938	.000			
SBIR/STTR	.000	5.155	.000			
Advanced Regenerative Medicine (ARM) Skin Cell Therapies, Limb and Digit Treatment	1.837	.000	.000			
Battlefield Exercise and Combat Related Spinal Cord Injury Research	2.898	.775	.000			
Bioceramic Bones for Battlefield Trauma	1.546	.000	.000			
Cartledge Infuser	.966	.000	.000			
Cellular Therapy for Battlefield Medical Care	.773	1.550	.000			
Center for Genetic Origins of Cancer	2.319	2.325	.000			
Christian Sarkine Autism Treatment Center	1.932	.000	.000			
Combat Wound Initiative at Walter Reed Army Medical Center	1.932	1.550	.000			
Composite Tissue Allotransplantation Research and Clinical Program	1.932	1.550	.000			
Dangerous Pathogens DNA Forensics Center	1.932	.000	.000			
Feeding Tube for Trauma and Burn Patients	.483	1.550	.000			
Host Pathogen Interaction Study	.966	3.100	.000			
Human Genomics, Molecular Epidemiology and Clinical Diagnostics for Infectious Diseases	1.159	1.124	.000			
Immersive Medical Environment for Distributed Intuitive Consultation (iMedic)	1.449	.000	.000			
Indiana-Ohio Traumatic Amputation Rehabilitation Research	.966	.000	.000			
Medical Surveillance Initiative-Clinical Looking Glass	.773	.775	.000			

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009			
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2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	PE 0603002A MEDICAL ADVANCED TECHNOLOGY	MM2			
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011	
Military Molecular Medicine Initiative	11.590	.000	.000		
Mobile Integrated Diagnostic and Data Analysis System (MIDDAS)	.773	.000	.000		
National Eye Evaluation and Research Network - Clinical Trial of Orphan Retinal Degenerative Disease	2.318	.000	.000		
National Oncogenomics and Molecular Imaging Center	2.897	3.100	.000		
National Warfighter Health Sustainment Study	.773	.775	.000		
Neural Control of External Devices	.966	.000	.000		
Neuroimaging & Neuropsychiatric Trauma in US Warfighters	3.863	4.844	.000		
Norfolk State University Center for Systems and Modeling & Simulation	2.395	.000	.000		
Nursing Clinical Simulation Lab	.966	.000	.000		
Personalized Orthopedic Implants for Combat Trauma Induced Orthopedic Surgery	.483	.000	.000		
Portable Burn Debridement Laser Demonstration	2.318	.000	.000		
Severe Battlefield Injury Treatment	1.546	.000	.000		
Telepharmacy Robotic Medicine Device Unit	1.546	1.356	.000		
The Institute for the Advancement of Bloodless Medicine	1.546	1.550	.000		
Three Dimensional Projection Environment for Molecular Design and Surgical Simulation	.966	.000	.000		
Tracking of Health of Soldiers with Advanced Implantable Nanosensors	1.546	.000	.000		
Advanced Medical Training Platform: Madigan Army Medical Center	.386	.000	.000		
Battlefield Tracheal Intubation for Wounded Soldiers	1.546	4.069	.000		
BEAR (Battlefield Extraction-Assist Robot)	1.546	.000	.000		
Burns Outcomes Infrastructure Project-Only for Dual Military/Civilian Application	2.319	.000	.000		
Integrated Patient Quality Program	1.546	1.550	.000		
Limb Tissue Regeneration after Battlefield Injuries Using Bone Marrow Stem Cells	3.866	2.906	.000		

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2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	PE 0603002A MEDICAL ADVANCED TECHNOLOGY	MM2			
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011	
National Biodefense Training	1.691	4.844	.000		
Post-IED Craniofacial Injury Reconstruction	1.546	.000	.000		
Rugged Electronic Textile Vital Signs Monitoring	1.546	2.906	.000		
Control of Inflammation and Tissue Repair (CITR)	1.546	3.100	.000		
Trauma Care, Research and Training	1.932	2.325	.000		
U.S. Approved Drugs for Malaria and Leshmaniasis for Military and Civilian Personnel	3.286	.000	.000		
Walter Reed Preventive Medicine Pilot Program	5.315	.000	.000		
Maine Institute for Human Genetics	.484	1.550	.000		
University of Kentucky Robotic Surgery Research	1.932	.000	.000		
University of Kentucky Tissue Repair Research	.967	.000	.000		
Joint Medical Simulation Technology Research & Development Center	1.237	.000	.000		
Pneumothorax Detection Device	1.160	.000	.000		
Targeted Radiation Therapy for Cancer Initiative	.967	.000	.000		
Telehealth Access and Infrastructure Expansion	1.546	.000	.000		
Ultra High-Speed MEMS Electromagnetic Cell Sorter	2.319	2.325	.000		
Warfighter Cancer Care Engineering	1.160	2.325	.000		
Institute for Regenerative Medicine	2.319	2.906	.000		
Wireless Electronic Patient Records, WPIC-Personal Information Center	1.932	3.100	.000		
Integrated Functional Materials Initiative	.967	.775	.000		
Medical Information Network Decision Support (MINDS) Tool Development	.967	.000	.000		
National Center of Ophthalmology Training and Educational Wills Eye Health System	1.933	.969	.000		
Rural Health - CERMUSA	1.546	2.325	.000		

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification			DATE: May 2009			
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B. Accomplishments/Planned Program (\$ in Millions)			FY 2008	FY 2009	FY 2010	FY 2011
Spinal Muscular Atrophy (SMA) Research Program			3.092	3.100	.000	
Ultra-High Resolution Display for Army Medicine			3.478	3.875	.000	
Veterinary Research Manpower Development for Defense			.484	.000	.000	
Acellular Matrix Constructs for Military Casualties			1.932	.000	.000	
Advanced Lower Limb Prosthesis for Battlefield Amputees			2.898	1.550	.000	
Advanced Restoration Therapies in Spinal Cord Injuries			.966	1.938	.000	
Advanced Surface Technologies for Prosthetic Development			1.546	1.550	.000	
Total			155.757	184.070	.000	
C. Other Program Funding Summary (\$ in Millions) N/A						
D. Acquisition Strategy N/A						
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MM3: WARFIGHTER MEDICAL PROTECTION & PERFORMANCE STDS	.000	.000	6.585						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project supports the Medical and Survivability technology areas of the future force with laboratory validation studies and field demonstrations of biomedical products designed to protect, sustain, and enhance Soldier performance in the face of a myriad of environmental, physiological stressors, and materiel hazards encountered in training and operational environments. This effort focuses on demonstrating and transitioning technologies and validated tools associated with biomechanical-based health risks, injury assessment and prediction, Soldier survivability, and performance during continuous operations. The three main thrust areas are (1) Physiological Health and Environmental Protection, (2) Injury Prevention and Reduction, and (3) Psychological Health and Resilience. This project contains no duplication with any effort within the Military Departments, and includes direct participation by other Services. Beginning in FY10, projects 800 and 819 will be consolidated into project MM3.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD, and the US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA, and the U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, AL.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Injury Prevention and Reduction (transferred from project 819 (Physical Performance Enhancement)): Validation of injury prediction tools for brain, spine, and thoracic injury from blast, blunt, and ballistic impact. In FY10, will field test loading assessment system for the prediction of spinal injury; will validate thoracic blunt trauma and performance decrement models by comparing with data obtained from large animal exercise studies; will validate a battery of Soldier performance tests based on common Soldiering tasks.	.000	.000	3.356	
Psychological Health and Resilience: Validation of neuro-cognitive assessment and brain injury detection methods. Validate tools and pre-clinical methods to treat Post-Traumatic Stress Disorder in a military population. In FY10, will conduct field study to determine the extent to which baseline psychological and neurological functioning impacts resilience and sensitivity to concussion.	.000	.000	.869	

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY		PROJECT NUMBER MM3	
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Physiological Health and Environmental Protection (transferred from project 800 (Sleep Research/Environmental Monitoring): Validation of physiological awareness and prediction tools for Soldier performance in extreme environments. In FY10, will transition heat strain decision aid to US Army Ranger School; will refine hydration sensor technologies and conduct early prototype evaluations.	.000	.000	2.360	
Total	.000	.000	6.585	
C. Other Program Funding Summary (\$ in Millions) N/A				
D. Acquisition Strategy N/A				
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.				

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 800	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
800: TELEMEDICINE TESTBED	5.241	4.079	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project funds the advancement and validation of prototype advanced concepts and enabling technology pertaining to Force Health Protection. Major efforts include collaborative tools for mission planning and rehearsal that enable deployment of optimally tailored medical support for a deployed force; medical command and control; and forward echelon telemedicine presence. The current focus provides increased situational awareness of the operational and health risks of fatigue, exposure to environmental toxins (toxic industrial chemicals and materials), and enabling technologies for reducing these risks. Beginning FY10, project 800 will be consolidated into project MM3.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Sleep Research/Environmental Monitoring: Efforts focus on the evaluation of fatigue countermeasures to validate methods used to mitigate the effects of fatigue and sleep loss that adversely affects the Soldier's ability to sustain both health and performance during prolonged military operations. In FY08, conducted laboratory clinical studies of the efficacy of nontraditional fatigue countermeasures (drug interventions) for restoring cognitive performance during extended periods of sleep loss (i.e., cognitive enhancers). The cognitive test capacities include decision making, situational awareness, and judgment. In FY09, conduct studies to validate whether cognitive enhancers are effective fatigue countermeasures (mobile health monitoring system) in an operational environment. Demonstrate validity of near real-time wireless squad and personal area networks (Spartan Sensor Network) to improve situational awareness of Soldiers during training by modeling hydration and heat strain using physiological and weather data. Demonstrate value of network-enabled predictive biomedical modeling in training mission planning and real-time mission support. Beginning FY10, this effort will be transferred to project MM3 (Physiological Health and Environmental Protection).	5.241	3.965	.000	
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.114	.000	
Total	5.241	4.079	.000	

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C. Other Program Funding Summary (\$ in Millions) N/A		
D. Acquisition Strategy N/A		
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 804	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
804: PROSTATE CANCER RSCH	2.319	2.392	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item for Prostate Cancer research.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
UMDNJ Cancer Initiative							2.319	2.325	.000	
SBIR/STTR							.000	.067	.000	
Total							2.319	2.392	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 810	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
810: IND BASE ID VACC&DRUG	20.735	22.020	20.397						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project demonstrates and matures US Food and Drug Administration (FDA) regulated medical countermeasures such as drugs, vaccines, and diagnostic systems to naturally occurring infectious diseases that are threats to US military deployed forces. The focus of the program is on prevention, diagnosis, and treatment of diseases that can adversely impact military mobilization, deployment, and operational effectiveness. Prior to licensure of a new drug or vaccine to treat or prevent disease, the FDA requires testing in human subjects. Studies are conducted stepwise: first to prove the product is safe in humans, second to demonstrate the desired effectiveness and optimal dosage in a small study, and third to demonstrate effectiveness in large, diverse human populations. All test results are submitted to FDA for evaluation to ultimately obtain approval (licensure) for medical use. This project supports studies for safety and effectiveness testing on small study groups after which they transition to the next phase of development for completion of studies in larger populations. The project also supports testing of personal protective measures that can reduce disease transmission from biting insects and other vectors to include products such as repellents and insecticides which are regulated by the U. S. Environmental Protection Agency (EPA).

Research conducted in this project focuses on the following five areas:

- (1) **Drugs to Prevent/Treat Parasitic (symbiotic relationship between two organisms) Diseases:** Select promising malaria and leishmaniasis (a skin-based disease transmitted by sand flies) drug candidates for testing in human subjects, and prepare data packages required for FDA approval of testing in humans and conduct testing. Studies have shown that the malaria parasite can become resistant to existing drugs, which makes it necessary to continually research new and more effective treatments.
- (2) **Vaccines for Preventing Malaria:** Select candidate vaccines; prepare data packages required for FDA approval of testing in humans, and conduct testing of promising malaria vaccine candidates in human subjects. A malaria vaccine against the severe form of malaria (plasmodium falciparum) and the less severe but relapsing form (plasmodium vivax) would be another means of protection against malaria. A malaria vaccine could also minimize the progression of drug resistance and poor Warfighter compliance with taking preventive anti-malarial drugs.
- (3) **Bacterial Threats:** Select promising candidate vaccines against each of the three bacterial causes of diarrhea (a significant threat during initial deployments) and meningococcal vaccine candidates (a threat to trainee and deployed troops and military families) for testing in human subjects, prepare data packages required for FDA approval and conduct testing in human subjects.
- (4) **Viral Threats:** Select most promising vaccine candidates for testing in human subjects against dengue fever (a severe debilitating disease caused by a virus and transmitted by a mosquito) and hantavirus (severe viral infection that causes internal bleeding and is contracted from close contact with rodents). Conduct FDA-required nonclinical safety and protection testing (laboratory-based) in animals, prepare FDA-investigational new drug data packages to allow clinical testing of candidate vaccines in humans to proceed.
- (5) **Diagnostics and Disease Transmission Control:** Conduct human subject testing of FDA-regulated field medical diagnostic devices and EPA-approved insect control measures.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY		PROJECT NUMBER 810	
<p>Research is conducted in compliance with FDA regulations for medical products for human use and EPA-regulations for insect control products that impact humans or the environment (e.g., repellents and insecticides). Work is managed by the US Army Medical Research and Materiel Command. The Army is responsible for programming and funding infectious disease research within the Department of Defense.</p> <p>Promising medical countermeasures identified in this project are further matured under PE 0603807A, project 808.</p> <p>Work is managed by the US Army Medical Research and Materiel Command. The Army is responsible for programming and funding all DoD naturally occurring infectious disease research requirements, thereby precluding duplication of effort within the Military Departments.</p> <p>The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.</p> <p>Work in this project is performed by the Walter Reed Army Institute of Research, Silver Spring, MD, and its overseas laboratories; the US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD; and the Naval Medical Research Center, Silver Spring, MD, and its overseas laboratories.</p>				
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Drugs to Prevent/Treat Parasitic Diseases: In FY08, conducted safety testing in humans (30 volunteers, 8-month trial) of one antimalarial drug and assessed two existing drugs for effectiveness in treating leishmaniasis (a skin-based disease transmitted by sand flies). In FY09, down select between two candidate drugs for leishmaniasis treatment (Amphotericin B and Nitric Oxide). Conduct proof-of-concept study to demonstrate whether current antimalarial drug (Malarone) dosing schedule can be extended to reduce drug cost while maintaining effective protection from infection. Test in humans (20 volunteers) a Chloroquine-tinidazole combination drug at overseas locations to assess effectiveness against the liver (relapsing) form of vivax malaria. In FY10, if results support, will expand Malarone testing in an increased number of humans, and continue studies with a Chloroquine-tinidazole combination drug.	3.704	3.328	3.891	
Vaccines for Prevention of Malaria: In FY08, finalized a multicomponent candidate malaria vaccine for larger scale testing in human volunteers. Began preclinical testing of a new vivax malaria vaccine. In FY09, proceed with first-in-human testing of protein-based candidate vivax malaria vaccine upon approval by FDA of study application. Refine the formulation of the falciparum malaria vaccine. Conduct initial testing in humans to demonstrate effectiveness of candidate vaccines. Vaccines found safe and effective will transition into advanced development. In FY10, will partner with industry to conduct initial safety and small-scale effectiveness testing in humans of a new falciparum malaria vaccine candidate; will forward promising candidate vaccines for further testing in larger populations where malaria occurs naturally, such as Africa; will initiate vivax malaria candidate vaccine testing in humans pending FDA approval.	4.925	4.428	4.812	
	6.506	7.320	6.659	

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY		PROJECT NUMBER 810	
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Bacterial Threats: In FY08, continued with ongoing testing in humans of candidate vaccines (100 volunteers, 12-month trial), including a second-generation oral dysentery vaccine if the current candidate fails in testing. Performed clinical trials (20-40 volunteers, 6-12 month trial) of two additional diarrheal vaccines. In FY09, conduct larger scale testing in humans for effectiveness of Shigella component (Invaplex) diarrheal vaccine candidate (200 volunteers) to determine effectiveness and optimal dosing. Conduct human volunteer testing (20-40 volunteers) of a genetically modified single component meningitis vaccine. In FY10, will conduct larger scale testing of Shigella component (Invaplex) candidate vaccine; will begin safety and effectiveness trial of live attenuated Shigella vaccine; will begin E. coli vaccine candidate safety and effectiveness testing in humans; in conjunction with partners, will prepare the meningococcal Group B multicomponent vaccine for testing in humans.				
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.509	.000	
Viral Threats Research: In FY08, continued ongoing human volunteer testing of multiple hemorrhagic virus vaccines including testing of broad-spectrum hantavirus (200 volunteers, 18-month trial) and dengue vaccines (70 volunteers, 6-month trial). In FY09, conduct human volunteer testing of hemorrhagic Hanta virus. Test several dengue candidate vaccines in humans (70 volunteers) to select most promising technologies. In FY10, will conduct larger scale testing in humans of the hantavirus vaccine; will down-select to most safe and effective dengue vaccine candidate based on larger scale studies (120 volunteers).	3.903	4.035	2.505	
Diagnostics and Disease Transmission Control: In FY08, continued to conduct clinical testing of medical diagnostic device for dengue, and field testing of insect control measures with potential completion of several components of the sand fly control tools for Preventive Medicine Units (PMUs). Conducted human subject trials in collaboration with commercial partners to support development of an FDA-approved, field-deployable point-of-care (for clinical use) diagnostic device for cutaneous leishmaniasis (a skin-based disease transmitted by sand flies) and an FDA-approved diagnostic test for latent infection (without signs of clinical disease) with Leishmania parasites. In FY09, work with commercial partner on an improved bed net. Complete testing and transition of selected components of sand fly control tools, such as screening tests to PMUs. Refine and test insect repellent to replace Diethylmetatoluamide or DEET (current ingredient in military insect repellent) in collaboration with commercial partners. Conduct testing of hospital-based leishmaniasis diagnostic device and field-deployable point-of-care diagnostic device for leishmaniasis, dengue and rickettsia diseases. In FY10, will test a new repellent and begin evaluation of field deployable tests to detect infectious organisms within insects that cause sand fly fever, Q-fever, and dengue fever. For diagnostics, will validate results of testing for leishmaniasis, dengue and Rickettsial disease devices. Will modify the Leishmania infection hospital-based	1.697	2.400	2.530	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
diagnostic test technology to be compatible with Joint Biological Agent Identification Diagnostic System (JBAIDS) platform.				
Total	20.735	22.020	20.397	
C. Other Program Funding Summary (\$ in Millions) N/A				
D. Acquisition Strategy N/A				
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.				

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 814	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
814: NEUROFIBROMATOSIS	7.729	9.967	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Neurofibromatosis research.										
B. Accomplishments/Planned Program (\$ in Millions)						FY 2008	FY 2009	FY 2010	FY 2011	
Neurofibromatosis (NF) Research						7.729	9.688	.000		
SBIR/STTR						.000	.279	.000		
Total						7.729	9.967	.000		
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 819	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
819: FLD MED PROT/HUM PERF	1.160	1.252	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification										
<p>The objective of this project is to support the Medical and Survivability technology areas of the Future Force with laboratory validation studies and field demonstrations of biomedical products designed to protect, sustain, and enhance Soldier performance in the face of a myriad of environmental, physiological stressors, and materiel hazards encountered in training and operational environments. This effort focuses on identifying stressors and validating methods for assessing risk to the Soldier due to both physical and operational stressors. Effort matures and demonstrates methodologies and tools associated with biomechanical-based health risks, injury assessment/prediction, Soldier survivability, and performance during continuous operations. In FY10, project 819 will be consolidated into project MM3.</p> <p>The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.</p> <p>Work in this project is performed by the US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA.</p>										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Physical Performance Enhancement: In FY08, validated a method to evaluate pre- and post-deployment physical status (i.e., body composition, performance, and muscle strength). In FY09, validate an integrated longitudinal model for predicting individual Soldier and unit musculoskeletal injury and adverse physical performance outcomes. Beginning in FY10, this effort will be transferred to the Injury Prevention and Reduction research area of project MM3.							1.160	1.216	.000	
Small Business Innovative Research/Small Business Technology Transfer Programs							.000	.036	.000	
Total							1.160	1.252	.000	
C. Other Program Funding Summary (\$ in Millions)										
N/A										
D. Acquisition Strategy										
N/A										

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E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 840	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
840: COMBAT INJURY MGMT	22.488	29.433	43.995						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project matures, demonstrates, and validates promising medical technologies and methods to include control of severe bleeding, treatment for traumatic brain injury (TBI), revival and stabilization of trauma patients, and prognostics and diagnostics for life support systems. Post-evacuation medical research focuses on continued care and rehabilitative medicine leveraging recent innovations in regenerative medicine and tissue engineering techniques for extremity (arms and legs), facial/maxillary (jaw bone), and ocular (eye) trauma.

Research conducted in this project focuses on the following seven areas:

- (1) Hemorrhage (bleeding) Control, Blood, and Resuscitative Fluids: Includes work required to validate safety and effectiveness of drugs and medical procedures to maintain metabolism, minimize inflammation (swelling), including blocking Complement activation (a series of disease fighting proteins and reactions) from damaging healthy cells of the body, and prevent or minimize secondary organ failure (including brain and spinal cord injury) after major trauma. Beginning in FY10, funding shifts to the Damage Control Resuscitation research area below.
- (2) Damage Control Resuscitation: Includes work required to validate safety and effectiveness of drugs and medical procedures to maintain metabolism, minimize harmful inflammation, including blocking Complement activation (a series of disease fighting proteins and reactions) from damaging healthy cells of the body and prevent or minimize secondary organ failure (including brain and spinal cord injury) after major trauma; this research area starts in FY10.
- (3) Combat Trauma Therapies: Includes work required to validate safety and effectiveness of drugs, biologics (products derived from living organisms), and medical procedures intended to minimize immediate and long-term effects from battlefield injuries.
- (4) Far-Forward Medical Systems: Includes diagnostic and therapeutic medical devices, algorithms, software, and data-processing systems for resuscitation, stabilization, life support, and dental care. Beginning in FY10, dental care moves to Combat Trauma Therapies and the remaining research in this area will be captured under Combat Critical Care Engineering.
- (5) Combat Casualty Bioinformatics and Simulation: Includes testing and validation of a data management system to capture and analyze data, such as heart and respiration rates. Bioinformatics research will merge into the Combat Critical Care Engineering research area in FY10.
- (6) Combat Critical Care Engineering: Includes diagnostic and therapeutic medical devices, algorithms, software, and data-processing systems for resuscitation, stabilization, and life support; this research area starts in FY10.
- (7) Clinical and Rehabilitative Medicine: Includes clinical studies of restoration of function and appearance by regenerating skin, muscle, and bone tissue in battle-injured casualties. Areas of interest include healing without scarring, repair of compartment syndrome (nerve or tendon constriction in an enclosed space), replacement skin, and facial reconstruction; this research area starts in FY10.

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<p>All research is conducted in compliance with US Food and Drug Administration (FDA) requirements for licensure of medical products for human use.</p> <p>Promising efforts identified through applied research conducted under PE 0602787A, project 874, are further matured under this project. Promising results identified under this project 840 are further matured under PE 0603807A, project 836.</p> <p>The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.</p> <p>Work in this project is performed by the US Army Institute of Surgical Research, Fort Sam Houston, TX; the Walter Reed Army Institute of Research, Silver Spring, MD; and the Armed Forces Institute of Regenerative Medicine, Fort Detrick, MD.</p>				
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.821	.000	
Combat Critical Care Engineering: In FY10, will complete FDA safety study of fluid resuscitation algorithms; will submit FDA data package for the fully integrated automated fluid resuscitation system; will collaborate with manufacturers to integrate oxygen and ventilation systems; will transition stroke volume algorithm to advanced development for integration with new monitors for triage decision support; and will conduct studies for development of a model (algorithm) for early indication of circulatory collapse from severe blood loss.	.000	.000	3.091	
Combat Trauma Therapies: In FY08, conducted expanded FDA safety/efficacy/dosing studies of neuroprotectant drugs in humans, completed clinical validation of brain trauma biomarkers, and identified potential, mature tissue regeneration methods through the Armed Forces Institute of Regenerative Medicine (AFIRM). In FY09, upon approval by FDA, begin an initial FDA safety study in 200 humans of neuroprotectants (brain trauma research is coordinated with related efforts in PE 0602787A, project 878); begin extensive, multicenter, clinical validation of the most promising tissue regeneration treatment regimens through AFIRM; and conduct evaluation of new and existing antibacterial compounds for use in controlling infection. In FY10, will complete initial FDA safety studies in humans of neuroprotectants and a diagnostic device for brain trauma; will refocus dental disease research to facial restorative surgery; will begin research in eye trauma to evaluate current repair treatment for improvement and evaluate new alternatives as they are identified; and will expand existing in-house capability for human safety and effectiveness testing on newly identified treatments and therapies for battlefield trauma for human use of medical products.	3.666	10.318	16.991	
Far-Forward Medical Systems: In FY08, completed clinical testing of the automated ventilation algorithm for operating room and intensive care settings and began initial, FDA-approved safety study in humans for an antimicrobial, antiplaque	5.076	7.849	.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
chewing gum. In FY09, establish relationships with industry developing oxygen and ventilation systems for future validation; initiate a human subject safety study of fluid resuscitation algorithms; begin building interfaces for use with either the Army's integrated litter or the Navy's lightweight trauma module for casualty transport; and complete prototype and data analysis of a field medic diagnostic device to enhance casualty treatment on the battlefield. Beginning in FY10, dental care moves to Combat Trauma Therapies and the remaining research in this area will be captured under Combat Critical Care Engineering.				
Damage Control Resuscitation: In FY08 and FY09, funding was within the Hemorrhage Control, Blood, and Resuscitation Fluids program area. In FY10, will begin safety and effectiveness testing in humans of freeze-dried plasma and platelet products to control severe bleeding; will conduct additional studies in larger animals to identify optimal timing, dose and mechanisms of action of plasma, clotting factors and CIs in combination.	.000	.000	14.688	
Hemorrhage Control, Blood, and Resuscitative Fluids: In FY08, continued animal studies using combinations of products (freeze-dried plasma, synthetic red blood cells, activated Factor VII, and fibrinogen) and treatment strategies to determine which combinations best control all forms of bleeding; and continued Platelet Derived Hemostatic Agent (PDHA) clinical studies to determine potential to increase survival; determined best transfusion and storage practices for blood products, and began safety and effectiveness clinical trial of complement inhibitor (CI) in trauma patients with severe hemorrhage. In FY09, continue to evaluate combinations of products and treatment strategies to best control all forms of bleeding; evaluate safety and effectiveness of freeze dried plasma in an animal model; analyze PDHA data from safety and effectiveness test in human subjects. Beginning in FY10 the work will be funded under Damage Control Resuscitation.	13.204	9.600	.000	
Combat Casualty Bioinformatics and Simulation: In FY08, completed revisions of algorithms intended to enhance recovery of usable physiological data and validated use of high-frequency features of electrophysiological signals (electrical measurements of body function) to predict the need for a lifesaving intervention (LSI). In FY09, complete prototype development and test validity of an algorithm that incorporates low- and high-frequency signals for an automated decision assist tool used by medical personnel to identify a need for a specific LSI. Bioinformatics research will merge into the Combat Critical Care Engineering research area in FY10.	.542	.845	.000	
Clinical and Rehabilitative Medicine: In FY10, will conduct regenerative medicine studies using human subjects to demonstrate stable engraftment and restoration of sensory-motor function of transplanted limbs and facial skin, fat transfer	.000	.000	9.225	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
therapy to manage burn scarring, implantation of engineered cartilage ear transplants, and use of a strain-reducing dressing to reduce wound scarring.				
Total	22.488	29.433	43.995	
C. Other Program Funding Summary (\$ in Millions) N/A				
D. Acquisition Strategy N/A				
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.				

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 938	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
938: Tissue Engineering	1.158	1.196	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Tissue Engineering research.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Angiogenesis and Tissue Engineering Research							1.158	1.163	.000	
SBIR/STTR							.000	.033	.000	
Total							1.158	1.196	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 954		
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost	
954: DIGITAL X-RAY	3.092	.000	.000						Continuing	Continuing	
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Digital X-ray advanced technology development.											
B. Accomplishments/Planned Program (\$ in Millions)								FY 2008	FY 2009	FY 2010	FY 2011
Portable Digital X-Ray								3.092	.000	.000	
Total								3.092	.000	.000	
C. Other Program Funding Summary (\$ in Millions) N/A											
D. Acquisition Strategy N/A											
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.											

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 955	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
955: ASSISTIVE TECHNOLOGY	2.319	2.392	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Assistive Technology.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Assistive Technology Research Center at the National Rehabilitative Hospital	2.319	2.325	.000	
SBIR/STTR	.000	.067	.000	
Total	2.319	2.392	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 97A	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97A: BIOSENSOR RESEARCH	1.545	.798	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Biosensor research.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Technologies for Metabolic Monitoring (TMM)							1.545	.775	.000	
SBIR/STTR							.000	.023	.000	
Total							1.545	.798	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 97B	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97B: BLOOD SAFETY	1.933	1.595	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Blood Safety advanced technology development.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Blood Safety and Decontamination Technology							1.933	1.550	.000	
SBIR/STTR							.000	.045	.000	
Total							1.933	1.595	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 97D	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97D: CENTER FOR AGING EYE	1.545	1.595	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Low Vision research.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Military Low Vision Research							1.545	1.552	.000	
SBIR/STTR							.000	.043	.000	
Total							1.545	1.595	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 97T	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97T: NEUROTOXIN EXPOSURE TREATMENT	19.323	24.917	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Neurotoxin Exposure Treatment.

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

	FY 2008	FY 2009	FY 2010	FY 2011
Neurotoxin Exposure Treatment Parkinsons Research Program	19.323	24.219	.000	
SBIR/STTR	.000	.698	.000	
Total	19.323	24.917	.000	

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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Exhibit R-2a, PB 2010 Army RDT&E Project Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603002A MEDICAL ADVANCED TECHNOLOGY					PROJECT NUMBER 97X	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97X: SYNCHROTRON-BASED SCANNING RESEARCH	7.729	.000	.000						Continuing	Continuing
A. Mission Description and Budget Item Justification Congressional Interest Item funding for Synchrotron-based scanning research.										
B. Accomplishments/Planned Program (\$ in Millions)							FY 2008	FY 2009	FY 2010	FY 2011
Proton Beam Therapy							7.729	.000	.000	
Total							7.729	.000	.000	
C. Other Program Funding Summary (\$ in Millions) N/A										
D. Acquisition Strategy N/A										
E. Performance Metrics Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.										

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