Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research					R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					
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	19.706	19.766	19.671						Continuing	Continuing
F16: ILIR-SMDC	.000	.000	.492						Continuing	Continuing
91A: ILIR-AMC	12.820	14.624	14.871						Continuing	Continuing
91C: ILIR-MED R&D CMD	3.865	3.604	3.025						Continuing	Continuing
91D: ILIR-CORPS OF ENGR	1.654	1.334	1.121						Continuing	Continuing
91E: ILIR-ARI	.167	.204	.162						Continuing	Continuing
91J: IN-HOUSE LAB INDEPENDENT RESEARCH - MEDICAL (CA)	1.200	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) is utilized to attract and retain top doctoral degreed scientists and engineers at the Army's research organizations. The In-House Laboratory Independent Research (ILIR) program provides a source of competitive funds to Army laboratories to stimulate high quality, innovative research with significant opportunity for payoff to Army warfighting capability. The basic research lays the foundation for future developmental efforts by identifying the fundamental principles governing various phenomena and appropriate pathways to exploit this knowledge. The ILIR program serves as a catalyst for major technology breakthroughs by giving the laboratory directors flexibility in implementing novel research ideas and nurturing promising young scientists and engineers. This PE supports ILIR at the Army Materiel Command's (AMC) six Research, Development, and Engineering Centers (RDECs) (project 91A); supports ILIR at the six Medical Research and Materiel Command (MRMC) laboratories (project 91C); supports ILIR at the Corps of Engineer's seven Engineer Research, and Development Center (ERDC) laboratories (project 91D); supports research that will develop and validate new techniques in social network analysis as well as training techniques to enhance expertise and adaptability and decrease training time project (91E); and research on high energy lasers and directed energy for air and missile defense (project F16).

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

Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	**R-1 ITEM NOMENCLATURE** PE 0601101A In-House Laboratory Independent Research

The work in this PE is performed by the Army Materiel Command (AMC), Ft. Belvoir, VA, Army Medical Research and Materiel Command (MRMC), Ft. Detrick, MD, the Army Corps of Engineers Engineer Research, and Development Center (ERDC), Vicksburg, MS, the Space and Missile Defense Command (SMDC), Huntsville, AL, and the Army Research Institute (ARI), Arlington, VA.

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	21.528	19.832	19.238	
Current BES/President's Budget	19.706	19.766	19.671	
Total Adjustments	-1.822	-.066	.433	
Congressional Program Reductions	.000	-.066		
Congressional Rescissions	.000	.000		
Total Congressional Increases	.000	.000		
Total Reprogrammings	-1.347	.000		
SBIR/STTR Transfer	-.475	.000		

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER F16	
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**
F16: ILIR-SMDC	.000	.000	.492						Continuing	Continuing

A. Mission Description and Budget Item Justification

The objective of this project is to provide funding for In-house Laboratory Independent Research (ILIR) in the Space and Missile Defense Command Technical Center. This basic research on lasers and directed energy lays the foundation for future developmental efforts on high energy lasers and directed energy systems for missile defense by identifying the fundamental principles governing various phenomena and appropriate pathways to exploit this knowledge.

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

Work in this project is performed by the Army Space and Missile Defense Command (SMDC), Huntsville, AL.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY10 will solicit new concepts for basic research efforts with broad applicability to lasers and directed energy for missile defense.	.000	.000	.492	
Total	.000	.000	.492	

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.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER 91A	
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**
91A: ILIR-AMC	12.820	14.624	14.871						Continuing	Continuing

A. Mission Description and Budget Item Justification

The project funds basic research within the Army Materiel Command's (AMC) Research, Development, and Engineering Centers and lays the foundation for future developmental efforts by identifying the fundamental principles governing various phenomena and appropriate pathways to exploit this knowledge.

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

The work in this program is performed by the Communications and Electronics Research, Development, and Engineering Center (CERDEC), Ft. Monmouth, NJ, the Armaments Research, Development, and Engineering Center (ARDEC), Picatinny, NJ, the Tank and Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, the Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA, the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL, and the Edgewood Chemical and Biological Center (ECBC), Aberdeen Proving Grounds, MD within AMC.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Aviation and Missile RDEC Aviation Efforts: In FY08, conducted aerodynamics study on adaptive shape changes (morphing) under airfoil dynamic stall conditions; completed study on high Reynolds number 3D bluff body turbulent boundary layer active separation control with a focus on turbulence measurements; developed and validated adjunct airfoil optimization methods for unsteady flow conditions. In FY09, study advanced airfoil aerodynamics for passive rotor performance improvement, investigate phenomenon and assess computational fluid dynamics modeling using existing data of pitching airfoil double dynamic stall events, investigate the effectiveness of fluidic oscillators to control separation for bluff body flows. In FY10 will conduct dynamic stall testing of advanced active and passive concepts with an emphasis on the fundamental flow physics of unsteady separation of turbulent boundary layers, will develop microscopic particle image velocimetry for identification of flow reversal and separation in unsteady turbulent boundary layers.	1.744	1.769	1.707	
Armaments RDEC: In FY08, conducted basic research into optical properties of black silicon, fatigue suppression in nanotube composites, detonation theory and modeling development for semi-metal energetic material, bolometric infrared detector based on	1.807	1.834	1.636	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91A

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
freestanding single-walled carbon nanotube network, surface enhanced raman spectroscopy of energetic materials on nanostructured substrates, development of shortwave/medium wave/longwave anomaly algorithms for hyperspectral sensors; new nitration methods for high density, high energy materials, sniper detection via multi-mode sensor fusion, and novel synthesis routes of graphine. In FY09, conduct basic research for developing new explosives and smaller warheads for increased lethality and volume reduction, lighter and stronger materials for guns, algorithms for future intelligent munitions using various sensors, and area denial technologies. In FY10, will continue basic research into synthesizing more powerful explosives with IM properties, techologies for detection and neutralization of IEDs/explosives, sensors/sensor fusion for area denial, smaller more lethal warheads and composite materials.				
Tank-automotive RDEC: In FY08, investigated JP-8 ignition and combustion behavior for a high performance military engine; developed new design methodologies for thick section composites using multiple failure theories for improved light-weight material reliability, and developed spectral fractal geometry and linear/non-linear filtering for real time dynamic simulation of Army tactical and combat vehicles. In FY09, record real-time polarization images for robotic vehicle terrain perception and signature countermeasure applications; investigate ultra-wide band (UWB) radar development for localizing mobile robots in battlefield scenarios, and explore fuzzy logic clustering algorithms for robotic vehicle stereovision range perception in difficult urban terrain environments. In FY10, will develop high performance control algorithms for unmanned ground vehicles in a heterogeneous off-road terrain environments; will use fuzzy logic C-mean clustering algorithms for vehicle terrain classification; and will investigate JP-8 heat release combustion chemistry as a function of cetane number and nozzle geometry.	1.288	1.307	1.262	
Natick Soldier Center: In FY08, investigated novel means for controlling nanoscale characteristics through precise morphology control, with potential to impact textiles used in Soldier ensemble, flexible wall shelters, and parachutes. In FY09, utilize morphology control data results to make initial selections of methodology to verify ability to regulate nanoscale characteristics, identify nanomaterials (metal or dielectrics) and develop preliminary design for nanorectenna array for converting visible/near-infrared light to direct current for photonic applications and derive a fundamental	1.420	1.441	1.391	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91A

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
understanding of how immobilization influences the antimicrobial peptide mechanisms of lytic behavior for Soldier protection against pathogens. In FY10 will solicit new concepts for basic research efforts with broad applicability to science and technology that enable advancement of developments such as electro-textiles, multifunctional fibers, advanced nutrient delivery, performance enhancing biomechanics and precision airdrop sytems.				
Edgewood Chemical Biological Center: In FY08, solicited new concepts for basic research efforts with broad applicability to point and stand-off detection and identification of chemical vapors and biological aerosols, targeted decontamination, protection, information technology, and obscuration sciences. In FY09, solicit new concepts for basic research efforts with broad applicability to point and stand-off detection and identification of chemical vapors and biological aerosols, targeted decontamination, protection, information technology, and obscuration sciences. In FY10 will solicit new concepts for basic research efforts with broad applicability to science and technology that address chemical and biological vulnerabilities.	1.023	1.036	.925	
Communications-Electronics RDEC: In FY08, investigate fundamental principles needed to enable efficient upgrade of distributed software; investigate a new family of high energy electrochemical materials for advanced batteries; investigate methods of enhancing heat and mass transfer within micro-reactors. In FY09, investigate novel means of creating wideband high-dielectric Electromagnetic Metamaterials using carbon nanotubes for use in designing future generations of antennas; investigate a new family of polymer based electrolyte materials (required to be ionically conductive and both chemically and electro-chemically stable to voltages greater than 5.0 Volts) for advanced lithium high energy electrochemical couples; conduct basic research on the pseudo noise modulation of radar wave forms; develop a novel approach for lower defect IR detector materials by investigating lattice phonons and electrons interactions within a sensor material, such as HgCdTe. In FY10 will investigate new metamaterial to significantly improve antenna signature and power handling capacity and will conduct research in network science to investigate novel neural management tools for optimum network performance; will research separator-electrolyte sub-components for high voltage electrochemical cells; will develop a novel approach for extensions of advanced signal processing from a cooperative regime (known parameters) to a non-cooperative regime.	1.596	1.619	1.443	
Peer reviewed proposal efforts:	1.535	2.894	4.149	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91A

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Proposal efforts will be selected near the start of each fiscal year through competitive applications among the Army laboratories with ILIR funding. Selections are based on an outside independent peer review of the proposals. The intent to provide increased quality and responsiveness in exploring in basic research new technological concepts that are highly relevant to Army needs. This funding will also enhance recruitment, development, and retention of outstanding scientists and engineers engaged in high quality basic research for the Army which will bring a constant flow of new knowledge to our laboratories. In FY08, funded 3 basic research efforts at the Medical Research and Materiel Command and 2 efforts at the Research, Development and Engineering Command. In FY09, solicit new basic research efforts aimed at developing and maintaining a cadre of active research scientists who can distill and extend results from worldwide research and apply them to Army problems. In FY10, will solicit new basic research efforts aimed at developing and maintaining a cadre of active research scientists who can distill and extend results from worldwide research and apply them to Army problems.				
Aviation and Missile RDEC Missile Efforts: In FY08, explored wide bandgap semiconductor photodetectors for advanced ultraviolet seekers. Investigated ultra-wide band chaotic arrays in radar applications. Fabricated transparent metal stacks for applications to negative refraction and sub-wavelength resolution. In FY09, develop THz spectroscopic imager for non-destructive testing and stand-off agent detection. Demonstrate operation of a quantum sensor, for application to sensing electric, magnetic, or microwave fields. In FY10, will solicit new concepts for basic research efforts with broad applicability to science and technology that support exploratory and advanced development for guided missile and rocket systems, directed energy weapons, unmanned vehicles, and related components.	2.407	2.441	2.358	
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.283	.000	
Total	12.820	14.624	14.871	

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91A

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.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER 91C	
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**
91C: ILIR-MED R&D CMD	3.865	3.604	3.025						Continuing	Continuing

A. Mission Description and Budget Item Justification

The objective of this project is to address investigator-driven medical and force health protection basic research initiatives performed at the six US Army Medical Research and Materiel Command laboratories. Research areas address countermeasures against infectious diseases, defense against environmental extremes and operational hazards to health, mechanisms of combat trauma and innovative treatment and surgical procedures, and medical chemical/biological warfare threats.

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; US Army Medical Research Institute of Chemical Defense (USAMRICD), Aberdeen Proving Ground, MD; US Army Medical Research Institute of Infectious Diseases (USAMRIID), Fort Detrick, MD; US Army Institute of Environmental Medicine (USARIEM), Natick, MA; US Army Institute of Surgical Research (USAISR), Fort Sam Houston, TX; and US Aeromedical Research Laboratory (USAARL), Fort Rucker, AL.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Independent Research Efforts: In FY08 and FY09, the ILIR program funded/funds innovative in-house basic research proposals that focus on research to explore treatments and countermeasures against militarily relevant infectious diseases; defense against environmental extremes and operational hazards to health; and mechanisms of combat trauma and innovative treatment and surgical procedures. In FY10, the program will fund innovative in-house basic research proposals that will focus on research to explore treatments and countermeasures against militarily relevant infectious diseases; defense against environmental extremes and operational hazards to health; mechanisms of combat trauma and innovative treatment and surgical procedures, and medical chemical/biological warfare threats.	2.893	2.829	2.522	
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.097	.000	
Peer reviewed proposal efforts: In FY08, solicited new and continuing basic research efforts focused on fundamental questions in medical science that relate to US Army requirements, including increased emphasis on network science.	.972	.678	.503	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91C

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY09, continue to solicit new basic research efforts aimed at developing and maintaining a cadre of active basic research scientists who can initiate new research as well as extend results from worldwide research and apply them to Army problems. In FY10, will continue ongoing awarded innovative basic research activities and continue to solicit new innovative medical and force protection basic research efforts in support of Army needs.				
Total	3.865	3.604	3.025	

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.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER 91D	
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**
91D: ILIR-CORPS OF ENGR	1.654	1.334	1.121						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project funds In-house Laboratory Independent Research (ILIR) in the areas of geospatial research and engineering, military engineering, and environmental quality/installations at the seven laboratories within the Corps of Engineer's Engineering Research and Development Center.

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

The work in this project is performed by the U.S. Army Engineer Research and Development Center (ERDC), at Vicksburg, MS.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.024	.000	
Geospatial Research and Engineering/Military Engineering/Environmental Quality and Installations: In FY08, investigated nanoparticle and molecular dynamics for chemical and biological networked sensing and assess infrasound ability to characterize infrastructure. In FY09, conduct research to determine factors influencing partitioning and ecological risk of military unique nanomaterials in the environment. In FY10 will investigate reduction potentials for military compounds through the application of computationally feasible approximations for predicting reduction-oxidation reaction potentials of explosives and their environmental transformation products. Will determine whether mineral surfaces or surface chemical processes can be exploited to promote the adsorption and transformation of nitroaromatic compounds and other explosives munitions on military training, testing and demolition ranges.	1.524	1.145	1.121	
Peer reviewed proposal efforts: Proposal efforts will be selected near the start of each fiscal year through competitive applications among the Army laboratories with ILIR funding. Selections are based on an outside independent peer review of the proposals. The intent to provide increased quality and responsiveness in exploring in basic research new technological concepts that are highly	.130	.165	.000	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research	PROJECT NUMBER 91D

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
relevant to Army needs. This funding will also enhance recruitment, development, and retention of outstanding scientists and engineers engaged in high quality basic research for the Army which will bring a constant flow of new knowledge to our laboratories. In FY08: sought new and continuing basic research efforts focused on fundamental questions in science that relate to U.S. Army requirements such as network science. In FY09, solicit new and continuing basic research efforts in areas such as next generation remote sensing through exploitation technologies for low-oblique image data.				
Total	1.654	1.334	1.121	

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.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER 91E	
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**
91E: ILIR-ARI	.167	.204	.162						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides funding for In-house Laboratory Independent Research (ILIR) in the Army Research Institute. This project supports basic research in the Cognitive and Neural Sciences is focused on theories, approaches, and models from the Behavioral and Social Sciences that have the highest potential to improve human performance. Improved recruiting, selection, assignment, training, leader development, performance, performance assessment, organizational dynamics, and retention are the goals.

Work in this project is performed by the Army Research Institute.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Army Research Institute: In FY08, demonstrated that formal and emergent leaders possess more accurate perceptions of informal advice, but not friendship networks than do non-leaders; individuals' perceptions of leadership ability predict advice, but not friendship partners; and friendship, but not advice relationships occur among individuals of congruent leadership ability. In FY09, identify training strategies that will help Soldiers recognize challenges that require novel solutions and to adapt their behavior to overcome such challenges. In FY10, will begin longitudinal modeling of career performance using latent curve analysis.	.167	.199	.162	
Small Business Innovative Research/Small Business Technology Transfer Program	.000	.005	.000	
Total	.167	.204	.162	

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.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601101A In-House Laboratory Independent Research					PROJECT NUMBER 91J	
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**
91J: IN-HOUSE LAB INDEPENDENT RESEARCH - MEDICAL (CA)	1.200	.000	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for In-House Laboratory Independent Research.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Nanotechnologies Initiative - Linear and nonlinear optics in metal-based metamaterials in the sub-wavelength regime: optics at the nano-scale.	.384	.000	.000	
Nanotechnology Initiative - Probing the electron transfer and mechanical properties of metal-filled single walled carbon nanotubes.	.536	.000	.000	
Nanotechnology Initiative - Designing morphology controlled polymer blends by nanoparticle mediated thermodynamic stabilization.	.280	.000	.000	
Total	1.200	.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.