

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2007

BUDGET ACTIVITY		PE NUMBER AND TITLE						
1 - Basic research		0601103A - University Research Sciences (H)						
COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
Total Program Element (PE) Cost	73707	80841	64843	66781	68696	69339	71625	73224
D55 University Research Initiative	64409	67787	64843	66781	68696	69339	71625	73224
D58 URI ACTIVITIES (CA)	5560	10087						
D63 INST OF BIOENGINEERING AND NANOSCIENCE IN ADV MED	959							
D66 MEDICAL UNIVERSITY RESEARCH INITIATIVES (CA)	2779	2967						

**A. Mission Description and Budget Item Justification:** This project supports Army efforts in the Multidisciplinary University Research Initiative (MURI) program, the Defense University Research Instrumentation Program (DURIP), and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program by funding basic research in a wide range of scientific and engineering disciplines pertinent to maintaining the US land combat technology superiority. Army MURI program efforts involve teams of researchers investigating high-priority; transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. Project D58 includes funding for specific congressional interest University Research Initiatives. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Department of Defense Basic Research Plan (BRP). Work on this project is performed extramurally by the Army Research Laboratory (ARL).

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<u><b>B. Program Change Summary</b></u>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	76984	68545	66507	67755
Current BES/President's Budget (FY 2008/2009)	73707	80841	64843	66781
Total Adjustments	-3277	12296	-1664	-974
Congressional Program Reductions		-309		
Congressional Rescissions				
Congressional Increases		13200		
Reprogrammings	-3277	-595		
SBIR/STTR Transfer				
Adjustments to Budget Years			-1664	-974

Eleven FY07 congressional adds totaling \$12652 (after adjustment for Congressional Undistributed Reductions) were added to this PE.

- (\$1916) Desert Environmental Research
- (\$1054) Laboratory for Engineered Human Protection (LEHP)
- (\$959) Low Temperature Research
- (\$959) High Res Analyt Transmission Electron Microscope
- (\$1246) Advanced Precision Supply Parts Manufacturing
- (\$959) Collaboration Skills for Time Critical Teams
- (\$959) Cyber Enabled Technology Program
- (\$1725) Nanosystems Through Optical Biosensors
- (\$959) Nanocrystal Therapeutic Agents & Screening Tools
- (\$958) Nanomedical Technologies Research
- (\$958) Physical & Behaviorial Rehabilitation

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**February 2007**

<b>BUDGET ACTIVITY</b> <b>1 - Basic research</b>	<b>PE NUMBER AND TITLE</b> <b>0601103A - University Research Sciences (H)</b>						<b>PROJECT</b> <b>D55</b>		
COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	
D55 University Research Initiative	64409	67787	64843	66781	68696	69339	71625	73224	

**A. Mission Description and Budget Item Justification:** This project supports the Multidisciplinary University Research Initiative (MURI) and the Defense University Research Instrumentation Program (DURIP). The MURI program funds university basic research in a wide range of scientific and engineering disciplines pertinent to maintaining the US land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. This program element also supports Presidential Early Career Awards for Scientists and Engineers (PECASE). The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Department of Defense Basic Research Plan (BRP). Work on this project is performed extramurally by the Army Research Laboratory (ARL).

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
MURI: In FY06, supported MURI awards made in prior years and made eight new awards. Topic areas for the FY06 MURI research competition include: Bio-integrating Structural and Neural Prosthetic Materials; Spatial-temporal Event Pattern Recognition; Self Assembling Metallic/Metalloid Cluster Materials; Optical Materials with Negative Refractive Index; Monolithic Silicon Microbolometer Materials for Uncooled IR Detectors; Ultrafast Switching for Optical Imaging, Ultrafast, Non-equilibrium Laser-Material Interactions; and Urban Target Recognition by Ad-hoc Networks of Imaging Sensors and Low-cost, Non-imaging Sensors. Topic areas for the FY07 MURI research competition: Biologically Synthesized Quantum Electronic Systems; Attosecond Subwavelength Optical Pulses; Designing and Prescribing an Efficient Natural-like Language for Bots; Ionic Liquid Containing Polymeric Materials; Self-healing Polymer Composites through Mechanochemical Transduction; Engineering of Phase Transforming Electromagnetic-Optical Materials; Robust and Resilient Tactical Mobile Ad-Hoc Network (MANET); Urban Sensor Network Structure For Data Fusion; Dynamic Modeling of 3D Urban Terrain; and Wide-band Gap Semiconductor Based Sensing for Detection and Response to Weapons of Mass Destruction Threats. In FY07, FY08, and FY09 continue to support MURI awards made in prior years and initiate new awards in research critical to the Army's future operating capabilities.	51011	51379	52882	55460
PECASE: Supported PECASE investigators started in prior years. In FY06, selected two new investigators. In FY07, FY08, and FY09 will select two new investigators each year.	910	958	992	998
DURIP: In FY06, the DURIP program awarded 64 competitive grants for the acquisition of research instrumentation under the Defense University Research Instrumentation Program (DURIP). In FY07, DURIP continues acquisition of instrumentation that enhances the current research infrastructure and provides new research capabilities to enable scientific exploration and discovery in promising areas vital to Army transformational technologies. In FY08 and FY09, DURIP will continue to fund competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army transformation.	12488	13543	10969	10323
Small Business Innovative Research/Small Business Technology Transfer Programs		1907		

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**February 2007**

**BUDGET ACTIVITY**  
**1 - Basic research**

**PE NUMBER AND TITLE**  
**0601103A - University Research Sciences (H)**

**PROJECT**  
**D55**

Total	64409	67787	64843	66781
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