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PE NUMBER: 0601103F
 PE TITLE: University Research Initiatives

Exhibit R-2, RDT&E Budget Item Justification								DATE February 2006	
BUDGET ACTIVITY 01 Basic Research				PE NUMBER AND TITLE 0601103F University Research Initiatives					
Cost (\$ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	115.506	108.757	107.571	107.931	117.225	119.912	121.975	Continuing	TBD
5094 University Research Initiatives	115.506	108.757	107.571	107.931	117.225	119.912	121.975	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

This program supports defense-related basic research in a wide range of scientific and engineering disciplines pertinent to maintaining U.S. military technology superiority; enhances and promotes the education of U.S. scientists and engineers in disciplines critical to maintaining, advancing, and enabling future U.S. defense technologies; and assists universities in establishing superior instrumentation capabilities needed to improve the quality of defense-related research and education. A fundamental component of this program is the recognition that future technologies and technology exploitations require highly coordinated and concerted multi- and interdisciplinary efforts. Note: In FY 2006, Congress added \$1.1 million for 21st Century Information Operations Workforce; \$1.5 million for Bio/Nano Electronic Devices and Sensors; \$1.0 million for Military Logistics Readiness; \$1.7 million for Secure and Assured Information Sharing. This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation. Through this program, the Air Force invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs.

(U) B. Program Change Summary (\$ in Millions)

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	118.985	105.029	106.353
(U) Current PBR/President's Budget	115.506	108.757	107.571
(U) Total Adjustments	-3.479	3.728	
(U) Congressional Program Reductions	0.000		
Congressional Rescissions	-0.093	-1.572	
Congressional Increases	0.000	5.300	
Reprogrammings	0.025		
SBIR/STTR Transfer	-3.411		

(U) Significant Program Changes:

Not Applicable.

C. Performance Metrics

(U) Under Development.

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Exhibit R-2a, RDT&E Project Justification

DATE
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BUDGET ACTIVITY 01 Basic Research				PE NUMBER AND TITLE 0601103F University Research Initiatives			PROJECT NUMBER AND TITLE 5094 University Research Initiatives		
Cost (\$ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5094 University Research Initiatives	115.506	108.757	107.571	107.931	117.225	119.912	121.975	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program supports defense-related basic research in a wide range of scientific and engineering disciplines pertinent to maintaining U.S. military technology superiority; enhances and promotes the education of U.S. scientists and engineers in disciplines critical to maintaining, advancing, and enabling future U.S. defense technologies; and assists universities in establishing superior instrumentation capabilities needed to improve the quality of defense-related research and education. A fundamental component of this program is the recognition that future technologies and technology exploitations require highly coordinated and concerted multi- and interdisciplinary efforts. Note: In FY 2006, Congress added \$1.1 million for 21st Century Information Operations Workforce; \$1.5 million for Bio/Nano Electronic Devices and Sensors; \$1.0 million for Military Logistics Readiness; \$1.7 million for Secure and Assured Information Sharing. This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation. Through this program, the Air Force invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs.

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

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) MAJOR THRUST: Promote fundamental, multi- and interdisciplinary science and engineering research projects. Topics will be selected in scientific research areas related to transformational and high priority technologies, such as nanotechnology, sensor networks, intelligence information fusion, smart materials and structures, efficient energy and power conversion, high energy materials for propulsion and control, and enhancing human performance.	57.512	52.388	54.269
(U) In FY 2005: Funded competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Continue funding of multi-disciplinary programs begun in prior years.			
(U) In FY 2006: Continue to fund competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Support and recognize superior academic research through the Presidential Early Career Award for Scientists and Engineers (PECASE). Continue funding of multi-disciplinary programs begun in prior years.			
(U) In FY 2007: Continue funding competitive research awards at U.S. universities to focus on underpinning Air Force-related technologies usually not achievable through typical single investigator awards. Continue to support and recognize superior academic researchers in the early stages of their career through PECASE. Continue funding of multi-disciplinary programs begun in prior years.			
(U) MAJOR THRUST: Support post-graduate, graduate, and undergraduate education in science and engineering disciplines at U.S. universities. National Defense Science and Engineering Graduate Program (NDSEG) Fellowships	33.315	36.091	37.650

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	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
(U) B. Accomplishments/Planned Program (\$ in Millions) are awarded to train U.S citizens in science and engineering disciplines of military importance under a joint tri-Service and Office of the Director of Defense Research and Engineering competition.				
(U) In FY 2005: Awarded highly competitive NDSEG fellowships. Supported competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Stimulated and recognized superior academic research under Federal programs such as the PECASE. Continued funding for awards made under prior year Department of Defense programs.				
(U) In FY 2006: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continue funding for awards made under prior year Department of Defense programs.				
(U) In FY 2007: Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences including those established under the Awards to Stimulate and Support Undergraduate Research Education program. Continue funding for awards made under prior year Department of Defense programs.				
(U) MAJOR THRUST: Enhance the scientific and engineering research and education infrastructure and instrumentation at U.S. universities.	15.822	15.053	15.652	
(U) In FY 2005: Conducted the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.				
(U) In FY 2006: Continue to conduct the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.				
(U) In FY 2007: Continue to conduct the competition for U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities under the Defense University Research Instrumentation Program.				
(U) CONGRESSIONAL ADD: 21st Century Information Operations Workforce	1.059	1.084	0.000	
(U) In FY 2005: Supported developments for an Information Operations curriculum to educate graduates and undergraduates in the field of intelligence.				
(U) In FY 2006: Support an Information Operations curriculum to educate graduates and undergraduates in the field of				
Project 5094	R-1 Shopping List - Item No. 2-4 of 2-6	Exhibit R-2a (PE 0601103F)		

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Exhibit R-2a, RDT&E Project Justification		DATE February 2006		
BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601103F University Research Initiatives	PROJECT NUMBER AND TITLE 5094 University Research Initiatives		
(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>		<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
intelligence.				
(U) In FY 2007: Not Applicable.				
(U)				
(U) CONGRESSIONAL ADD: Agile Response Chameleon Coating		1.443	0.000	0.000
(U) In FY 2005: Conducted meta-materials research into aircraft coating systems that allow for stealth capabilities and advanced sensing capabilities.				
(U) In FY 2006: Not Applicable.				
(U) In FY 2007: Not Applicable.				
(U)				
(U) CONGRESSIONAL ADD: Bio/Nano Electronic Devices and Sensors		2.889	1.479	0.000
(U) In FY 2005: Conducted functionalized carbon nanotubes research and determine the feasibility of transferring information on the surface of photosensitive proteins at the single-molecule level.				
(U) In FY 2006: Develop and demonstrate a prototype 3-D magnetic memory device with high storage capabilities and a high data transfer rate on an erasable medium and also to determine the feasibility of transferring information on the surface of photosensitive proteins at the single-molecule level. (Note: In FY 2005, this add was called Bio/Nanotechnology Infrastructure and Technology Oriented Research).				
(U) In FY 2007: Not Applicable.				
(U)				
(U) CONGRESSIONAL ADD: Griffith Observatory Programming		0.962	0.000	0.000
(U) In FY 2005: Supported educational programming and exhibits which demonstrate the application of defense technology and research at Griffith Observatory Planetarium.				
(U) In FY 2006: Not Applicable.				
(U) In FY 2007: Not Applicable.				
(U)				
(U) CONGRESSIONAL ADD: Secure and Assured Information Sharing		1.542	1.676	0.000
(U) In FY 2005: Conducted research in the security issues in information technology architectures and components.				
(U) In FY 2006: Conduct research in the security issues in information technology architectures and components. (Note: In FY 2005, this add was called Information Security Solution).				
(U) In FY 2007: Not Applicable.				
(U)				
(U) CONGRESSIONAL ADD: Military Logistics Readiness		0.962	0.986	0.000
(U) In FY 2005: Continued support of the Air Force crew systems personnel protection program.				

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R-1 Shopping List - Item No. 2-5 of 2-6

Exhibit R-2a (PE 0601103F)

Exhibit R-2a, RDT&E Project Justification	DATE February 2006
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BUDGET ACTIVITY 01 Basic Research	PE NUMBER AND TITLE 0601103F University Research Initiatives	PROJECT NUMBER AND TITLE 5094 University Research Initiatives
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(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) In FY 2006: Continue the support of the Air Force crew systems personnel protection program. (Note: In FY 2005, this add was called The Logistics Institute).			
(U) In FY 2007: Not Applicable.			
(U) Total Cost	115.506	108.757	107.571

(U) <u>C. Other Program Funding Summary (\$ in Millions)</u>		<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>	<u>Total Cost</u>
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Related Activities: PE 0601102F, Defense Research Sciences.										

(U) D. Acquisition Strategy
Not Applicable.