Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force											Date: February 2018	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601103F / *University Research Initiatives*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	137.775	147.923	154.991	0.000	154.991	158.859	161.914	165.083	168.302	Continuing	Continuing
615094: *University Research Initiatives*	-	137.775	147.923	154.991	0.000	154.991	158.859	161.914	165.083	168.302	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports defense-related basic research in a wide range of scientific and engineering disciplines relevant to maintaining U.S. military technology superiority. Research topics include, but are not limited to, transformational and high priority technologies such as nanotechnology, sensor networks, intelligence information fusion, smart materials and structures, efficient energy and power conversion, and high-energy materials for propulsion and control. The program also enhances and promotes the education of U.S. scientists and engineers in disciplines critical to maintaining, advancing, and enabling future U.S. defense technologies. For example, the National Defense Science and Engineering Graduate (NDSEG) program awards fellowships to train U.S citizens in science and engineering disciplines of military importance under a joint tri-Service and Office of the Assistant Secretary of Defense for Research and Engineering competitive scholarship program. Finally, this program 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 inter-disciplinary efforts. Efforts in this program have been coordinated through the Department of Defense (DoD) Science and Technology (S&T) Executive Committee process to harmonize efforts and eliminate duplication.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science & technology capabilities. The use of program funds in this PE would be in addition to the civilian pay expenses budgeted in program elements 0601102F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602601F, 0602602F, 0602605F, 0602788F, 1206601F, and 602298F.

This program is in Budget Activity 1, Basic Research because this budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

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B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	145.044	147.923	150.158	0.000	150.158
Current President's Budget	137.775	147.923	154.991	0.000	154.991
Total Adjustments	-7.269	0.000	4.833	0.000	4.833
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	5.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-6.888	0.000			
• SBIR/STTR Transfer	-5.381	0.000			
• Other Adjustments	0.000	0.000	4.833	0.000	4.833

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2017	FY 2018
Project: 615094: *University Research Initiatives*		
Congressional Add: *Program Increase*	4.821	0.000
Congressional Add Subtotals for Project: 615094	4.821	0.000
Congressional Add Totals for all Projects	4.821	0.000

Change Summary Explanation

Decrease in FY 2017 reflects reprogramming to support Research and Development Projects, 10 U.S.C. Section 2358.

Increase in FY 2019 for the National Defense Science and Engineering Graduate (NDSEG) program.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Multidisciplinary University Research Initiative	75.355	83.839	84.445
Description: Promote fundamental, multi- and interdisciplinary science and engineering research projects involving multiple principle investigators.			
FY 2018 Plans: Fund competitive research grants at U.S. universities that focus on significantly expanding the basic knowledge of Air Force-relevant science and technology areas, not normally achievable in smaller funded, single investigator awards. Support and			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
recognize superior academic researchers in the early stages of their careers through the Presidential Early Career Award for Scientists and Engineers (PECASE) program. Continue funding of multi-disciplinary programs initially awarded in prior years. ***FY 2019 Plans:*** Continue funding competitive research grants at U.S. universities that focus on significantly expanding the basic knowledge of Air Force-relevant science and technology areas, not normally achievable in smaller funded, single investigator awards. Support and recognize superior academic researchers in the early stages of their careers through the PECASE program. Continue funding of multi-disciplinary programs initially awarded in prior years. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 increased compared to FY 2018 by $0.606 million. Justification for this increase is described in plans above.			
Title: Science and Engineering Education ***Description:*** Support post-graduate, graduate, and undergraduate education in science and engineering disciplines at U.S. universities. ***FY 2018 Plans:*** Award highly competitive National Defense Science and Engineering Graduate (NDSEG) fellowships. Support competitive awards for graduate and undergraduate research experiences, including those established under the Awards to Stimulate and Support Undergraduate Research Experiences (ASSURE) program. Continue funding for awards initiated under prior year DoD programs. ***FY 2019 Plans:*** Continue to award highly competitive NDSEG fellowships. Continue to support competitive awards for graduate and undergraduate research experiences, including those established under the ASSURE program. Continue funding for awards initiated under prior year DoD programs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 increased compared to FY 2018 by $6.356 million due to increase in National Defense Science and Engineering Graduate Fellowship (NDSEG) program.	44.308	49.296	55.652
Title: Research Instrumentation ***Description:*** Enhance scientific and engineering research through advanced education infrastructure and instrumentation at U.S. universities. ***FY 2018 Plans:***	13.291	14.788	14.894

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Award grants on a competitive basis under the Defense University Research Instrumentation Program (DURIP) to U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities. ***FY 2019 Plans:*** Continue to award grants on a competitive basis under the DURIP to U.S. universities to acquire state-of-the-art, high technology instrumentation and infrastructure to enhance research and educational capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY 2019 increased compared to FY 2018 by $0.106 million. Justification for this increase is described in plans above.			
Accomplishments/Planned Programs Subtotals	132.954	147.923	154.991

	FY 2017	FY 2018
Congressional Add: Program Increase ***FY 2017 Accomplishments:*** Conducted Congressionally directed effort. ***FY 2018 Plans:*** N/A	4.821	0.000
Congressional Adds Subtotals	4.821	0.000

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.