AAU RECOMMENDS $2.117 BILLION FOR 6.1 BASIC RESEARCH IN FY13
AAU urges Congress to provide at least $2.117 billion for Defense 6.1 basic research in FY13, the amount requested by the Pentagon. We also urge that the 6.2 applied research program be sustained at its FY12 level of $4.739 billion.

DEFENSE RESEARCH IS CRITICAL TO OUR NATION’S SECURITY
Basic research innovations funded by the Department of Defense (DOD) have contributed significantly to our nation’s economic and national security. DOD relies on technological innovation as a force multiplier, and cutting-edge advances have helped make our military the best-equipped and most effective in the world. Addressing complex military challenges – such as improvised explosive devices, information warfare, and weapons of mass destruction – requires new technologies. The new knowledge needed to develop such technologies depends on sustained investments in basic research performed at U.S. universities. Past DOD investments in university basic research have led to such innovations as lasers, radar, fiber optics, infrared technologies, stealth technology, and advanced composite materials. Moreover, past investments in DOD basic, as well as applied, research have led to technology breakthroughs important to the competitiveness of some of the nation’s leading industries, including: computing, information technology, manufacturing, and defense.

DEFENSE BUDGET PRIORITIES AND CHOICES
In January 2012, Defense Secretary Leon Panetta and Chairman, Joint Chiefs of Staff General Martin Dempsey released a report entitled Defense Budget Priorities and Choices. It states the following about science and technology: “The Department believes that accelerating trends in both technology development and a dynamic threat environment dictate that we must maintain our edge by protecting our investments in development of future capabilities. As such, science and technology programs are largely protected within this budget.”

SUSTAINING DOD 6.1 BASIC RESEARCH INVESTMENTS
We commend the Pentagon for its effort to sustain the recent growth in 6.1 basic research funding by seeking a slight increase ($4 million above FY12) when total Defense Department funding is slated for a 3.3-percent cut. Basic research funding above the Pentagon’s proposal would minimize the impact of inflation and enable the Department to address some of the recommendations in the Defense Science Board’s Basic Research Task Force report of February 2012. That report outlines the unique and valuable role the Defense Department plays in funding basic research. Among its recommendations is a call for additional investments in graduate fellowships supported by the National Defense Education Program (NDEP) and the National Defense Science and Engineering Graduate (NDSEG) Fellowship program. Within the Defense 6.1 basic research program, AAU urges Congress to provide the following FY13 funding levels, as recommended by the Pentagon:

- $87.98 million for NDEP, which supports undergraduate scholarships, graduate fellowships, and research awards to exceptionally talented researchers;
- $46.86 million for the NDSEG Fellowships program; and
- $16.52 million for the Minerva Initiative, a unique social science research program that deepens understanding of the social, cultural, and political forces affecting areas of the world of strategic importance to the U.S.

6.2 APPLIED RESEARCH IS VITAL TO THE INNOVATION PIPELINE
Defense 6.2 applied research programs build on basic research discoveries and support exploratory development of new technologies to meet specific security problems. Applied research is vital to the innovation pipeline and giving our military a technological advantage.
6.1 BASIC RESEARCH PROGRAMS TRAIN THE NEXT GENERATION OF SCIENTISTS

DOD 6.1 basic research programs help train the next generation of U.S. scientists and engineers. Research grants and contracts support not only cutting-edge research, but also graduate research assistantships. Undergraduate scholarships and graduate fellowships, funded by NDEP’s Science, Mathematics And Research for Transformation (SMART) and the NDSEG fellowships programs, help attract and retain top U.S. citizens for study in fields vital to addressing security-related challenges. Under the Pentagon’s FY13 budget, the SMART program would receive $53.3 million to support approximately 300 new students. NDSEG fellowships would be funded at $46.86 million to support approximately 200 new students.

DARPA’S HIGH-RISK, HIGH-REWARD RESEARCH

The Defense Advanced Research Projects Agency (DARPA) historically has invested in high-risk, high-reward research that has led to extraordinary, “game changing,” technological advances, such as the Internet and GPS. AAU urges Congress to provide $2.817 billion, the same as Pentagon’s FY13 budget, for DARPA. This includes a $20.1 million increase above FY12 for DARPA 6.1 basic research.

ENERGY RESEARCH AT DOD

The 2010 Defense Quadrennial Review notes: “Solving military challenges—through such innovations as more efficient generators, better batteries, lighter materials, and tactically deployed energy sources—has the potential to yield spin-off technologies that benefit the civilian community as well.” DOD basic and applied research play important roles in funding the science necessary to develop alternative energy sources, improve storage, and create efficient technologies that are critical to future U.S. energy independence.

MINERVA RESEARCH INITIATIVE

Begun in 2008, the Minerva Research Initiative is a university-based research program that funds research projects to improve DOD’s basic understanding of the social, cultural, behavioral, and political forces that shape regions of the world of strategic importance to the U.S. Minerva brings together U.S. military higher education institutions, universities, research institutions, and individual scholars, and supports interdisciplinary and cross-institutional projects addressing specific topic areas determined by the Secretary. AAU urges continued support for Minerva.

DOD RESEARCH FACTS

- **DOD relies heavily on universities to conduct research.** More than 350 universities and colleges conduct DOD-funded research. Universities receive more than 60% of DOD 6.1 basic research funding and substantial 6.2 applied research funding.

- **DOD supports academic disciplines vital to national security.** DOD is the leading federal sponsor of university engineering research. DOD provides: 90% of all federal obligations for mechanical engineering; 64% for electrical engineering; 71% for aeronautical engineering; 46% for astronautical engineering; and 38% for metallurgy and materials engineering. (Source: NSF 2008)

- **DOD basic and applied research underpins the innovative health treatments and technologies** that help save lives on the battlefield and speed recovery from injuries. For injured soldiers, this includes high-technology prosthetics and other life-enhancing technologies and therapies.

- **DOD’s NDSEG Fellowship is a highly competitive, portable fellowship** that is awarded to U.S. citizens and nationals who pursue a doctoral degree in one of 15 disciplines critical to national security. NDSEG Fellowships last for three years and pay for full tuition and all mandatory fees, a monthly stipend, and up to $1,000 a year in medical insurance. DOD has awarded approximately 3,200 NDSEG fellowships since the program’s inception 22 years ago.

- **Since 2005, DOD’s SMART program has supported 1,150 students.** Approximately 380 students have already transitioned into the service commitment. Ninety-two (92) have completed their service commitment, and 82% of them continue to serve beyond their commitment.