April 25, 2019

The Honorable James Inhofe
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

The Honorable Adam Smith
Chairman
Committee on Armed Services
House of Representatives
Washington, DC 20515

The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate
Washington, DC 20510

The Honorable Mac Thornberry
Ranking Member
Committee on Armed Services
House of Representatives
Washington, DC 20515

Dear Chairmen Inhofe and Smith, and Ranking Members Reed and Thornberry,

As the Committees on Armed Services begin to craft the fiscal year (FY) 2020 National Defense Authorization Act (NDAA), the Coalition for National Security Research (CNSR) offers the following recommendations to enable the U.S. Department of Defense (DOD) to continue to support transformational science and technology (S&T) research that maintains the military's technical superiority. CNSR members conducted more than $3.6 billion in DOD-sponsored scientific research in FY 2017 to advance technologies important to DOD and support Departmental operations.

National Defense Strategy (NDS)

The National Defense Strategy (NDS) lays out numerous defense objectives and goals to remain the preeminent military power in the world. Investing in the Defense S&T program is not only consistent with the *NDS*, it is essential. Meeting the objectives of deterring adversaries, sustaining Joint Force military advantages, and establishing an unmatched twenty-first century National Security Innovation Base require improving and developing military technologies and capabilities that provide technological overmatch for our Armed Forces. The core functions of the Defense S&T program are to advance and develop the capabilities needed to ensure technological superiority over our adversaries.

In addition, the *NDS* states that "we cannot expect success fighting tomorrow's conflicts with yesterday's weapons or equipment." This is essentially a call to action to invest in defense basic research. As we describe below, basic research underpins many current DOD technologies and capabilities and directly supports the three main tenets of the *NDS* - lethality, partnerships, and reform. It is through discovery driven basic research that we have created disruptive technological advances that radically improved military capabilities, strategy and operations. Robust investment in defense basic research will enable the discoveries for future technologies that will provide for the military capabilities to succeed in the conflicts of tomorrow.

More specifically, CNSR members are already at the forefront of helping meet the strategic goals of the *NDS*. Mathematicians and engineers at the Air Force Research Laboratory are working with academia to increase *lethality* by designing a high-power solid-state laser for precise targeting for missile and hypersonic defense. DOD's Basic Research Office is sponsoring the Bilateral Academic Research Initiative (BARI) in *partnership* with the U.K. Ministry of Defense to support high-risk basic research on artificial intelligence with academic teams from the U.S. and U.K. Finally, the Manufacturing USA Institutes are helping *reform and improve DOD's business processes* by leveraging consortia to streamline manufacturing technology development through rapid prototyping and experimentation efforts. Increasing investments in the Defense S&T program will provide for greater opportunities to meet the objectives and goals of the *NDS* and help ensure U.S. military preeminence.

Defense Basic Research

The defense basic research programs gave rise to many of the military technologies deployed on the battlefield today. Stealth technology, night vision, near-real-time delivery of battlefield information, GPS, communication and weather satellites, and precision munitions derive from defense basic research. Simply put, our military would not have the technologies necessary to deter or defeat our adversaries without investments in the defense basic research programs.

For authorization levels for the defense basic research programs, CNSR supports the recommendations from *Innovation: An American Imperative* (Innovation Imperative), a statement signed by the CEOs of Northrop Grumman, Lockheed Martin, Boeing, and Microsoft and endorsed by over 500 other leading organizations from industry, academia, and science and engineering. Specifically, the Innovation Imperative urges Congress to provide steady and sustained real growth in funding of ***at least four percent for basic scientific research*** at numerous agencies, including DOD. More specifically, we urge you to provide not less than a 5.9 percent increase over FY 2019 enacted levels for the following program elements across each Service and Defense-wide account: *University Research Initiatives, Defense Research Sciences, High Energy Laser Research Initiatives, DTRA Basic Research Initiatives, Basic Research Initiatives, National Defense Education Program, and Defense-Wide Manufacturing Science & Technology Program.*

University Research Initiatives (URIs)

The University Research Initiatives (URIs) program elements fund the Army, Navy and Air Force's Multidisciplinary University Research Initiative (MURI) programs and Defense University Research Instrumentation Programs (DURIP). The MURI program regularly sponsors university basic research that produces revolutionary new military technologies. Nanotechnology, drones, biological detection capabilities and stealth detection sensors all stem from MURI-sponsored scientific research. The DURIP program helps ensure universities have state-of-the-art equipment needed to conduct cutting edge defense research that ultimately provides the warfighter with the capabilities necessary to succeed on the battlefield.

Both the MURI and DURIP programs are currently funded below FY 2010 levels when adjusting for inflation. On average, only slightly more than 20 MURI proposals are funded each year,

leaving approximately 60 proposals unfunded. In FY 2018, the DURIP program received $254 million in proposal requests but only had $53 million in funding. Given the proven record of accomplishments for both programs, ***we respectfully request that you increase each Service's University Research Initiatives program element and explicitly require that the additional dollars support the MURI and DURIP programs.*** We request that these increases not come at the expense of other initiatives funded under the URIs program element.

The Minerva Research Initiative, the Department's signature social science basic research program that funds university-led teams to address problems of strategic importance to U.S. national security, has been funded since its inception through contributions from the Office of the Secretary of Defense (OSD), the Army, the Navy, and the Air Force. However, it is our understanding starting in FY 2019 and continuing in FY 2020, the Army has eliminated its contribution to and participation in Minerva, resulting in a reduction in overall funding and annual program awards. In FY 2018, the Army reduced its contribution by 80 percent. In FY 2018, the Minerva program selected 15 proposals for three-year awards but only 12 were funded due to the reduction in the Army's contribution. The Army's lack of continued support for Minerva also put a strain on previously-funded multi-year projects that lost their Army program manager for the remainder of their execution. The Navy, Air Force, and OSD have sustained their annual support for Minerva, which has aligned its research with the *NDS* in support of Department-wide priorities. We urge you to reinforce the need for the Army's participation in this joint research program and restore the cut to the Army's contribution in its URI account in FY 2020 and beyond.

Prior NDAA Implementation

CNSR appreciates provisions enacted through previous NDAAs to strengthen the defense S&T enterprise. Unfortunately, implementation of some provisions has been delayed or failed to be implemented to date.

In the FY 2019 NDAA, Section 1640 authorized a program to establish cyber institutes at institutions of higher learning from among institutions with a Reserve Officers' Training Corps program to accelerate and focus the development of foundational expertise in critical cyber operational skills for future military and civilian leaders of the Armed Forces and the Department of Defense, including leaders of the reserve components. The development of these skills is of critical importance to achieving the Joint Force cyberspace objectives of cyber resilience and cyber operations to increase military readiness against asymmetric threats as described in the *Department of Defense Cyber Strategy 2018*. Given the importance of enhancing the cyber workforce, CNSR respectfully requests that the authorization language ***direct*** the Secretary to carry out this program.

Additionally, Section 222 of the FY 2019 NDAA built on the success of the Army Research Laboratory's Open Campus initiative by authorizing the development of similar open campus programs at all military departments, including the Air Force Research Laboratory and the Office of Naval Research. Given the importance of partnerships that facilitate innovation through collaboration among defense laboratories, industry, and academia, CNSR respectfully asks that

the authorization language ***direct*** the Secretary of Defense to ensure all military Services execute open campus-type programs that facilitate collaborative research and access to research facilities.

Personnel Appointments

The success and alignment of the Department of Defense's basic research enterprise with the *NDS* requires strong leadership from within the Office of the Secretary of Defense and the military Service research organizations to guide long-term S&T investments necessary to maintain U.S. technological superiority. Key leadership positions, including the Director of Basic Research within the Under Secretary of Defense for Research and Engineering (USD R&E) and the Director of the Air Force Office of Scientific Research (AFOSR) are currently unfilled, leaving vacant the primary advocates in the Department for basic scientific research programs. We believe that these career Senior Executive Service positions should be filled with exceptionally well qualified personnel immediately to ensure long-term basic research plans and programs receive appropriate attention and oversight.

Thank you in advance for your consideration of our views. We look forward to working with you as the FY 2020 NDAA is crafted. Please do not hesitate to contact me if we can be of any service to you.

Sincerely,

John Latini
Chairman
Coalition for National Security Research (CNSR)