July 7, 2021

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

The Honorable Mike Rogers
Ranking Member
Committee on Armed Services
House of Representatives
Washington, DC 20515

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

As you begin to craft the FY 2022 National Defense Authorization Act (NDAA), I write to share recommendations from the Coalition for National Security Research (CNSR) for the Defense Science and Technology (S&T) program that drive innovations to ensure continued global military technological superiority.

CNSR is a coalition with more than 100 members from industry, academia, scientific and professional associations, and non-profits conducting vital scientific research to create new and improve existing technologies and capabilities to support the U.S. Department of Defense (DoD). With nearly 70 percent of Research, Development, Test and Evaluation (RDT&E) conducted extramurally[1], DoD relies on its partners such as CNSR members to perform the RDT&E that will provide the Department the technologies and capabilities it needs to secure our national security.

If the United States military is to maintain its technological advantage during great power competition, it is imperative that we make robust investments in the Defense S&T enterprise, including strengthening the future defense workforce. Many of the technologies that have sustained our military dominance stem from prior Defense S&T investments. These include stealth and counter stealth technologies, night vision, radar, sonar, nuclear propulsion, global positioning technologies and precision munitions among many others. The Defense S&T programs are investing now in artificial intelligence (AI), hypersonics, microelectronics, quantum information sciences, biotechnology, and directed energy to ensure DoD has the technological capabilities to deter adversaries or succeed in future conflicts. *As noted by the Defense Science Board (DSB), lower funding levels for Defense S&T could threaten the dominance of the U.S. military*[2].

[1] https://ncses.nsf.gov/pubs/nsf21329
[2] https://dsb.cto.mil/reports/1990s/DefenseScienceandTechnologyBaseforthe21stCentury.pdf

FY 2022 Defense S&T Recommendations

The Biden-Harris Interim National Security Strategic Guidance states that the United States will double down on science and technology investments and support cutting-edge technologies and capabilities that will advance our military and national security in the future[3]. In addition, the National Defense Strategy *(NDS)* calls for establishing an unmatched twenty-first century national security innovation base and sustaining Joint Force military advantages[4]. *Unfortunately, the FY 2022 budget fails to meet the commitment in the Interim National Security Strategic Guidance and request the appropriate resources to implement the NDS.*

While the budget requests the largest Research, Development, Test and Evaluation (RDT&E) top line ever, it simultaneously calls for cutting Defense S&T funding within the larger portfolio by *13%* or more than *$2.1 billion*. The budget also requests cutting defense basic research, the type of research that makes discoveries to enable future technologies and military capabilities, by *14.5%* or more than *$388 million*. Furthermore, even the Office of Management and Budget documents that calculate research and development (R&D) slightly differently than DoD, demonstrate the cuts requested – *1%* cut for defense R&D; *11%* cut for defense basic research and *16%* cut for defense applied research[5]. With China investing three times more annually in R&D than the U.S. and likely to be the world's top R&D performer in the near future[6], now is not the time to cut funding for the DoD's primary programs that create new technologies and capabilities – as well as to help train the next generation defense workforce – to ensure the U.S. military maintains its global dominance.

The FY 2022 budget proposes more than just cutting the Defense S&T program below FY 2021 Congressionally enacted levels, it proposes to cut certain research programs below levels requested in the FY 2021 budget request. More specifically, DoD requested fewer resources compared to its last budget request for overall 6.1 defense basic research; Army University Research Initiatives; Army applied research; Navy basic research; Air Force basic research; Air Force applied research; DTRA Basic Research Initiatives; and Defense-Wide basic research. This de-emphasis on supporting the kind of research that maintains our technological and strategic advantage over adversaries developing advanced capabilities puts the military at a competitive disadvantage. Condoning this proposed budget will have many negative, sustained implications for our national security in the short-term and long-term.

CNSR urges Congress to reject cuts requested in the FY 2022 budget for the Defense S&T program and increase authorized funding by least 6% consistent with the recommendations from the National Defense Strategy Commission[7]; DSB[8]; National Security Commission on Artificial Intelligence (NSCAI)[9]; National Academies[10]; CNAS[11]; House Armed Services

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[3] https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/03/interim-national-security-strategic-guidance/
[4] https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf
[5] https://www.whitehouse.gov/wp-content/uploads/2021/05/ap_14_research_fy22.pdf
[6] https://ncses.nsf.gov/pubs/nsb20203
[7] https://www.usip.org/sites/default/files/2018-11/providing-for-the-common-defense.pdf
[8] http://www.dtic.mil/dtic/tr/fulltext/u2/a403874.pdf
[9] https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf
[10] https://www.nap.edu/catalog/11463/rising-above-the-gathering-storm-energizing-and-employing-america-for
[11] https://www.cnas.org/publications/commentary/sharpening-the-u-s-militarys-edge-critical-steps-for-the-next-administration

Committee's Future of Defense Task Force[12]; Council on Competitiveness[13]; and American Academy of Arts and Sciences[14].

FY 2022 Defense Basic Research Recommendations

For decades, the defense basic research programs have provided the scientific breakthroughs to give the warfighter the weapons and infrastructure needed to succeed. Capabilities that help ensure our national security – such as advances in hypersonics testing, various quantum technologies, semiconductors critical to defense radar systems, solar cell efficiency, laser technologies, stealth capabilities, night vision, GPS, sonar, radar, precision munitions, biosensors, and near-real-time delivery of battlefield information – all derive from defense basic research. If we plan to succeed in this time of great power competition, we cannot underinvest in the long-term basic research that will provide U.S. military with new transformational capabilities.

Unfortunately, the FY 2022 budget request calls for slashing funding for defense basic research. It also requests Congress eliminate important regional capacity building and workforce development programs such as the Defense Established Programs to Stimulate Competitive Research (DEPSCoR). DoD often relies on scientists and engineers on an as-needed basis. It is critical that the Department support communities in states that typically are not involved in defense research -- not doing so could significantly slow down innovation and limit talent development opportunities for future scientists and engineers which are just beginning to emerge. As such, CNSR urges Congress to restore funding for DEPSCoR and other defense basic research programs mentioned in this letter.

University Research Initiatives

The FY 2022 budget request would cut University Research Initiatives (URIs) by more than *20%* which means funding at levels below 2005, adjusted for inflation. Given that universities and colleges perform the majority (55%) of DoD-funded basic research[15], this type of research that creates paradigm shifts in DoD's technological capabilities, cutting URIs this significantly will not only harm defense innovation efforts, but also workforce development since basic research funding often attracts the most creative minds in fields of critical interest to DoD[16].

A program within URIs, the Multidisciplinary University Research Initiative (MURI) regularly produces revolutionary new military technologies and has become an essential skunkworks for create innovation[17]. Domestic semiconductor manufacturing, advances in quantum computing and communication, military drones, nanotechnology, sensors enabling navigation in GPS compromised environments, counter-stealth capabilities, enhanced optical sensing for intelligence, surveillance, and reconnaissance (ISR) missions, biological detection capabilities and explosive detection capabilities all stem from MURI-sponsored university basic research.

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[12] https://armedservices.house.gov/_cache/files/2/6/26129500-d208-47ba-a9f7-25a8f82828b0/6D5C75605DE8DDF0013712923B4388D7.future-of-defense-task-force-report.pdf
[13] https://www.compete.org/reports/all/202
[14] https://www.amacad.org/sites/default/files/publication/resources/Perils-of-Complacency_Full-Report_1.pdf
[15] https://ncses.nsf.gov/pubs/nsf21329
[16] https://dsb.cto.mil/reports/2010s/BasicResearch.pdf
[17] https://www.ida.org/idamedia/Corporate/Files/Publications/IDA.../STD/D-5361.pdf

Unfortunately, the FY 2022 budget request proposes to fund MURIs at levels below FY 2005, adjusted for inflation. This will only exacerbate the fact that the program is already dramatically underfunded. *According to DoD, the MURI program received 365 proposals in FY 2020 but was only able to make 26 awards – leaving 339 proposals unfunded including 32 potentially game-changing research projects that were determined to be worthy of funding but were not due to a lack of appropriations.* Not funding potentially revolutionary defense scientific research will hurt our ability to maintain global military technological superiority.

In addition, the situation is similar for the Defense University Research Instrumentation Program (DURIP), which provides infrastructure and equipment support to build universities' capacity to conduct defense-relevant research. The FY 2022 budget request proposes to fund DURIP at levels below FY 2010, adjusted for inflation, further underfunding this program. *According to DoD, the DURIP program received 724 proposals in FY 2020 but was only able to make 172 awards – leaving a staggering 552 proposals unfunded including 229 critical infrastructure and equipment projects that were determined to be worthy of funding but were not funded due to a lack of appropriations.* If universities and colleges do not have the infrastructure and equipment necessary to do unique defense research, the DoD will potentially lose its biggest source of support for developing new capabilities.

We respectfully request that you increase authorized funding for each URI and require that the additional dollars be used to support the MURI & DURIP programs. We request that these increases not come at the expense of other initiatives funded under these program elements. We strongly encourage you to direct DoD to maintain and grow funding for both programs in the Future Years Defense Program.

Minerva Research Initiative

The Minerva Research Initiative is DoD's signature social science basic research program that funds university-led teams to address problems of strategic importance to U.S. national security. As noted by DoD officials, because many national security challenges impact or are driven by complex social dynamics, Minerva is an important source of new ideas to better understand social, behavioral, cultural, and political considerations that are inherent to our security and stability. Despite its importance, the FY 2022 budget request cuts funding for Minerva from $17 million to only *$4 million* within the Defense-Wide Basic Research Initiatives PE.

This cut is shortsighted for two main reasons. First, Minerva's research is aligned with and critical to carrying out the *NDS* in support of Department-wide priorities. Recently funded Minerva projects, such as "Russian Disinformation and Propaganda Campaigns" and "Empirical Analysis for Meeting Great Power Challenges" have given DoD unique insights that help shape future national security policies and better position the warfighter to navigate a complex global environment. Second, Minerva is another underfunded defense basic research program. *According to DoD, in FY 2019, Minerva received 180 applications but only funded 15 – at least 6 projects were determined to be worthy of funding but were not funded due to a lack of appropriations.*

CNSR urges Congress to authorize $17 million for Minerva in the Defense-Wide Basic Research Initiatives program element. This is consistent with authorized levels in the FY 2021 NDAA.

Thank you for your commitment to a robust Defense S&T program. Please do not hesitate to contact me if CNSR can be of any service to you.

Sincerely,

John Latini
Chairman