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OFFICE OF PREPUBLICATION AND SECURITY REVIEW

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MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board Study on Emerging Biotechnologies and National Security

Section 263 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) requires the Secretary of Defense direct the Defense Science Board (DSB) to “carry out a study on the emerging biotechnologies pertinent to national security” as these technologies pertain to the requirements of the Department of Defense (DoD). The scope should include the opportunities and potential advantages afforded to improving the Department’s capabilities and operations, as well as the threats to national security and/or leverage that could be gained by adversaries in any of the areas addressed.

Because of the evolving threats, I am tasking the DSB, through the establishment of the DSB Study on Emerging Biotechnologies and National Security (“the DSB Study”), to study ways in which the DoD can take better advantage of the rapidly expanding technologies in biology, and to better understand and prepare for their application or misuse by adversaries. This study will focus on the following areas as outlined in Section 263 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92):

- A review of the military understanding and relevancy of applications of emerging biotechnologies to national security requirements of the Department of Defense, including:
 1. A review of all research and development relating to emerging biotechnologies within the Department of Defense, including areas that demand further priority and investment;
 2. A review of interagency cooperation and collaboration on research and development relating to emerging biotechnologies between:
 - The Department;
 - Other department and agencies in the Federal Government; and
 - Appropriate private sector entities that are involved in research and development relating to emerging biotechnologies;
 3. An assessment of current biotechnology research in the commercial sector, institutions of higher education, the intelligence community, and civilian agencies of the Federal Government relevant to critical Department of Defense applications of this research;
 4. An assessment of the potential national security risks of emerging biotechnologies, including risks relating to foreign powers advancing their use of emerging biotechnologies for military applications and other purposes faster than the Department; and

5. An assessment of the knowledge base of the Department with respect to emerging biotechnologies, including scientific expertise and infrastructure in the Department and the capacity of the Department to integrate emerging biotechnologies into its operational concepts, capabilities and force.
- An assessment of the technical basis within the Department used to inform the intelligence community of the Department's collection and analysis needs relating to emerging biotechnologies.
 - Development of a recommendation on a definition of emerging biotechnologies, as appropriate for the Department.
 - Development of such recommendations as the Board may have for legislative or administrative action relating to national security emerging biotechnologies for the Department.

This study should also assess the current landscape and provide recommendations and findings on the following areas:

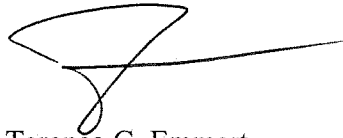
- Materiel.
 1. Development of improved or new materials important to military operations, personnel and equipment; and,
 2. Approaches that contribute to safety and security; e.g., localized characterization of operational environments; securing of scarce minerals; and production of key chemicals, biochemical, and energy supplies.
- Health and Medicine.
 1. In operations that arise with little warning, the potential for rapidly assessing exposure to, and achieving immunity from, indigenous and/or emerging diseases in the wide range of geographic areas in which personnel are deployed, across the spectrum from long term immunity to temporal immune system enhancement that is tissue-specific; and,
 2. Application of genomics and systems biology to personalized care for active duty personnel, and the long term data collection mechanisms that could inform red-teaming related to the manipulation of higher organisms.
- Human Performance.
 1. Opportunities for responsible application of emerging technical capabilities to improve performance under stress; and,
 2. Identification of emerging areas of genetic engineering or bioengineering that could offer enhancement of various traits to make adversary warfighters more resistant to natural or intentional hazards on the battlefield, or to achieve targeted behavior modifications to enhance (their) or degrade (our) performance; and,
 3. Opportunities for the establishment of domestic and international norms through partnerships, standards, and treaties.
- Operations, Intelligence, and Partnering.

1. Operational improvements, both internally within DoD and with its partner agencies, which advance biotechnology for national security, based on lessons learned from the Department's efforts to support the nation's responses to the current pandemic;
2. Early warning improvements to monitor not only areas in which new or novel agents (and medical countermeasures) are being pursued, but also areas where motivations are not yet well understood, such as the coupling of social behavior monitoring with massive genomic databases;
3. In this and all of the above areas, DoD guidance to the Intelligence Community, to enable a more robust posture for the nation's security related to biotechnology; and
4. Ways in which DoD can become a valued partner with the commercial and academic sectors where most of the fundamental technical advances are being made.

The DSB Study's findings, observations, and recommendations will be presented to the full DSB for its thorough, open discussion and deliberation at a properly noticed and public meeting subject to Government In Sunshine Act requirements. The DSB will provide its findings and recommendations to the Under Secretary of Defense for Research and Engineering (USD(R&E)) as the Sponsor of the DSB. The USD(R&E) will serve as the DoD decision-maker for the matter under consideration and will as appropriate take into consideration of other stakeholders identified by the study's findings and recommendations. The nominal start date of the study period will be within 30 days of the initial appointment of its members, and Section 263(a)(5) of the NDAA requires a report be submitted to the Secretary no later than one year from the start date. In no event, will the duration of the study exceed 24 months from the start date.

The study members are granted access to those DoD officials and data necessary for the appropriate conduct of their studies. As such, the Office of the Secretary of Defense and Component Heads are requested to cooperate and promptly facilitate requests by DSB staff regarding access to relevant personnel and information deemed necessary, as directed by paragraphs 5.1.8. and 5.3.4. of DoD Instruction 5105.04, "Department of Defense Federal Advisory Committee Management Program," and in conformance with applicable security classifications.

The DSB and the DSB Study will operate in accordance with the provisions of the Federal Advisory Committee Act, the Government in the Sunshine Act, and other applicable federal statutes, regulations, and policy. Individual DSB and DSB Study members do not have the authority to make decisions or recommendations on behalf of the DSB nor report directly to any Federal representative. It is not anticipated that this study will need to go into any "particular matters" within the meaning of title 18. U.S.C. section 208, nor will it cause any member to be placed in the position of action as a procurement official.

A handwritten signature in black ink, consisting of a large, stylized loop at the top, a horizontal line extending to the right, and a vertical line descending from the end of the horizontal line, forming a shape similar to a 'T' or 'E'.

Terence G. Emmert
Performing the Duties of the
Under Secretary of Defense
for Research and Engineering