

Emerging biotechnology has clear national security applications. We can imagine a future in which our warfighters are fed, fueled, equipped, protected, treated, and healed, all thanks in part to biotechnology. We can also imagine a future where biotechnology can be used to promote American priorities globally, such as ensuring food security.

If the United States does not lead, others will, and we risk a future in which biotechnology undermines, rather than supports, U.S. national security. The People's Republic of China intends to win the age of biology and is making significant investments and shrewd policy decisions with the intent to outpace the United States.

While the National Security Commission on Emerging Biotechnology ("the Commission") continues its work towards a final report to Congress, there are concrete steps lawmakers can take now to allow the Department of Defense (DOD) and the Intelligence Community (IC) to better harness biotechnology for America's security. This white paper lays out policy options for consideration in the Fiscal Year 2025 National Defense Authorization Act (NDAA) and Intelligence Authorization Act (IAA) to better prepare the DOD and IC for biotechnology advancements.

Policy Options for the NDAA

Publish and update a biotechnology roadmap: Require the Office of the Secretary of Defense (OSD), in consultation with the Under Secretary of Defense for Research and Engineering, the Under Secretary of Defense for Acquisition and Sustainment, and the military services, to develop and publish an annual biotechnology roadmap. This roadmap would include strategies for DOD to prioritize biotechnology within organizations; metrics and timelines for success; and plans for how technologies will transition into acquisition programs. The report would include an analysis of federal governance structures that hinder DOD's ability to advance and use biotechnology. Additionally, OSD should release a public version of the report and a version of the report for a U.S. Government audience. This overall roadmap would help the DOD to effectively coordinate its biotechnology efforts, with the end goal of increasing the adoption of biotechnology solutions.

Determine biotechnology workforce needs: Require the DOD and the military services to report within six months on their biotechnology workforce needs. The report should cover current workforce needs and planned needs in the next five and ten years. The report should contain the number of positions required, the number of positions filled, and challenges in hiring a qualified workforce. This report should include details about the positions, such as seniority level, education, training, and security clearances requirements. The report should assess if the current workforce codes adequately cover the range of the biotechnology workforce, such as personnel in research, engineering, and testing. The report should discuss mechanisms by which DOD can access outside expertise, especially retaining a bench of cleared experts. This information will allow policymakers to better understand if DOD workforce skills are sufficient to keep up with advances in biotechnology.

Identify challenges in collaborating with international partners: Require the DOD, in consultation with the Department of State, to brief relevant Congressional committees on challenges hampering collaborative biotechnology research and development with countries that are part of the Five Eyes intelligence alliance and the North Atlantic Treaty Organization (NATO). This brief should evaluate any limitations on funding that discourage co-investment and whether any U.S. export controls are hindering information sharing. International collaboration is integral to U.S. national security; identifying roadblocks to international collaboration is the first step to addressing those challenges.

Establish an artificial intelligence (AI) and biotechnology development sandbox: Require the DOD to establish a public-private partnership focused on the development of near-term use cases and pilot demonstrations of AI toward biotechnology applications for national security. The DOD should have the sandbox operational within one year. This policy option harnesses recent advances in the field of AI and biotechnology, detailed in the Commission's "[Policy Options for AIxBio](#)" paper.

Encourage bio-based acquisitions: Increase DOD's bio-based acquisitions by encouraging use of the existing BioPreferred program, which uses mandatory federal purchasing requirements to create and expand markets for

bio-based products.¹ Specifically, policymakers could:

- Require training for acquisition personnel on the Bio-Preferred program;
- Require DOD to clarify the types of products exempt from the program; and
- Ensure DOD can use its purchasing systems to procure items listed under the U.S. Department of Agriculture's (USDA) BioPreferred catalogue.

Create new supply chains for critical chemicals: Require the DOD to report within six months to the appropriate Congressional committees on critical chemicals that could be biomanufactured. The report should identify the critical chemicals that the DOD currently needs, determine the feasibility of biomanufacturing the critical chemicals, and identify the resources required to meet the Department's needs to biomanufacture the critical chemicals. The report should include how these needs will be communicated to the biotechnology industry so that innovation efforts can focus on fulfilling DOD needs.

Policy Options for the IAA

Resourcing for biotechnology threat assessment:

Require the Office of the Director of National Intelligence (ODNI) to brief relevant Congressional committees about the resources needed to fully target, collect, and analyze information related to biotechnology threats. The brief would include any tradeoffs that may occur with competing priorities if resources are diverted to target, collect, and analyze information on biotechnology threats.

Identify structural challenges: Require ODNI, in consultation with other agencies in the IC, to brief appropriate Congressional committees on any federal governance structures that hinder the IC's missions related to biotechnology. The brief should include opportunities to streamline governance and additional authorities needed to better execute the IC's biotechnology missions.

Access to experts: Require the Office of Personnel Management, in consultation with ODNI, to brief relevant Congressional committees on mechanisms to retain clearances for biotechnologists and other scientific experts who the IC may wish to retain as expert consultants after their government employment. The brief would include both existing mechanisms for retaining clearances and how the existing mechanisms are used, as well as ideas for new mechanisms for retaining clearances.

Initiate a global biotechnology competitive analysis:

Require the President to conduct a competitive analysis of the state of biotechnology infrastructure and technological advancement in the United States, compared to our strategic adversaries, as well as in other science, technology, and innovation sectors critical to national security and economic prosperity. This analysis should draw on experts from the IC and the Departments of Commerce, State, and Defense, and may potentially be directed through the operations of a Federally Funded Research and Development Center. The analysis should be complete within 18 months with periodic updates following. A more thorough understanding of our adversaries' biotechnology industries can improve policymakers' abilities to assess risks of misuse. To the extent possible, this effort would assess the biotechnology industry as a whole. A similar policy option, specific to AI and biotechnology, is presented in the Commission's recent "[Policy Options for AlxBio](#)" paper.

Establish an international working group focused on AI and biotechnology:

Within one year of enactment, create an AI and biotechnology working group within a multilateral body such as the Five Eyes. Congressional members have proposed the "Five AIs Act," which develops an AI working group under the Five Eyes Framework, focused on collaborating to advance AI systems within member countries, implementing intelligence gathering related to AI, and providing ethical frameworks for development. Similar legislation that includes biotechnology would create partnerships needed to advance AI and biotechnology, as discussed in the Commission's recent "[Policy Options for AlxBio](#)" paper.

Improve coordination between the IC and USDA:

Enact the Agriculture and National Security Act, developed and previously recommended by the Commission, which would improve connections between the USDA and national security agencies by establishing a senior advisor for national security and requiring USDA to identify any gaps or limitations related to food and agriculture in existing national security efforts. Legislative text for this proposal is in the Commission's [interim report](#) on page 39.

Source

- 1 Department of Agriculture. "[What is the BioPreferred Program?](#)"

For any questions about this white paper, or related work at the National Security Commission on Emerging Biotechnology, please contact us at ideas@biotech.senate.gov.

Staff at the National Security Commission on Emerging Biotechnology authored this paper with input from the expert Commissioners. The content and policy options in this white paper represent ideas that the Commission is considering as we move toward official policy recommendations.

