THE SELECT COMMITTEE ON THE STRATEGIC COMPETITION BETWEEN THE UNITED STATES AND THE CHINESE COMMUNIST PARTY

FOX IN THE HENHOUSE:

THE U.S. DEPARTMENT OF DEFENSE RESEARCH AND ENGINEERING'S FAILURES TO PROTECT TAXPAYER-FUNDED DEFENSE RESEARCH

Executive Summary

Over the past two years, the Select Committee on the Chinese Communist Party and the Committee on Education and the Workforce's (Committees) investigations revealed how the Chinese Communist Party (CCP) exploits U.S. universities—and gains access to U.S. government-funded research—to fuel its military and technological rise.

The U.S. Department of Defense (DOD) funds research for the purpose of achieving technological breakthroughs to equip future warfighters. The Select Committee undertook an extensive review of DOD-funded research projects that also involved People's Republic of China (PRC) military connections. **The examples reviewed reveal a pervasive and deeply troubling pattern of U.S. taxpayer-funded research being conducted in collaboration with Chinese entities that are directly tied to China's defense research and industrial base—many of which appear on various U.S. government entity lists—and state-sponsored talent recruitment programs**. These collaborations involved research in sensitive technical domains such as hypersonics, quantum sensing, semiconductors, artificial intelligence (AI), advanced materials, cyber warfare, intelligence, surveillance, and reconnaissance (ISR) systems, and next-generation propulsion—many with clear military applications.

Balancing academic freedom and open science with national security interests is important. However, unlike in democratic societies—where the norms of scientific openness are grounded in reciprocal trust, transparency, and research integrity—PRC institutions operate under a state-directed research model that is deeply politicized and subordinate to national strategic objectives, including military and economic priorities.

This investigative report presents findings of research relationships with the PRC and long-standing shortcomings in DOD policies and practices to safeguard taxpayer-funded research from exploitation by China's defense research and industrial base.

This report finds the following:

Recent DOD-funded Publications Reveal Continued Research Relationships with China's Defense Research and Industrial Base. The Select Committee identified approximately 1,400 research papers published between June 2023 and June 2025, acknowledging DOD funding or research support that also involved collaboration with PRC entities, which included over 300 DOD grants. Of these, over 700 publications—or **just over 50%—were conducted in partnership with entities affiliated with China's defense research and industrial base**.

Continued Collaboration with China's Defense Research and Industrial Base. Numerous DOD-funded research awards—some still active—have been

conducted in collaboration with entities directly tied to China's defense research and industrial base. Among the most concerning are partnerships involving the "Seven Sons of National Defense" Chinese universities, numerous State Administration for Science, Technology, and Industry for National Defense (SASTIND) co-administered schools, national defense-designated laboratories, the Chinese Academy of Engineering Physics (CAEP), a Chinese cyber-range, and BGI (formerly Beijing Genomics Institute)—all of which have been publicly linked to the People's Liberation Army (PLA) and some of which appear on U.S. government entity lists due to their roles in advancing China's military capabilities or engaging in human rights violations. Even when entities appear on the U.S. Department of Commerce Bureau of Industry and Security (BIS) Entity List, the DOD 1260H List, or other federal restricted lists—and are widely recognized as supporting the PLA—DOD-funded researchers are still, in many cases, permitted to collaborate with them. This lapse reflects DOD R&E's failure to adopt a proactive approach to prohibiting such collaborations.

Recent DOD-Funded Publications Reveal Research Relationships with Entities Known to Commit Human Rights Abuses and Support China's Mass Surveillance Apparatus. Much of the current discourse around research security focuses on the national security risks of conducting federally funded research with Chinese entities—a critically important concern. However, an equally urgent issue is the ethical aspect of research: what the research is enabling, and who we are choosing to collaborate with. The Select Committee identified multiple instances where DOD-funded research involved entities with well-documented roles in human rights abuses or direct participation in China's mass surveillance apparatus.

Why Protecting DOD-Funded Research Matters: Case Studies on How U.S. Hypersonics and Fundamental Research Advanced PLA Strategic Weapons Development. To underscore the risks of PRC collaboration involving DOD-funded research, the Select Committee identified two troubling case studies. The first involves U.S. participation in hypersonic research and development with a "Seven Sons of National Defense" Chinese university—which directly supports PLA hypersonic weapons research and development. The second concerns fundamental research on nitrogen conducted in partnership with a Chinese Academy of Sciences lab, which allegedly led to breakthroughs in high-yield explosives and contributed to advancements in China's nuclear weapons development. Most strikingly, the Committee obtained documents attributed to the Chinese Academy of Engineering—a PRC governmental body—detailing a 12-year research partnership between a U.S. professor, who had worked on DOD-funded research for more than a decade, and a Chinese institution. The Chinese government credited this collaboration with **"leading China to develop new materials and technologies for cutting-edge defense weapons and equipment, such as nanomaterial synthesis, multiscale fine structure control, as well as**

additive manufacturing technology and continuously narrow the technology gap with more advanced countries." The same document specifically referenced the U.S. Navy—one of the DOD entities that funded research the U.S. professor worked on—noting: "The U.S. Navy and the Boeing Company have made full use of this technology to achieve lightweight structural materials. **This key technology has profound practical significance for China's aerospace technology development and modern defense construction**. It will effectively help to facilitate industrial breakthroughs in high-end equipment and new materials."

Shortfalls in DOD Research & Engineering (R&E) Policies. Despite its critical role in funding and advancing U.S. innovation in emerging and dual-use technologies for the warfighter, DOD R&E has not established consistency for research security, due diligence, compliance and monitoring, or uniform access to necessary data and tools across the Department. This has resulted in fragmented and uneven practices among its components and funding entities.

- Despite the enactment of Section 1286 (1286 List) of the Fiscal Year (FY) 2019 National Defense Authorization Act (NDAA) and further prohibitions in the FY2025 NDAA, DOD R&E has not meaningfully updated its risk framework or enforcement protocols. For example, DOD has added only a small fraction of China's known talent recruitment programs and defense-designated laboratories to the 1286 List, even though both government and private sector analyses have identified many more.
- DOD R&E does not currently prohibit research relationships on fundamental research with entities DOD has designated as national security threats under the DOD 1260H List—rendering the list functionally meaningless and undermining its own research security framework. Additionally, DOD does not currently prohibit research relationships with entities on other U.S. government restricted lists (such as the BIS Entity List or the Office of Foreign Assets Control (OFAC) Sanctions List), nor with other publicly documented organizations, including SASTIND co-administered universities, state-owned defense conglomerates, national defense–designated laboratories, and components of China's intelligence and security apparatus.
- DOD R&E's Risk Matrix, as currently implemented, suffers from fundamental structural and operational deficiencies that render it ineffective at identifying, mitigating or prohibiting high-risk activities and/or collaborations with foreign entities.
- DOD components responsible for research security lack uniform access to both tools and relevant internal grant data, undermining their ability to conduct holistic and rigorous reviews of individuals under consideration.

- To date, DOD R&E has not established a standardized training program for conducting research security due diligence assessments across all DOD components.
- DOD components currently do not share their research security risk assessments with one another, even when evaluating the same individuals or institutions.
- Not all DOD research security offices have access to their own component's grant records.
- DOD does not currently conduct post-award compliance or monitoring of grants—even in cases where risk mitigation measures were required.
- The DOD has not taken a clear policy position—within its risk matrix or broader research security framework—on engagements with foreign entities that pose ethical and human rights risks.
- DOD does not currently incorporate Section 117 foreign gift and contract disclosure data into its framework for grant proposals and submissions.
- DOD R&E has not established a centralized or standardized proposal submission portal for fundamental research awards across the Department.
- DOD R&E's current policy does not scrutinize foreign students working on DOD-funded research unless they are designated as a "covered individual" or key personnel.
- Under the current DOD R&E Risk Matrix, if an individual files a patent in a foreign country of concern—such as China—either prior to filing in the United States or on behalf of that foreign country, even when the invention is based on U.S. government-funded research, such behavior is treated merely as a discouraged factor, not a prohibited one.

Unprotected Research: Fueling the PRC's Rise. While global collaboration in scientific and engineering research is essential to advancing innovation and solving shared challenges, the PRC has systematically weaponized this openness. Despite these risks, some within DOD maintain that if research is deemed "fundamental"—and is neither controlled nor classified—it should remain open. This position disregards the reality that such openness enables exploitation and targeting by China, particularly in defense-relevant fields with clear military applications. This can undermine U.S. national interests and security and enable the exploitation of DOD-funded research in critical technology areas. Through a state-directed apparatus that includes talent recruitment programs, military-civil fusion policies, and extensive use of foreign partnerships, China has exploited international research cooperation to acquire sensitive technologies and technical

know-how to directly compete in technology areas and warfighting capabilities with the United States.

These efforts advance the PRC's strategic goals of economic dominance, technological superiority, and military modernization—often at the expense of U.S. national security and technological leadership. What was intended as open scientific exchange has, in many cases, become a conduit for the transfer of taxpayer-funded innovation into the hands of a dangerous strategic adversary.

Failing to safeguard American research from hostile foreign exploitation will continue to erode U.S. technological dominance and place our national defense capabilities at risk. The time for passive risk tolerance is over. American taxpayer dollars should be used to defend the nation—not strengthen its foremost strategic competitor.

* * *

Select Committee on the CCP Chairman John Moolenaar is therefore introducing the Securing American Funding and Expertise from Adversarial Research Exploitation Act of 2025 (SAFE Research Act), which:

- Prohibits federal science, technology, engineering, and mathematics (STEM) research funding to researchers who collaborate with foreign adversary-controlled entities that pose a national security risk.
- Prohibits DOD funding to universities that partner with foreign adversary-controlled entities that pose a national security risk.
- Requires enhanced disclosures of foreign adversary collaborations, travel, and affiliations from foreign adversary entities.

The SAFE Research Act is attached to this report. We look forward to working expeditiously to pass this legislation and have President Trump sign it into law.

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BACKGROUND

This is not a new problem. As far back as 1999, alarm bells have been ringing across the U.S. government regarding research security threats within academic settings. That year, Congress released the U.S. National Security and Military/Commercial Concerns with the People's Republic of China report (the "Cox Report") after a bipartisan investigation led by Rep. Christopher Cox (R-CA). The Cox Report concluded that the PRC had engaged in systematic efforts to acquire U.S. military and dual-use technologies through commercial and academic channels. It highlighted serious failures in U.S. export control and counterintelligence systems and documented how China used scientific exchanges and university research collaboration to gain access to sensitive technologies in fields such as aerospace, materials science, and high-performance computing—all critical to PLA modernization.[1]

Beyond the Cox Report, DOD has long been aware that the PRC actively targets U.S. critical technology areas within academia to divert research and accelerate its military modernization. In 2006, a Duke University lab—funded by the Air Force Office of Scientific Research (AFOSR)—developed a prototype "invisibility cloak" that could deflect microwave beams and conceal objects from detection. Ruopeng Liu, a Chinese Ph.D. student on the project, encouraged collaboration with a Chinese lab, which Duke faculty approved. By 2009, Liu co-published advanced cloaking research with a Chinese lab, extending the technology to broader wave frequencies and faster production. Unbeknownst to Duke, however, Liu allegedly transferred proprietary research and intellectual property to China. Duke lost significant licensing, patent, and royalty opportunities, and was preempted from publishing its own groundbreaking findings. By 2018, Chinese state media reported the mass production of metamaterials for stealth applications, likely to be used on J-20 fighter jets. The production line is reportedly under Chinese military control and directly linked to the Chinese defense industry.[2] This case drew national attention when NBC News aired a full segment titled *How a Chinese Student Allegedly Stole Duke University Tech to Create a Billion-Dollar Empire*.[3] It was also featured as a case study in the 2017 book *Spy Schools: How the CIA, FBI, and Foreign Intelligence Secretly Exploit America's Universities*.[4]

Figure 1 - Ruopeng Liu holding alleged invisibility cloaking materials[5]

In 2012, the foundational book *Chinese Industrial Espionage: Technology Acquisition and Military Modernization* was published. Utilizing extensive Chinese language primary source documents, this work remains one of the most detailed and authoritative accounts of how the PRC systematically acquires foreign technology to advance its economic and military power. The authors demonstrate that China's technology-transfer apparatus is state-sponsored, centrally coordinated, and strategically integrated into its national development programs and broader modernization agenda. The book also documents how the PRC exploits academic relationships to divert human and intellectual capital in support of its technological and military advancement.[6]

Despite historical examples showing how academia's research and intellectual capital have been targeted to advance China's economic and military objectives, the DOD has lacked the urgency to establish robust frameworks, policies, and due diligence to safeguard America's future warfighting capabilities from direct exploitation by the PRC's military and broader technology transfer apparatus.

Weaponizing Openness: How China Converts Open Research into a Pipeline of Foreign Talent and Military Modernization

Balancing academic freedom and open science with national security interests is important. However, relying on this as a justification for unguarded international collaboration fails to understand and account for the distinct nature of the PRC's research and technology ecosystem. Unlike in democratic societies—where the norms of scientific openness are grounded in reciprocal trust, transparency, and research integrity—PRC institutions operate under a state-directed research model that is deeply politicized and subordinate to national strategic objectives, including military and economic goals.

Academic and scientific activity is tightly controlled by the CCP, exemplified by China's decision to restrict foreign access—including by U.S. institutions—to its largest academic publication database, the China National Knowledge

Infrastructure (CNKI).[7] Furthermore, research that does not align with state ideology is often censored, rejected, or suppressed. Transparency in research methods, data sharing, and institutional intent is limited, especially in sensitive or dual-use fields.

China's engagement with the global scientific community is often non-reciprocal: while China benefits from access to open research systems abroad, it restricts comparable access at home. Most critically, the PRC explicitly weaponizes access to foreign innovation—through both informal and formal collaboration and legal, illegal, and extralegal acquisition—as a means of advancing its strategic economic, technology, and military objectives. This divergence from global academic norms creates significant risks for open research environments and underscores the need for greater scrutiny and safeguards in international scientific collaboration with China. In fact, over the years, the Chinese government has implemented a series of statutory policies and administrative directives explicitly designed to target and acquire foreign intellectual capital, advanced technology, and scientific know-how:

- The then-Ministry of Personnel (now known as the Ministry of Human Resources & Social Security) "Plan for Working with Overseas Scholars in the Personnel System during the Ninth 5-Year Plan" (中华人民共和国人事部. 关于在"九五"期间在人事制度中开展与海外学者合作的若干意见) details a plan to encourage technology transfer from ethnic Chinese scholars overseas.[8]
- The "Notice on Trial Work to Organize and Develop the Model Construction of National OCS Pioneering Parks" (关于组织开展国家海洋工程先导区示范工程建设试点工作的通知) details and outlines the establishment of safe haven development zones in China for returnees bearing foreign technology.[9]
- The "Opinions on Building a Green Channel for the Return to China of High-level Overseas Educated Talent Aboard" (人事部等部门关于印发《关于建立海外高层次留学人才回国工作绿色通道的意见》的通知) outlines a plan to facilitate recruitment and immigration of foreign S&T talent. Ethnic Chinese born abroad are considered "returnees." This document further outlines China's need to target overseas talent to return to China to leapfrog economic and social development. Furthermore, the document states, "For high-level overseas talents who are temporarily unable to return to China, encourage them to serve the motherland through various appropriate methods such as part-time work and cooperative research, so as not to seek where they are, but to seek what they need."[10,11]
- According to an official Chinese government directive jointly issued by the Ministry of Personnel, Ministry of Education, Ministry of Science and Technology, Ministry of Finance, and the Ministry of Public Security—titled "Circular on the Release of Opinions on Encouraging Overseas

Chinese Scholars to Serve the Country by Multiple Means" (人事部、教育部、科技部、公安部、财政部关于印发《关于鼓励海外留学人员以多种形式为国服务的若干意见》的通知)—the Chinese government explicitly outlines a framework to mobilize overseas Chinese students, including those who remain abroad, to advance the strategic interests of the state. The document encourages overseas students to hold part-time technical, consulting, or honorary roles in Chinese universities, state key laboratories, research institutes, and enterprises; enter into cooperative research agreements with Chinese institutions that can be executed remotely or through short-term visits; and establish "cooperative development bases" in China or abroad to facilitate technology transfer. It further directs students to use foreign laboratory access, equipment, and funding to support domestic technology development; accept and conduct commissioned research projects for Chinese entities while abroad; and file patents in China for discoveries made at foreign institutions. The policy also encourages recruiting foreign experts to participate in research activities in China, commercializing proprietary technology through Chinese enterprises, forming overseas consulting firms to support Chinese interests, and establishing intermediary platforms abroad to market Chinese products and open international markets.[12,13]

- The "Homeland-Serving Action Plan for Overseas Chinese" (海外华人服务祖国行动计划) outlines and enables ethnic Chinese abroad, "temporally unable to return," to "serve the country by multiple means." A 2018 analysis claims 18,000 people participated in more than 7,000 cooperative projects.[14]
- The "Planning Guide for Manufacturing Talent Development" (制造人才发展规划指南) is a joint plan to import "1,000" foreign experts able to make "breakthrough" improvements, via talent programs and other venues such as "famous overseas companies."[15]
- The "Plan to Build a National Technology Transfer System" (建立国家技术转移体系的计划) outlines a comprehensive guide to China's technology transfer system with, the acquisition of "high-level overseas talent" emphasized.[16,17]
- The "13th Five-year Plan for S&T Military Civil Fusion" ("十三五"科技军民融合发展专项规划) provides details on crossover for civilian and military technology supported by a range of foreign outreach initiatives.[18,19]

The PRC government's own statutory records and administrative directives—publicly available and issued by official state organs—leave no ambiguity about the PRC's intent to systematically acquire foreign technology, intellectual property, and scientific know-how through academic and research collaborations.

These policies constitute a formal, state-sanctioned blueprint for strategic technology transfer, detailing how China leverages overseas students, foreign-trained experts, state-directed talent programs, and joint research platforms to channel innovation back into its military-civil fusion (MCF) ecosystem. Anchored by national security mandates such as the 2017 National Intelligence Law, this architecture is not limited to hardware acquisition but is explicitly designed to absorb and divert human and intellectual capital into China's broader strategic apparatus. What often appears as benign academic engagement is, in reality, a deliberate and structured effort to exploit the openness of democratic research systems—frequently without host institutions recognizing the downstream risks—to fuel the PRC's goals of technological self-sufficiency, economic dominance, and military modernization.

Furthermore, accusations that the U.S. government is acting in a discriminatory or racist manner toward Chinese researchers must be viewed in proper context. The statutory and administrative policies outlined previously in this report demonstrate that it is the PRC itself that deliberately targets, leverages, and exploits individuals of Chinese ethnicity or heritage to advance its technology transfer and research objectives. It is Beijing—not Washington—that compels its own people, through pressure, inducement, and Chinese laws to engage in activities that ultimately trigger U.S. investigative actions. The United States does not target individuals for who they are—it targets the malign activities the PRC compels them to undertake.

The Committees' Investigations

Over the past two years, the Committees investigated the PRC's exploitation of U.S. research institutions to fuel its military and technological rise, analyzing thousands of academic and government records, conducting extensive open-source research, and engaging directly with universities across the country.

Last fall, the Committees published a joint report, ***CCP on the Quad: How American Taxpayers and Universities Fund the CCP's Advanced Military and Technological Research,***[20] revealing how taxpayer-funded research fuels China's military ambitions through individual research collaborations and university-level partnerships with individuals and institutions in China—and specifically with China's defense research and industrial base.[a]

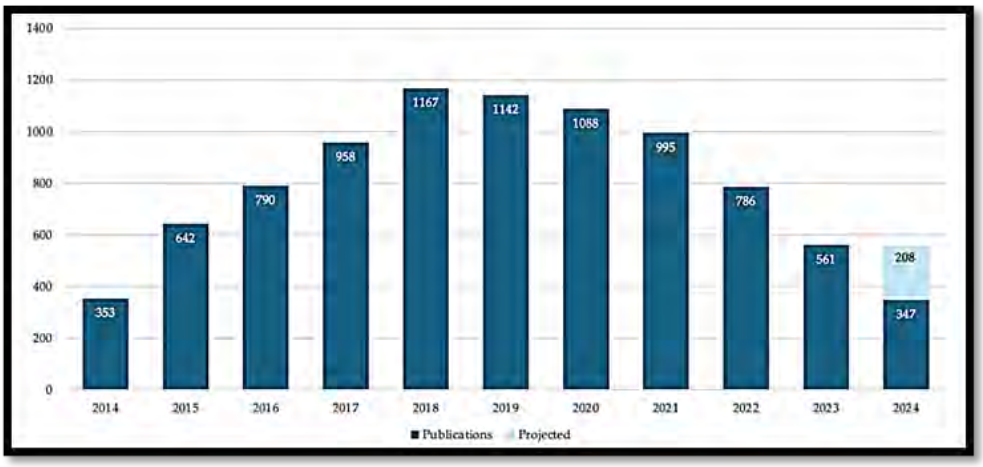
Individual Research Relationships: American researchers—many funded by the Department of Defense, Department of Energy, and National Science Foundation

[a] Any PLA organ, "Seven Sons of National Defense" (国防七子) university, "Seven Sons of Ordinance (Arms) Industry" (兵工七子) University, schools co-administered by the State Administration for Science, Technology, and Industry for National Defense, defense-designated laboratories, state-owned defense conglomerates, and the intelligence and security apparatus.

(NSF)—enabled major PRC advancements in nuclear technology, artificial intelligence, robotics, and quantum computing.[21]

This practice is troublingly widespread: over 8,800 USG-funded research papers between 2014 and 2024 had PRC coauthors, and thousands were directly tied to China's defense industrial base.[22] DOD funds research for the purpose of achieving technological breakthroughs to equip future warfighters—in other words, all DOD-funded projects are potentially dual-use.

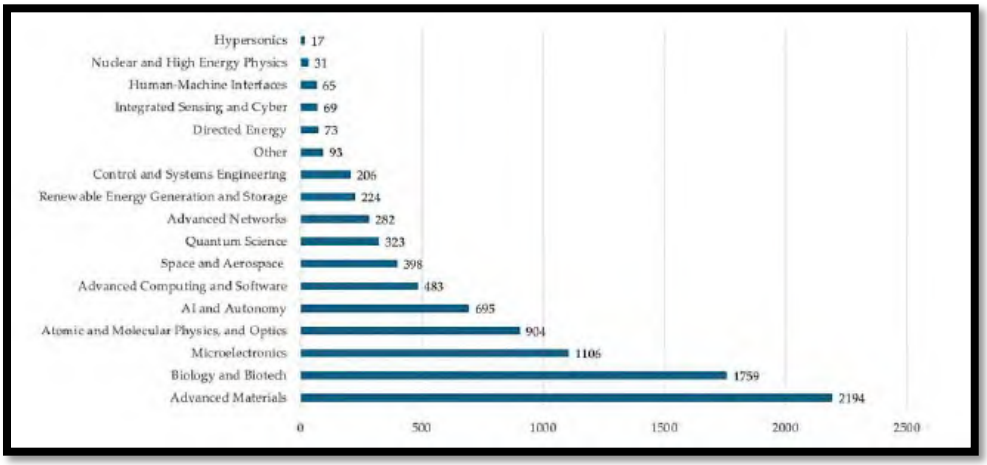
Figure 2 - Taxpayers Funded Thousands of Potential Dual-Use Research Publications Coauthored with PRC-Based Individuals



These collaborations span AI, microelectronics, advanced materials, space and aerospace, and military-use technologies like hypersonics, nuclear physics, and directed energy. The vast majority of these DOD-funded publications are collaborations on advanced research related to dual-use, critical, and emerging technologies.[23]

Some of this research has direct military applications—such as high-performance explosives, tracking of targets, and drone operation networks—that the PLA would use against the U.S. military in the event of a conflict.[24]

Figure 3 - DOD-Funded PRC-Coauthored Papers Advanced China's Knowledge of Strategic Technologies (2014-2024)



Joint Institutes: U.S.-PRC joint institutes are entities based in China that pair American universities with PRC institutions and serve as key technology transfer points. These joint institutes operate under PRC law, are run by Chinese-majority boards, and are aligned with the CCP's national strategy, including its military buildup. Many joint institutes are with universities that are part of China's defense research and industrial base.[25]

Red Flags Ignored

In 2019, FBI Director Christopher Wray warned before Congress:

> *"The use of nontraditional collectors, especially in the academic setting—whether it's professors, scientists, students… It's across basically every discipline. And I think the level of naivete on the part of the academic sector about this creates its own issues. They are exploiting the very open research and development environment that we have and that we all revere, but they are taking advantage of it…"*[26]

In 2019, the Senate Permanent Subcommittee on Investigations released a landmark report titled ***Threats to the U.S. Research Enterprise: China's Talent Recruitment Plans.*** The report outlined how the PRC exploits academic openness and U.S. taxpayer-funded research to divert critical and emerging technologies directly to China's defense research and industrial base.[27,28] That same year, Congress enacted Section 1286 of the FY2019 NDAA—which mandated a DOD initiative to protect national security research and academic institutions from undue foreign influence and security threats.[29]

In 2019, the Australian Strategic Policy Institute (ASPI) developed the *China Defense Universities Tracker*, a publicly accessible database cataloguing Chinese institutions connected to China's defense entities and engaged in military and security-related science and technology research. Funded in part by the U.S. government, the ASPI tracker draws extensively on Chinese-language sources to

assess risk levels associated with partnerships and collaborations.[30] The ASPI tracker also identified Chinese universities engaged in academic-to-academic partnerships with U.S. institutions. Furthermore, the ASPI tracker provides a critical resource for policymakers, universities, and governments worldwide in recognizing how the PRC exploits academic partnerships to advance its defense and intelligence objectives.

This issue has been recognized, written about, analyzed, and well-documented for years—including through congressional roundtables and public hearings.[31,32,33,34,35,36,37] Yet, over the years the U.S. government, including the DOD, has continued to allow research to be conducted with known Chinese military and defense associated entities. To this day, DOD R&E has largely refused to take proactive measures to strengthen and enhance prohibitions on research relationships that pose national security or ethical risks—despite the years of knowledge, public discourse, and existing U.S. government entity lists with numerous Chinese entities listed. Accordingly, Congress enacted binding prohibitions through the Fiscal Year 2025 NDAA, signed into law in January 2025. The NDAA explicitly prohibits any DOD-funded research from being conducted in collaboration with entities listed under Section 1286 of the FY19 NDAA, which includes a range of research institutions affiliated with the Chinese military and defense industrial base.

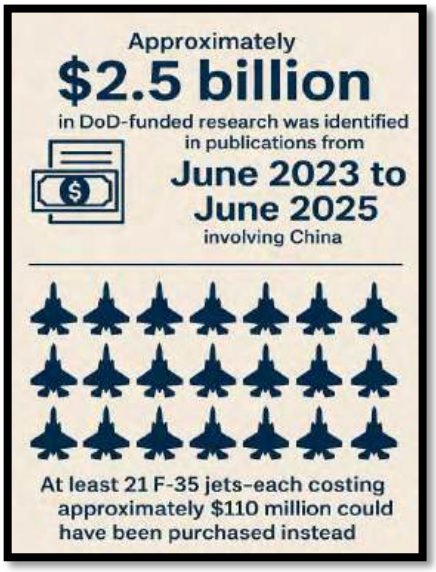
The Committee's Current Investigation

Following the release of *CCP on the Quad*, the Committee continued to examine DOD-funded research. The Committee performed an analysis of publications from June 2023 to June 2025 and identified approximately 1,400 research papers acknowledging DOD funding or research support that also involved collaboration with PRC entities. We sought to further examine DOD-funded research based on findings uncovered in the Committee's *CCP on the Quad* report and DOD policies surrounding research security. The analysis examined bibliometric data and also involved in-depth investigations into the Chinese entities affiliated and co-authors—identifying links to China's defense research and industrial base, uncovering hidden institutional affiliations, exposing participation in Chinese talent recruitment programs, flagging researchers involved in classified or military projects, and revealing likely end-user activities to trace where diverted technology and know-how ultimately end up. This assessment relied primarily on Chinese-language sources of information.

FINDINGS

Recent DOD-Funded Publications Reveal Continued Research Relationships with China's Defense Research and Industrial Base

The Select Committee identified approximately 1,400 research papers between June 2023 and June 2025, acknowledging DOD funding or research support that also involved collaboration with PRC entities. Of these, over 700 publications—or just over 50%—were conducted in partnership with entities affiliated with China's defense research and industrial base.[b,c,38,39] The collaborations span sensitive DOD research areas such as advanced materials, high-strength alloys, optical and photonic devices, and ballistic impact research—all of which have clear military applications. These are the very technology domains where the United States seeks to maintain a strategic edge. The mere fact that DOD entities are funding research in these fields reflects a strategic interest in advancing technologies tied to warfighting capability and national defense. These are precisely the technology areas where the United States must maintain a strategic edge, and yet they are being compromised through collaborative research with entities aligned with China's defense research and industrial base.



The case studies outlined below represent only a sample of the publications identified during the timeframe examined. These case studies reveal a pervasive and deeply troubling pattern of U.S. taxpayer-funded research being conducted in collaboration with Chinese entities that are directly tied to China's defense research and industrial base—many of which appear on various U.S. government entity lists—and state-sponsored talent recruitment programs. These collaborations involved research in sensitive technical domains such as hypersonics, quantum sensing, semiconductors, AI, advanced materials, cyber warfare, ISR systems, and next-generation propulsion—many with clear military applications. Several publications explicitly acknowledged support from or access to Chinese defense-designated laboratories, military computing infrastructure, or PRC-developed supercomputers linked to nuclear weapons development. These examples expose critical failures in post-

[b] Many of the DOD grant numbers identified were originally awarded prior to the start of the bibliometric analysis period; however, because these awards often span multiple years, they were captured in our timeframe for analysis of affected grants. In some cases, grants are still in the period of performance. We also acknowledge the peer-review process timelines.

[c] The Committee acknowledges the data and software contributions of LJ Eads, Founder of Data Abyss, Jeff Stoff, Founder and CEO of the Center for Research Security and Integrity, and Digital Science Dimensions AI Platform to this section of the report.

award monitoring, potential disclosure failures, and at least in one example, a likely direct violation of federal law, including the Wolf Amendment.[d]

Case Study 1: A 2025 publication on sequential decision-making processes was funded by the Office of Naval Research (ONR), the Army Research Office (ARO), and the National Aeronautics and Space Administration (NASA). The research was conducted collaboratively by researchers at the University of Texas at Austin, Arizona State University, Shanghai Jiao Tong University, and Beihang University.[40] Shanghai Jiao Tong University is co-administered by SASTIND,[e,41,42] while Beihang University is one of China's "Seven Sons of National Defense"—a group of universities closely tied to the PLA. Beihang University was added to the BIS Entity List in 2001, due to its involvement in rocket systems and unmanned air vehicle activities.[43] According to the award, the U.S. Navy funded this research for "Attack-Resilient Mission Planning for Swarms of Autonomous Systems."[44] The ONR grant is still in the period of performance through 2026. The ARO grant description, titled "Synthesis of Strategies for Information Integrity and Manipulation in Adversarial Environments," was awarded with a performance period from August 2023 to August 2026.

This collaboration may also violate the *Wolf Amendment*, which prohibits NASA and NASA-funded researchers from engaging in bilateral agreements or coordinated activities with Chinese entities unless Congress grants a waiver and the FBI certifies it. The decision-making frameworks outlined in this publication—grounded in powerful mathematical models such as Markov Decision Processes (MDPs)—are designed to optimize sequential decision-making under uncertainty. These frameworks have direct defense applications, including autonomous systems, electronic warfare and spectrum management, cyber defense and network security, and ISR tasking, where dynamic, high-stakes decisions must be made rapidly and adaptively in contested or uncertain environments.

Figure 4 – Publication from Digital Science Dimensions AI Platform: On Detection of the Markov Decision Processes. Demonstrating bilateral research with China on DOD and NASA-funded research in potential violation of the Wolf Amendment

[d] Wolf Amendment: First enacted in 2011 (P.L. 112-10, Sec. 1340) and renewed annually in appropriations acts, the Wolf Amendment prohibits NASA, the White House Office of Science and Technology Policy, and the National Space Council from engaging in bilateral cooperation with the People's Republic of China or Chinese-owned companies without explicit Congressional authorization and FBI certification.

[e] SASTIND is the PRC's principal civilian authority overseeing national defense science, technology, and industrial activities. It operates under the State Council's Ministry of Industry and Information Technology (MIIT). SASTIND is tasked with coordinating weapons and equipment research and development, core technical capabilities within China's defense industrial base, national-level strategic plans, standards, and regulations for defense S&T, managing and overseeing non-PLA entities engaged in defense research and production, and supporting these efforts through a national-wide network of provincial and municipal SASTIND offices.

Publication · Article

On the detection of Markov decision processes

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Summary

TL;DR Key highlights Top keywords

The research addresses the detection problem for a finite set of Markov decision processes (MDPs) with identical state and action spaces but different transition functions. It explores the possibility of perfectly identifying the true MDP model from a single observed history and establishes conditions for the existence of policies that enable this detection, ultimately developing efficient algorithms for both two and multiple MDPs.

Abstract

We study the detection problem for a finite set of Markov decision processes (MDPs) where the MDPs have the same state and action spaces but possibly different probabilistic transition functions. Any one of these MDPs could be the model for some underlying controlled stochastic process, but it is unknown a priori which MDP is the ground truth. We investigate whether it is possible to asymptotically detect the ground truth MDP model perfectly based on a single observed history (state–action sequence). Since the generation of histories depends on the policy adopted to control the MDPs, we discuss the existence and synthesis of policies that allow for perfect detection. We start with the case of two MDPs and establish a necessary and

More

Acknowledgements

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The military applicability of the work is clear, yet the involvement of PLA-affiliated institutions signals a shocking lapse in due diligence. Even more troubling is the apparent disregard for federal law—namely, the Wolf Amendment. The fact that this collaboration proceeded suggests that key institutions either lacked the training to identify legal violations or willfully ignored their compliance obligations.

Case Study 2: A 2025 publication on thin film research—co-authored by scientists from Brookhaven National Laboratory, the University of Arkansas, the University of Science and Technology of China's (USTC) National Synchrotron Radiation Laboratory, and the Harbin Institute of Technology's (HIT) State Key Laboratory of Advanced Welding and Joining Materials and Structures—was funded by the Vannevar Bush Faculty Fellowship—DOD's flagship basic research program administered by DOD R&E.[45,46] Harbin Institute of Technology is a "Seven Sons of National Defense" university. The State Key Laboratory of Advanced Welding and Joining Materials and Structures (先进焊接与连接国家重点实验室/现代焊接生产技术国家重点实验室) is a defense-designated laboratory—overseen by SASTIND[47]—that conducts research on new materials, intelligent welding in extreme environments, precision welding of material structures, and specifically in the areas of manned spaceflight, domestic aircraft carriers, nuclear submarines, large aircraft, aero-engines, superconducting accelerators, and major heavy equipment.[48] HIT's defense-designated Defense Science and Technology Laboratory of Precision Hot Processing of Metals (金属精密热加工国防科技重点实

验室) established this laboratory along with State-owned Ansteel Group.[49] HIT's The antiferroelectricity research outlined in this publication is highly relevant to a range of dual-use and defense technologies, including radar and RF tunable devices, radiation-hardened electronics for space and nuclear environments, and advanced sensors and smart materials used in systems such as adaptive camouflage.

Case Study 3: Two 2025 publications on neural mechanisms, co-authored by researchers from Washington University in St. Louis and China's Peng Cheng Laboratory (鹏城实验室), were funded by the NSF, National Institutes of Health (NIH), and the AFOSR.[50,51] Peng Cheng Laboratory is a Chinese state-directed research institution that operates CloudBrain-II, a high-performance AI supercomputing platform used to support large-scale computational research across disciplines, including cybersecurity and machine learning.[52] Peng Cheng Lab also hosts cyber ranges for industrial control systems and smart cars.[53] The lab has the "Pengcheng Shooting Range", and the "ultra-large-scale multi-field integration of key technologies and systems of the Federal Shooting Range (Pengcheng Network Shooting Range) designed to achieve disruptive technological innovation."[54] References to "shooting range" typically refers to offensive and defensive cyber and information warfare environments.[55] Peng Cheng Lab has formed research partnerships with other Chinese institutions.

Figure 5 – 2025 "Peng Cheng Cup" Online Shooting Range Offensive and Defensive Drill

Peng Cheng Lab partners with 21 universities, 13 research organizations, and 25 businesses or state-owned enterprises. Among the organizations participating in the initiative, prominent institutions include several of China's premier universities, such as Peking University, Tsinghua University, and the Chinese Academy of Sciences. One school tied to state-sponsored hacking campaigns and co-located on a PLA base, Shanghai Jiao Tong University, also partners with Peng Cheng Lab. Likewise, China's National University of Defense Technology and the Key Laboratory of Science and Technology for National Defense are listed among its partnerships with research organizations. The collection of collaborators is a

who's who of Chinese high-tech research talent. Peng Cheng Lab names entities like BGI, China Aerospace Science and Industry Corporation, China Electronics Corporation, China Electronics Technology Group, iFlyTek, and HiSense among its corporate and defense-State-owned enterprise partners. The U.S. Department of Commerce has listed many of these entities on its Entity List. Additionally, Jianhua Li is associated with Peng Cheng Lab and is a professor at Shanghai Jiao Tong University. Li currently runs a lab that researches the application of AI to cybersecurity research for both offensive and defensive purposes. His work is also featured in Robot Hacking Games, China's version of DARPA's Cyber Grand Challenge cybersecurity development, and AI.[56]

Case Study 4: A 2025 publication on two-dimensional materials, funded by the AFOSR and the Office of Naval Research Global (ONR Global), was co-authored with researchers from China's National University of Defense Technology (NUDT)—a core institution of the PLA and on the BIS Entity List since 2015.[57,58] NUDT is the PLA's premier scientific research university, specializing in advanced military technologies, and is directly subordinate to the Central Military Commission, the CCP organ that oversees and manages the PRC military.[59] The research outlined in this publication on single-electron transistors and two-dimensional materials has significant national security and defense applications, particularly in the areas of quantum sensing, secure communications, quantum encryption, and space-based electronic systems.

Case Study 5: A 2025 publication on high-entropy alloy research was co-authored by a researcher from the University of Tennessee and researchers from two key laboratories at Shanghai Jiao Tong University (SJTU): the State Key Laboratory of Mechanical Systems and Vibration (机械系统与振动国家重点实验室) and the State Key Laboratory of Metal Matrix Composites (金属基复合材料国家重点实验室).[60] The research was funded by the ARO and the NSF. The State Key Laboratory of Metal Matrix Composites conducts research in composites, new materials, and superalloys. The lab acknowledges significant contributions to national security and at least 88 major national defense projects.[61] The State Key Laboratory of Mechanical Systems and Vibration has conducted research with acknowledged achievements in ship acoustic stealth, impact protection, spacecraft dynamics and control, and launch vehicle manufacturing technologies.[62] The lab's main research direction focuses on vibration and noise control problems that restrict the combat performance of weapons and equipment, processing dynamics and machine tool dynamics that restrict the manufacturing ability of aerospace models, vibration and noise control of national defense equipment, manufacturing equipment dynamics and integrated design, high-precision manufacturing and quality control of thin-walled components, design and control of intelligent electromechanical systems.[63] These focus areas demonstrate the laboratory's deep integration into China's strategic defense research priorities, particularly in the

development of naval quieting technologies, missile system survivability, and aerospace platform optimization.

Figure 6 – STJU State Key Laboratory of Mechanical Systems and Vibration Research Direction Translation: Research Direction (研究方向), Vibration and Noise Control of National Defense Equipment (国防装备振动与噪声控制), Dynamics and Integrated Design of Manufacturing Equipment (制造装备动力学与集成设计), High-Precision Manufacturing and Quality Control of Thin-Walled Structures (薄壁构件高精度制造与质量控制), Design and Control of Intelligent Electromechanical Systems (智能机电系统设计与控制)[64]

Case Study 6: A 2025 publication on quantum research funded by the AFOSR was co-authored by researchers from Brown University and a postdoctoral researcher, Xiaoxue Liu, affiliated with Brown University and Shanghai Jiao Tong University (SJTU).[65] The publication explicitly acknowledges that Liu is supported by the Pujiang Talent Program (a.k.a Shanghai Pujiang Talent Program 上海市浦江人才计划).[66] Liu is affiliated with the SJTU Ministry of Education Key Laboratory of Artificial Structures and Quantum Control. This laboratory's research includes optoelectronics, microelectronics, semiconductor quantum structures, electromagnetic wave regulation, and high-temperature superconducting materials.[67] The Pujiang Talent Program is a municipal-level foreign talent recruitment initiative established by the Shanghai Municipal Government with the explicit goal of attracting overseas Chinese and foreign experts to work, conduct research, or launch enterprises in Shanghai. The program targets returnees in strategically prioritized fields and provides funding for a range of activities, including intellectual property-related costs, international collaboration, equipment procurement, and research and development. The program is structured into four project categories:[68,69]

- A-type: Scientific research and development projects at universities, research institutes, or enterprises;[70]
- B-type: Technology commercialization and startup ventures, including patent industrialization;[71]
- C-type: Social sciences, culture, media, finance, and entrepreneurship initiatives;[72] and
- D-type: High-demand or urgently needed talent in strategic sectors.[73]

The grant was awarded in July 2023, after the inaugural DOD R&E Policy and Risk Matrix Memo was publicly issued.[74,75] This example exemplifies a critical lapse in research security, where a Chinese talent recruitment program, designed to facilitate technology transfer and innovation repatriation, is directly tied to DOD-funded research seemingly without detection, disclosure, or mitigation. It underscores the DOD's failure to conduct effective post-award review of publications and to flag participation of co-authors—in this case, conducting research at Brown University—in Chinese talent programs. Despite the clear mandate of Section 1286 of the FY2019 NDAA—which established an initiative to protect researchers from undue foreign influence, including through foreign talent programs.

Case Study 7: A 2024 publication on high-strength alloys research funded by ONR's Additive Manufacturing Alloys for Naval Environments (AMANE) program was co-authored by a researcher from China's Central South University-State Key Laboratory of Powder Metallurgy,[76,77] identified in Chinese as 粉末冶金国防重点实验室/粉末冶金国家重点实验室.[78] This laboratory carries a defense designation, as reflected by the Chinese characters for "national defense" (国防, Guófáng) in its official name. Interestingly, the words "national defense" is often omitted in English-language publications. This lab conducts research on high temperature alloys for jet turbines (used for fighter jets and missiles), [79,80,81] ultra-high temperature carbines for hypersonic vehicles,[82,83,84] high-entropy alloys for armor-piercing applications,[85] ballistic impact on various materials,[86,87,88] and materials for stealth technology.[89,90] The research on laser powder bed fusion of high-strength alloys outlined in this publication has direct defense applications across a range of critical systems and technologies, including the production of lightweight, durable components for armor systems, aircraft structures, ground vehicle platforms, and naval applications. The ability to fabricate high-performance parts with precision and design flexibility supports DOD priorities in advanced manufacturing, rapid sustainment, and battlefield-ready logistics.

Figure 7 – In many cases, when reviewing English-language materials related to China's defense–designated laboratories, the Chinese characters for "national defense" (国防, Guófáng) are deliberately omitted. One example, officially named the Xidian University Key Laboratory of National Defense Science and Technology for Radar

Signal Processing, the laboratory's English signage notably omits the words "national defense"

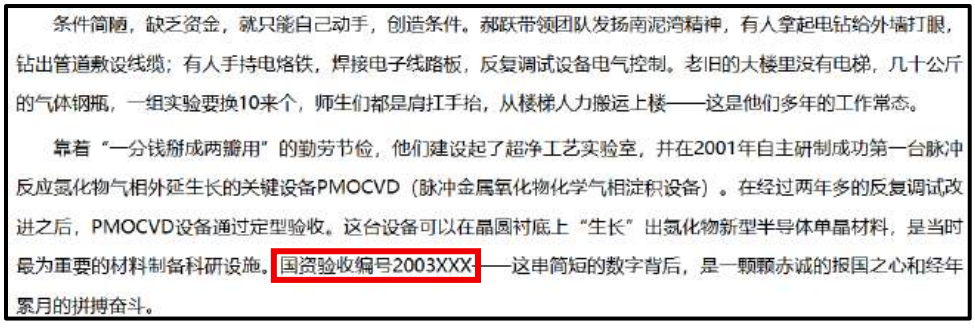
Case Study 8: A 2024 publication on ultrawide bandgap semiconductor devices, funded by the AFOSR, was co-authored by researchers from the Massachusetts Institute of Technology, Cornell University, the University of Nebraska, and Xidian University's State Key Laboratory of Wide Band-Gap Semiconductor Technology.[91] Xidian University is co-administered by China's SASTIND and is one of the country's core institutions supporting military research. The State Key Laboratory of Wide Band-Gap Semiconductor Technology (宽带隙半导体技术国防重点学科实验室) is a defense-designated laboratory specializing in wide bandgap semiconductor technologies with direct applications in military radar, electronic warfare systems, and high-frequency communications in support of national defense science and technology.[92,93] This lab's research direction is on electronic countermeasure systems, new generation radars, communication, and radiation resistant microwave millimeter wave devices. The lab has undertaken major scientific and technological projects funded by the National (National Defense) Major Research (973) Project, the National Defense Science and Technology Pre-research Project, Sino-Russia Scientific and Technological Cooperation Projects in the Field of Aerospace, and the Military Electronic Component Spectrum Project.[94] Ultrawide bandgap semiconductor research has highly relevant applications across a spectrum of advanced defense technologies, including directed energy weapons, high-power radiofrequency (RF) and radar systems, satellite and space-based platforms, and hypersonic and missile defense systems.

- Yue Hao, a co-author in this AFOSR-funded publication, is with the State Key Laboratory of Wide Band-Gap Semiconductor Technology at Xidian University, serves as Director of the university's Department of Integrated Circuits, and previously led China's military microelectronics working group. He also led a team designated as one of China's inaugural National Defense Science and Technology Innovation Teams. Hao is internationally recognized as a leading expert in microelectronics, with research focused on semiconductor materials and devices, micro- and nano-scale

semiconductor technologies, and high-reliability integrated circuit (IC) chips. [95,96]

- In a public interview, Yue Hao emphasized the foundational role of semiconductor technology in both civilian and military systems: "At present, all integrated circuit chips are made on semiconductor materials. Mobile phones, computers, household appliances, electric vehicles and other technology products closely related to life are inseparable from chips—that is, semiconductor technology. Modern defense equipment such as satellites, missiles, radars, communications, and electronic countermeasures is also inseparable from high-end electronic devices, so they are also inseparable from semiconductor technology."[97]
- Hao Yue also led the development of China's first key equipment for pulsed reaction nitride gas-phase epitaxial growth—Pulsed Metal Oxide Chemical Vapor Deposition (PMOCVD) equipment. This advanced system allows for the "growth" of single-crystal nitride semiconductor materials on wafer substrates, representing a major advancement in China's ability to domestically produce strategic semiconductor materials. The equipment was registered under State-owned Assets Acceptance Number 2003XXX. China routinely uses "XXX" placeholders in open-source documents to redact specific identifiers tied to classified, defense-related, or military programs and equipment. In this context, the use of "XXX" in a State-owned Assets Acceptance Number strongly indicates that the actual registration number has been deliberately censored due to its association with sensitive or classified government-owned equipment.[98]

Figure 8 – Screenshot from Xidian University Academician Hao Yue Interview outlining State-owned Asset 2003XXX[99]



条件简陋，缺乏资金，就只能自己动手，创造条件。郝跃带领团队发扬南泥湾精神，有人拿起电钻给外墙打眼，钻出管道敷设线缆；有人手持电烙铁，焊接电子线路板，反复调试设备电气控制。老旧的大楼里没有电梯，几十公斤的气体钢瓶，一组实验要换10来个，师生们都是肩扛手抬，从楼梯人力搬运上楼——这是他们多年的工作常态。

靠着"一分钱掰成两瓣用"的勤劳节俭，他们建设起了超净工艺实验室，并在2001年自主研制成功第一台脉冲反应氮化物气相外延生长的关键设备PMOCVD（脉冲金属氧化物化学气相淀积设备）。在经过两年多的反复调试改进之后，PMOCVD设备通过定型验收。这台设备可以在晶圆衬底上"生长"出氮化物新型半导体单晶材料，是当时最为重要的材料制备科研设施。国资验收编号2003XXX——这串简短的数字背后，是一颗颗赤诚的报国之心和经年累月的拼搏奋斗。

Case Study 9: A 2024 publication on hydrogen detonation research, funded by ONR, was co-authored with Case Western University researchers and Qiang Xiao, a researcher at Northwestern Polytechnical University (NWPU) ("Seven Sons of National Defense" university) and Nanjing University of Science and Technology (NJUST) ("Seven Sons of National Defense" university)-State Key Laboratory of Transient Physics[100,101] (a.k.a The National Defense Key Laboratory of Science and

Technology on Trajectory-瞬态物理国家重点实验室 and the Defense S&T Key Laboratory of Ballistics-) 弹道国防科技重点实验室).[102,103]

Xiao was the Chairman of the Detonation and Burning Branch of the Symposium on Shock Waves, selected into the Shaanxi Provincial Young Talents Program, and conducts research in detonation methods.[104] NJUST was added to the BIS Entity List in 2020.[105] This key laboratory is a defense-designated laboratory with its major research focus area on new ballistics, new quality ballistics, and new ballistic capabilities. The lab has built seven major technical research platforms for internal ballistics, external ballistics, propulsion range extension drag reduction, high-speed underwater ballistics, end ballistics, ballistic simulation, ballistic planning and control, and has major ballistic research facilities integrating "wind tunnel-target track-shooting range" and "water tunnel-water target track-water shooting range," forming a ballistic test system from "mechanism research."[106]

The ONR overarching grant research title and description is "Water Entry of Hypervelocity Projectiles," indicating its clear defense applications.[107] Research in hydrogen detonation has numerous defense applications, including in hypersonic propulsion systems such as scramjets and rotating detonation engines, explosive ordnance and advanced warhead design, and blast mitigation technologies. A deeper understanding of detonation dynamics may support the development of next-generation missile systems, directed energy platforms, and counter-WMD capabilities.

Case Study 10: A 2024 publication on hydrogen production, funded by the U.S. Army Research Laboratory (ARL), was co-authored by researchers from the Massachusetts Institute of Technology (MIT) and Peking University. The paper acknowledges the use of computational resources provided by TianHe-1A and TianHe-II supercomputers, as well as the High-Performance Computing Platform of Peking University.[108] TianHe-1A and TianHe-II are state-operated Chinese supercomputers developed by the NUDT.[109.110] Both Supercomputers are understood to be used in nuclear explosive design and development activities.[111] The supercomputers' use in ARL-funded research raises concerns about reliance on foreign military-affiliated infrastructure and the possible exposure of U.S.-sponsored scientific work to China's defense technology ecosystem.

Case Study 11: A 2024 publication on nanoscale optical devices, funded by AFOSR, was co-authored with researchers from the City University of New York, Huazhong University of Science and Technology (SASTIND co-administered university), Sun Yat-sen University (SASTIND co-administered university), Wuhan University of Technology, and the China Academy of Launch Vehicle Technology (CALT) (中国运载火箭技术研究院).[112] CALT is a subsidiary of one of China's major defense conglomerates, the China Aerospace Science and Technology Corporation. CALT (a.k.a the "Rocket Institute") is China's largest missile weapons and launch vehicle development and production base. CALT

develops many of China's missile weapons—including the Long March and Dongfeng series—for strategic deterrence as part of its national strategic security.[113] CALT works on hypersonic missiles and reusable launch vehicles.[114,115] CALT was added to the BIS Entity List in 2001 due to material contributions to the proliferation of missiles.[116]

Figure 9 – CALT Involvement in Missile Research Translation: Missiles and Space Vehicles, Missile and Space Launch Vehicle Technology, Sponsored by the China Academy of Launch Vehicle Technology (CALT)

Case Study 12: A 2024 publication on condensed matter physics and quantum systems research was co-authored with researchers from Rutgers University, the Flatiron Institute Center for Computational Quantum Physics, and the Beijing Computation Science and Research Center (CSRC), funded by AFOSR.[117] CSRC is administered under CAEP[118]—China's nuclear weapons research and development complex under the Central Military Commission. CSRC was added to the BIS Entity List in June 2020 for being directly affiliated to CAEP and responsible for research, development, and testing of China's nuclear weapons and is on the 1286 List.[119] The start date for this grant was after June 2020.[120] Additionally, the publication acknowledges the use of the Tianhe-2JK at the CSRC.[121] The use of DOD-funded research conducted in collaboration with, and utilizing computing infrastructure from, an entity that develops nuclear weapons capabilities is troubling.

Case Study 12: A 2023 publication on robot swarms, funded by ONR Global, was co-authored with researchers from Beihang University (a "Seven Sons of National Defense" university). This research further investigated mechanisms to coordinate robot swarms and formation control of large swarms depending on tasks and self-organized hierarchical frameworks.[122] Xingjian Wang, a co-author on this publication affiliated with Beihang University, has been selected for both the

"Young Talents Support Program" and the "National High-Level Young Talents Program"—Chinese Communist Party-backed initiatives designed to accelerate the development of strategically important scientific personnel.[123,124] He also served as Secretary-General of the Military Working Committee,[125] indicating his active role in defense-related research coordination. Wang's research centers on critical aerospace technologies, including electromechanical components, fault diagnosis of airborne hydraulic and actuation systems, synchronous control of non-similar redundancy actuation systems, and fault-tolerant control mechanisms for high-safety aircraft platforms. He also conducts research in the fields of biomechatronics and human-computer interaction—areas with direct applications in advanced aviation systems, unmanned platforms, and next-generation pilot-interface integration.[126] This research supports the development of adaptive, resilient, and decentralized autonomous systems capable of operating in contested, GPS-denied, and communication-degraded environments.

Case Study 13: A 2023 publication on strategies for the identification of moving targets was co-authored by a researcher from the University of Michigan and a researcher from the School of Cyber Science and Technology at Beihang University and was funded by the ARO and the National Nuclear Safety Administration (NNSA).[127] Lin Zhou—a Beihang University professor—conducts research on physical layer security, air-space-ground integrated communications security, and low-latency and strong security communication networks.[128] Zhou was also selected for multiple PRC government talent recruitment programs, including the Outstanding 100 Talents Program (2019), the Young Top Talents Program (2021), and the National Overseas High-Level Young Talents Program (2021)[129]—each of which is designed to accelerate the development of strategic scientific expertise and support China's military-civil fusion and innovation-driven development strategies. This research informs how to optimize the search for moving targets and supports defense applications such as electronic signal geolocation and autonomous drone swarm search patterns, helping improve target detection efficiency under uncertainty with pre-programmed, non-adaptive strategies.

Case Study 14: A 2023 publication on micro-ballistic impact funded by ONR was co-authored with researchers from the California Institute of Technology, Iowa State University, the Chinese Academy of Sciences (CAS) Institute of Mechanics Key Laboratory for Mechanics in Fluid Solid Coupling Systems (LMFS), the CAS Institute of Physics, the CAS Institute of Mechanics (IOM) State Key Laboratory of Nonlinear Mechanics (LNM), and the Chinese Academy of Engineering Physics (CAEP) Institute of Fluid Physics (IFP).[130] CAS IOM is one of China's most prominent entities conducting hypersonic and aerospace research and development and acknowledges its contribution via its subordinate laboratories.[131,132,133]

To assist in the research and development of hypersonic technology, CAS IOM launched the "shock reproducing hypersonic flight conditions" program in

2008.[134] CAS LMFS openly acknowledges its involvement in major national defense projects, with a focus on advanced fluid–structure coupling system mechanics and numerical simulation technologies. The lab cites work on likely classified defense research topics such as "Study on XXXX Underwater Launch Load Formation and Action Mechanisms"—language strongly suggesting research related to submarine-launched missile systems or other classified underwater weapons technologies. CAS LMFS also confirms its participation in core Chinese military R&D initiatives, including the National Defense Science and Technology Major Projects Program, the Central Military Commission Science and Technology Committee's National Defense Science and Technology Innovation Special Topics, and the National Defense Industries Basic Research Program.[135,136]

In addition to serving as China's primary nuclear weapons design and production complex, CAEP also engages in research and development of nuclear and other advanced weapons delivery systems.[137] CAEP IFP conducts research in shock waves, detonation physics, hydrodynamics, high-pressure physics, and nuclear test simulations—all of which are critical for nuclear warhead design and stockpile maintenance without live testing.[138] CAEP has been on the BIS Entity List since 2012.[139] The CAS Institute of Physics was added to the BIS Entity List for its support in advanced China's nuclear program development.[140]

Figure 10 – CAS IOM JF-12 Shock Tunnel, Duplicating Hypersonic Flight Conditions at Mach 5 – Mach 9

Case Study 15: A 2023 publication on hexagonal boron nitride funded by ONR was co-authored with researchers from Kansas State University, Nanjing University of Aeronautics and Astronautics (NUAA) (a "Seven Sons of National Defense" university), and Changchun University of Science and Technology's (CUST) (a "Seven Sons of Ordnance (Arms) Industry" university) State Key Laboratory of High-Power Semiconductor Lasers (高功率半导体激光国防科技重点实验室/高功率半导体激光国家重点实验室).[141] The State Key Laboratory of High-Powered Semiconductor Lasers is a defense-designated laboratory directly supporting the PLA. The lab developed beam-guided semiconductor laser launch systems ([驾束制导半导体激光发射器) that have been successfully integrated into

PLA Army main battle tanks. It also engineered laser sensor components ([激光敏感器组件) used in terminally guided sensitive submunitions (likely a type of smart munition) used by the PLA Air Force across multiple weapons platforms.[142] The laboratory openly acknowledges its critical role in advancing China's national defense weapons and equipment development, underscoring its integration into the military-industrial complex and its alignment with the objectives of China's Military-Civil Fusion strategy.

Case Study 16: At least nine research projects were identified between 2023 and 2025 with U.S. researchers and researchers from the Huazhong University of Science and Technology (HUST), Wuhan National Laboratory of Optoelectronics (WNLO-武汉光电国家实验室)—a SASTIND co-administered school. Research with WNLO on photovoltaics, remote sensing applications, thin materials, and optics was funded by ONR and AFOSR. [143,144,145,146,147,148,149,150,151] WNLO was one of six national research centers approved by China's Ministry of Science and Technology in 2017. WNLO conducts advanced research in optoelectronics with applications spanning information science, energy technologies, and life sciences.[152,153] Its core areas include ultrafast lasers, laser-based manufacturing, optoelectronic device integration, and data storage technologies—all of which have substantial dual-use and military relevance. WNLO is jointly organized by three primary entities: the Wuhan Institute of Physics and Mathematics (WIPM) under the Chinese Academy of Sciences; the Wuhan Research Institute of Post and Telecommunications (WRIPT); and most notably, the 77th Research Institute of the China Shipbuilding Industry Corporation (CSIC)—a military research entity under China's state-owned defense conglomerate.[154] WNLO houses at least seven specialized research departments, including a Military Optoelectronics Research Department, indicating its direct involvement in China's defense research ecosystem.[155]

- In 2006, WNLO was approved by the State Administration of Foreign Experts Affairs (now part of the Ministry of Science and Technology) and the Ministry of Education under China's "111 Program."[156] Also known as the "Program for Introducing Talents to Universities", the 111 Program is a Chinese state-sponsored talent recruitment initiative designed to bring in high-level foreign experts to support strategic disciplines, often with dual-use fields.[157] WNLO's participation in this program reflects its alignment with China's national strategy to absorb foreign scientific talent, human capital, and technology in areas like advanced optoelectronics, which are directly relevant to both commercial and defense applications.[158]
- In 2008, WNLO was approved by the Central Organization Department of the Chinese Communist Party as an "Innovation and Entrepreneurship Base for Overseas High-Level Talents" (海外高层次人才创新创业基地).[159] Innovation and Entrepreneurship Bases are PRC-designated platforms

designed to attract and integrate overseas high-level talent, particularly those with backgrounds in cutting-edge science and technology disciplines. These bases are typically tasked with introducing original, innovative, and strategically significant foreign high-tech projects into China. Their core functions include showcasing the latest overseas S&T achievements and products, facilitating technology transfer, and serving as a bridge for foreign-trained experts to commercialize or operationalize their research in China.[160]

- In 2011, WNLO established the Photon Detection and Radiation Functional Laboratory in the 717th Research Institute of CSIC.[161]
- In 2013, HUST/WNLO signed a cooperative framework agreement with the China Academy of Launch Vehicles Technology—a core entity within China's state-owned space and missile industry subordinate to state-owned defense conglomerate CASC—and Capital Aerospace Machinery Company. As part of this agreement, the parties jointly established a Joint Laboratory of Additive Manufacturing Technology.[162]

Case Study 17: At least three publications between 2023-2025 with researchers from the State Key Laboratory of Radio Frequency Heterogeneous Integration (国家重点实验室 射频异构集成) were funded by ONR Global, ONR, and AFOSR.[163,164,165] State Key Laboratory of Radio Frequency Heterogeneous Integration is a joint laboratory operated by Shenzhen University, Shanghai Jiao Tong University, and ZTE Corporation.[166] Its research portfolio includes millimeter wave technology, radar detection, intelligent unmanned systems, integrated circuits, antenna design, materials diffusion, and 6G mobile communications.[167] The laboratory openly acknowledges that its research outcomes are applied in semiconductors, mobile communications, artificial intelligence, aerospace, and national defense technology.[168] It further states that its work directly contributes to and is implemented in major national projects, including the development of national defense equipment.[169] The lab's Director, Junfa Mao, is listed as Chief Scientist for the Engineering Commission of the Central Military Commission—China's top military body responsible for weapons development and strategic force modernization.[170] His leadership role within the CMC strongly indicates that the laboratory serves not only academic functions but also plays a direct role in advancing the PLA's military R&D priorities. ZTE was previously on the BIS Entity List for engaging in actions contrary to national security and foreign policy interest—including risks related to its equipment being used by the Chinese military or for surveillance purposes—of the United States, but has since been removed.[171,172]

- The laboratory identifies the Chunhui Plan (春海计划) as a core component of its cooperative framework. The Chunhui Plan is a Ministry of Education–sponsored and funded talent recruitment program that allocates dedicated resources to facilitate the short-term return of overseas

experts and students. Its stated objective is to leverage their expertise in advancing and modernizing China's science and technology capabilities, in alignment with national development priorities.[173,174] Additionally, the Chunhui Plan emphasizes leveraging overseas expertise to support the technological transformation and upgrading of large and medium-sized state-owned enterprises[175]—entities that often serve as pillars of China's strategic industrial base and are closely tied to national defense, infrastructure, and advanced manufacturing sectors. This objective underscores the Chunhui Plan's role in accelerating domestic innovation through the targeted acquisition and application of foreign-developed technologies.

Case Study 18: A 2023 publication on microlaser research, funded by both ARO and AFOSR—was co-authored by researchers from the University of Texas at Dallas, North Carolina State University, and a visiting scholar from Beijing University of Posts and Telecommunications (BUPT)-State Key Laboratory of Information Photonics and Optical Communication (IPOC) (信息光子学与光通信国家重点实验室), Zhitong Li,[176] who remains employed at the laboratory and continues to publish research.[177] The IPOC conducts research on optical communications, pulse light sources, photonics, and quantum secure communications.[178] BUPT was placed on the BIS Entity List in 2020, because it "directly participates in the research and development, and production, of advanced weapons and advanced weapons systems in support of People's Liberation Army modernization, which poses a direct threat to U.S. national security."[179] The AFOSR award associated with this publication and research is still in its period of performance with an end date of September 14, 2025.[180]

- The IPOC lab has established an international research cooperation base known as the "Communication and Network Core Technology" discipline innovation and intelligence introduction base (111 base)[f] 通信与网络核心技术学科创新引智基地(111基地).[181,182] 111 Base refers to a research platform under China's Program of Introducing Talents of Discipline to Universities (学科创新引智计划), commonly called the 111 Plan or 111 Program. The 111 Base Program is a joint initiative of the Ministry of Education (MOE) and the State Administration of Foreign Experts Affairs (SAFEA), launched in 2006. Its key features include integration with PRC talent recruitment programs, alignment with national priorities outlined in successive Five-Year Plans, and targeted recruitment of overseas professors and researchers to acquire specialized expertise and foreign

[f] A "111 Base" typically refers to a designated host institution or research platform established under the Ministry of Education's 111 Program—formerly co-administered with the State Administration of Foreign Experts Affairs (SAFEA). The program's objective is to recruit top-tier overseas experts, both ethnic Chinese and foreign nationals, into Chinese universities and research institutes engaged in strategically important disciplines.

technology.[183,184] These bases serve as conduits for embedding foreign know-how into China's research ecosystem, often in areas with direct relevance to national defense and strategic industrial development.

- In 2016, the IPOC lab established a joint laboratory between Jiangsu Hengtong Marine Optical Network System Co., Zhongtia Technology Submarine Cable Company, and the PLA Naval Engineering University/the PLA Submarine Cable Communications Technology Research Center called the "Underwater Optical Network Joint Laboratory (水下光网络联合实验室)."[185,186] The joint laboratory is established for an initial three-year term, after which it will undergo a formal review to determine whether it should be renewed.[187] The joint laboratory concentrates on advanced optical communications, including the planning and simulation of underwater integrated optical networks, the development of standards for such networks, the structural design and deployment of specialized optical cables, and the domestic technology development and engineering application of G.654 optical fiber. Notably, the agreement highlights that the companies participating in this joint laboratory have established expertise in fiber-optic cable surveillance and monitoring systems.[188] Additionally, the Underwater Optical Network Joint Laboratory operated out of BUPTS's IPOC.[189]

* * *

These case studies and accompanying analysis only begin to reveal the scope of the issue—and only examine publications within the last two years. The Committee identified additional research projects in which DOD is credited as a funding source in the acknowledgments alongside Chinese institutions, including those directly tied to or part of China's defense research and industrial base. In many of these examples, the publications involve dual-use technologies with clear military applications—such as alloys for aerospace structures, target tracking, microelectronics, and advanced composite materials. Crucially, these publications reveal far more than mere scientific collaboration—they provide a window into the potential diversion of U.S. defense-funded technology know-how, the strategic direction of DOD research priorities and technology, and the identities and institutional affiliations of China's downstream end-users.

Repeated patterns of co-authorship with researchers embedded in the PRC defense ecosystem—particularly those affiliated with PLA-linked universities, SASTIND co-administered institutions, and state-owned defense conglomerates—underscore the extent to which adversarial entities are gaining access to sensitive U.S. technology development, methodologies, modeling techniques, and system-level design insights. These collaborations serve as conduits for the transfer of emerging defense-relevant capabilities, providing Chinese military institutions with early visibility into the trajectory of U.S. research and development. In doing so, they offer strategic value not only in the form of technical data but in signaling

where the United States is investing in future warfighting capabilities. Ultimately, this dynamic results in U.S. taxpayer-funded research inadvertently subsidizing the PRC's military modernization and strategic technological advancement—undermining both U.S. national security and the competitive edge of the U.S. defense industrial base.

Recent DOD-Funded Publications Reveal Research Relationships with Entities Known to Commit Human Rights Abuses and Support China's Mass Surveillance Apparatus, Raising Reputational and Ethical Concerns

Much of the current discourse around research security focuses on the national security risks of conducting federally funded research with Chinese entities—a critically important concern. An equally urgent issue, however, is the ethical aspect of research: what the research is enabling, and who the United States chooses to collaborate with. Ethical risks associated with partnering with authoritarian regimes present unique challenges that complicate due diligence and risk assessment processes, particularly when such regimes leverage scientific collaboration to advance repression, surveillance, human rights abuses, or military objectives.

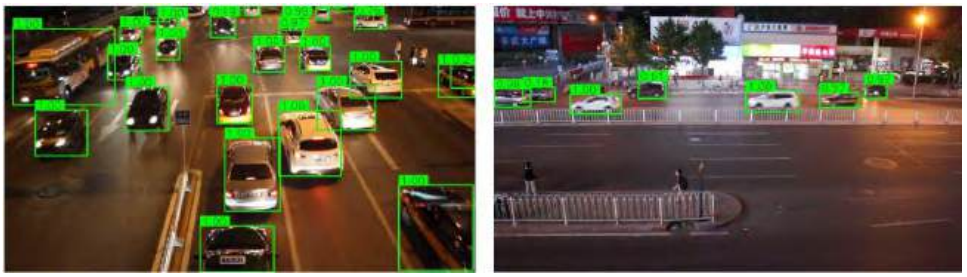
The United States is committed to upholding human rights and shielding individuals from harassment and retaliation. China's publicly documented record of using technology, companies, and state institutions to carry out mass surveillance and systemic human rights abuses demands that the United States scrutinize not just the strategic implications, but also the moral consequences of our research partnerships.[190,191,192,193,194,195,196] The following case studies highlight instances where DOD-funded research was conducted in collaboration with Chinese entities that are documented to support China's mass surveillance infrastructure and ultimately enable human rights abuses.

Case Study 1: A 2025 genomics research publication, funded by the Office of Naval Research (ONR), was conducted in collaboration with researchers from BGI Research Group.[197] Notably, BGI is listed on the DOD's Section 1260H List—a designation for foreign military companies operating directly or indirectly in the United States, due to its ties to the Chinese military-industrial complex.[198] In addition, in 2020, BIS added BGI to its Entity List, citing its role in enabling the surveillance and repression of ethnic minorities in China, including genetic surveillance of Uyghurs Muslims in the Xinjiang Uyghur Autonomous Region (XUAR).[199,200]

Case Study 2: A 2024 publication on distributed learning, funded by ONR, was conducted in collaboration with researchers from Rutgers University and the Alibaba DAMO Academy (a.k.a Alibaba Dharma Academy).[201] The ONR grant,

awarded in September 2024, remains within its period of performance which extends through August 2027.[202] Since at least 2016, Alibaba has supported China's mass surveillance apparatus.[203] Alibaba's DAMO Academy is explicitly named in official Hangzhou Municipal Government planning documents as a contributor to China's military-civil fusion (MCF) initiatives.[204] The same document also outlines a focus on key surveillance technologies, including biometrics, video and image data processing, video surveillance cloud retrieval, and panoramic super-view monitoring.[205] Alibaba DAMO Academy engages in surveillance-focused research, including network refining for surveillance object detection,[206] person re-identification for matching across camera surveillance systems,[207] panoramic image generation for camera surveillance systems,[208] and facial recognition.[209] All of these are core capabilities that enable state surveillance and public control/security operations.

Figure 10 – Example of Detection Results in Various Environmental Conditions Utilizing Bounding Boxes with Confidence Scores from Alibaba DAMO Academy Surveillance Object Detection Research[210]



There is no justification—ethical, legal, or strategic—for U.S. taxpayer-funded research to be conducted with entities documented to have facilitated human rights abuses or support China's mass surveillance apparatus. Such collaboration raises grave ethical concerns, undermines U.S. democratic values, creates reputation harm, and erodes public trust in the integrity of federally funded research.

Why Protecting DOD-Funded Research Matters: Case Studies on How U.S. Hypersonics and Fundamental Research Likely Advanced PLA Strategic Weapons Development

To underscore the risks of PRC collaboration involving DOD-funded research, the Select Committee identified troubling examples: U.S. participation in hypersonic research and development, and fundamental research on nitrogen, conducted in partnership with PRC entities. The first case study illustrates how a Chinese defense university established a training pipeline for multiple researchers and an ongoing collaborative relationship that enabled access to a leading U.S.

hypersonics expert, culminating in the formation of a joint laboratory that continued to advance China's hypersonics research and development for explicit military purposes. The second case study examines a U.S. scientist who was recruited into China's most prestigious talent recruitment program while concurrently working on U.S. government–funded research—including DOD projects—and leading a team in China that achieved a breakthrough in nitrogen research also funded by the U.S. government. Chinese news sources later claimed that this research led to the development of strategic weapons.

Case Study 1: A professor at Duke University specializing in aeroelasticity, structural dynamics, and unsteady aerodynamics held a dual position and established a joint laboratory with the School of Aeronautics at Northwestern Polytechnical University (NPU)—a "Seven Sons of National Defense" university—around 2019.[211] The professor contributed to DOD-funded research for many years, with co-authored publications appearing as recently as April 2025.[212] He has contributed to research funded by the ARO, AFOSR, NSF, and NASA.[g,213]

As a lead researcher in Duke's Aeroelasticity Laboratory—which lists sponsorship from NASA, DOD, NSF, and Honeywell[214]—the professor has published numerous peer-reviewed articles and contributed foundational work in aircraft flutter, hypersonic panel vibration, turbomachinery, and nonlinear structural response.[215] His research spans supersonic and subsonic flow, shock-wave turbulence, post-flutter oscillations, aeroelastic modeling of thin plates, and hypersonic vehicle dynamics. He has served as a member of the United States Air Force Scientific Advisory Board, the Air Force Studies Board, the Aerospace Science and Engineering Board, and the Board on Army Science and Technology of the National Academies.[216]

As early as 2019, journal publications publicly documented the existence of the NPU–Duke Aerodynamics and Aeroelasticity Laboratory/Group (a.k.a NPU-Duke Top Group of Aerodynamics and Aeroelasticity),[217] a joint entity with NPU focusing on hypersonics, aerodynamics, and aeroelasticity—fields directly relevant to the development of maneuverable reentry vehicles, hypersonic glide bodies, and military aircraft. The partnership appears to be active, with publications citing the joint lab as recently as January 2025.[218] Notably, the Duke professor is the sole U.S. academic listed on many of the publications listing the joint lab with NPU, suggesting he leads and/or established the collaboration.

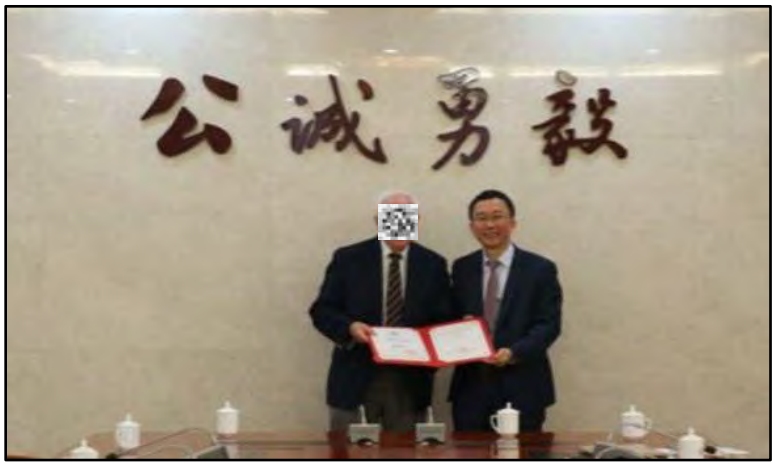
Research conducted under the NPU–Duke lab has examined research on irregular shock reflection, aeroelastic behavior, aerodynamic heating, orthogonal decomposition of panel deflection, and the dynamics of supersonic and hypersonic vehicles.[219] Additionally, multiple papers reference a funding

[g] It remains unclear whether he was classified as "key personnel" or a "covered individual" on any of the awards under applicable research security frameworks.

mechanism labeled the NPU–Duke China Seed Program, further indicating a structured partnership.[220]

According to a 2023 NPU faculty news article, the Duke professor was awarded the *International Science and Technology Cooperation Award* by the Chinese Society of Aeronautics and Astronautics (CSAA)—a state-affiliated body tied to China's military aerospace programs.[221] The article states he serves as a *Consulting Professor* at NPU and co-director of the joint lab.[222] This confirms the partnership as formal and institutionally recognized by one of China's leading defense research universities, which plays a key role in the People's Liberation Army's (PLA) hypersonic R&D.

Figure 11 – Duke University Professor Receiving CSSA Award at NPU Award Ceremony[223]



The Duke professor's principal Chinese counterpart appears to be Professor Aiming Shi, a faculty member at NPU's School of Aeronautics.[224] In 2013, Professor Shi studied under the Duke professor as a visiting scholar, researching unsteady flow and aeroelasticity within Duke's Aeroelasticity Group.[225] Prior to his time in the United States, Shi was already serving as a faculty member at Northwestern Polytechnical University (NPU) and was affiliated with the Defense Science and Technology Key Laboratory of Airfoil and Blading Aerodynamics (翼型、叶栅空气动力学国防科技重点实验室)—in English known as the National Key Laboratory of Aerodynamic Design and Research.[226,227] According to publicly available Chinese-language sources, the Chinese government has repeatedly recognized Professor Shi for his contributions to military-relevant technologies, receiving research projects and awards under the National Defense Science and Technology Progress Award system including:[228]

- XXX Analysis Technology and Engineering Application;[229]
- Aircraft XXX Analysis Technology and Deep Engineering Application;[230]
- XXX Technology and System;[231]
- Research on Transonic Operability Surface Buzzing, China Postdoctoral Science Foundation, 2006XXX;[232]
- AVIC Chengdu Aircraft Design and Research Institute;[233]
- COMAC Shanghai Aircraft Design and Research Institute;[234]
- China Academy of Aerospace Aerodynamic Technology;[235]
- China Academy of Launch Vehicle Technology, 2014XXX;[236]
- General Department of the Fourth Academy of Aerospace Science and Industry Group, 2013XXX;[237] and
- CAST-BISEE Fund, China Academy of Space Technology (511 institutes), 2015XXX.[238]

This "XXX" nomenclature is a deliberate and common practice in Chinese scientific reporting, used to obscure the nature of research or equipment assets that are classified, highly sensitive, or directly connected to military and weapons development programs.[239]

Another NPU collaborator, Professor Dan Xie, studied under the Duke professor from 2009 to 2015 and holds a faculty position at NPU's School of Aeronautics. Professor Xie has presided over a wide array of defense projects, including:

- A National Military Mouth sub-project titled XXX Research on Aeroelastic Active Suppression Method;
- The National Natural Science Fund of China, Thermoaeroelastic dynamics analysis of wall plates under XXX typical trajectory;
- Stability Prediction, Dynamics and Control of Transatmospheric Aircraft;
- Exploration of Hypersonic Aircraft Force-Thermal-Structure Multiphysics Unidirectional Coupling/Bidirectional Coupling Boundary;
- Influence of structural defects on nonlinear chatter characteristics of wall plates in supersonic airflow;
- Complex response and damage detection of supersonic wall panel flutter system;
- National 863 Project, XXX Multi-field Coupling Physical Model and Calculation Method; and
- National 863 Project, XXX Fault Maintenance Scheme and Special Tools Research.

Beyond the NPU–Duke Laboratory, the Duke professor has engaged in collaborative research with multiple Chinese defense-affiliated institutions, including several of the "Seven Sons of National Defense"—including Northwestern Polytechnical University (NPU), Harbin Institute of Technology (HIT), Beihang University, and Beijing Institute of Technology (BIT).[240] These collaborations have spanned technical domains directly relevant to military

aerospace applications, including hypersonics, turbine dynamics, aerodynamics, and airfoil performance at high angles of attack.[241]

Notably, the Duke professor's work with Beihang University was conducted in partnership with the National Key Laboratory of Science and Technology on Aeroengine Aerothermodynamics[242] (航空发动机气动热力国家/国防重点实验室)—a defense-designated laboratory focused on advanced propulsion technologies. This lab specializes in hypersonic technology, turbine blade cooling, high-temperature engine performance, scramjet and ramjet propulsion, hypersonic and afterburning engine systems, and aerothermodynamic stability under supersonic and variable-altitude flight conditions.[243,244] The lab publicized several past strides in aero-engine technology such as "turning turbine design technology" for turbine engines for the PRC's 4th generation aircraft, hypersonic pre-cooling aero-engine technology, and "small and large blade axial flow compressor technology" with 15% higher pressurization ratio than the U.S. F-22 fighter aircraft.[245]

The Duke professor has also engaged in collaborative research with the Aero Engine Academy of China—also known as the China Aero Engine Research Institute.[246] This entity operates under the Aero Engine Corporation of China (AECC), a state-owned defense conglomerate established by the Chinese government to consolidate and advance China's indigenous aircraft engine capabilities. AECC is a critical component of China's military-civil fusion (MCF) strategy, serving as the leading supplier of aeroengines, gas turbines, and aircraft power units for the PLA. The Aero Engine Academy functions as one of AECC's principal research arms, specializing in technologies central to the performance and development of military aircraft propulsion systems, including high-thrust turbofan engines, thermal management systems, and hypersonic propulsion components.[247]

Duke University is listed as a University Member of the University Consortium for Applied Hypersonics (UCAH), which is a collaborative network of universities working with government, industry, national laboratories, federally funded research centers, and existing university-affiliated research centers. It aims to deliver the innovation and workforce needed to advance modern hypersonic flight systems in support of national defense. The consortium's mission is to serve DOD requirements in science and technology, workforce development, and technology transition.[248,249]

This case study also represents a troubling example of a research relationship in which U.S. scientific expertise appears to have been leveraged to support, and potentially diverted into, classified military research conducted by the PLA. Such collaboration underscores a fundamental failure to exercise due diligence and uphold basic research security protocols. By permitting or overlooking the establishment of a joint laboratory with a core Chinese military university—Northwestern Polytechnical University—critical U.S. defense-relevant

technologies, intellectual capital, and technology know-how in areas such as hypersonics, propulsion, and aerospace design were likely diverted directly to China's military.

Case Study 2: A professor and Senior Staff Scientist at the Geophysical Laboratory of the Carnegie Institution of Washington is an expert in nuclear science, nitrogen research, and advanced materials.[250] He was a selectee of China's Thousand Talents Program,[251] held a concurrent appointment at the Chinese Academy of Sciences' Institute of Solid State Physics, Hefei Institute of Physical Sciences (ISSP),[252] and worked extensively on research funded by the DOD—including ARO, Defense Threat Reduction Agency (DTRA), and Defense Advanced Research Projects Agency (DARPA)—as well as DOE and NSF, with DOD-funded work published as recently as 2024.[253]

Beginning in 2011, the Carnegie Institution scientist held a nine-year appointment at the ISSP, where he led a team within the Center for Extreme Environmental Quantum Matter. His research focused on metal nitrogen, polymerized nitrogen, high-pressure physics, and ultra–high energy materials.[254,255] This position at the Chinese Academy of Sciences ran concurrently with his Carnegie Institution position and overlaps with numerous DOD, DOE, and NSF awards he conducted research on. After joining the Chinese Academy of Sciences, he was selected in 2012 for China's Thousand Talents Program[256]—a state-run talent recruitment initiative designed to attract overseas experts in strategic fields and incentivize the transfer of foreign research, intellectual property, and technological know-how to the PRC.[257]

Since beginning his research partnership with the ISSP, he also conducted research with entities tied to China's defense research and industrial base—including the State Key Laboratory of Advanced Welding and Joining Materials and Structures Harbin Institute of Technology,[258] the Center for High Pressure Science and Technology Advanced Research (HPSTAR),[259] and the Computational Science Research Center (CSRC)[260]—with many of these publications explicitly acknowledging U.S. government funding.

- HPSTAR (高压科学与技术先进研究中心) was established by the CAEP—outlined earlier in this report—to better leverage foreign talent. On its Chinese-language website, HPSTAR states that it "embraces the foundational principles of the Carnegie Institution of Washington."[261] The Carnegie Institution scientist also delivered speaking engagements at HPSTAR.[262] He has published with HPSTAR as recently as April 2024, on research funded by the DOE National Nuclear Safety Administration.[263]

In 2015, the Carnegie Institution scientist received the Friendship Award (中国政府友谊奖), the highest honor the Chinese government bestows on foreign nationals.[264] He was presented with the award at the Great Hall of the People in Beijing.[265] The Friendship Award recognizes individuals whose work advances the

PRC's national development objectives, including strategic science and technology sectors.

After he received the Friendship Award, news articles began naming the Carnegie Institution scientist directly, alleging that the team he led at ISSP and their research on metal nitrogen and high-pressure physics contributed to the development of higher-yield super explosives. One article described the ISSP team's breakthrough on metallic nitrogen as follows: "The emergence of metallic nitrogen is expected to make the fourth generation of new nuclear weapons. Compared with the first three generations of nuclear weapons, metallic nitrogen has better performance in all aspects."[266,267,268,269,270271]

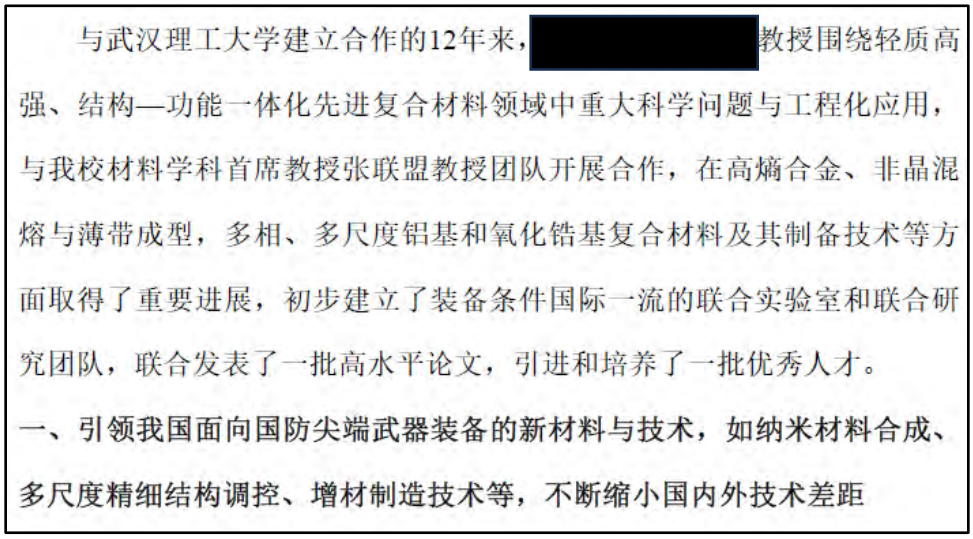
Figure 12 – Carnegie Institution Scientist, Receiving the Friendship Award[272]

This case presents a deeply troubling example of how U.S. taxpayer-funded research, funded by the DOD, DOE, and NSF, can be leveraged by the PRC to advance its own strategic weapons development. The scientist in question held a concurrent, nearly decade-long appointment at a Chinese state-run laboratory, while simultaneously conducting U.S. government–funded research on high-energy materials, nitrogen, and high-pressure physics—fields with direct relevance to nuclear weapons development. His selection into the PRC's Thousand Talents Program and his receipt of the Chinese government's highest honor for foreign experts, the Friendship Award, underscore the strategic value the PRC placed on his contributions. The fact that Chinese news articles explicitly credited him and his team's nitrogen research with enabling breakthroughs in fourth-generation nuclear weapons underscores the serious risks posed by unmonitored dual affiliations, undisclosed research partnerships, and participation in foreign talent recruitment programs. It also highlights the critical need for language-capable personnel in due diligence and research security programs to identify and translate Chinese-language sources—without which the diversion of U.S.

government–funded innovation into adversarial military programs can go undetected. Ultimately, this case illustrates how the PRC—through state-backed talent programs, laboratory appointments, and targeted research partnerships—can quietly absorb U.S. scientific expertise and technical know-how to advance its warfighting capabilities. Transfers of expertise and know-how often occur under the auspices of fundamental research, likely without triggering export controls or violating classification boundaries.

Case Study 3: The Committee obtained documents attributed to the Chinese Academy of Engineering—a PRC governmental body—detailing a 12-year research partnership between a U.S. professor, who had worked on DOD-funded research for more than a decade, and a Chinese institution. The Chinese government credited this collaboration with "leading China to develop new materials and technologies for cutting-edge defense weaponry, such as nanomaterial synthesis, multiscale fine structure regulation, and additive manufacturing techniques, to continuously narrow the technological gap between China and the international community." The same document specifically referenced the U.S. Navy—one of the DOD entities that funded research the U.S. professor worked on—noting: "The U.S. Navy and the Boeing Company have made full use of this technology to achieve lightweight structural materials. This key technology has profound practical significance for China's aerospace technology development and modern defense construction. It will effectively help to facilitate industrial breakthroughs in high-end equipment and new materials."

Figure 13 – Chinese Academy of Engineering Document Detailing a 12-Year Research Partnership with a U.S. Professor Conducting DOD-Funded Research During That Period



与武汉理工大学建立合作的12年来，[redacted]教授围绕轻质高强、结构—功能一体化先进复合材料领域中重大科学问题与工程化应用，与我校材料学科首席教授张联盟教授团队开展合作，在高熵合金、非晶混熔与薄带成型，多相、多尺度铝基和氧化锆基复合材料及其制备技术等方面取得了重要进展，初步建立了装备条件国际一流的联合实验室和联合研究团队，联合发表了一批高水平论文，引进和培养了一批优秀人才。

一、引领我国面向国防尖端武器装备的新材料与技术，如纳米材料合成、多尺度精细结构调控、增材制造技术等，不断缩小国内外技术差距

Translation: During the 12 years since his cooperation with the Wuhan University of Technology, Professor [name redacted] has cooperated with the team of

Professor Lianmeng Zhang, the chief professor of materials science, regarding major scientific problems and engineering applications in the field of lightweight, high-strength and structural/functional integrated advanced composite materials. They have made significant progress in high-entropy alloys, amorphous co-fusion and thin-film forming, as well as multiphase, multiscale aluminum-based and zirconia-based composites and their preparation techniques. They have established a joint laboratory with the world's first-class equipment and a joint research team, jointly published many high-level papers, and introduced and cultivated a lot of outstanding talents.

I. Leading China to develop new materials and technologies for cutting-edge defense weapons and equipment, such as nanomaterial synthesis, multiscale fine structure control, as well as additive manufacturing technology and continuously narrow the technology gap with more advanced countries.

Figure 13 – Chinese Academy of Engineering Document Acknowledging U.S. Navy and Boeing Use of New Materials and Their Significance for China's Aerospace and Modern Defense Development

印）发源于美国，目前，美国增材制造技术无论在军事、航空航天、医疗、工业还是民用方面，均走在世界前列，美国拥有全世界最前沿的增材制造技术，我国增材制造产业化仍处于起步阶段，与发达国家相比存在较大差距，尚未形成完整的产业体系，离实现大规模产业化、工程化应用还有一定距离，加快增材制造技术发展，尽快形成产业规模，对于推进我国制造业转型升级具有重要意义，同时能实现"中国制造2025"新跨越。多尺度材料以其独特的尺寸效应成功解决了材料强度和韧性或塑性相互倒置的关系这一科学和技术难题，美国海军和美国波音公司充分利用这项技术实现了结构材料的轻量化，汽车的减重和降耗在很大程度上依赖于高性能的多尺度材料的发展和应用，这项关键技术对我国的航空航天技术发展和现代化国防建设具有十分重要的现实意义，同时能有效促进高端装备与新材料的产业突破。另外，在航空发动机涡轮叶片涂层材料和长时间高温蠕变性能方面，与国外存在技术差距，这也是长期制约我国航空发动机应用的关键瓶颈问题。

Translation: Accelerating the development of additive manufacturing technology and building an industrial scale as soon as possible is of great significance for

promoting the transformation and upgrading of China's manufacturing industry and realizing a substantive leap of "Made in China 2025". With their unique size effect, multiscale materials have successfully solved the scientific and technical problems of the inverse relationship between material strength and toughness or plasticity. Reducing vehicle weight and fuel consumption depends heavily on the development and application of high-performance multiscale materials. The U.S. Navy and the Boeing Company have made full use of this technology to achieve lightweight structural materials. **This key technology has profound practical significance for China's aerospace technology development and modern defense construction. It will effectively help to facilitate industrial breakthroughs in high-end equipment and new materials**. Also, compared with more advanced countries, China still has a way to go in terms of aero-engine turbine blade coating materials and long-term high-temperature creep performance, which is also a key bottleneck problem that has restricted the application of aviation engines in China for a long time.

This case study illustrates with striking clarity why protecting fundamental research is not an abstract concern but a matter of national security. In its own words, the Chinese Academy of Engineering openly credited a U.S. professor—tied to numerous DOD-funded research—with helping China develop technologies directly tied to advanced weaponry and equipment, aerospace, and defense modernization. These documents show how Beijing views international research partnerships: not as academic exchanges, but as deliberate channels to acquire critical expertise, accelerate industrial breakthroughs, and close the military technology gap with the United States. The lesson is unambiguous—when DOD fails to safeguard taxpayer-funded research, China sees an opportunity to turn American innovation into tools of its own military power. Protecting the integrity of fundamental research is therefore essential to preserving America's technological edge.

DOD Research and Engineering Policy Shortfalls

The DOD's research security framework remains incomplete, leaving serious vulnerabilities in protecting federally funded research—designed to support America's military—from exploitation by foreign adversaries. While DOD R&E has taken limited steps—such as maintaining the Section 1286 List and holding due diligence working groups—it has not fully utilized available information or expanded prohibitions to address the full scope of China's defense research and industrial base, as well as its technology transfer apparatus, including talent recruitment programs. Reliance on vague definitions, inconsistent criteria, virtually no post-award monitoring—especially where mitigation was required—lack of uniform access to tools for all due diligence components, and decentralized

implementation across DOD components has allowed sensitive, defense-relevant research to move forward without adequate vetting or mitigation. In practice, this fragmented approach creates uneven risk assessments, permits high-risk collaborations to escape proper review, and erodes safeguards intended to protect U.S. technological advantage.

The policy shortfalls outlined below reflect issues identified in publicly available DOD documents by DOD officials, as well as through concerns raised directly in meetings with the Department.[h]

DOD R&E has declined to proactively set policies that significantly expand prohibitions to entities beyond some Chinese research institutions and some Chinese Talent Recruitment Programs outlined on the 1286 List—and expanding prohibitions beyond the 1286 List generally.[273] In fact, according to public reports from the Permanent Select Subcommittee on Investigations on Homeland Security and Government Affairs at the Senate and the Federal Bureau of Investigation, there are hundreds of Chinese Talent Recruitment Programs operating at the national, provincial, municipal, and sub-municipal levels that incentivize its selectees to steal foreign technologies needed to advance China's national, military, and economic goals[274,275] Additionally, The Center for Security and Emerging Technology has a Chinese Talent Program Tracker listing numerous programs.[276] Yet only six of these programs are currently designated on the Section 1286 list.[277] The current and most recently updated Section 1286 List by DOD R&E still references the "Thousand Talents Program"[278]—a program that was officially shut down and restructured in 2019. It was consolidated into a broader initiative known as the High-End Foreign Expert Recruitment Program (高端外国专家引进计划), along with several other Chinese talent recruitment programs. Neither the original 2023 1286 List[279] nor the updated 2025 1286 List[280] reflect this change or the consolidation into the new umbrella program, creating a gap in accuracy and enforcement relevance. However, the 1286 List allows for further integration by including—alongside the six identified talent recruitment programs—language stating that any program meeting one of the criteria in Section 10638(4)(A) and either Section 10638(4)(B)(i) or (ii) of the CHIPS and Science Act shall be considered a foreign malign talent recruitment program.[281] Nevertheless, there appears to be no further effort or analysis to identify and include additional talent recruitment programs that would meet the criteria for designation.

DOD R&E itself commissioned an initiative to conduct open-source analysis to identify Chinese talent recruitment programs beyond the well-known Thousand Talents Plan.[282] Yet, despite having direct access to this information, DOD R&E has failed to incorporate these findings into its own Risk Matrix—the very tool intended to assess and mitigate foreign influence in DOD-funded research. The

[h] The Select Committee has held meetings with DOD officials, including DOD R&E leadership, during which many of these policy shortfalls were directly raised and discussed.

Department knowingly funded work that confirmed the scale and scope of China's foreign talent acquisition architecture but then ignored its own commissioned findings.

Just as troubling, the DOD's Air Force China Aerospace Studies Institute (CASI) published research—based on Chinese-language primary sources—identifying dozens of Chinese national defense-designated laboratories.[283,284] Despite this authoritative internal analysis, DOD R&E has listed only six of these laboratories under the DOD 1286 List.[285] This data is public, produced by the DOD itself, and grounded in high-confidence Chinese language sourcing. Yet, DOD R&E refuses to act on DOD's own findings. This reflects either a deliberate unwillingness to protect U.S. taxpayer-funded research or blatant disregard for research security.

For years, DOD R&E and others have frequently invoked National Security Decision Directive-189 (NSDD-189), arguing that most "fundamental research" should remain unrestricted and that any additional constraints on international collaborations would stifle innovation. However, NSDD-189—established in 1985—is outdated and was never intended to serve as a blanket shield for all federally funded research, particularly in relation to authoritarian regimes such as the PRC. The distinction between fundamental and applied research has continued to blur, especially in dual-use and defense-relevant fields as technology advances. While fundamental research is defined as basic or applied research intended for broad scientific dissemination, the risk significantly increases when the research is funded by the DOD, given its underlying purpose of supporting warfighting capabilities. In practice, however, the determination of whether research qualifies as "fundamental" is often left to the discretion of individual investigators or program managers.[286] This creates a systemic vulnerability where researchers are incentivized to publish openly, and DOD grant funding program managers are incentivized to allow the broadest pool of applicants to classify their work as "fundamental," regardless of downstream military applications or direct relevance to specific defense technologies and projects.

Furthermore, DOD R&E relies on its slow-moving policy development process as a justification for allowing high-risk research collaborations to proceed—even with entities tied directly to China's defense research and industrial base. Rather than acting proactively and decisively when there are known risks, R&E's bureaucratic inertia serves as a shield against accountability, relying on the dates of policy implementation as a pretext for inaction. In effect, DOD R&E's inability to adopt timely restrictions or clear prohibitions has created a permissive environment in which federally funded research can—and does—support adversarial military modernization. Although the threat is well known, DOD R&E's inaction in prohibiting engagement with China's defense research and industrial base enables continued opportunities for exploitation by our adversaries.

In June 2023, DOD R&E released a three-part memorandum titled "Countering Unwanted Foreign Influence in Department-Funded Research at Institutions of Higher Education." The memo provided initial policy guidance for DOD components to assess and mitigate foreign influence risks in fundamental research awards, and introduced the "DOD Component Decision Matrix to Inform Fundamental Research Proposal Mitigation Decisions."[287] In this inaugural framework, the only prohibited risk factor was evidence of a proposer's active participation in a malign foreign talent recruitment program (MFTRP), as defined by the CHIPS and Science Act of 2022.[288] The 2023 matrix did not prohibit research collaboration with the PLA, Chinese intelligence or security services, state-owned defense conglomerates, or entities known to facilitate human rights abuses through technology—such as those involved in mass surveillance or genetic profiling.[289] Instead, such high-risk collaborations were merely flagged as either "discouraged and requiring mitigation" or placed in the "mitigation measures recommended" category,[290] revealing a significant policy gap in DOD's approach to research security and ethical oversight.

Because DOD R&E failed to proactively address these concerns, in January 2025, Congress enacted Section 238 of the FY2025 National Defense Authorization Act (NDAA), which prohibits DOD-funded research collaborations with entities on the Department's Section 1286 List.[291] Despite this legislative mandate, DOD R&E has yet to take proactive measures to prohibit research with other high-risk entities—including organizations on the BIS Entity List, Chinese universities co-administered by SASTIND, the OFAC-sanctioned entities, entities credibly linked to human rights abuses, and even institutions designated under DOD's own Section 1260H List. This continued inaction leaves serious gaps in DOD's research security posture and allows taxpayer-funded research to remain at risk of exploitation by foreign adversaries, military institutions, and actors involved in repression and surveillance. As outlined in this report, several identified Chinese entities—though not currently included on the 1286 List—are demonstrably and closely integrated into China's defense research and industrial base, underscoring critical gaps in existing U.S. government designations and the urgent need for expanded scrutiny and inclusion to the list.

To date, DOD R&E has not established a standardized training program for conducting research security due diligence assessments across all DOD components. Nor has it ensured that components have equal access to shared tools, platforms, or databases necessary for consistent risk analysis. This has created significant challenges—particularly for components with limited funding—who may lack access to commercial tools that others routinely use. As a result, different DOD entities are using different tools and data sources, which inevitably leads to inconsistent risk assessments for similarly situated individuals or institutions, undermining the goal of a unified research security posture across the DOD.

DOD components currently do not share their research security risk assessments with one another, even when evaluating the same individuals or institutions. For example, a proposer may submit a research proposal to ONR one year and later apply to ARO for a separate award. Although ONR may have already conducted a full due diligence review, ARO's research security team typically has no access to that prior assessment, forcing them to repeat the process from scratch. This results in duplicative work, wasted person-hours, and missed opportunities to verify or cross-reference key risk information across proposals, undermining both efficiency and consistency in DOD's research security efforts.

Not all DOD research security offices have access to their own component's grant records. The Select Committee has learned that in some cases, research security personnel are unable to access critical documents such as progress reports, program evaluations, or prior award files. This lack of access significantly impairs the ability to conduct effective due diligence, particularly when assessing a proposer's history of disclosures, affiliations, and compliance patterns. It also creates major gaps in monitoring and enforcement, as research security teams are limited in their ability to verify past conduct or identify inconsistencies across award cycles.

The Committee has learned that DOD R&E currently aims to conduct compliance and monitoring reviews of only approximately 20% of research awards across the enterprise. According to DOD R&E officials, this 20% sample is not limited to awards involving risk-based mitigation but rather includes a broad mix of all awards. By this approach, DOD is not systematically reviewing all awards where mitigation measures were required, meaning there is no assurance that identified risks are being actively managed or that mitigation conditions are being enforced. This gap allows awards with known risk indicators to proceed without meaningful follow-up, undermining both the integrity of the review process and DOD's broader research security posture.

The DOD has not taken a clear policy position—within its risk matrix or broader research security framework—on engagements with foreign entities that pose significant ethical and human rights risks. For example, conducting research collaborations with entities such as BGI Group or Hikvision in areas like artificial intelligence, machine learning, biomedical sciences, and surveillance technologies raises serious ethical concerns.[292,293] These entities have been publicly documented in open-source reporting as contributors to state-led surveillance, repression, and human rights abuses, particularly in Xinjiang Uyghur Autonomous Region—a region in China's Northwest where the PRC has committed crimes against humanity against the Muslim minorities (particularly the Uyghurs) that reside there.[294] Despite well-documented public concerns outlining many Chinese entities involved, DOD's current policy does not explicitly proscribe or flag research collaboration with such entities on ethical or human rights grounds. DOD

R&E should align its research funding policies with broader U.S. government commitments to human rights and ethical research conduct.

DOD does not currently incorporate Section 117[i] foreign gift and contract disclosure data into its regulatory framework for grant proposals and submissions. By contrast, the NSF has issued regulatory guidance establishing a new reporting requirement, pursuant to Section 10339B of the CHIPS and Science Act of 2022 (P.L. 117-167), obligating institutions to disclose any gifts or contracts valued at $50,000 or more from entities in designated "foreign countries of concern," including China. This new NSF requirement parallels, though is not identical to, the existing reporting obligation under Section 117 of the Higher Education Act of 1965, which mandates disclosure of certain foreign gifts and contracts to the U.S. Department of Education.[295] For DOD components conducting due diligence reviews of research proposals, access to Section 117 data—or adoption of NSF's CHIPS Act–aligned disclosure standards within DOD's own grant submission process—would significantly enhance the identification of potential foreign influence indicators and mitigate risks related to research duplication or diversion stemming from foreign funding.

DOD R&E has not established a centralized or standardized proposal submission portal for fundamental research awards across the Department. Currently, each DOD component manages proposal intake independently, often using different systems, formats, and disclosure forms. The lack of a unified portal prevents the use of automated tools and structured data fields that could streamline research security review, reduce manual workload, and improve consistency. Standardizing proposal submission through a common platform would enable faster, more accurate due diligence, allow research security personnel to identify patterns across submissions, and facilitate information sharing across DOD components when proposers apply for multiple awards. The absence of such a system represents a major missed opportunity for efficiency, consistency, and enterprise-level risk visibility.

DOD R&E policy does not scrutinize foreign students working on DOD-funded research unless they are designated as a "covered individual" or key personnel. A major flaw in DOD R&E policy is the ambiguity surrounding what constitutes a "covered individual" and the vague standard of "contributes significantly."[296] To further complicate matters, the CHIPS and Science Act puts forth different verbiage of "contributes in a substantive, meaningful way," which introduces

[i] Section 117 Foreign Gift and Contract Reporting: Section 117 of the Higher Education Act of 1965 (HEA) requires institutions of higher education that offer a bachelor's degree or higher, or that offer a transfer program of not less than two years that is acceptable for credit towards a bachelor's degree, and receive federal financial assistance to disclose semiannually to the U.S. Department of Education any gifts received from and contracts with a foreign source that, alone or combined, are valued at $250,000 or more in a calendar year. The statute also requires institutions to report information when owned or controlled by a foreign source.

additional ambiguity and definitional challenges for implementation and enforcement.[297] These terms can often be interpreted inconsistently from one principal investigator to another—much like the term "collaboration." If a researcher does not view a student or partner as substantially or significantly contributing to the project, that individual may never be flagged for risk review, regardless of his or her actual access to sensitive research. This loophole poses serious vulnerabilities, particularly when foreign students or research partners are involved.

Under the current DOD R&E Risk Matrix,[298] if an individual files a patent in a foreign country of concern—such as China—either prior to filing in the United States or on behalf of that foreign country, even when the invention is based on U.S. government-funded research, such behavior is treated merely as a discouraged factor, not a prohibited one.[299] This is a serious policy gap. The use of U.S.-funded research to advance intellectual property protections in adversarial nations should be explicitly prohibited, not merely discouraged. Anything less allows for the diversion of taxpayer-funded innovation into the hands of strategic competitors—who can then leverage these patents to develop competitive technologies and gain economic and possibly military advantages that directly undermine U.S. technological leadership and national security interests.

There is an apparent absence of any formal enforcement mechanism when violations occur within the current DOD R&E baseline risk matrix. The matrix itself relies heavily on self-reporting, good-faith interpretations, and decentralized implementation at the university or project level. Even when there are clear deviations—such as failing to report a foreign student with access to controlled research or collaborating with restricted entities—there is no standard consequence or enforcement pathway. Violations are rarely escalated unless they are discovered through external audit or whistleblower disclosures. As a result, the entire risk mitigation framework becomes more of a compliance suggestion than a binding requirement.

The persistent occurrence of joint publications by DOD-funded personnel with Chinese defense-affiliated entities suggests systemic failures in research security oversight, grant due diligence, risk mitigation within federally funded research programs, and compliance and monitoring post-award during research grants' period of performance. This underscores an urgent need for strengthened research security measures, standardized risk assessments, and prohibitions against collaborations with foreign military-industrial entities in federally funded research. While DOD R&E appears to be adhering to the bare minimum required by existing laws and policies, more must and should be done.

LACK OF NEW SAFEGUARDS IN THE FACE OF NEW THREATS

The persistent and unaddressed failure of DOD R&E to proactively safeguard research intended for U.S. warfighting capabilities and defense modernization is

not merely a policy shortcoming—it is a systemic breach of national trust. This has allowed the PRC to exploit and divert taxpayer-funded science meant to strengthen American science and technology and military advantage.

Just as concerning as the examples in this report, the Committee understands that some DOD personnel, like many others in the U.S. government research enterprise and academia, view fundamental research as low-risk, openly published due to NSDD-189, thus, not warranting serious scrutiny. The DOD, however, does not fund research simply to advance science and the frontiers of knowledge for general benefits to society and humanity; it is mandated to develop new capabilities for the warfighter and to bolster our national defense. When a program officer in a specialized technology area such as radar research at ONR—or any other DOD grant agency—awards a grant to a U.S. institution, not only should that award push the scientific knowledge and breakthrough advances of the field but also develop and transition to controlled, applied, Small Business Innovation Research awards, classified, and/or special access programs for warfighting capabilities and capacities.

While many research relationships may technically fall within the boundaries of what is legally defined as "fundamental research," legality does not equal strategic prudence. It's important to understand that the value of a research partnership goes far beyond what is eventually openly published in journals. Whether it involves editing a manuscript or building key partnerships during the research and publication process, access to research environments provides unique advantages. Hands-on laboratory work, raw datasets, iterative experimentation, unpublished or pre-patented findings, and real-time dialogue with leading experts offer non-public insights that far exceed the value of open-source publications. These privileged interactions provide foreign collaborators with the ability to ask targeted questions, refine their own parallel efforts, and gain early visibility into emerging technologies—often in areas with direct defense, intelligence, or dual-use implications. Such access accelerates knowledge transfer in ways that are invisible to traditional academic scrutiny but strategically invaluable to adversarial state actors. These risks are magnified when the collaboration involves entities tied to China's defense research and industrial base. The mere fact that such research is considered basic or fundamental research and is openly published does not negate its potential military utility for the PRC.

It is neither speculative nor controversial to argue that DOD-funded research is meant to maintain and expand the technological dominance of the American warfighter. Similarly, it is reasonable to assume that research partnerships and collaborations with entities linked to the PRC military—particularly those identified on U.S. government blacklists—could aid China's own economic, science and technology, and defense development efforts.

DOD R&E takes the position that research initiated before formal policy implementation is exempt from further scrutiny and is therefore deemed appropriate. This is evident in DOD's R&E Risk Matrix, which sets effective dates for certain restrictions—leaving prior, still-active awards outside the policy's scope and exempt from scrutiny or mitigation. This argument suggests that affiliations with high-risk foreign entities and talent programs were acceptable simply because a memo had not yet been issued or formalized—despite these risks being well-documented, publicly reported, and identified on U.S. government entity lists. By this logic, DOD R&E effectively grants retroactive immunity to itself for its lack of protecting DOD-funded research where research relationships posed clear strategic threats.

Some have argued that "we get as much out of them as they do out of us" in reference to research collaborations with China's defense research and industrial base—yet this claim is entirely unsupported by empirical evidence. To this Committee's knowledge, no comprehensive study has been conducted across the defense research ecosystem to validate this assertion. There has been no systematic effort to interview principal investigators (PIs), collect data, or analyze outcomes to determine whether U.S. researchers gained unique data, access to equipment they do not have, or technical capabilities they previously lacked from their Chinese counterparts. Nor has the U.S. government demonstrated whether any such "new" knowledge gained from their Chinese counterpart was subsequently leveraged by DOD program managers to enhance U.S. defense capabilities.

Previous arguments suggesting that protections or restrictions on research collaborations with the PRC and other authoritarian regimes should apply only to narrowly defined "critical technology" areas fail to account for the broad and evolving nature of China's military-civil fusion (MCF) strategy. The assumption that all other fields should remain "free and open" ignores the reality that the PRC has become increasingly adept at repurposing a wide range of civilian STEM research for defense applications—including areas not traditionally listed as sensitive.

For years, the PRC has exploited vulnerabilities in the U.S. research ecosystem through a wide range of mechanisms that extend far beyond the statutory records and administrative directives discussed earlier in this report. These include:

- Converting or diverting U.S. government-funded research into intellectual property that is commercialized in the PRC may be in violation of research grants or university terms and conditions or, at a minimum, solely benefit the PRC economically.[300]
- Repurposing U.S. research, including in seemingly innocuous fields, like climate change research, to PRC defense programs and weapons system development that can undermine or eliminate U.S. military superiority.[301]

- Directing or redirecting U.S. critical technology research funded by industry and federal and state governments for China's benefit through selectees of PRC talent recruitment programs who are under contract with and tasked by the PRC government.[302]
- Improperly influencing or manipulating federal research grant evaluations and award decisions.[303]
- Applying to U.S. research to enable or enhance the PRC's domestic surveillance apparatus and human rights abuses.[304]
- Influencing or co-opting U.S. academics' hiring or sponsoring of PRC national PhD students, postdoctoral fellows, and visiting researchers that circumvent merit-based processes and build talent and training pipelines that predominantly benefit China.
- Establishing or co-opting networks of organizations in the U.S. that enable knowledge transfer, talent recruitment operations, and PRC state-backed venture capital investments intended to offshore critical technology to China. A subset of this effort includes targeting recipients of U.S. Small Business Innovation Research programs.
- Influencing or tasking researchers at federal research facilities and laboratories to facilitate formal cooperative agreements with PRC institutions, sometimes violating internal conflicts of interest and ethics policies.
- Engaging in behaviors that violate norms of transparency, reciprocity, and other aspects of integrity that equate to deception, fraudulent publications, or other forms of dishonest research and publication practices.

While DOD R&E has taken some positive steps, more action is required. DOD R&E has implemented a nomination process for adding entities to the Section 1286 List. This is a step in the right direction, as it empowers individuals conducting research security due diligence to leverage sourced information on high-risk entities and formally submit nominations for review. DOD R&E has recently issued guidance to reinforce the criteria for determining when research qualifies as fundamental, alongside promoting the use of the R&E Science and Technology Protection Guide to support consistent application of research security principles.[305] Additionally, DOD R&E continues to convene its Due Diligence Working Group with DOD components. These meetings provide a constructive forum for components to raise concerns, share best practices, and gain visibility into each other's research security efforts—ultimately helping to strengthen programs across the Department.

However, far more must be done. For far too long, DOD R&E has failed to safeguard the very foundation of our future warfighting advantage—fundamental

research. This negligence has allowed adversarial institutions to siphon off taxpayer-funded innovation, eroding America's technological edge and strengthening the very militaries that our warfighters may one day face on the battlefield. By refusing to confront these risks head-on, DOD R&E has not only failed to protect its fundamental research ecosystem but has also jeopardized U.S. national security and squandered billions of dollars meant to advance our defense capabilities. By remaining stagnant in its duty to proactively protect the defense research ecosystem, DOD R&E has very likely subsidized the PLA's military modernization—paid for not by Beijing, but by American taxpayers. This failure has turned U.S. defense research dollars into a resource for our foremost adversary, directly eroding the U.S. warfighting advantage DOD R&E were meant to secure.

RECOMMENDATIONS

CCP on the Quad laid out a detailed analysis of the gaps in U.S. policy and regulation that have enabled the Chinese Communist Party to exploit American universities. This report highlights additional issues. Accompanying this report, Chairman Moolenaar is introducing legislation to address these issues.

The *Securing American Funding and Expertise from Adversarial Research Exploitation Act of 2025 (SAFE Research Act)* will prohibit federal funding to researchers in science and technology fields whose collaborations with foreign adversaries may pose a national security risk and prohibit DOD funding to universities that partner with Chinese institutions that pose a national security risk.

In addition, the *SAFE Research Act* will require enhanced disclosures from federal researchers of their ties to foreign adversary countries, including disclosure of collaboration, funding, travel, and affiliations with entities and individuals based in a foreign adversary country like the PRC. Finally, the bill will restrict federally funded researchers from sharing non-published research outcomes or expertise with prohibited foreign adversary entities even after the life of the grant.

The *SAFE Research Act* hyperlink to the bill text is in Appendix A below.

In addition to adopting the *SAFE Research Act*, the Committee recommends:

1. **Conduct Damage Assessments on Research identified with China's Defense Research and Industrial Base**

DOD should conduct a comprehensive analysis of affected grants to determine whether research outcomes transitioned into controlled programs, SBIR/STTR initiatives, classified projects, or special access programs tied to warfighting capabilities. This review should also assess whether any such advancements were simultaneously or subsequently diverted to China's military—due to research collaboration—providing critical insights into the scope of technology leakage from U.S.-funded research into the PRC's defense research and industrial base.

Answering these questions is critical to determining whether our adversaries now possess the same advanced capabilities we do—and, more importantly, whether they have already developed countermeasures—because they worked on the technology alongside us.

2. **Establish a Mandatory Standardized Training Curriculum**

DOD should develop and implement a mandatory, standardized training curriculum for all personnel involved in research security and due diligence reviews. This will ensure baseline competency and consistency in risk assessments across DOD components and funded institutions. No due diligence program should operate without properly trained personnel.

3. **Standardize Database Access and Analytical Tools Across DOD**

DOD should centralize and standardize access to all commercial and government databases used in research security vetting. At a minimum, all research security and due diligence offices must be granted uniform access to key paid platforms (e.g., bibliometric aggregators, commercial platforms, etc.). Lack of access to critical intelligence tools undermines the integrity and effectiveness of risk assessments. Additionally, DOD should ensure that due diligence offices conducting research security work have access to grant data held internally by each DOD component grant agency.

4. **Require Grant Numbers in all Publications**

In the dataset analyzed for this study, numerous publications acknowledged DOD funding but failed to include the corresponding grant number. This omission hinders traceability, undermines transparency, and complicates efforts to assess the downstream impact of federally funded research.

5. **Codify All U.S. Government Blacklists as Prohibited Entities**

DOD should revise its risk matrix to categorically prohibit research collaboration with any entity listed on a U.S. government designation or sanctions list, including:

- Department of Commerce BIS Entity List
- Department of Treasury OFAC Sanctions List
- Department of Defense 1260H List
- Any other federal control, restricted, or watch list.

These lists already represent vetted national security determinations. Allowing DOD-funded research with such entities contradicts existing U.S. policy and exposes taxpayer-funded innovation to adversarial exploitation.

6. **Codify and Prohibit all Research with Entities Known to be Part of China's Defense Research and Industrial Base**

This includes—but is not limited to—the 58 SASTIND co-administered universities, the so-called "Seven Sons of the Ordnance Industry" (军工七子) universities, national defense-designated laboratories, cyber ranges, and entities affiliated with or supporting China's intelligence, security, and internal surveillance apparatus.

7. **Establish a Mechanism to Share DOD Due Diligence Reports Across DOD Research Security and Due Diligence Offices**

Establishing a mechanism to share DOD due diligence reports across research security and due diligence offices is critical to ensuring consistent and effective protection of taxpayer-funded research. Currently, due diligence efforts are often siloed within individual components, leading to duplication, gaps in awareness, and uneven standards of enforcement. By creating a system for cross-component sharing, DOD can leverage existing work, avoid redundant investigations, and build a unified risk picture of foreign influence, problematic partnerships, and emerging threats. This approach would not only increase efficiency but also strengthen oversight, ensuring that no research award slips through the cracks simply because already assessed proposals/information were not accessible to all relevant offices.

8. **Work with the Department of Education's Office of General Counsel to Secure Access to Section 117 Data for Due Diligence**

Access to Section 117 foreign gift and contract data is essential for DOD's due diligence and research security mission. Without visibility into the foreign funding streams flowing into U.S. universities, DOD cannot fully assess potential conflicts of interest and commitment, undisclosed foreign influence, or risks of technology diversion when awarding federal research grants. Section 117 data provide critical context—such as partnerships with entities of concern or funding from foreign governments—that may not be disclosed—as required—in grant applications or publications. By working with the Department of Education's Office of General Counsel to secure access to this information, DOD can strengthen its ability to identify high-risk collaborations, apply consistent mitigation measures, and protect taxpayer-funded research from exploitation by foreign adversaries.

9. **Establish a One-Year Interagency Task Force on Adversarial Entities**

DOD should establish a dedicated interagency task force, operating for at least a one-year term, to conduct a comprehensive deep-dive analysis of research institutions, universities, talent recruitment programs, and commercial entities linked to China, Russia, Iran, and North Korea. The task force should recommend additions to the DOD's 1260H and Section 1286 lists and publish unclassified findings where appropriate to alert the broader research ecosystem.

10. **Enforce Post-Award Compliance Monitoring and Spot Audits**

For all awards requiring mitigation measures, DOD should implement mandatory 100% compliance monitoring to verify adherence to the approved mitigation/safeguards. Additionally, DOD should implement randomized spot checks on at least 20% of all awards where no mitigation was initially required. This will create accountability, identify systemic weaknesses, and deter future circumvention of mitigation frameworks.

11. Add Intellectual Property and Patent Theft as a Prohibited Risk Factor

DOD should amend its risk matrix to prohibit research collaboration with entities or individuals linked to documented intellectual property theft or patent infringement. No DOD-funded recipient would be allowed to file patents in China based on the DOD-funded research. Tolerating known IP violators undermines U.S. economic and technological competitiveness and incentivizes further abuse.

12. Create a New Category on the Risk Matrix for Ethical Issues

DOD R&E should create a new, distinct category within its research security risk matrix to account for the ethical and legal implications of conducting research—particularly in sensitive technology fields—with entities based in foreign countries of concern that are credibly linked to human rights abuses. This category should trigger heightened scrutiny or automatic disqualification when proposed collaborations involve research that could be applied to surveillance, repression, forced labor, or other violations of international human rights norms.

13. Congress Must Enact the SAFE Research Act to Close the Loopholes that Continue to Allow U.S. Taxpayer-Funded Research to be Exploited by Adversarial Foreign Entities

The SAFE Research Act of 2025 ends federal research funding to individuals and institutions tied to foreign adversaries' military, surveillance, or repression networks by requiring transparency and imposing clear restrictions on award eligibility and post-award conduct:

Prevents Foreign Adversaries' Exploitation of Taxpayer-Funded Research

- Individual Researchers: Prohibits all federal agencies from issuing a "covered award" to any institution whose project is led by a researcher who maintained a prohibited affiliation—like formal teaching, research, advisory, or other collaboration—with a hostile foreign entity in the last five years.
- University Partnerships: Prohibits DOD funding to any university with an active "covered partnership"—research partnership, IP licensing agreement, facilities or data sharing, or CCP-controlled centers on their U.S. campus—with a hostile foreign entity.

- Waiver: The heads of agencies can waive the prohibitions on a case-by-case basis when it is in the national security interest of the United States, with notice to Congress.

Requires Disclosure of Foreign Adversary Ties

- Applicants seeking federal funding must disclose foreign adversary collaborations, travel, gifts, funding, or talent program participation over five years. Disclosures must include counterparties, terms, and dollar values.

The SAFE Research Act will ensure that taxpayer-funded research benefits America, not our adversaries. It protects taxpayer dollars, stops adversary access to breakthrough science, and closes a critical national security gap with clear, common-sense rules.

14. Establishment of the National Research Security, Integrity, and Compliance Center (NRSICC)

The United States government and its federally funded research enterprise face persistent challenges in protecting critical and emerging technologies from exploitation by foreign adversaries. The current decentralized framework—spread across multiple federal funding agencies and institutions of higher education—has proven insufficient, inconsistent, and ineffective in preventing the diversion of taxpayer-funded research, intellectual capital, and technological know-how.

To address this, the Executive Branch or Congress should authorize and fund the creation of the NRSICC. This new centralized entity would consolidate all federal research security and due diligence efforts, establish uniform standards and policies, and provide cross-agency oversight and coordination. The NRSICC would operate as a centralized authority responsible for risk assessments, compliance monitoring, investigative lead generation, and engagement with both academia and industry. Its creation would eliminate duplicative efforts, close enforcement gaps, reduce costs, and significantly enhance the federal government's ability to protect U.S. technological and economic leadership:

- Current research security efforts are fragmented across federal agencies, with varying standards, limited data sharing, and inconsistent due diligence protocols.
- Duplication of effort and lack of automation result in wasteful spending, slow assessments, and gaps in monitoring and compliance enforcement.
- Foreign adversaries—particularly the PRC—exploit these weaknesses, targeting U.S. research infrastructure through talent programs, joint research partnerships, and statutory mechanisms that mandate acquisition of foreign science and technology.

- The NRSICC will centralize policy, oversight, and technical solutions, enabling the federal government to more effectively assess risk, detect compliance failures, and protect national security interests in the research ecosystem.

Policy Development and Oversight

- Establish and enforce uniform federal standards for research security and due diligence across fundamental research and SBIR/STTR programs.
- Standardize proposal forms, reporting documents (e.g., RPPR), and risk assessment templates across all agencies.
- Maintain and update a consolidated list of prohibited or high-risk foreign entities, including malign talent programs, defense-affiliated institutions, and sanctioned organizations.
- Serve as the coordinating body for research security policy across the federal government, including alignment with export control and national security directives.

Due Diligence and Risk Assessment

- Conduct all pre-award due diligence and post-award compliance monitoring for fundamental research and SBIR/STTR contracts.
- Use automated tools and data aggregation to streamline initial risk flagging and enable deep-dive human analysis where needed.
- Implement a standardized, tiered risk assessment framework to guide funding decisions and mitigation strategies based on quantitative and qualitative indicators.
- Conduct ongoing monitoring of research activities and publications to detect noncompliance or emerging risk.

Investigative Coordination and Compliance

- Refer criminal, civil, or administrative violations identified during the due diligence process to appropriate law enforcement or oversight bodies (e.g., DOJ, OIG, DCIS).
- Support investigative task forces and provide technical expertise in research security cases.
- Oversee and manage a Voluntary Disclosure Program for institutions of higher education, offering reduced penalties for past compliance failures in exchange for proactive identification and resolution of those failures.

Technology Infrastructure and Automation

- Build and maintain a centralized IT infrastructure capable of aggregating relevant government and public data (e.g., visa data, travel records, patents, Section 117 disclosures, federal grant records).
- Integrate and automate entity screening using machine-readable forms and customizable filters based on evolving risk indicators.
- Maintain an integrated list combining the NDAA Section 1286 List, BIS Entity List, OFAC sanctions, and other risk designations.

Public-Private Sector Engagement

- Serve as the primary federal interface on research security for academia, industry, and allied governments.
- Promote transparency, compliance best practices, and two-way communication with research institutions and federal award recipients.

The NRSICC's Estimated Cost and Funding Model

- Implement a 0.1% to 0.4% "Research Security Due Diligence Fee" on federal fundamental research and SBIR/STTR awards. This is modeled after the existing "Facilities and Administrative" (F&A) rate and would fund all NRSICC operations without requiring additional appropriations.
- Consolidation of existing contracts, licenses, and due diligence functions across agencies is projected to save $10–$20 million over several years.
- Repurposing the NSF SECURE Center and integrating its functions into the NRSICC would result in several million dollars in cost avoidance.

Streamlined investigations and lead generation are expected to recover millions of dollars annually through civil settlements and fraud prevention.

APPENDIX A: SAFE RESEARCH ACT BILL TEXT

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