Select Committee on China

House Permanent Select Committee on Intelligence

Containment Breach:

The U.S. Department of Energy's Failures in Research Security and Protecting Taxpayer-Funded Research from Foreign Exploitation

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EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) funds research to advance energy technologies, enhance national and economic security, and expand the nation's fundamental scientific understanding. DOE is tasked with reducing the threat of nuclear proliferation, ensuring the reliability of the U.S. energy supply, and managing environmental cleanup from the Cold War nuclear weapons program. The Department also oversees 17 National Laboratories, which serve as the backbone of America's scientific and technological innovation ecosystem. Three of the 17 labs are designated national security labs and overseen by the DOE National Nuclear Security Administration (NNSA). DOE's Office of Science is one of the largest federal sponsors of basic research in the physical sciences, supporting a vast portfolio of projects in materials science, chemistry, physics, computing, and energy innovation that are critical to maintaining U.S. scientific and strategic leadership.[1,2]

The investigation conducted an extensive review of DOE-funded research projects involving the People's Republic of China's (PRC) technology-transfer apparatus and military-linked entities. In addition, the investigation examined the roles, responsibilities, and effectiveness of multiple components within DOE's research-security framework, including—but not limited to—the Office of Intelligence and Counterintelligence, the Office of Research, Technology, and Economic Security (RTES), and the Department's National Laboratory system. 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[a]—many of which appear on various U.S. government national security entity lists. These collaborations involved research in sensitive technical domains such as quantum sensing, semiconductors, machine learning, artificial intelligence (AI), advanced materials, nuclear science, and explosion science—many with clear dual-use, national security, and military applications.

Balancing academic freedom and open science with national security interests is undoubtedly 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.

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[a] China's defense research and industrial base is any PLA organ, "Seven Sons of National Defense" school, "Seven Sons of Ordinance (Arms) Industry" school, a university co-administered by the State Administration for Science, Technology, and Industry for National Defense (SASTIND), defense-designated labs and centers, state-owned enterprise defense conglomerates, and the public security and intelligence apparatus.

This investigative report reveals extensive research collaborations with the PRC, along with the DOE's decades-long failures to promptly and proactively implement adequate research security and due diligence measures. DOE did not establish the RTES office until 2023, years after extensive public evidence had already documented the PRC's systematic targeting and exploitation of U.S. national laboratories, academic institutions, and federally funded research partnerships. These longstanding failures and inaction have left taxpayer-funded research vulnerable to exploitation by China's defense research and industrial base as well as state-directed technology transfer activities.

FINDINGS

The findings of the investigation are based on extensive analysis of publication data, grant and funding records, Chinese-language source materials, and multiple briefings, meetings, and materials provided by relevant DOE offices.

1. Recent DOE-funded Publications Reveal Continued Research Relationships with China's Defense Research and Industrial Base. The investigation identified approximately 4,350 research papers between June 2023 and June 2025,[b] acknowledging DOE funding or research support involving research relationships with PRC entities, including over 730 DOE awards and contracts. Of these, approximately 2,200 publications—or roughly 50%—were conducted in partnership with entities within China's defense research and industrial base.

2. Continued Collaboration with China's Defense Research and Industrial Base. Numerous DOE-funded research awards—some still active—were conducted in collaboration with entities directly tied to China's defense research and industrial base. Among the most concerning are partnerships involve the "Seven Sons of National Defense" Chinese universities, numerous State Administration for Science, Technology, and Industry for National Defense (SASTIND)[c] co-administered schools, national defense-designated laboratories, China's primary nuclear weapons research and development complex—the Chinese Academy of Engineering Physics (CAEP), the People's Liberation Army's (PLA) National University of Defense Technology, state-owned enterprise defense conglomerates, and a Chinese cyber-range. Many of these entities are publicly linked to the PLA and some of which appear on U.S. government entity lists due to their roles in

[b] Many of the DOE 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] 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.

advancing China's military capabilities or engaging in human rights violations. Although many of these entities appear on the U.S. Department of Commerce Bureau of Industry and Security (BIS) Entity List, the Department of War's (DOW) 1260H List, or other federal restricted entity lists—and are widely recognized as supporting the PLA—DOE-funded researchers are still, in many cases, conduct research with them. This lapse reflects DOE's Office of Basic Research, RTES, and National Laboratories' failure to adopt a proactive approach to outright prohibit such research relationships.

3. Recent DOE-Funded Publications Reveal Research Relationships with Entities Known to Commit Human Rights Abuses. Much of the current discourse around research security focuses on the national security risks of conducting federally funded research with Chinese entities. However, an equally urgent issue is the ethical considerations of research. Specifically, what the research enables, and whom we choose to collaborate with. The Select Committee identified multiple instances where DOE-funded research involved entities with well-documented roles in human rights abuses, direct participation in China's mass surveillance apparatus, or a combination thereof.

4. Recent DOE-Funded Publications Reveal China Scholarship Council–Affiliated Researchers Participating in DOE-Funded Research. A review of publication data from 2023 to 2025 reveals that researchers affiliated with Chinese universities, laboratories, and defense-linked entities were funded by or received support from the China Scholarship Council (CSC) and actively participated in research supported by the DOE.

5. Why Protecting DOE-Funded Research Matters: Case Studies on How U.S. DOE-Supported Researchers Likely Advanced the PRC's Strategic Weapons Development. To underscore the risks of PRC collaboration involving DOE-funded research, the Select Committee identified multiple troubling case studies. One involves a Stanford University and SLAC National Laboratory professor concurrently holding a position with a subsidiary of China's primary nuclear weapons research and development complex, CAEP, while also conducting research with Chinese defense-designated laboratories. Another case involves fundamental research on nitrogen conducted by a U.S. professor—who had worked extensively on DOE-funded projects—in collaboration with a Chinese Academy of Sciences laboratory. According to Chinese sources, this research allegedly contributed to breakthroughs in high-yield explosives and 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 the same U.S. professor and a Chinese institution, despite the professor's long history of working on both DOE- and DOW-funded research. 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 technology developed was said to have profound practical significance for China's aerospace technology development and modern defense construction**.

6. As of 2025, DOE's National Laboratory system employs or hosts nearly 2,000 Chinese national researchers and contractors. This issue carries significant national-security implications given the sensitivity of the research environment and access that being in the National Laboratories provides. National Laboratories provide access to experts in critical technology fields, advanced instrumentation, high-performance computing, proprietary software, experimental data, and specialized training that cannot be replicated elsewhere. When researchers affiliated with a strategic competitor operate at scale within these environments, the risk is not limited to individual misconduct, but to the creation of systemic knowledge-transfer pipelines.

7. Shortfalls in DOE Research Security Framework, Practices, and Policies. Despite its critical role in funding and advancing U.S. innovation in emerging and dual-use technologies imperative to the U.S.'s economic and national security, DOE has been slow to implement policy and has not established consistency for research security, due diligence, and compliance and monitoring.

- The DOE RTES Office lacks full access to DOE's own internal grant and award data, limiting its ability to conduct comprehensive research security reviews, track foreign collaborations, and identify high-risk awards.
- The DOE RTES Office currently lacks a risk assessment matrix comparable to the Department of War's (DOW) research security framework. As a result, DOE is left without a standardized methodology to evaluate and categorize risk levels in federally funded research collaborations. This absence not only undermines the Department's ability to make informed decisions about foreign partnerships or entity affiliations, but also leaves program officers and research institutions with little guidance when questions arise regarding how DOE defines, measures, or mitigates research security threats.
- DOE appears to operate two distinct vetting mechanisms for research security: one for basic research conducted at universities and another for employees and contractors within the National Laboratory system. This bifurcated approach creates inconsistencies in oversight, due diligence, and risk mitigation. The result is a fragmented and uneven security posture that leaves significant gaps in protecting taxpayer-funded research from foreign exploitation. A unified, risk-based framework is urgently needed to ensure consistent vetting, regardless of whether

research is conducted inside or outside DOE's labs. This inconsistency within DOE mirrors similar failures observed within DOW, where different components conduct due diligence using disparate mechanisms, standards, and levels of scrutiny. In both agencies, the absence of a centralized, standardized vetting framework undermines the effectiveness of research security efforts.

- DOE currently does not share their research security risk assessments with other grant agencies, even when evaluating the same individuals or institutions. This lack of coordination results in redundant due diligence efforts, fragmented visibility across agencies, and increased vulnerability to foreign talent recruitment and technology transfer schemes. Without a mechanism for interagency sharing of flagged risks, malign actors can exploit stove-piped systems, receiving awards from one agency even after being denied or flagged by another.
- DOE has permitted access to advanced computational resources and infrastructure by individuals and institutions affiliated with China's defense research and industrial base through DOE-funded researchers. These resources, which include some of the world's most advanced high-performance computing (HPC) environments and modeling software, are intended to support U.S. scientific leadership and national security priorities. Instead, they may be exploited to advance the capabilities of a strategic adversary. DOE's failure to control access to these assets—whether through inadequate vetting of collaborators, publication-based leaks, or open software repositories—represents a fundamental breakdown in research security.
- DOE lacks a centralized, automated proposal submission portal for fundamental research awards, resulting in fragmented oversight, limited data visibility, and inconsistent application of research security reviews across program offices.
- DOE does not currently conduct post-award compliance or monitoring of grants, even in cases where risk mitigation measures are required. DOE's failure to conduct post-award compliance or monitoring—even in cases where specific risk mitigation measures were required—is a vulnerability in the U.S. research security apparatus. By effectively taking a "trust and forget" approach, DOE allows potentially high-risk collaborations to proceed unchecked after initial approval, creating fertile ground for foreign exploitation. This lack of enforcement and compliance/monitoring not only renders pre-award due diligence and implemented mitigation meaningless but also signals to adversarial actors—like the PRC—that there are few, if any, consequences for violating the terms of taxpayer-funded research awards. Due to the lack of post-award monitoring, any

prohibitions or screening measures applied by DOE during the pre-award proposal process lose effectiveness over the life of the award. Because publications and collaborations typically occur after the initial due diligence phase, DOE does not appear to have a mechanism to detect or address emerging high-risk partnerships that develop during the performance period.

- The DOE has failed to take a clear public position within its broader research security framework on engagements with foreign entities that pose serious ethical and human rights risks. By refusing to draw red lines around collaborations with institutions tied to forced labor, surveillance technologies, or human rights abuses, DOE leaves the door open for U.S. taxpayer-funded research to be entangled in morally and strategically compromising partnerships. In an era where authoritarian regimes—such as the PRC—increasingly fuse scientific advancement with repression and military power, the absence of ethical guardrails in DOE policy is both unacceptable and deeply shortsighted.
- The DOE RTES office lacks sufficient Chinese-language–capable analysts to perform deep, source-validated research security due diligence into the Chinese vernacular. While DOE has acknowledged having some contract linguists, the sheer volume of DOE-funded publications and collaborative research outputs involving Chinese institutions identified in just a two-year period likely far exceeds what limited linguistic support could reasonably vet. Proper due diligence would have required sustained, systematic analysis of Chinese-language sources at scale to identify affiliations, funding streams, and defense-related linkages—particularly if post-award compliance and monitoring are to be put in place. China uses its language as a first layer of encryption. For those who know what to look for, where to find it, and how to interpret and translate it, Chinese-language open-source materials can be as revealing—and in some cases more informative—than the classified intelligence information the RTES office relies on from the DOE Office of Intelligence and Counterintelligence. Importantly, these sources are entirely unclassified, legally accessible, and broadly shareable, making them a critical but underutilized component of effective research security due diligence.
- The DOE does not currently incorporate Section 117 foreign gift and contract disclosure data into its framework for evaluating grant proposals and submissions, a critical oversight. Section 117 of the Higher Education Act requires U.S. universities to report substantial foreign gifts and contracts, offering a valuable window into potential conflicts of interest, conflicts of commitment, and foreign influence. By failing to leverage this information, DOE is unable to fully assess whether applicants or

subrecipients have extensive financial ties to foreign governments or entities of concern, including those affiliated with the PRC.

- DOE-funded/supported research publications often cite national laboratory facility contracts, which can obscure the scale and scope of support, technology areas, and typically span decades. In many publications authored by researchers affiliated with DOE-funded projects or National Laboratories, the acknowledgment of support is made through citation of DOE facility contract numbers. While this may appear to be a formality, these facility contracts often represent large-scale, multi-purpose federal funding mechanisms—frequently worth hundreds of millions to billions of dollars—that support not only research, but also infrastructure maintenance, operations, personnel, and a wide array of scientific services. This practice creates a transparency gap in understanding the specific scale, intent, and oversight of research support.

Additionally, the Select Committee heard from multiple DOE executives who defended the continued presence of thousands of PRC national researchers in the national labs by claiming, in effect, that we want them in our labs so they can see how advanced we are—and go back to China telling their colleagues, thus giving up on beating the United States. This rationale is not only stunningly naïve, but also completely divorced from decades of empirical evidence and the CCP's well-documented strategy of deliberately embedding scientific talent abroad to absorb, replicate, and leapfrog U.S. capabilities through reverse-engineering and targeted technology transfer.

During this investigation, the Select Committee learned that a Federally Funded Research and Development Center (FFRDC) had been tasked with conducting an internal assessment of research security and other related issues within the DOE National Laboratory system. The FFRDC carried out interviews with laboratory scientists and performed site surveys to identify weaknesses in DOE's research security posture. After completing its work, the FFRDC submitted an unclassified report to DOE detailing significant research security failures, including issues that implicated the Department's own Office of Intelligence and Counterintelligence. Rather than addressing these findings, the previous DOE Director of the Office of Intelligence and Counterintelligence classified the report, effectively burying its contents and preventing accountability. The DOE Director of Intelligence and Counterintelligence was later dismissed. The report remains withheld from the public due to its retroactive classification. Classifying a report to conceal systemic failures is inexcusable and undermines the very foundation of research security and integrity. By suppressing critical findings, DOE leadership not only avoided accountability for its research security shortfalls but also initially denied policymakers the information needed to fix vulnerabilities that place U.S. taxpayer-funded research at risk. This kind of institutional self-protection fosters the same culture of complacency found across many U.S. universities, one that

foreign adversaries readily exploit. It leaves the Department blind to its own vulnerabilities and unwilling to confront the systemic failures that endanger U.S. research security. Furthermore, this action is potentially in violation of Executive Order 13526, which explicitly stipulates that "in no case shall information be classified, continue to be maintained as classified, or fail to be declassified in order to conceal violations of law, inefficiency, or administrative error; to prevent embarrassment to a person, organization, or agency; to restrain competition; or to prevent or delay the release of information that does not require protection in the interest of national security."[3]

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 DOE—and the research community writ-large—maintain that if research is deemed "fundamental" and is neither controlled nor classified, it should remain open. This position disregards and ignores more than 25 years of evidence and the reality that such openness enables exploitation and targeting by China, particularly in dual-use and defense-relevant fields with clear military applications. This can undermine U.S. national interests and security and enables the exploitation of DOE-funded research in critical and emerging technology areas.

China has exploited international research cooperation through a state-directed apparatus that includes talent recruitment programs, military-civil fusion (MCF, 军民融合) policies, industrial policies, medium/long-term plans, statutory records, lawfare, and a vast network of foreign partnerships. These mechanisms have enabled Beijing to acquire sensitive technologies and technical know-how, which it uses to compete directly with the United States in critical technology areas and warfighting capabilities.

These efforts advance the PRC's strategic goals of economic dominance, technological superiority, and military modernization 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.

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The Select Committee on the CCP Chairman John Moolenaar introduced 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 DOW 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 PRC report (the "Cox Report") after a bipartisan investigation led by Rep. Christopher Cox (R-CA). The Cox Report concluded that the PRC 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—specifically at DOE national weapons laboratories—and documented how China used scientific exchanges and university research collaboration to gain access to sensitive technologies in fields such as nuclear weapons research and development, aerospace, materials science, and high-performance computing—all critical to PLA modernization.[4]

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.[5]

In 2017, Chinese media published an article titled "America's Hidden Role in Chinese Weapons Research." The article noted that so many former DOE Los Alamos National Laboratory (LANL) scientists had returned to the PRC to work on military research programs that they had come to be known as the "Los Alamos Club." The piece described the PRC's systematic efforts to lure scientists back from overseas institutions and the significant military payoff that strategy produced. These returnees reportedly contributed to China's development of hypersonic weapons capable of penetrating U.S. missile-defense systems and the design of new submarines able to patrol quietly along the U.S. West Coast.[6]

The article detailed the CCP's talent recruitment approach—combining lucrative financial incentives, appealing to patriotism, and promises of enhanced career opportunities—to attract scientists with overseas defense-research experience. Among those highlighted was Professor Chen Shiyi, a former Los Alamos scientist who, as Director of the State Key Laboratory for Turbulence and Complex Systems at Peking University, played a pivotal role in developing China's hypersonic glide vehicle. The article further noted that, while one returning researcher claimed not

to hold a U.S. security clearance or citizenship, the research he and his Chinese colleagues conducted had both civilian and military applications.[7]

Subsequent analysis of the so-called "Los Alamos Club" was conducted to assess the scope of what was outlined in Chinese media reporting. A review identified more than 160 scientists who had previously worked at Los Alamos National Laboratory and later returned to the PRC to support a range of domestic research and development initiatives, including defense and military programs such as hypersonics and submarine quieting technology. Among them, 59 individuals participated in the PRC's flagship foreign talent recruitment initiative: the Thousand Talents Program (TTP) and its youth branch, the Youth Thousand Talents Program (YTTP).[8]

Despite historical examples—dating back more than 25 years—demonstrating how fundamental research, academia, and intellectual capital have been systematically targeted and leveraged to advance China's economic and military objectives, DOE has, for decades, failed to act with sufficient urgency. During this period, the Department did not establish robust frameworks, policies, or due-diligence mechanisms to safeguard taxpayer-funded research, technology, and downstream defense capabilities from direct exploitation by the PRC's military and broader technology-transfer apparatus. It was not until 2023 that the DOE finally established its own dedicated research security office—years behind other federal agencies—despite persistent warnings and mounting evidence of foreign exploitation.

As of 2025, nearly 2,000 Chinese nationals were employed—as contractors—in person across the DOE national laboratory system. Even after a Chinese media outlet openly celebrated the success of the PRC's efforts to recruit more than 160 former Los Alamos scientists—dubbed the "Los Alamos Club"—to support China's nuclear and weapons development, DOE appears not to have learned from this failure as it continues to allow significant amounts of Chinese to access and work in their national labs. By continuing to grant access to its laboratories, research infrastructure, and human capital, DOE is enabling the systematic diversion of taxpayer-funded research to the PRC. This permissiveness has created training pipelines that pair PRC researchers with some of the world's most advanced scientific talent and equipment, only for that expertise to be repatriated to China's defense research and industrial base, where it is used to develop weapons systems aimed squarely at the United States and its allies.

Additionally, some have argued that imposing restrictions on who may work with or within the DOE's national laboratories would weaken the labs' scientific capabilities and limit their ability to attract top global talent. However, the strength of the national laboratory system is not measured solely by the diversity of its workforce, but by the integrity and security of the research it produces. Safeguards that prevent individuals affiliated with foreign adversary governments or

military-linked institutions from accessing sensitive research are not a constraint. They are a necessary protection to ensure that taxpayer-funded innovation advances U.S. interests, not those of our competitors. Moreover, there exists a vast global pool of qualified researchers, industry partners, and academic collaborators who are not connected to foreign militaries or intelligence services; the laboratories can and should deepen partnerships with these legitimate, non-adversarial actors. The laboratories' scientific excellence depends on both openness and trust, and those principles cannot coexist without a foundation of security and accountability.

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.

Over the years, China has established a vast and highly coordinated technology and know-how acquisition apparatus backed by industrial policies, state-directed talent recruitment programs, Five-Year Plans, medium- and long-term science and technology development strategies, laws, and formal government statutory records. Official PRC policy documents—including the National Medium-and Long-Term Plan for Science and Technology Development, Made in China 2025, successive Five-Year Plans, and military-civil fusion directives—explicitly identify foreign technology acquisition, overseas talent recruitment, and the absorption of international research 成果 ("results") as core mechanisms for advancing China's strategic, technology, and military objectives. These directives are operationalized through state-run talent programs, research partnerships, professional appointments, defense-linked laboratories, and provincial and municipal innovation platforms that systematically target Western universities, national laboratories, and researchers for access to expertise, intellectual property, data, and training. Far from ad hoc or incidental, this apparatus is deliberate, centrally guided, and openly documented in Chinese-language government sources, demonstrating a sustained state strategy to leverage foreign-funded research—particularly from the United States—to accelerate China's technological and military development strategies. Put simply, China has a comprehensive state-directed strategy to achieve technological and military dominance by systematically capturing, transferring, absorbing, and operationalizing foreign technologies, intellectual property, patents, methods, data, and applied know-how.

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).[9] 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 research ecosystem is deliberately structured to advance state objectives. China's academic and scientific institutions operate under and dictated by a system of centralized national planning. In contrast, the United States maintains a decentralized research ecosystem driven by universities, private industry, and multiple federal agencies and guided by competition, peer review, and market demand rather than political directive. The implication of this fundamental difference is clear: Chinese research is coordinated to advance state power, while U.S. research evolves organically through open inquiry and scientific freedom.

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, as well as 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 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 strategy to encourage technology transfer from ethnic Chinese scholars overseas.[10]
- 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.[11]
- 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."[12,13]

- 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.[14,15]
- 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.[16]
- 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."[17]

- 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.[18,19]
- 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.[20,21]

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 and know-how transfer, detailing how China leverages overseas students, foreign-trained experts, state-directed talent programs, and joint research platforms to channel innovation back into its technology acquisition 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 and innovation system. 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 U.S. researchers and institutions recognizing the downstream risks—to fuel the PRC's goals of technological self-sufficiency, economic dominance, and military modernization.

Despite China's broad and coordinated technology acquisition efforts targeting open research environments, academia and some U.S. government scientific grant agencies continue to argue that it already has comprehensive safeguards in place to prevent research misuse or foreign interference. They point to mandatory disclosure forms, export-control offices, research integrity training, and compliance frameworks aligned with NSPM-33 and federal agency guidance. Academic associations such as the Association of American Universities (AAU) insist these systems are effective, emphasizing that most researchers act in good faith, that violations are rare, and that overregulation would stifle international collaboration and innovation. They maintain that their decentralized compliance models—rooted in institutional trust, faculty autonomy, and peer accountability—are sufficient to manage research security risks. However, the evidence and data show these safeguards are largely performative and fail to protect taxpayer-funded research from exploitation by foreign adversaries. Disclosure forms rely on self-reporting and are rarely verified; compliance offices seldom have Chinese-language, counterintelligence, or China expertise; and universities routinely approve projects with partners tied to China's defense and intelligence apparatus. Repeated DOE, DOW, and NSF investigations reveal that serious violations are

uncovered by federal law enforcement, not by universities' internal systems. Despite "safeguards," thousands of U.S. government-funded papers still involve Chinese military-affiliated entities, proving existing controls are neither preventive nor adaptive. The academic compliance model rewards grant volume over security diligence, allowing foreign exploitation to persist behind a façade of institutional self-assurance.

- To provide an example and underscore this, documents obtained by the Select Committee reveal that the University of Maryland (UMD) hesitated to approve a professor's contract with Huawei. In the correspondence with Huawei, the UMD professor stated, "if you confirm that it is a gift, we may have a chance to move forward." The Huawei employee responded, "Huawei will be glad to provide gift funding for your research." Ultimately, UMD had approved Huawei research to be provided as a gift rather than a contract despite required outputs. This exchange underscores how universities and researchers often look for semantic workarounds to justify questionable foreign funding rather than enforcing genuine research security safeguards. UMD and an outside entity conducted an internal investigation that concluded, and essentially dismissed, the nondisclosure of the funding as a series of unintentional clerical errors.[22] However, the documents obtained tell a very different story. Correspondence shows that there was awareness of the nature of the Huawei contract and deliberately sought to conceal it by labeling it as a "gift."[23] This maneuver appears intended to avoid disclosing an active affiliation and research conducted on behalf of Huawei in U.S. government grant documentation. Such actions raise clear conflict-of-interest and conflict-of-commitment concerns and undermine the integrity of federal grant decisions, which rely on full and accurate disclosure to ensure awards are made without foreign influence or competing obligations. In 2024, UMD ultimately settled the case and agreed to pay $500,000 to resolve allegations that it failed to disclose foreign research support in federal grant proposals.[24]

Leaving risk management and national security decisions to universities—about how China exploits open research collaboration—is fundamentally flawed because their primary incentive is to maximize research funding and publication output, not to limit collaborations. The same can also be said for U.S. government grant agencies who need to ensure awards and funding go out the door to ensure money is spent. Universities and university associations routinely downplay or dismiss national security concerns to protect foreign partnerships, tuition revenue, and faculty autonomy. When asked to implement stronger controls, they frame it as a threat to "academic freedom" rather than a safeguard for research security and integrity. In practice, universities resist restrictions because they fear losing access to international funding and talent pipelines, especially from China.

Allowing universities to self-regulate is like letting a defense contractor write its own export-control policy, it will prioritize self-interest over security, and history has repeatedly shown that voluntary compliance fails.

Furthermore, accusations that the U.S. government is acting in a discriminatory or racist manner toward Chinese researchers must be viewed in the 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' Research Security Investigations

Over the past two years, the Select Committee has 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 Select Committee published a joint report, ***CCP on the Quad: How American Taxpayers and Universities Fund the CCP's Advanced Military and Technological Research,***[25] 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.[d]

Individual Research Relationships: American researchers—many funded by the DOW, DOE, and National Science Foundation (NSF)—enabled major PRC advancements in nuclear technology, artificial intelligence, robotics, and quantum computing.[26]

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.[27] DOW funds research for the purpose of achieving technological breakthroughs to equip future warfighters—in other words, all DOW-funded projects are potentially dual-use.

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 DOW-funded publications are

[d] 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.

collaborations on advanced research related to dual-use, critical, and emerging technologies.[28] 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.[29]

China Scholarship Council Letters: Seven letters were sent to U.S. universities (Notre Dame, University of Tennessee, Dartmouth, Temple University, University of California–Irvine, UC–Riverside, and UC–Davis) acknowledging formal joint agreements with the China Scholarship Council (CSC). The CSC is a state-directed mechanism that funds China's top 1% of students, not solely based on academic merit, but also on political and strategic selection criteria. CSC plays a central role in China's technology transfer ecosystem and targets STEM fields aligned with the CCP's statutory records and strategic S&T goals, as outlined in national Five-Year Plans and other guiding documents. The majority of CSC-funded students are pursuing advanced degrees or conducting postdoctoral research. Past CSC-sponsored students worked directly on U.S. government-funded research projects, including in sensitive STEM fields. CSC students had affiliations with or returned to positions in China's defense research and industrial base. CSC students are required to report regularly to PRC embassies or consulates abroad, disclosing details such as their research topics, advisors, and institutional affiliations. Publication analysis and document production confirmed numerous instances where CSC-funded students gained access to and worked on federally funded research while maintaining ties to China's defense research and industrial base.[30] To the university's credit, all seven have confirmed to the Select Committee they have terminated or will be terminating their formal agreements with the CSC.[31]

Divided Loyalties-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.[32] Since the release of this report, numerous U.S. institutions that previously maintained formal joint institutes with Chinese entities have moved to shut down those partnerships—an acknowledgment of the mounting research security, ethical, and national security risks such collaborations pose.

From Ph.D. to PLA – How Visa Policies Enable PRC Defense Entities to Tap U.S. Higher Education: Exposes how U.S. visa policies have failed to prevent Chinese military-linked individuals from accessing American universities and federally funded research, thereby enabling China's defense industrial base to exploit U.S. higher education. The Select Committee found widespread non-enforcement of Executive Order 10043, which was intended to bar Chinese nationals tied to China's MCF system. Despite the order, the Biden Administration failed to prevent individuals with military-linked backgrounds from enrolling in sensitive

STEM programs at U.S. institutions. Many of these students and scholars were supported through taxpayer-funded federal research grants, fellowships, and university assistantships—effectively using U.S. government resources to train individuals with ties to China's defense research and industrial base.

Fox in the Henhouse - The Department of Defense Research and Engineering's Shortfalls in Protecting Taxpayer-Funded Defense Research: This investigative report exposes systemic failures within the DOW Research & Engineering (R&E) enterprise to protect taxpayer-funded defense research from exploitation by the PRC. The report documents over 1,400 collaborative publications between DOW-funded researchers and Chinese institutions from June 2023 to June 2025, involving more than $2.5 billion in DOW grants. Over 50% of these publications were co-authored with PRC entities within China's defense industrial base, including "Seven Sons of National Defense" universities, defense-designated labs, and entities supporting China's mass surveillance apparatus and committing human rights violations.[33] Despite repeated warnings for over 25 years, the DOW, specifically career officials at DOW R&E, failed to implement a unified research security policy, allowing risk to be interpreted inconsistently.

If one thing has become clear through the Select Committee's investigation into research security issues across academia and U.S. government agencies, it is that universities and government agencies rarely change course even when they are publicly exposed. When confronted publicly with egregious behavior or clear policy deficiencies, these institutions typically respond with damage control and public relations, not meaningful reform. Absent external oversight and accountability, most would continue operating as if there were nothing to fix and no threat to address, willfully ignoring China's systematic exploitation of scientific and technological research and development acquisition strategy.

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…"*[34]

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.[35,36] That same year, Congress enacted Section 1286 of the FY2019 NDAA—which mandated a DOW initiative to protect national security research and academic institutions from

undue foreign influence and security threats.[37] The report also highlighted the DOE as a primary target of foreign espionage and technology transfer efforts. According to the Federal Bureau of Investigation (FBI), DOE is the U.S. government agency subject to the "most penetration attempts" for technology acquisition because of its "prominent role in advanced research and development, particularly in energy and nuclear weapons development."[38]

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.[39] 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.

China's targeting and acquisition of foreign research and technology has been recognized, written about, analyzed, and well-documented for years—including through congressional roundtables, congressional investigations and reports, public hearings, think tank reports, DOJ investigations and indictments, cyber intrusions, intelligence service operations, and Chinese lawfare.[40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57] Yet, over the years the U.S. government, including the DOE, has continued to allow research to be conducted with known Chinese military and defense associated entities. To this day, DOE has taken little proactive measures to strengthen and enhance prohibitions on research relationships that pose clear national security or ethical risks—despite the years of knowledge, public discourse, and existing U.S. government entity lists with numerous Chinese entities listed.

The Committee's Current Investigation into DOE

Following the release of *CCP on the Quad and Fox in the Henhouse*, the Select Committee continues to examine research security frameworks within the U.S. government. The Select Committee performed an analysis of publications from June 2023 to June 2025 and identified approximately 4,300 research papers acknowledging DOE funding or research support that also involved collaboration with PRC entities. We sought to further examine DOE-funded research based on initial findings uncovered in the Select Committee's *CCP on the Quad* report and current DOE policies surrounding research security. The analysis examined bibliometric data and also involved in-depth investigations into the Chinese entities 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 investigative report relied on extensive analysis of publication data, grant and funding records, Chinese-language source materials, and multiple briefings, meetings, and materials provided by relevant DOE offices.

FINDINGS

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

The investigation identified approximately 4,300 research papers between June 2023 and June 2025, acknowledging DOE funding or research support that also involved collaboration with PRC entities. Of these, approximately 2,200 publications—or roughly 50%—were conducted in partnership with entities affiliated with China's defense research and industrial base.[e,f,58,59] **Over 700 awards/contracts were identified totaling more than $6 billion**.[g] The collaborations span sensitive technology areas such as advanced materials, high-strength alloys, explosion science, machine learning, advanced batteries, and advanced materials, all of which have clear dual-use and military applications. These are the very technology domains where the United States seeks to maintain a strategic edge. The mere fact that DOE is funding research in these fields reflects a strategic interest in advancing technologies tied to technology areas for economic security 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.

[e] Many of the DOE 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.

[f] The Committee acknowledges the data and software script writing contributions of LJ Eads, Founder of Data Abyss for USAspending data, 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.

[g] This includes DOE facility management and operating (M&O) contracts, which typically do not specify or delineate the particular research fields or technology. Yet researchers routinely cite these contract numbers to support their work, further obscuring the ability to understand and identify the full scope of funding flows, research activities, and associated technology.

The case studies outlined below represent only a sample of the thousands of 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-restricted entity lists. Several publications explicitly acknowledged research with Chinese defense-designated laboratories, China's primary nuclear weapons development complex and its subsidiaries, or PRC-developed supercomputers linked to nuclear weapons development. These examples expose critical failures in post-award monitoring, potential disclosure failures, and in at least one example, a likely violation of federal law, including the Wolf Amendment.[h]

DOE-Funded Research Publications Reveal Extensive Research Relationships with China's "Seven Sons of National Defense" Universities

Between 2023 and 2025, over 150 publications were identified acknowledging DOE funding or support that involved U.S. researchers collaborating with China's "Seven Sons of National Defense" (国防七子) universities.[i] These universities are a group of civilian universities with a primary mission to support military research and defense industries. They originated as military academies but are now directly overseen by the Ministry of Industry and Information Technology (MIIT) and SASTIND—the PRC government organ responsible for implementing MCF policies. These universities work on classified defense programs, house departments and laboratories that work closely with PLA organs, and partner with state-owned defense conglomerates. These are considered some of the highest-risk entities to conduct research with due to extensive and acknowledged work on weapons and equipment development with the PLA. All the "Seven Sons of National Defense" universities are designated across multiple U.S. government national-security restriction lists, including the BIS Entity List, the Department of War Section 1286 list, and Presidential Proclamation 10043, signed on May 29,

[h] 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.

[i] The "Seven Sons of National Defense" (国防七子) refer to seven Chinese universities administered by the MIIT and SASTIND that form the backbone of China's defense research and industrial complex. These institutions are Beihang University, Beijing Institute of Technology, Harbin Engineering University, Harbin Institute of Technology, Nanjing University of Science and Technology, Nanjing University of Aeronautics and Astronautics, and Northwestern Polytechnical University

2020. Notably, several of these universities have appeared on the BIS Entity List since the early 2000s, reflecting long-standing and well-documented national-security concerns.

Case Study 1: A 2025 publication on CO2 hydrogenation reaction result was co-authored by researchers from DOE Lawrence Berkeley National Laboratory, Brookhaven National Laboratory, Lanzhou University, Soochow University, and the Beijing Institute of Technology (BIT). The publication acknowledges DOE support from the DOE Basic Energy Sciences, the Advanced Light Source, the Condensed Phase and Interfacial Molecular Science Program in the Chemical Sciences Geosciences and Biosciences Division, and the UHV-STM in Multiprobe Surface Analysis System of the Center for Functional Nanomaterials (CFN), which is a DOE Office of Science User Facility, at Brookhaven National Laboratory. Additionally, the publication also acknowledges support form China's Key Talent Project of Gansu Province and the enterprise project of China Northern Rare Earth (Group) High-Tech Co., Ltd.[60]

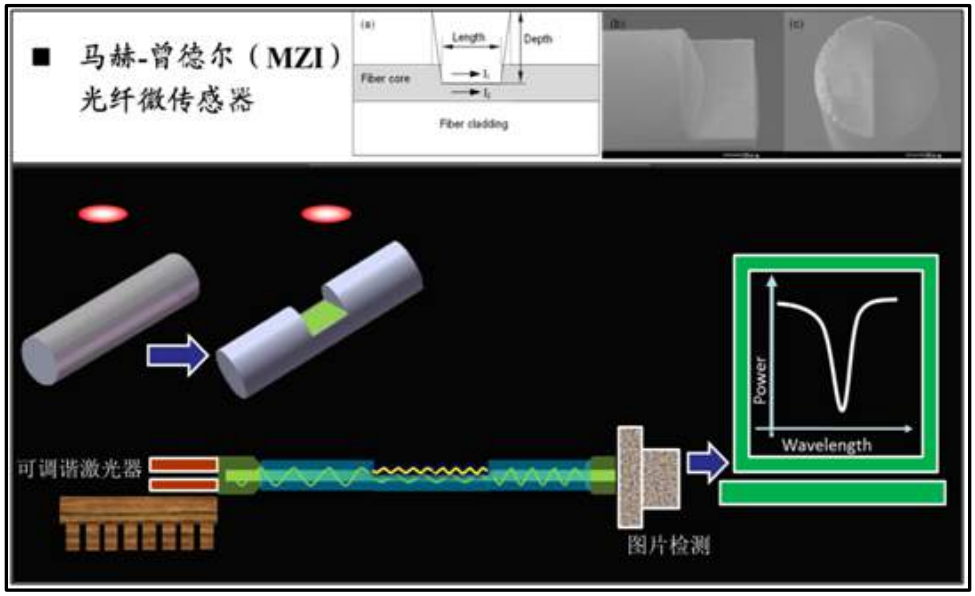
- BIT (北京理工大学) was added to the BIS Entity List in 2020 for acquiring and attempting to acquire U.S.-origin items in support of programs for the People's Liberation Army.[61] BIT was added to the DOW 1286 List for fiscal year 2023 as a foreign institution that poses a threat to national security and technology transfer.[62] BIT—along with all "Seven Sons of National Defense" universities—was explicitly identified in Presidential Proclamation 10043, issued on May 29, 2020. The proclamation specifically named BIT and imposed restrictions on F and J visa–category students associated with the People's Liberation Army (PLA) or China's military-civil fusion efforts.[63]

- One of the BIT researchers listed in this publication, Zhang Xueqiang (张学强), is identified as being affiliated with both Beijing Institute of Technology (BIT) and Lawrence Berkely National Laboratory (LBNL). According to his BIT faculty biography, he served as a postdoctoral researcher at the University of California and LBNL from 2018 to 2021.[64] He is affiliated with the BIT Laser and Micro Nano Fabrication Laboratory/Institute and the BIT Chongqing Innovation Center (北京理工大学重庆创新中心).[65,66] He has conducted research on laser technology and astronautic composite materials with numerous entities within China's defense research and industrial base including the China Academy of Space Technology (a defense conglomerate), Northwestern Polytechnical University, and BYD Shanghai Company (Department of Battery Technology).[67] Additionally, he was selected for the National High-Level Overseas Talent Youth Program (国家海外高层次人才青年项目), a youth-tier subprogram of China's flagship foreign talent and technology transfer initiative commonly referred to as the Thousand Talents Program (consolidated and renamed in 2019 with other talent

programs under the High-End Foreign Expert Recruitment Program (高端外国专家引进计划), administered by the Ministry of Science and Technology).[68] His selection for the talent recruitment program likely coincided with his postdoctoral tenure in the United States, as the award is specifically intended for overseas youth researchers.

- The BIT Laser and Micro Nano Fabrication Laboratory/Institute conducts research on micro-nano processing, femtosecond laser for time-down/airspace/frequency-domain shaping, electronic dynamic controls, and ultra-fast lasers. The lab acknowledges numerous funded projects from China's Ministry of Science and Technology 973 and 863 Programs and the National Defense Basic Scientific Research funding. The lab served as the leader of the special planning group, guide compilation group, and overall expert group for additive manufacturing and laser manufacturing. The lab outlines research on High Reliability and High Sensitivity Fiber Optic Micro-Nano Sensors that successfully solved the measurement problem of key physical quantities of major equipment in the field of national defense. The lab claims to have carried out and maintained scientific research cooperation with the University of Nebraska, University of California-Berkeley, Missouri University of Technology, and Princeton University.[69]

Figure 1 – BIT Laser Micro and Nano Manufacturing Laboratory High Reliability and High Sensitivity Fiber Optic Micro-Nano Sensor Research for National Defense Equipment[70]



This case not only highlights research relationships with a designated Chinese defense university. It also exposes how DOE permitted a researcher—who later went on to work at a Chinese defense institution—to conduct postdoctoral research within a U.S. National Laboratory that is one of only three national security–designated laboratories overseen by the National Nuclear Security Administration (NNSA). Additionally, Zhang was selected for an overseas youth subprogram of the Thousand Talents Program, likely during his time in the United States and potentially while conducting research at. This publication also demonstrates that DOE-affiliated researchers collaborated with multiple BIT researchers, despite BIT having been listed on the BIS Entity List since 2020. Further compounding the risk, the laboratory with which he is now affiliated at BIT explicitly conducts research funded by and in direct support of defense equipment development and manufacturing. This raises the troubling reality that U.S. national laboratories helped train an individual who subsequently returned to contribute to China's defense capacity-building efforts.

Case Study 2: A 2025 publication on machine learning and ferroelectrics research was co-authored by researchers from AiMaterials Research LLC, Xi'an Jiao Tong University State Key Laboratory of Mechanical Behavior of Materials, Nanjing University of Science and Technology, and the Northwestern Polytechnical University's State Key Laboratory of Solidification Processing. The research publication acknowledged support from the DOE Los Alamos National Laboratory (LANL), where part of this work was carried out.[71]

- Xi'an Jiao Tong University (XJTU, 西安交通大学) is co-administered by SASTIND, reflecting its integration within China's national defense science and technology apparatus. XJTU's State Key Laboratory for Mechanical Behavior of Materials (材料强度与韧性国家重点实验室) researchers the deformation of metals, high-performance coatings, integrated materials, and micro-nano structure of materials.[72] The lab has established a MCF innovation platform in collaboration with China Aerospace and other entities. The laboratory explicitly acknowledges conducting research in support of National Defense and Military Industry Major Key Projects (国防军工重大重点项目). It also emphasizes its contributions to scientific and technological advancement, national economic development, and national defense construction (国防建设).[73] These disclosures demonstrate that the laboratory operates as a dual-use research hub, serving both civilian and defense objectives while directly supporting the CCPs and the PLA's broader technology development and modernization goals.
- Nanjing University of Science and Technology (NJUST) was added to the BIS Entity List in 2020 for acquiring and attempting to acquire U.S.-origin items in support of programs for the PLA.[74] NJUST was added to the DOW

1286 List for fiscal year 2023 as a foreign institution that poses a threat to national security and technology transfer.[75]

- The researcher, Liu Zhen (刘震), affiliated with NJUST in this publication, previously served as a research assistant at Los Alamos National Laboratory from 2015 to 2017 and as a postdoctoral researcher from 2018 to 2019, following the completion of his Ph.D. at Harbin Institute of Technology (HIT).[76]
- Northwestern Polytechnical University (NPU, 西北工业大学) was added to the BIS Entity List in 2001.[77] NPU was added to the DOW 1286 List for fiscal year 2023 as a foreign institution that poses a threat to national security and technology transfer.[78] The NPU State Key Laboratory of Solidification Processing is overseen and administered by SASTIND.[79] The laboratory is affiliated with the national defense system. The lab's main service object is the major national defense material technology needs in the field represented by aerospace.[80] While the laboratory does not explicitly include the term "national defense" (国防, guófáng) in its name—as many defense-designated laboratories do—its oversight by the SASTIND and its explicit acknowledgment of defense-related research make clear that it functions as a defense laboratory within China's national defense science and technology enterprise.
    - One of the researchers—listed in this publication—at NPU's Solidification Laboratory, Yuan Ruihao (袁瑞豪), previously served as a Research Assistant at Los Alamos National Laboratory from 2018 to 2019.[81]
    - Another researcher identified in this publication from Northwestern Polytechnical University's Solidification Laboratory is Li Jinshan (李金山), the Director of the laboratory. His research focuses on electromagnetic confinement molding and directional solidification, continuous casting technology, melt treatment, and microstructural ultrarefinement, as well as the development of bulk amorphous and nanocrystalline metal materials, rare metal alloys, superalloys, functional materials, and composite materials. Li has led extensive research under China's MCF framework and has received funding from programs administered by the National Defense Science and Technology Commission. His work directly supports strategic defense applications through the design of advanced alloys, rapid and directional solidification techniques, and high-performance material processing for dual-use technologies, as seen on his Chinese profile.[82]

- Application and Development of XXXXXXX Functional Materials;[83]
- The basic research of national defense "XX high-conductivity X, XXX and their preparation technology;[84]
- Research on the design and preparation technology of high-strength and tough block amorphous/XXX metal materials;[85]
- The national defense 973 sub-project "XX complex components precise solidification and forming law and theoretical model;[86]
- Research on Ultra-high Gradient XXXXXX Forming Directional Solidification Technology;[87] and
- The Ministry of Science and Technology's 973 project "XXXX Liquid Electromagnetic Forming and Control.[88]

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.

Case Study 3: A 2024 publication on thermoelectric research was co-authored by researchers at Northwestern University, Beihang University (aka Beijing University of Aeronautics and Astronautics) and Tianmushan Laboratory.[89] The research was funded by the DOE Office of Science, Basic Energy Sciences and supported through China's 111 Project.[90] The DOE-funded project titled "New Horizons in Thermal and Charge Transport in Complex Narrow Gap Semiconductors" with a performance period beginning in 2023 and extending through August 2026.[91] Modern aircraft—especially advanced fighters, unmanned aerial vehicles (UAVs), and hypersonic platforms—generate extreme and localized heat from onboard electronics, radar systems, power-dense avionics, and directed-energy components. Effective thermal management and cooling—as outlined in this research publication—is critical to mission reliability and survivability, as overheating can degrade sensor performance, distort radar signals, and shorten the operational lifespan of key systems.

- Beihang University was added to the BIS Entity List in 2001, due to its involvement in rocket systems and unmanned air vehicle activities.[92] Beihang University was added to the DOW 1286 List for fiscal year 2023 as a foreign institution that poses a threat to national security and technology transfer.[93]
- Tianmushan Laboratory (天目山实验室) is an aviation laboratory built by Beihang University. Its main research direction centers on advanced

aviation technology and the development of high-performance aviation materials, with a focus on next-generation aircraft design, advanced propulsion systems, high-efficiency power technology, aerospace-grade materials, and airborne electronic systems and chips.[94] The lab's mission explicitly supports breakthroughs in critical technologies that underpin China's push for self-reliance in aviation and aerospace manufacturing, aligning closely with the national "MCF" (军民融合) strategy. The Lab specifically designs multi-rotor and fixed-wing unmanned aerial vehicles. Multiple members of Tianmushan Laboratory's leadership explicitly acknowledge their roles as Chief Scientists of National Defense Key Projects (国防重点项目首席科学家),[95,96,97,98,99] underscoring the lab's direct integration into China's defense research and industrial ecosystem. Such titles are typically reserved for senior researchers overseeing classified or strategically sensitive programs under the MIIT, SASTIND, or the Central Military Commission's Science and Technology Committee.

- 111 Project (111计划, aka Program of Introducing Talents of Discipline to Universities 高等学校学科创新引智计划, 111 Program): Launched jointly in 2006 by the Ministry of Education (MOE) and the State Administration of Foreign Experts Affairs (SAFEA) (now under the Ministry of Science and Technology).[100] The 111 Project is a Chinese state-sponsored talent recruitment program platform initiative designed to bring in high-level foreign experts to support strategic disciplines, often with dual-use fields.[101]

Case Study 4: A 2025 publication on lithium-ion cells research was co-authored by researchers at Oak Ridge National Laboratory (ORNL), North China Electric Power University, and the Beijing Institute of Technology's (BIT) National Engineering Research Center for Electric Vehicles. The research was supported by the DOE Office of Electricity at ORNL.[102] One of the Chinese researchers listed on the publication, Zhu Xiaoqing (朱晓庆), was funded by the CSC from 2018 to 2019 to conduct postdoctoral research and training at the University of Tennessee and ORNL.[103]

- During Zhu's time at ORNL—as evidenced by the subsequent publication of this scientific article—he maintained concurrent affiliations with both North China Electric Power University (NCEPU) and the National Engineering Research Center for Electric Vehicles at BIT.[104] Zhu also conducted research on explosion safety—along with an ORLN scientist—with the China North Vehicle Research Institute (中国北方车辆研究所)[105]—a subsidiary of the state-owned defense conglomerate China Ordnance Industry Group Co., Ltd. (NORINCO). North Vehicle Research Institute explicitly acknowledges its central role in advancing China's defense weapons and equipment research and its full integration into the MCF system—demonstrating its direct contribution to the modernization

and combat readiness of the PLA.[106] NORINCO is the PRC's "overall unit of assault equipment and the R&D center of weapon ground unmanned platform, shouldering the core mission of "leading the innovation and development of land assault equipment, achieving high-level scientific and technological self-reliance and self-improvement, and making every effort to ensure the army's preparation and victory", and is the backbone of promoting the construction of a modern new army and the scientific and technological progress of the weapons industry.[107]

- National Engineering Research Center for Electric Vehicles (电动车辆国家工程研究中心) at BIT acknowledges that its research and development activities were organized under the former National Defense Science and Technology Commission. Since China's Eighth Five-Year Plan, the Center has received sustained support from the People's Liberation Army's General Equipment Department, underscoring its long-standing defense affiliations. The Center was subsequently designated as a "National Defense Science and Technology Innovation Team" (国防科技创新团队)—a title reserved for entities contributing directly to China's defense science and technology priorities.[108] Given these formal designations and explicit acknowledgments of defense sponsorship, it is highly likely that the National Engineering Research Center for Electric Vehicles functions as a defense-oriented R&D center, distinct from but complementary to China's official defense laboratory system (国防实验室体系).

- The Select Committee investigated U.S. universities that maintained formal cooperative agreements with the CSC. The Committee found that, unlike other international student programs, the CSC has come under increasing scrutiny and criticism due to serious concerns regarding academic freedom, surveillance of Chinese students, ideological control, and potential espionage. For example, the CSC requires sponsored students to report regularly to PRC diplomatic missions on their research activities and collaborators, to monitor and report on fellow Chinese students, and to adhere to Chinese Communist Party ideology while studying abroad. CSC contracts also obligate recipients to return to the PRC upon completion of their studies and serve in positions for a minimum of two years—a condition that reinforces the program's function as an instrument of state control rather than academic exchange.[109] This program has also come under scrutiny for using its participants to target, acquire, and facilitate the transfer of technology and technical know-how, and for prioritizing their placement upon return to China in positions within China's defense research and industrial base, including at institutions such as the Chinese Academy of Engineering Physics (CAEP)—China's primary nuclear weapons research and development complex.[110]

Case Study 5: A 2024 publication on ultrathin ferroelectric and feromagentic research was co-authored by researchers from DOE Sandia National Laboratory, Purdue University, the University of Cambridge, the University of Parma-Italy, and Nanjing University of Aeronautics and Astronautics (NUAA, 南京航空航天大学) Ministry of Industry and Information Technology Key Laboratory of Aerospace Information Materials and Physics, State Key Laboratory of Mechanics and Control for Aerospace Structures. The DOE National Nuclear Security Administration (NNSA) supported the resarch.[111]

- The MIIT Key Laboratory of Aerospace Information Materials and Physics (工业和信息化部航空信息材料与物理重点实验室) at NUAA conducts advanced research in aerospace science and aerospace materials. The laboratory's stated research areas include the development of new materials, devices, metamaterials, quantum materials, and information-sensing and detection technologies. It further acknowledges research in nano-coating materials designed for radar and infrared stealth applications, as well as high-sensitivity ultraviolet, sun-blind, and infrared detection devices[112]—technologies directly relevant to military aerospace, surveillance, and counter-detection systems.
- The State Key Laboratory of Mechanics and Control for Aerospace Structures (航空结构力学与控制国家重点实验室) at NUAA conducts advanced research in aircraft structural dynamics and control, intelligent materials and structures for aviation, nonlinear dynamics and control, and micro- and nanoscale system mechanics.[113] The laboratory's work directly supports China's efforts to enhance the performance, adaptability, and survivability of aerospace platforms, aligning with national priorities in aeronautics, defense innovation, and MCF. Additionally, this lab's official Chinese site is inaccessible from a U.S. point of presence.
    - The laboratory is oriented to major national projects such as high-tech, lunar exploration, manned spaceflight, large aircraft, and "two aircraft" for China's large passenger aircraft, advanced fighters, helicopters and unmanned aerial vehicles, super-large spacecraft and reusable aerospace vehicles, advanced military and civilian aero engines and wide-speed aerospace combined power. The lab carries out research on key scientific and technological issues such as high-reliability design of lightweight structures, dynamic design and control of flexible and lightweight structures, thermal structure design and control, and integrated precision manufacturing of material structures, and develop aerospace structure dynamics and control theories and methods. The labs research also supports weight reduction design of aerospace equipment structures and improve performance and reliability.[114]

- The laboratory has led the development of aircraft structural dynamics and control, intelligent material structural mechanics, nanomechanics, thermal control and thermal management, and developed China's first ultrasonic motor for practical application in space, namely C919, AG600, ARJ21, and Zhi-20, J-15, J-20, medium-range high-speed UAV, WS10 and CJ1000 engines and other important military and civilian aviation models, as well as the Tianwen, Tiangong, and Chang'e series of space missions provide key technical and talent support.[115]

Figure 2 – Translation of NUAA's State Key Laboratory of Mechanics and Control for Aerospace Structures Official Site: "Your Current IP Address is not an On-Campus Address, and this Information is Only Allowed to be Accessed by the On-Campus Address"

From a research security and integrity perspective, **China's restriction of foreign IP addresses from accessing some university and laboratory websites undermines the fundamental principles of academic openness, transparency, reciprocity, and accountability that underpin global scientific collaboration**. Open access to institutional and researcher information is essential for due diligence, conflict-of-interest screening, and compliance verification by research partners and funding agencies. When Chinese universities and state laboratories block international access, they effectively conceal affiliations, state funding sources, and potential defense or military ties, making it exceedingly difficult for U.S. institutions and grant agencies to evaluate the true nature of partnerships or assess diversion risks. This lack of transparency not only violates the norms of academic openness but also enables malign actors to exploit asymmetries in access and oversight, allowing China to harvest foreign research outputs while shielding its own programs from scrutiny.

Case Study 6: A 2024 publication on hydrokinetic energy research was co-authored by researchers from the University of Michigan, Vortex Hydro Power, and the Harbin Engineering University (HRBEU)-College of Aerospace and Civil

Engineering. Research was funded under a cooperative agreement between Vortex Hydro Power and DOE with the University of Michigan's MRELab as a subcontractor to Vortex Hydro Power.[116] The award was for the "development of a no-blade, no-rotor, fish-symbiotic hydrokinetic energy harvester for the Detroit/Wayne County Port Authority," with the cooperative agreement scheduled to conclude in June 2026.[117]

- The College of Aerospace and Civil Engineering (航天与建筑工程学院) at HRBEU (哈尔滨工程大学) traces its origins to the Department of Aerospace Engineering, which was originally established by the Tactical Missile Department of the Department of Missile Engineering at the Military Engineering College of the Chinese People's Liberation Army (中国人民解放军军事工程学院导弹工程系战术导弹教研室.[118]
- According to the University of Michigan, Sun Hai (孙海)—a researcher at Harbin Engineering University (HRBEU, 哈尔滨工程大学)—previously served as a visiting scholar in the University's Department of Naval Architecture and Marine Engineering.[119] An archived version of Sun's 2024 HRBEU faculty profile references his association with Vortex Hydro Energy working as Senior Engineer and part-time associate 2014 to the present. However, it remains unclear whether this affiliation is current, as the faculty page may not have been recently updated.[120] Sun conducts research with and as of 2024, is affiliated with the Shanghai Shipbuilding Research and Design Institute—a subsidiary of the China State Shipbuilding Corporation, a state-owned defense conglomerate—working on propeller-hill vortex cavitation.[121]

Case Study 7: 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 Army Research Office and the DOE National Nuclear Safety Administration (NNSA).[122] The NNSA research award is scheduled to end in April 2026 and is listed as research for defense nuclear nonproliferation.[123] Lin Zhou, a Beihang University professor on this publication, conducts research on physical layer security, air-space-ground integrated communications security, and low-latency and strong security communication networks.[124] 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)[125]—each of which is designed to accelerate the development of strategic scientific expertise and support China's MCF 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.

Allowing such collaborations over the years to occur represents a serious breach of research security and strategic oversight. The DOE's funding was intended to advance U.S. scientific and technological innovation—not to indirectly strengthen China's defense research and industrial base. By permitting DOE-supported researchers to conduct research with institutions that are central to China's defense research ecosystem, the DOE has effectively subsidized entities that design defense equipment and weapons systems, missile technologies, nuclear weapons development, and other capabilities used by the PLA.

This failure undermines both national security and technological competitiveness, as it enables the transfer of advanced research, methods, and data to adversarial entities operating under Beijing's MCF framework. It also signals to foreign governments and U.S. institutions that no unified or enforceable standard exists to prevent federally funded research from being leveraged by nations that seek to counter U.S. military and technological advantage. In short, DOE's lack of due diligence and robust research security framework has allowed taxpayer-funded research to flow directly into the hands of China's defense establishment, eroding the very technological edge the United States depends on to maintain its security and deterrence.

Furthermore, allowing foreign students—particularly those from the "Seven Sons of National Defense" schools—to train and conduct research in DOE national laboratories poses a serious national security risk. DOE labs provide access to world-class scientific infrastructure, mentorship, and methodologies that directly enhance the technical capacity of visiting researchers. When these individuals later return to China, many transition into roles within China's defense research and industrial base, as outlined in the previous examples of case studies.

DOE-Funded Research Publications with Chinese Defense-Designated Laboratories

Between 2023 and 2025, the Select Committee identified a disturbing pattern of DOE laboratories and grantees collaborating—knowingly or unknowingly—with Chinese institutions designated as national defense laboratories. These entities form the backbone of the PRC's military research ecosystem. While some of these labs may appear academic or civilian in nature to an untrained observer, their defense affiliations are unmistakable when translated or reviewed in Chinese-language sources. DOE-supported research with these labs spanned a wide range of sensitive areas, from advanced welding techniques used in nuclear submarines

and domestic aircraft carriers, to combustion/fuel mixtures as well as hypersonic alloys.

Beginning in 2022, the PRC began a multi-year reorganization of its national-level lab system in which civilian state-key laboratories converted into a new category of "National" Key Labs (全国重点实验室), and at least some if not all the military Defense Science and Technology Key Laboratory's (DSTKL) slowly folded into this system as well.[126] While the abolition of the DSTKL system represents a significant reform of the PRC's state science and technology regime, in the context of heightened Western scrutiny of PRC defense laboratories, it may also serve as a deliberate effort to obscure and rebrand the role of these defense research entities. This restructuring reduces research and academic transparency, complicates due-diligence analysis, and increases the risk that U.S. researchers and institutions unknowingly engage with PRC defense-aligned entities operating under civilian or academic labels.

Case Study 1: A 2025 publication on thin film research was co-authored by researchers from the DOE BNL, the University of Science and Technology of China, and 14 researchers from the HIT State Key Laboratory of Advanced Welding and Joining Materials and Structures. The research was supported by the DOE, Office of Basic Energy Science, Division of Materials Science and Engineering.[127]

- The HIT 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[128]—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.[129] 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.[130]

Case Study 2: A 2025 publication on nitrogen and ferroelectric property research was co-authored by researchers from the DOE Lawrence Berkeley National Laboratory, the University of California-Berkeley, Pennsylvania State University, Xiamen University (a SASTIND co-administered university), Soochow University (a SASTIND co-administered university), the Chinese Academy of Science Institute of Metal Research, and HIT State Key Laboratory of Advanced Welding and Joining Materials and Structures (defense lab overseen by SASTIND). The research was supported by the DOE Optical second-harmonic generation characterization.[131]

Case Study 3: A 2024 publication on combustion and fuel-mixture research involving aviation and diesel fuels was co-authored by researchers from DOE's Lawrence Livermore National Laboratory (LLNL), the University of Connecticut, and Beihang University's National Key Laboratory of Science and Technology on Aero-Engine Aero-Thermodynamics within its Research Institute of Aero-Engine. The research was supported by the DOE Office of Energy Efficiency and Renewable Energy's Vehicle Technologies Office.[132]

- The Beihang University National Key Laboratory of Science and Technology on Aero-Engine Aero-Thermodynamics, also known as the Defense Science and Technology Laboratory of Aero-Engine Aerodynamics and Thermodynamics (航空发动机气动热力国防科技重点实验室), is defense-designated, as indicated by the presence of the term "国防" (national defense) in its official Chinese name[133] The laboratory conducts specialized research on aerodynamics and thermal sciences for aircraft propulsion systems, with core research directions in aero-compression systems, thermo-fluid dynamics, compressor and turbine performance under variable operating conditions, high-performance combustion mechanisms, advanced aero-engine cooling technologies, and high-efficiency liquid-mist combustion systems.[134,135]
    - This lab is associated with the Advanced Aero-Engine Collaborative Innovation Center [先进航空发动机协同创新中心], a 2013 collaboration between Beihang and AVIC that was part of the first batch of 14 Ministry of Education collaboration and innovation centers.[136,137]

Case Study 4: Between 2023 and 2025, eight publications were identified involving researchers from Central South University's State Key Laboratory of Powder Metallurgy, conducted in collaboration with U.S. researchers from DOE ORNL, BNL, LLNL, Ames National Laboratory, the University of Michigan, the University of Chicago, Iowa State University, and Dartmouth College. The research topics span a broad range of strategic materials science, including X-ray absorption techniques, antiferromagnetism, high-power-density electrodes, rechargeable lithium batteries, additive manufacturing of lightweight mechanical metamaterials, heat-treated alloys, alloy nanoparticles, and high-performance cathodes. All eight studies acknowledged support from various DOE programs and laboratories.

- Central South University State Key Laboratory of Powder Metallurgy, 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.[138] This laboratory carries a defense designation, as reflected by the Chinese characters for "national defense" (国防, Guófáng) in its official

name.[j] This lab conducts research on high temperature alloys for jet turbines (used for fighter jets and missiles), [139,140,141] ultra-high temperature carbines for hypersonic vehicles,[142,143,144] high-entropy alloys for armor-piercing applications,[145] ballistic impact on various materials,[146,147,148] and materials for stealth technology.[149,150]

The presence of Chinese defense laboratories in taxpayer-funded research pipelines is not merely a lapse in policy enforcement; it is a strategic vulnerability. Without transparent Chinese-language vetting and strict prohibitions on collaboration with defense-designated laboratories, the Department risks continuing to subsidize the very laboratories fueling the PLA's military modernization.

DOE-Funded Research Publications with Entities within China's Primary Nuclear Weapons Research and Development Complex, the Chinese Academy of Engineering Physics

Between June 2023 and June 2025, at least 24 publications acknowledging U.S. DOE funding or support were identified as having been conducted in collaboration with China's primary nuclear weapons research and development complex, CAEP and its affiliated institutes and subsidiaries. These publications involved U.S. co-authors from DOE National Laboratories and leading U.S. universities. The collaborations span areas such as nuclear materials science, superconductivity, ferromagnets, high-pressure investigations, metallic glass, isotopically paired systems, high-energy density physics, and advanced computational simulation—fields directly overlapping with nuclear weapons design and testing.[151]

CAEP (中国工程物理研究院) is responsible for researching, developing, and manufacturing China's nuclear weapons. It is also involved in developing lasers, directed-energy weapons, and conventional weapons. CAEP is subordinate to the Central Military Commission, the CCP's top military organ.[152] CAEP was added to the BIS entity list in 1997.[153]

In 2012, CAEP established the **Center for High Pressure Science and Technology Advanced Research (HPSTAR)** to better leverage foreign

[j] While this laboratory has appeared in at least one Chinese publication bearing a defense designation, that reference appears to be the only one public instance of such labeling. It is nevertheless clear that the State Key Laboratory of Powder Metallurgy conducts extensive defense-related research in critical technology areas. The limited visibility of its defense designation suggests that the laboratory's status is either being deliberately obscured or that it functions as a de facto defense laboratory operating under civilian cover.

talent.[154] The Beijing-based center claims that it's committed to science without borders' and uses English as its official language but doesn't mention on its English-language website that it's affiliated within CAEP.[155] HPSTAR was created and is run by a Taiwanese-American scientist, Ho-Kwang Mao who was recruited in 2012 through the Chinese Government's Thousand Talents Plan—a scientific talent recruitment program that CAEP has used to hire at least 57 scientists from abroad.[156] Mao had been the Director of High Pressure Synergetic Center (HPSynC) and the Director of High Pressure Collaborative Access Team (HPCAT) at the Advanced Photon Source, Argonne National Laboratory from 1998 to 2012 and held a Staff Scientist position at the Carnegie Institute in Washington, DC.[157] HPSTAR was added to the BIS Entity List in 2020 for procuring U.S.-origin items for activities contrary to the national security or foreign policy interests of the United States, and for being owned, operated, or directly affiliated with CAEP.[158]

In 2009, CAEP established the **Beijing Computational Science Research Center (CSRC, 北京计算科学研究中心)**.[159] CSRC explicitly acknowledges its role in enhancing research capabilities in national defense science and technology, promoting foreign academic exchanges and cooperative research, and advancing China's strategy of MCF/integration.[160] This mission statement underscores that, despite its nominally civilian status, CSRC functions as a dual-use computational research institution in direct support of national defense and security. CSRC was added to the BIS Entity List in 2020 for procuring U.S.-origin items for activities contrary to the national security or foreign policy interests of the United States, and for being owned, operated, or directly affiliated with CAEP.[161]

Case Study 1: A 2025 publication on superconductivity and ferromagnetism was co-authored by researchers from the University of California-San Diego, the University of California-Riverside, the University of California-Los Angeles, California State University, Fudan University's State Key Laboratory of Surface Physics, and the CAEP Key Laboratory of Neutron Physics and Institute of Nuclear Physics and Chemistry. Research was supported by DOE and China's National Key Research and Development Program, a research funding mechanism directly aligned with China's MCF integration.[162,163]

- One of the CAEP researchers on this publication, Guang-Ai Sun (孙光爱), has participated in the National Security Academic Fund (NSAF, 国家安全学术基金)—a joint funding mechanism established in 2000 between the National Natural Science Foundation of China (NSFC) and CAEP. The NSAF program was created to promote basic research serving national defense and security priorities, emphasizing technology breakthroughs in nuclear science, materials under extreme conditions, computational

physics, and high-energy-density research.[164,165] The fund explicitly advances China's MCF (军民融合) objectives by integrating civilian university laboratories into projects supporting CAEP's defense and weapons-related missions.[k]

Case Study 2: A 2025 publication on high-pressure and x-ray diffraction research was co-authored with researchers from DOE BNL, Zhejiang University (a SASTIND co-administered school), Shanghai Key Laboratory of Material Frontiers Research in Extreme Environments (MFree), and CAEP's HPSTAR. Researchers affiliated with Brookhaven National Laboratory (BNL) in this publication appear to be visiting scholars or postdoctoral researchers from Zhejiang University, MFree, and HPSTAR.[166] This raises serious concerns regarding how individuals affiliated with entities tied to China's defense research and industrial base—including HPSTAR, which is a subsidiary of the PRC's primary nuclear weapons research and development complex—were able to conduct research within a U.S. DOE national laboratory. Such associations underscore persistent research security vulnerabilities within DOE's foreign visitor and collaborator vetting processes. They also highlight the ongoing risk of inadvertent technology transfer to entities that support China's military and strategic weapons programs.

Case Study 3: A 2025 publication on solid-state cooling and quantum supersolid research was co-authored by researchers from Duke University, Duke Kunshan University (a Duke University and Wuhan University joint institute),[l] and HPSTAR. This research was funded by DOE, the National Key Research and Development Program of China, and the Kunshan Shuangchuang Talent Program.[167] The DOE grant in question was awarded for research on neutron scattering of quantum materials and remains active, with its period of performance scheduled to conclude in January 2026.

- Further analysis of the Kunshan "Shuangchuang" Talent Program uncovered Chinese municipal government documents detailing the use of "Duke Kunshan University platforms" to recruit a group of "high-quality, sophisticated, and in-demand" individuals. These records show that Duke Kunshan University serves as a key local mechanism for talent acquisition under Kunshan's broader innovation and entrepreneurship strategy. Recruitment is implemented jointly through the Kunshan municipal talent

[k] Two translations of the program's name have been observed: the "National Security Academic Fund" and the "National Safety Academic Fund," typically seen in English language. The translation from "security" to "safety" in the English likely reflects an effort to make the fund appear benign or non-military to foreign audiences. In standard usage, however, the Chinese term 安全 (ānquán) can mean either "safety" or "security" depending on context, but the compound 国家安全 (guójiā ānquán) unequivocally translates to "national security."

[l] The Select Committee examined Duke Kunshan University in its September 2025 investigative report, *Divided Loyalties: Joint Institutes*.

> programs and Duke Kunshan University's Distinguished Scholars Program, which are designed to attract a "critical few"—including domestic and overseas academicians, academic leaders, and leading science and technology entrepreneurs.[168] The document further outlines the intent to build a global science and technology network by establishing offshore innovation centers in Europe, the United States, Japan, South Korea, and countries along the Belt and Road Initiative. It also calls for the creation of "liaison stations" to enhance the effectiveness of technology-resource matching and international coordination. By 2026, the goal is to establish five new offshore innovation centers and develop over 100 talent-recruitment and investment partnerships worldwide.[169]

Beyond the clear concerns raised by Duke researchers conducting DOE-funded work in collaboration with an entity under China's nuclear weapons research and development complex, this case demonstrates how a joint institute between a Chinese and U.S. university is leveraged to recruit talent and facilitate the transfer of technology and intellectual capital within China's broader technology-acquisition apparatus. Municipal records show that Duke Kunshan University's platforms are explicitly used to attract high-level scientists, entrepreneurs, and technical experts under programs such as the Kunshan Shuangchuang Talent Plan and the Duke Kunshan University Distinguished Scholars Program.

This case study also highlights a clear failure of research-security due diligence by both the Department of Energy and Duke University. HPSTAR was added to the BIS Entity List several years before the award of this grant, yet the collaboration was still permitted to proceed under DOE funding. Allowing such a partnership to take place—despite HPSTAR's well-documented ties to China's nuclear-weapons research complex—reflects a complete disregard for protecting taxpayer-funded research and safeguarding U.S. national security interests.

Despite Duke University's repeated appearance in Select Committee research-security investigations—including findings of collaboration with Chinese defense-affiliated institutions and joint institutes—the university has not taken any substantive action to close its joint institute or address systemic research-security deficiencies. This continued inaction underscores how U.S.–China joint institutes can become embedded nodes within China's national talent-recruitment and technology-transfer architecture, posing enduring risks to U.S. research integrity and national security.

Figure 3 – Duke Kunshan University Homepage with PLA Military Training

Case Study 4: A 2025 publication on high-altitude nuclear explosion research, co-authored by researchers from CAEP acknowledged that "the software used in this work was developed in part by the DOE NNSA and DOE Office of Science-supported Flash Center for Computational Science at the University of Chicago and the University of Rochester."[170] While this research does not appear to include U.S. co-authors, the explicit acknowledgment of software and computational tools developed DOE NNSA funding indicates that China's nuclear weapons researchers leveraged U.S. taxpayer-funded computational resources in support of a foreign nuclear weapons–related study.

Case Study 5: A 2024 publication on antiferromagnetic ordering research was co-authored with researchers from the University of California-Davis, the University of Houston, HIT, and CSRC. The research was funded by the DOE Office of Science, and numerical simulations were performed in the Tianhe-2JK at the Beijing Computational Science Research Center.[171] The DOE research award is set to end in May 2026.[172]

Case Study 6: From at least 2020 to 2025 a scientist at the DOE Brookhaven National Laboratory (BNL) conducted research with HPSTAR.[173] Research topics included nanomaterials, metal behavior, ambient pressures, antiferromagnetic insulators, band gap insulators, ultrathin devices, x-ray diffraction and absorption, tunable band gaps, and high-pressure investigations of structural and ecteronic properties. The Scientist was employed by BNL from 2002 to 2023 in the Condensed Matter Physics and Materials Science Department where he was in charge of establishing and leading a new exploratory materials synthesis laboratory.[174,175] He also held an adjunct professor position at Stoney Brook University from 2010 to until an unspecified time after 2023.[176,177]

In 2023, the scientist left BNL and took a position at China's Shanghai Advanced Research in Physical Science (SHARPS, 上海前瞻物质科学研究院) and a visiting staff scientist position at HPSTAR.[178,179] Additionally, the now former BNL scientist

was recruited in the Oriental Peral Talent Award in 2024. That same year, he was awarded the highest honor/award for foreigners, the International Friendship Award and was honored in the Great Hall of the People.[180] This award is not typically granted to individuals who have spent only a short period working in China. It is generally reserved for foreign researchers who have made "significant contributions" to Chinese scientific and technological development over multiple years. The fact that he received this recognition soon after leaving BNL strongly suggests that, during his time at BNL, he was already conducting research with Chinese counterparts that materially advanced technology areas prioritized under China's industrial and military-civil fusion policies. Moreover, given the U.S. government's increased scrutiny of foreign talent programs, undisclosed foreign positions, and required disclosure practices, it is likely that the Chinese government delayed publicly conferring his talent program award and the Friendship Award until after he departed BNL—to protect him from scrutiny from the U.S. government.

- SHARPS was created and organized by the Shanghai Municipal Science and Technology Commission in January of 2022 as a municipal institution. Its purpose is: to serve the construction of Shanghai's talent highland and science and technology innovation center with an elite and international system; Committed to subversive breakthroughs in basic research on material science under extreme conditions and the introduction, training and gathering of leading international scientific research talents; Create an international top scientific research platform that leads the future development of material science. Since its establishment, it has introduced a number of high-level talents at home and abroad, forming a high-level scientific research team based on the field of extreme environmental material science composed of high-level talents from China, the United States, Italy, Germany, Canada, Serbia and other countries. SHARPS was approved to establish the Shanghai Key Laboratory of New Materials for Extreme Environments (上海市极端环境新材料重点实验室). Since its establishment, the Institute has closely focused on the national innovation-driven development strategy, adhering to the "four aspects", focused on key areas, and gave full play to its own advantages in science and technology to promote the high-quality development of the national economy and the construction of Shanghai International Science and Technology Innovation Center.[181] **SHARPS appears to function less as a benign research organization advancing the ideal that "science knows no borders," and more as a strategic platform to acquire foreign talent, technology, and know-how in direct support of China's industrial and technological directives. Its structure and activities align closely with the objectives of the PRC's MCF and national innovation plans, rather than open, curiosity-driven scientific collaboration**.

- The Oriental Talent Program Award/Top Talent Project Science and Technology Platform (东方英才计划拔尖项目科技平台) aims to cultivate a select group of academic leaders and technical leaders who have entered the forefront of world science technology and lead industrial innovation in the global basic frontier fields and key core technological innovation fields, drive the development of science and technology industry in Shanghai, and provide strong support for Shanghai to build a scientific and technological innovation center with global influence.[182]

Figure 4 – DOE BNL Scientist (2002-2023) At His International Friendship Award Ceremony in China

According to scientific publication records from 2023–2025, the BNL scientist simultaneously listed affiliations with BNL, Stony Brook University, and SHARPS. This demonstrates that he continued conducting research while at BNL under multiple institutional affiliations, including with a Chinese entity.[183] This potentially means he either conducted research at BNL while formally tied to a foreign institution without disclosure, or he continued to leverage his BNL position and U.S. taxpayer-funded research after departing the lab—both of which raise serious research security compliance and diversion concerns.

Furthermore, this case example brings to light a stark reality: U.S. taxpayer-funded scientific expertise—developed over decades inside one of America's premier national laboratories—was likely targeted, exploited, and actively leveraged to advance China's strategic technology objectives and MCF ecosystem. The BNL scientist's research portfolio in ultrahard materials, tunable semiconductors, high-pressure physics, and novel electronic behavior maps directly onto areas the PRC identifies as critical to weapons modernization, radiation hardening, next-generation space systems, hypersonics, stealth technologies, and advanced industrial capabilities. This case example also shows how long-standing research

partnerships with Chinese entities development into targeted talent, technology, and know-how acquisition. This case also demonstrates how long-standing research collaborations with Chinese entities can evolve into targeted foreign-talent recruitment and the systematic acquisition of U.S. technology and know-how

Conducting research with Chinese researchers where they utilize U.S. government entity listed Chinese supercomputers and infrastructure represent a serious breakdown in research security and potential export control safeguards. It suggests that software designed for modeling high-energy density physics and nuclear detonation dynamics—developed for use within the U.S. nuclear deterrence and stockpile stewardship programs—was repurposed by China's nuclear weapons enterprise to enhance its own simulation capabilities. The use of NNSA-funded code by CAEP researchers effectively aids the modernization of a strategic adversary's nuclear arsenal and underscores how uncontrolled dissemination of U.S. scientific software can directly undermine U.S. national security and nonproliferation objectives.

Furthermore, when looking at publication data beyond the timeframe of this investigation, DOE-funded researchers and national laboratory scientists have had extensive research relationships with CAEP and its subsidiaries. The repeated presence of CAEP and its subsidiaries within DOE-funded research outputs demonstrates that taxpayer resources intended to advance U.S. scientific and national security interests are, instead, co-opted to strengthen those of a strategic adversary. These collaborations are not incidental, they reflect a deliberate, long-term Chinese effort to leverage open U.S. science and DOE National Laboratory access to close critical capability gaps in materials science, high-energy physics, and computational modeling directly relevant to nuclear weapons development.

DOE-Funded Research with China's State-Owned Enterprise Defense Conglomerates

From 2023 to 2025, the Select Committee identified multiple publications that acknowledged DOE funding or support in collaboration with major Chinese state-owned defense conglomerates. These conglomerates—many of which play a central role in the People's Liberation Army's weapons development and defense-industrial planning—represent some of the highest-risk partners within China's MCF ecosystem.

Case Study 1: A 2024 publication on magnetic multilayer and ferrimagnet heterostructure research was coauthored by researchers from DOE LBNL, Tsinghua University (a SASTIND co-administered university), Zhejiang University (a SASTIND co-administered university), and the 618th Research Institute (618 RI) of the China Aviation Industry Corporation (AVIC) Shenyang

Aviation Corporation. The research also used resources of the Advanced Light Source at LBNL.

- The 618 Research Institute of the Aviation Industry Corporation of China (AVIC)—also known as the AVIC Xi'an Flight Automatic Control Research Institute (西安飞行自动控制研究所)[184]—is one of China's premier research and development centers for aircraft flight control systems. AVIC is China's largest aviation conglomerate, responsible for producing nearly all of the nation's military aircraft, unmanned aerial vehicles (UAVs), helicopters, and civil aviation platforms.[185] The 618th Research Institute designs and manufactures military and civil aviation automatic control systems, including flight control systems for aircraft, helicopters, and UAVs, as well as automation technologies and critical avionics components.[186] Its portfolio includes integrated aircraft management systems, automatic landing systems, fly-by-wire flight control systems for fixed-wing and rotary aircraft, UAV autonomous control systems, and civil aircraft electrical flight control systems. The Institute also produces supporting hardware and subsystems such as electronic computers, actuators, embedded software, motors, sensors, laser gyroscopes, fiber-optic gyroscopes, accelerometers, and MEMS gyroscopes.[187] The 618th Research Institute is directly involved in the development of China's next-generation aircraft flight control and guidance systems, including:
    - Flight control systems for numerous combat aircraft, including the J-10, J-11, J-15, and J-16;[188]
    - AT200 cargo UAV;[189]
    - ZLG laser inertial navigation system;[190]
    - Closed-loop optical fiber inertial navigation systems;[191] and
    - High-precision rotary modulation inertial navigation systems[192]
- The 618 RI was added to the BIS Military End User List 2020[193] and the fiscal year 2021 DOW 1260H List.[194]

Case Study 2: A 2023 publication on biodiversity hotspots and nitrogen deposition research was co-authored by researchers from Cornell University, Peking University (a SASTIND co-administered university), and the China National Offshore Oil Corporation Research Institute (CNOOC, 中国海洋石油总公司研究院). The researcher was funded by DOE with use from the Peking University high-performing computing platform.[195]

- CNOOC is the largest offshore oil and gas producer in China. The company's main business segments include oil and gas exploration and development, professional technical services, refining and sales, natural gas and power generation, financial services, etc., and actively develops new energy businesses such as offshore wind power. CNOOC was added to the BIS Entity List in 2021 for its involvement in the PRC's efforts to assert its unlawful maritime claims in the South China Sea, as well as efforts to intimidate and coerce other South China Sea coastal states from accessing and developing offshore marine resources.[196] CNOOC was added to the DOW Chinese Military Companies 1260H List in 2021.[197] CNOOC was added to the OFAC Non-SDN Chinese Military-Industrial Complex Companies.[198]

Case Study 3: A 2023 publication on electronic conductivity research was co-authored by researchers from the DOE ORNL, the University of Tennessee, Hebei University of Technology (a SASTIND co-administered university), Tianjin University of Technology, and the Information Science Academy of the China Electronic Technology Group Corporation.[199]

- The China Electronics Technology Group Corporation (CETC, 中国电子科技集团公司) is a state-owned defense conglomerate and one of the largest military-industrial enterprises in the world, comprising more than 500 subordinate research institutes, laboratories, and subsidiaries.[200] CETC serves as a central pillar of the PRC defense electronics and information warfare sector, specializing in dual-use technologies that support both civilian and military applications. CETC's defense electronics portfolio spans seven primary domains: air-based early warning systems, integrated electronic information systems, radar, communications and navigation, electronic warfare, unmanned aerial vehicles (UAVs), and integrated identification friend or foe (IFF) systems. The corporation plays a key role in the development of advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities for the People's Liberation Army (PLA) and is deeply embedded in China's MCF strategy.
- The Information Science Academy of the CETC (中国电子科技集团公司信息科学研究院) has conducted extensive research and achieved significant breakthroughs in radar signal processing technologies. The academy has successfully developed and patented false target suppression methods, which enhance radar system accuracy and resilience. These technologies

utilize advanced optimization algorithms to distinguish between genuine targets and electronic jamming signals, thereby improving the anti-jamming and countermeasure capabilities of radar systems.[201]

- Additionally, the Information Science Academy of CETC has presented research for adaptive frequency management, spectrum agility, and cognitive radar techniques for improving detection continuity and anti-jamming capability with researchers from Xidian University and other defense-affiliated universities. The research aims to enable radar systems to dynamically coordinate spectrum use across multiple nodes while maintaining coherent operation, even when individual radar lines of sight are blocked or jammed. The presentation acknowledged the work directly supports the information confrontation and electronic warfare capabilities within China's defense technology ecosystem.[202]

- CETC was added to the Department of the Treasury's Office of Foreign Assets Control (OFAC) Non-SDN Communist Chinese Military Companies (NS-CCMC) List in 2020, pursuant to Executive Order 13959, which restricts U.S. persons from investing in firms linked to China's defense sector.[203] In addition, CETC is included on the Department of Defense's Section 1260H List (originally Section 1237 of the FY1999 NDAA, updated under Section 1260H of the FY2021 NDAA) since fiscal year 2021, identifying it as a Chinese military company operating directly or indirectly within the United States.[204,205]

These case studies underscore a deeply troubling reality: U.S. government scientists, employed by the DOE and working at federally funded national laboratories, have coauthored research with Chinese entities at the very heart of the PRC's military-industrial complex. These are not abstract collaborations or academic niceties. They involve the joint development of technologies with direct relevance to next-generation military aircraft, electronic warfare systems, radar deception techniques, and critical energy and aerospace infrastructure—alongside entities already restricted entities by multiple U.S. agencies for posing threats to national security.

That fact these collaborations were conducted with DOE funding, utilized DOE user facilities, and were carried out in concert with researchers at institutions like AVIC's 618th Research Institute, CETC's Information Science Academy, and the CNOOC Research Institute—each explicitly named on the BIS Military End User List, the DOW 1260H List, or OFAC's NS-CCMC List—exposes failures in DOE oversight, vetting, and institutional safeguards. The involvement of DOE national lab personnel in these partnerships represents a breach of public trust and a glaring vulnerability in the federal government's ability to protect sensitive

knowledge, technologies, and taxpayer investments from being co-opted by hostile foreign powers.

DOE-Funded Research Publications Reveal Use of Computational Resources of the Chinese National Supercomputing Centers—Entity Listed by the U.S. Government—Used for Defense and Nuclear Weapons Research and Development

Between June 2023 and June 2025, multiple publications were identified acknowledging DOE funding or support that also cited the use of computational resources from the National Supercomputer Center Zhengzhou, Tianhe-1A, or Tianhe-2 supercomputers. The National Supercomputing Centers (NSCCs) in China—including those in Tianjin (home of TianHe-1A) and Guangzhou (home of TianHe-2)—serve as critical infrastructure for the PLA and the CCP in advancing next-generation military technologies. Both systems were developed by the National University of Defense Technology (NUDT, 国防科技大学)—the PLA's premier scientific research institution and on the BIS Entity List— under the 12th Five-Year Plan's 863 Program.[206] raising serious concerns that DOE-funded research was executed using foreign military–linked high-performance computing infrastructure. Despite these supercomputers being added to the BIS Entity List in 2015, research publications continue to show continued collaboration and utilization of these systems well after their designation. This ongoing activity demonstrates both the persistence of scientific engagement with restricted entities and the lack of effective safeguards to prevent the use of critical and emerging technologies in research involving foreign adversaries.

TianHe-1A (天河一号A) is a Chinese petaflop-level supercomputer, developed by NUDT and housed at the National Supercomputer Center in Tianjin.[207,208,209] TianHe-1A was added to the BIS Entity List in 2015 for believed usage in nuclear explosive activities as described in §744.2(a) of the EAR.[210] Additionally, TianHe-1A is used for applications such as petroleum exploration and aircraft design.[211]

TianHe-2 (天河二号) is a petaflop supercomputer located in the National Supercomputer Center in Guangzhou. It was built by China's National University of Defense Technology in a joint effort with a Chinese IT firm, Inspur. The computer beat out second-place finisher Titan by nearly a 2-to-1 margin. Titan, which is housed at the DOE ORNL , achieved 17.59 petaflops, while Tianhe-2 achieved 33.86 petaflops.[212] TianHe-2 was added to the BIS Entity List in 2015 for believed usage in nuclear explosive activities as described in §744.2(a) of the EAR.[213]

National Supercomputer Center Zhengzhou (NSCC-Zhengzhou, 国家超级计算郑州中心) was added to the BIS Entity List in 2015 for believed usage in nuclear explosive activities as described in § 744.2(a) of the EAR.[214]

These supercomputers support a wide range of applications, including biomedical research, genetic analysis, aerospace research, quantum cryptography, electronic-warfare simulations, and counterspace operations—directly reinforcing China's civil–military fusion strategy. As part of the Chinese Communist Party's broader push for technological self-sufficiency, the NSCC's continue to drive China's next-generation military modernization by ensuring computational superiority in hypersonic flight, space warfare, and AI-driven autonomous weapons systems, all developments that carry profound implications for global security.[215,216,217,218,219]

Case Study 1: A 2025 publication on nuclear fission research was co-authored by researchers from Michigan State University and Peking University's State Key Laboratory of Nuclear Physics and Technology (核物理与核技术国家重点实验室). The project was supported by a DOE grant through the DOE NUCLEI SciDAC-5 collaboration. Notably, the publication also acknowledged that computations for this research were performed on Tianhe-1A.[220]

- Peking University is co-administered by SASTIND. Peking University's State Key State Key Laboratory of Nuclear Physics and Technology acknowledges its ties and support to national security,[221] national defense research,[222] and the defense industry.[223] Within its stated research directions, the laboratory explicitly promotes the development and application of advanced particle accelerator technology, including RFQ (radio-frequency quadrupole) accelerators, in support of the PRC's defense industry. The lab also acknowledges the application of nuclear technology and the continued use of basic nuclear data for purposes directly tied to national defense, energy systems, and other strategic technologies and applications.[224]
- The publication lists researcher Pei Junchen (裴俊琛) of Peking University's State Key Laboratory of Nuclear Physics and Technology, who previously served as a Postdoctoral Researcher at ORNL and the University of Tennessee from 2007 to 2012.[225]

The example of Pei Junchen illustrates a broader systemic challenge: the United States continues to provide advanced training to foreign researchers who later return to China and contribute directly to institutions tied to the PRC's defense research enterprise. Pei spent five years as a postdoctoral researcher at ORNL and the University of Tennessee (2007–2012), benefiting from U.S. taxpayer-funded expertise, facilities, and mentorship in nuclear science. Today, he is a researcher at Peking University's State Key Laboratory of Nuclear Physics and Technology. The institution openly acknowledges its role in supporting China's defense industry

through nuclear data research and accelerator technology development. This example highlights the recurring pattern in which U.S. laboratories and universities inadvertently cultivate highly skilled scientists who then apply their expertise to advance China's strategic and military objectives.

Case Study 2: A 2025 publication on thermal annealing and heterostructure research was co-authored by researchers from the DOE's Brookhaven National Laboratory (BNL), Zhengzhou University's Key Laboratory of Diamond Materials and Devices, and BIT (a "Seven Sons of National Defense" university). The research was supported by DOE, with electron microscopy work being conducted at BNL. The publication further acknowledges that the work was also supported by the National Supercomputing Center in Zhengzhou, Henan Province.[226] Thermal annealing and heterostructure research are foundational to the development of next-generation semiconductor and quantum materials, enabling enhanced electronic performance, thermal stability, and radiation resistance. These processes are critical for producing high-power, high-frequency, and thermally robust components used in aerospace, satellite, radar, and quantum communication systems. The dual-use nature of these technologies—relevant to both civilian electronics and military-grade systems—makes such collaborations strategically sensitive, particularly when involving DOE national laboratories, U.S. government restricted Chinese supercomputing centers, and Chinese defense research and industrial base entities.

Case Study 3: A 2024 publication on hydroxylated hematite surface research was co-authored with researchers from the University of Southern California and Chang'an University's State Key Laboratory of Ecohydrology and Water Security in Arid and Semiarid Regions. The research was supported by the DOE, and computational simulations were performed on the TianHe-2.[227]

Case Study 4: A 2023 publication on superlattice research was co-authored by researchers from multiple DOE national laboratory researchers—ORNL, BNL, and Argonne National Laboratory (ANL)—alongside researchers from several Chinese institutions, including the Southern University of Science and Technology (SUSTech) Laboratory of Quantum Emergence, the Chongqing University Low-Temperature Physics Laboratory, the University of Science and Technology of China (USTC), and the Chinese Academy of Sciences (CAS) National Laboratory for Condensed Matter Physics. The research utilized resources at the 21-ID-1 beamline of the National Synchrotron Light Source II (NSLS-II) at BNL, and computational work was performed using Tianhe-1A, located at the National Supercomputing Center in Tianjin, a facility under the National Supercomputing Center network managed by the PRC government.[228]

Case Study 5: A 2023 publication on nucleon-pair shell model research was co-authored by researchers at DOE ANL, Louisiana State University, Nankai University, and Liaoning Normal University. The research was supported by the

DOE, acknowledging that the work was carried out at the National Supercomputer Center in Tianjin, and the calculations were performed on TianHe-1(A).[229]

From a research security perspective, using NSCCs for U.S. federally funded projects undermines scientific integrity and weakens export control safeguards. It allows sensitive modeling and computational resources—often leveraged by China's defense research apparatus—to be repurposed for strategic advantage. These facilities are developed and operated by entities tied to the PLA and the MIIT—institutions that anchor China's MCF strategy. When U.S. researchers—or their co-authors—run simulations or data analyses on these systems, they expose proprietary algorithms, models, and datasets to foreign military infrastructure subject to PRC government access. This not only risks the unauthorized transfer of sensitive technologies and data but also undermines nonproliferation objectives, as well as sanctions and compliance frameworks designed to prevent adversarial states from leveraging American science research for weapons development. In effect, taxpayer-funded research is processed on supercomputers that directly support China's nuclear modeling, advanced weapons and equipment development, and AI warfare programs—turning open science into an unintentional engine for a strategic competitor's defense innovation.

DOE-Funded Publications Research Relationships with China's Defense Research and Industrial Base

Between 2023 and 2025, extensive amounts of DOE-funded or supported research were conducted in partnership with entities across China's defense research and industrial base, beyond those profiled in earlier sections of this report. These collaborations span a wide range of technologies and PRC institutions, including universities, laboratories, and research institutes. Some of these entities appear on U.S. government restricted lists such as the BIS Entity List, while others operate just below current regulatory thresholds. Regardless of designation status, these partnerships raise serious concerns about the integrity of U.S. taxpayer-funded research and the unintended transfer of sensitive technologies, methodologies, or know-how to the PRC. Additionally, at least one collaboration may have violated federal law, the Wolf Amendment.

Understanding precisely who U.S. researchers are partnering with—and whether these institutions serve military or security functions of the PRC—is critical to assessing risk. Many of these PRC institutions operate under complex administrative structures that obscure their connections to China's MCF strategy or its broader efforts to dominate emerging technology sectors. The case studies that follow illustrate the range and severity of these research relationships, underscoring the urgent need for improved vetting, due diligence, and post-

award monitoring within DOE's research enterprise, as well as for U.S. government restricted lists to be adequately updated.

Case Study 1: A 2025 publication on ion-battery research was co-authored by researchers from DOE ANL, DOE BNL, Xiamen University's (a SASTIND co-administered university) State Key Laboratory of Physical Chemistry of Solid Surfaces, and Contemporary Amperex Technology Company (CATL, 宁德时代新能源科技股份有限公司). The research was supported by DOE and used beamline 18-ID of the National Synchrotron Light Source II at BNL.[230]

- Over the past year and a half, the Select Committee has conducted an extensive investigation into CATL and its role within the PRC's MCF and forced labor ecosystems. Following letters sent by the Select Committee to the DOW and the Department of Homeland Security's (DHS) Forced Labor Enforcement Task Force (FLETF), CATL was added to the DOW's Section 1260H List of Chinese Military Companies and has yet to be added to the Uyghur Forced Labor Entity List under the Uyghur Forced Labor Prevention Act (UFLPA). [231,232,233] These actions formally recognize CATL as both a military-linked enterprise and a beneficiary of forced labor within China's battery and critical minerals supply chain.
- One of the DOE ANL scientists listed in this publication was previously recruited into a Chinese talent-recruitment program and subsequently accepted an appointment as an Honorary Professor at Wenzhou University.[234]

Figure 5 – DOE Argonne National Laboratory Scientist Accepting Certificate for High-Level Talent Recruitment and Honorary Professor Position at Wenzhou University

Case Study 2: A 2025 publication on machine learning research was co-authored by researchers affiliated with the Carnegie Theoretical Astrophysics Center, DOE's LANL, the University of Pennsylvania, the University of California Los Angeles Center for Vision, Cognition, Learning, and Autonomy, the University of Texas at Dallas, New York University, the Flatiron Institute, Tsinghua University (a SASTIND co-administered university), and Peng Cheng Laboratory. The research was funded by LANL's LDRD Project No. 20240863PRD2 and NASA's Astrophysics Theory Program, Grant No. 80NSSC20K0497.[235]

- 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.[236] Peng Cheng Lab also hosts cyber ranges for industrial control systems and smart cars.[237] 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."[238] References to "shooting range" typically refers to offensive and defensive cyber and information warfare environments.[239] Peng Cheng Lab has formed research partnerships with other Chinese institutions.

Figure 6 – 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 is 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 such as 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.[240]

- 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 and 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.[241]

This collaboration may 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. Additionally, Peng Cheng Laboratory—established in early 2018 with a heavy focus on cyberspace security and operations, as well as joint agreements with numerous entities in China's defense research and industrial base—was only added to the BIS Entity List in January 2025.

Figure 7 – Publication from Digital Science Dimensions AI Platform: A New Framework for Interstellar Medium Emission Line Models: Connecting Multiscale Simulations across Cosmological Volumes. Demonstrating Bilateral Research with China on DOE and a NASA-Funded Award Likely in Violation of the Wolf Amendment

While the research is framed around astrophysics and cosmology, the dual-use applicability of the underlying machine learning work is clear. The methods developed for high-performance computing, data fusion, and artificial intelligence have direct relevance beyond astronomy, particularly in areas tied to national security and cyber. Notably, Peng Cheng Laboratory has explicitly leveraged these same research areas to advance China's cyber capabilities, underscoring the risks of U.S. taxpayer-funded research being co-opted for strategic advantage by the PRC. Even more troubling is the apparent disregard for federal law—namely, the Wolf Amendment. The fact that this collaboration proceeded suggests that key institutions lacked the training to recognize legal violations; that the DOE or NASA is failing to conduct effective post-award compliance and monitoring of research outputs; or that compliance obligations were willfully ignored.

Case Study 3: A 2025 publication on alloy and thermal stability research was co-authored by researchers from DOE Ames National Laboratory, Iowa State University, and the Huazhong University of Science and Technology (HUST, a SASTIND co-administered university), and Wuhan National Laboratory for Optoelectronics (WNLO, 武汉光电国家研究中心). Work at the Ames Laboratory was supported by the DOE, Office of Science, Basic Energy Sciences, Materials Science and Engineering Division, including a grant of computer time at the National Energy Research Scientific Computing Center (NERSC) in Berkeley, CA.[242]

- 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.[243,244] 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.[245] WNLO houses at least seven specialized research departments, including a Military Optoelectronics Research Department, indicating its direct involvement in China's defense research ecosystem.[246]
- 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."[247] 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.[248] 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.[249]

- 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).[250] 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.[251]
- In 2011, WNLO established the Photon Detection and Radiation Functional Laboratory in the 717th Research Institute of CSIC.[252]
- In 2013, HUST/WNLO signed a cooperative framework agreement with the China Academy of Launch Vehicle Technology—a core entity within China's state-owned space and missile industry subordinate to state-owned defense conglomerate CASC—and the Capital Aerospace Machinery Company. As part of this agreement, the parties jointly established a Joint Laboratory of Additive Manufacturing Technology.[253]

Case Study 4: A 2025 publication on heterogeneous catalysis research was co-authored by researchers from Oregon State University, USTC, Dalian Institute of Chemical Physics, and the National University of Defense Technology (NUDT). The research publication acknowledges support, and experiments were performed at the 10-ID of the Materials Research Collaborative Access Team (MR-CAT), which is supported by the DOE and the MR-CAT member institutions. This research used the resources of the Advanced Photon Source, a DOE Office of Science User Facility operated for the DOE Office of Science by Argonne National Laboratory.[254] NUDT is a core institution of the PLA and on the BIS Entity List since 2015.[255,256] 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.[257]

Case Study 5: A 2025 publication on superconductivity research was co-authored by researchers from the DOE LBNL, the University of Florida, and the Beijing University of Posts and Telecommunications (a SASTIND co-administered university) State Key Laboratory of Information Photonics and Optical Communications (BUPT IPOC, 信息光子学与光通信国家重点实验室).

- 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."[258]
- 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)[m] 通信与网络核心技术学科创新引智基地(111基地).[259,260] 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 technology.[261,262] 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)."[263,264] 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.[265] 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

[m] 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 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.[266] Additionally, the Underwater Optical Network Joint Laboratory operates out of BUPTS's IPOC.[267]

Case Study 6: A 2024 publication on electrochemical properties was co-authored by researchers from Texas A&M University, the University of California-Irvine, the University of Maryland, and Xidian University's (a SASTIND co-administered university) State Key Laboratory of Electromechanical Integrated Manufacturing of High-Performance Electronic Equipment (高性能复杂电子系统机电一体化制造技术国家重点实验室). Research in this publication was funded/supported by the DOE (award ends in July 2026),[268] the Laganowsky laboratory at Texas A&M University is acknowledged for loan of the pressure-clamp rig, and the use of Texas A&M University Microscopy and Imaging Center Core Facility.[269]

- Xidian University was originally established in 1931 as the Central Military Commission Radio School and continues to maintain a strong focus on defense-oriented research and development. The university is jointly supervised by the Ministry of Education (MOE), SASTIND, and CETC—a major state-owned defense conglomerate. Xidian is deeply integrated into the PRC's military and national intelligence ecosystem, conducting research that supports the PLA, the Ministry of State Security (MSS), and other components of China's defense and signals intelligence infrastructure.[270,271,272,273,274]
- Xidian University's State Key Laboratory of Electromechanical Integrated Manufacturing of High-Performance Electronic Equipment focuses on the development of core and "disruptive technologies" in the field of high-performance electronic equipment mechatronics manufacturing. The laboratory conducts original and leading scientific research in several key domains, including mechatronic integrated manufacturing theory, digital and intelligent manufacturing technology, high-density packaging, precision assembly and testing, and specialized manufacturing techniques.[275]

Case Study 7: A 2024 publication on nucleation heterogeneity research was co-authored by researchers from the DOE ORNL and the Chinese Academy of Sciences' Institute of Mechanics (CAS IOM, 中国科学院力学研究所). The research was funded by the DOE and utilized computational resources from ORNL's Compute and Data Environment for Science (CADES) and the National Energy Research Scientific Computing Center (NERSC) clusters.[276]

- CAS IOM is one of China's most prominent research entities, conducting advanced work in microscale mechanics, high-temperature gas dynamics, advanced manufacturing processes, and hypersonic and aerospace

research and development. The Institute explicitly acknowledges its contributions to these areas through the work of its subordinate national and key laboratories, which support China's strategic aerospace and defense technology programs.[277,278,279] CAS IOM appears to be extensively involved in major national defense research projects and maintains partnerships with the PLA and organs under the Central Military Commission (CMC). It houses at least five major research laboratories and one research center, including the State Key Laboratory of Nonlinear Mechanics, the State Key Laboratory for High-Temperature Gas Dynamics, the CAS Key Laboratory for Microgravity, the CAS Key Laboratory for Fluid–Solid Coupling System Mechanics, the Laboratory for Advanced Manufacturing and Processing Mechanics, and the Aerospace Flight Technology Innovation and Research Center. Collectively, these laboratories conduct research integral to China's hypersonics, spacecraft design, and military aerospace programs, aligning closely with national defense priorities under the CMC Science and Technology Committee and SASTIND oversight.[280] The labs also conduct classified research as indicated with "XXX" in the titles of their research.

- To assist in the research and development of hypersonic technology, CAS IOM launched the "shock reproducing hypersonic flight conditions" program in 2008.[281] CAS IOM houses the JF-12 Shock Tunnel, duplicating true hypersonic flight conditions and is the largest and most advanced shock tunnel in the world.[282]

Figure 6 – CAS IOM JF-12 Shock Tunnel, Duplicating Hypersonic Flight Conditions at Mach 5 – Mach 9[283]

Case Study 8: A 2023 publication on electromagnetic absorption materials was co-authored by researchers from Duke University, Nanjing University, and Purple Mountain Laboratory.[284] DOE funded by the research to support the development

of new materials for energy applications, under an award that concluded in 2024.[285]

- Purple Mountain Laboratory (PML, 紫金山实验室) conducts research in network communications and security, operating systems, communications infrastructure, and endogenous security. PML has carried out several major national economic and national defense projects.[286] In 2024, PML created and unveiled a new microcomputer that is claimed to be 100 times more resistant to hackers.[287] According to a survey of bibliometric data, PML conducts extensive joint research with key Chinese military and defense-affiliated institutions, including the PLA Information Engineering University, PLA Army Engineering University, the PLA's NUDT, Peng Cheng Laboratory, China Electronic Cyber Security Co., and state-owned defense conglomerates such as CETC.[288]

Case Study 9: A 2023 publication on high-voltage and sodium-ion battery research was co-authored by researchers from the DOE NNL, the University of Science and Technology of China, China's National Synchrotron Radiation Laboratory, and the PLA's National University of Defense Technology. Research on this publication was funded and supported by the DOE Advanced Battery Materials Research (BMR) Program and used beamline 7-BM (QAS) of the National Synchrotron Light Source II, U.S. DOE Office of Science User Facilities, operated for the DOE Office of Science by Brookhaven National Laboratory.[289]

- Duan Fuqiang (段富强)—the NUDT co-author listed in this publication—is within NUDT's College of Aerospace Science and Engineering. He was part of a team that won first prize for their development of the Space-Earth Integrated Global Environmental Monitoring System Based on Cube Star Constellation. The constellation of satellites monitors greenhouse gas concentrations, water radioactive materials, marine life, watercolor, monitoring and prediction of global carbon emissions, and marine nuclear sewage.[290] Given NUDT's defense mission, technical monitoring and analysis of marine nuclear sewage and nuclear pollution serve as viable indicators for tracking the activity and location of nuclear reprocessing sites and naval nuclear platforms, including submarines and aircraft carriers.

These case studies illustrate how U.S. taxpayer-funded research and scientific infrastructure continue to be exploited by entities embedded within China's defense research and industrial base. Each collaboration, whether through joint publications, shared computing resources, or laboratory partnerships, blurs the line between legitimate scientific inquiry and state-directed technological acquisition. The participating Chinese institutions, including those directly overseen by the SASTIND, the Central Military Commission (CMC), and state-owned defense conglomerates, are not independent academic actors; they are extensions of a system designed to absorb foreign innovation—as stipulated by PRC government organ statutory records—into the People's Liberation Army's modernization pipeline. Engaging with such entities does not advance open science—it accelerates the militarization of global research.

DOE-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.[291,292,293,294,295,296,297] The following case studies highlight instances where DOE-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 2023 publication on genome editing research co-authored by researchers from the University of California-Davis, the Joint BioEnergy Institute, and BGI Shenzhen Company (aka BGI Group). The research was supported by the Joint Bioenergy Institute funded by the DOE.[298] Notably, BGI is listed on the DOW'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.[299] 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).[300,301]

Case Study 2: A 2023 publication on machine learning research was co-authored by researchers from Princeton University, the Flatiron Institute, Xiamen University (a SASTIND co-administered university), Peking University (a SASTIND co-administered university), Tsinghua University (a SASTIND co-administered university), ByteDance, Baidu, and the National University of Defense Technology (the PLA's premier scientific research institute). The publication acknowledged research support from the DOE, with the award concluding September 14, 2025.[302] Computational resources were provided by a wide array of platforms, including the Bohrium Cloud Platform operated by DP Technology; the Office of Advanced Research Computing (OARC) at Rutgers University; and the Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS) program, supported by the National Science Foundation under Grant Nos. 2138259, 2138286, 2138307, 2137603, and 2138296. Supercomputing resources included SDSC's Expanse (allocation CHE190067), the Frontera system at the Texas Advanced Computing Center (allocation CHE20002), the AMD Cloud Platform at AMD, Inc., and the Princeton Research Computing infrastructure at Princeton University—a consortium led by the Princeton Institute for Computational Science and Engineering (PICSciE) and the Office of Information Technology's Research Computing group.[303]

- ByteDance—the parent company of TikTok—came under congressional scrutiny following a 2023 letter the House Select Committee on the Chinese Communist Party sent to FBI Director Christopher Wray. The letter detailed how ByteDance granted the PRC's cybersecurity authorities access to the backend systems of its platforms, including TikTok. It also cited internal investigations revealing that ByteDance employees tracked multiple American journalists reporting on TikTok, accessing their IP addresses and user data. Furthermore, ByteDance maintained an internal list—regularly updated—identifying individuals likely to be blocked or

restricted from all ByteDance platforms, including TikTok, for reasons such as advocating for Uyghur independence.[304]

- Baidu is alleged to support China's mass surveillance apparatus by working directly with the Ministry of Public Security to provide communications functions and map functions for geolocation analysis for MPS.[305,306]

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.

The ethical implications of these collaborations are profound. When U.S. taxpayer-funded research and high-performance computing resources are used in partnership with Chinese entities that enable censorship, surveillance, and repression, the issue extends beyond national security—it becomes a moral one. Federally funded laboratories and supercomputing centers were created to advance human knowledge and societal progress, not to empower regimes that weaponize science against their own citizens. Allowing PRC-linked researchers access to DOE and NSF supercomputing infrastructure risks legitimizing and accelerating technologies used in mass surveillance, digital authoritarianism, and human-rights abuses in Xinjiang and beyond.

U.S. universities routinely espouse the importance of research integrity, but integrity extends beyond data accuracy or compliance checklists—it is rooted in moral judgment. Upholding America's scientific integrity requires more than procedural adherence; it demands that our research enterprise reflect the nation's core values of freedom, transparency, and human dignity and protect these values from authoritarian regimes that seek to exploit the openness of our research ecosystem.

DOE ARPA-E-Funded Research Publications Reveal Continued Research Relationships with China's Defense Research and Industrial Base

Between 2023 to 2025, publication data from DOE awards and contracts show that numerous research papers acknowledge support from the DOE's Advanced Research Projects Agency–Energy (ARPA-E).

ARPA-E advances high-potential, high-impact energy technologies that are too early for private-sector investment. The projects funded by ARPA-E develop new ways to generate, store, and use energy. Early-stage technologies supported by ARPA-E have the potential to support energy independence, reduce emissions, improve energy efficiency and our economy, bolster national security, and improve the resilience and reliability of our grid.

Publications identified with ARPA-E acknowledgments included research with China's "Seven Sons of National Defense" universities and other entities within China's defense research and industrial base.

Cast Study 1: A 2025 publication on electric aircraft propulsion research was co-authored by researchers from the University of Tennessee-Knoxville, the University of Houston, Tsinghua University (a SASTIND co-administered university), Huazhong University of Science and Technology (a SASTIND co-administered university), and NUAA (a "Seven Sons of National Defense" school).[307] The research was supported by ARPA-E for the development of ultra-light, tightly integrated modulation aviation-transportation solid-state circuit breakers. The grant concluded in June 2025.[308] The start date of the ARPA-E award is after NUAA was added to the BIS Entity List in 2020 for acquiring and attempting to acquire U.S.-origin items in support of programs for the PLA.[309]

Case Study 2: A 2023 publication on high-performance cooling system research was co-authored by researchers from the University of Maryland, Xi'an Jiaotong University (a SASTIND co-administered university), Beihang University's (a "Seven Sons of National Defense" school) Ministry of Education Key Laboratory of Aerospace Materials and Performance, and Tianmushan Laboratory (profiled earlier in this report). Research was supported by a DOE award and an ARPA-E award.[310]

- Beihang University's Ministry of Education Key Laboratory of Aerospace Materials and Performance (教育部航空航天先进材料及服役重点实验室) conducts research on lightweight materials and applications, aluminum matrix composites and applications, high-purity micro-nano powders and target applications, and surface technologies and applications. Develop aerospace light alloy material technology, solve the key problems of precision forming of large and complex thin-walled castings, and meet national strategic needs; Promote the industrial application in the automotive chassis parts industry and promote the development of automotive lightweight technology. Solve the key problems of casting aluminum matrix composites, break foreign technology monopolies, and promote the application of aluminum matrix composites in aerospace, rail

transit, automobiles, electronic communications, and other industries. The lab also works closely with other Beihang University defense-designated labs.[311]

Early-stage, taxpayer-funded innovations with clear national security and dual-use implications—supported by ARPA-E—are being developed in partnership with Chinese institutions directly linked to the People's Liberation Army and the PRC's defense industrial base. ARPA-E exists to catalyze high-risk, high-reward energy technologies that the private sector is not yet willing to fund. As such, it serves as a critical engine of American innovation and technological edge. That edge is eroded when cutting-edge research, such as propulsion systems and power modulation for electric aircraft or advanced aerospace materials, is conducted jointly with PRC institutions that are part of China's defense research and industrial base on U.S. government restricted entity lists. The fact that one of the ARPA-E awards began after a Chinese partner institution had already been added to the BIS Entity List underscores the lack of coordinated vetting and post-award monitoring. Without enforceable guardrails, ARPA-E risks becoming an unwitting incubator for China's next generation of strategic energy and aerospace technologies.

DOE-Funded Research Publications Acknowledging the China Scholarship Council

From 2023 to 2025, over 100 publications acknowledging DOE support also acknowledged funding from the CSC. While not all CSC-supported researchers were physically present in the United States, some were based in other countries. However, the Select Committee's investigation found that the CSC plays a strategic role in targeting STEM disciplines aligned with China's industrial policies and medium- to long-term development plans. As previously outlined in this report, the CSC serves as a key channel for transferring human talent, intellectual capital, and technical expertise back to the PRC in support of its national strategic objectives.

Case Study 1: A 2025 publication on electrocatalytic water splitting research was co-authored by researchers from the University of Wisconsin-Madison, Fudan University, Nanjing Normal University, Zhejiang University (a SASTIND co-administered university), the CAS Institute of Physics, and HIT's (a "Seven Sons of National Defense" school) Center for Composite Materials and Structures and Zhengzhou Research Institute. The first author of this publication, Huáng Jīnzhēn, is a Ph.D. candidate at the Center for Composite Materials and Structures at Harbin Institute of Technology and a visiting scholar at the University of Wisconsin, supported by the CSC.[312,313]

- HIT's Center for Composite Materials and Structures (复合材料与结构研究所)is a defense research center (different than the defense-designated laboratory system) conducting aerospace research. The Institute's research focuses on ultra-high temperature anti-insulation materials [超高温防隔热材料], lightweight structural composites [轻质结构复合材料], and intelligent composites and structures [智能复合材料与结构]. Special composite materials created by the Institute are mainly utilized for aerospace applications, most notably for the C919 aircraft.[314]
    - The lab established the Defense S&T Key Laboratory of Composite Material Technology in Special Environments (特种环境复合材料技术国防科技重点实验室), and personnel between the center and lab overlap.[315]
    - The lab has received more than 30 national defense science and technology awards.[316]
    - The lab is designated as a national '111' Innovation and Talent Recruitment Base (the '111' base profiled earlier in this report).[317,318]
- The HIT Zhengzhou Research Institute (郑州研究院) has established cooperative agreements with the 27th Research Institute of China Electronic Technology Group Corporation and the 713th Research Institute of the China Shipbuilding Corporation—both of which are major state-owned enterprise defense conglomerates supporting the PLA.[319]

Figure 8 – Zhengzhou Research Institute and CETC 27 Research Institute Meeting to Cary out In-Depth Joint Cooperation

These findings underscore the CSC's role as a critical enabler of research collaborations between Chinese defense-linked institutions and U.S. universities supported by the DOE. While not every CSC acknowledgment indicates a researcher was physically located in the United States, the program's broad international footprint—coupled with its documented ties to PRC state talent recruitment mechanisms and technology transfer—raises serious concerns about the integrity of U.S.-funded research. The case study involving Huáng Jīnzhēn exemplifies the risks: a CSC-funded visiting scholar embedded at a U.S. university conducting research with PRC institutions, including a "Seven Sons" university and two defense-affiliated research institutes. The current DOE research security framework fails to adequately screen for CSC affiliations or monitor the downstream implications of these partnerships. This gap leaves open pathways for the transfer of sensitive technologies and technical know-how to China's military-industrial complex.

DOE-Funded Quantum Research with China

From 2023 to 2025, publication records tied to DOE awards and contracts show hundreds of DOE-funded studies in quantum science and technologies conducted with partners in China. Further analysis reveals extensive collaboration with China's defense research and industrial base—particularly SASTIND co-administered universities—including the previously documented case involving HPSTAR, an entity linked to the PRC's nuclear-weapons complex.

The Committee's investigation has identified multiple DOE–funded research collaborations involving Chinese institutions directly affiliated with China's defense research and industrial base. These partnerships—often facilitated through joint publications, shared grants, and researcher exchanges—have provided the PRC with direct access to U.S.-developed quantum technologies, methodologies, and data. These areas directly align with the PRC's national priorities for strategic weapons development, intelligence modernization, and quantum-enabled command, control, and communications systems.

Case Study 1: A 2025 publication on quantum communication research was co-authored by researchers from DOE ORNL, Purdue University, Arizona State University, New York University, and East China Normal University's State Key Laboratory of Precision Spectroscopy. Research was supported by DOE Office of Science, Advanced Scientific Computing Research and Sandia National Laboratory.[320]

- The State Key Laboratory of Precision Spectroscopy (SKLPS, 精密光谱科学与技术国家重点实验室) researches human cognition of time, space, frequency, energy and other physical quantities by exploring the

interaction between light and matter under extreme conditions in the dimensions of ultra-high temporal resolution, spatial resolution, frequency accuracy, light field intensity, and sensitivity, challenging the existing precision limits, revealing new physical mechanisms and promoting technological innovation.[321] The lab has undertaken numerous 863, 864, 865, 866, and 867 National Projects which were classified research projects and outlined as such be denoting their project name as "XXXXX."[322][323]

Figure 9 – Several research projects at SKLPS are Identified as "National Plan Projects" and Denote Their Project Names as "XXXXX," a Designation Used to Indicate that the Projects are Classified in Nature

Case Study 2: A 2025 publication on quantum phase transition research was co-authored by researchers from San Diego State University, the University of Delaware, Tongji University, Shanghai Maritime University, and Southwest University of Science and Technology's College of National Defense Science and Technology.[324] The DOE-funded research is scheduled to end in May 2026.[325]

- Southwest University of Science and Technology's College of National Defense Science and Technology (aka the School of National Defense Science and Technology/Nuclear Science and Technology 西南科技大学国防科技学院/核科学技术学院2023年度招聘人才公告) was jointly established by the Sichuan Provincial government and SASTIND.[326] The school was established to specifically promote in-depth development of military-civilian integration of the national defense science and technology industry. Its research portfolio focuses on nuclear engineering and technology, radiation protection, nuclear chemical engineering, nuclear fuel engineering, special energy technologies, and information countermeasure technology.[327] Collectively, these areas directly support China's strategic weapons development, nuclear safety systems, and

> electronic-warfare capabilities, underscoring the school's role as a core contributor to the People's Liberation Army's defense science and technology enterprise. Furthermore, the College has established comprehensive strategic cooperative arrangements with Chinese Academy of Materials, China National Nuclear Corporation, China General Nuclear Power Group, Ordnance Industry Group, Electronic Technology Group, and Institute of High Energy of the Chinese Academy of Sciences. The College further states "The country is safe and the country is peaceful, and the offense and defense are clear". During the "13th Five-Year Plan" period, the National Academy of Defense Science and Technology will conscientiously implement the national military-civilian integration in-depth development strategy and the bureau and province co-construction agreement, adhere to the school-running positioning of "open schooling, serving the military and civilians…"[328]

Quantum science represents one of the most consequential technological frontiers of the 21st century, underpinning advances in computing, sensing, and secure communications that will redefine both economic and military power. Dominance in quantum technologies will determine which nations can secure their data, protect their command-and-control systems, and achieve decisive advantages in intelligence, navigation, and weapons development. The United States invests billions annually in federally funded quantum research; however, collaboration with Chinese institutions, especially those within China's defense research and industrial base poses a direct threat to U.S. national security. Such partnerships risk transferring sensitive methodologies, designs, and algorithms that underpin China's pursuit of quantum-enabled intelligence, surveillance, and strategic-weapons capabilities. Protecting U.S.-funded quantum research is therefore not merely an academic concern, it is a national security imperative.

Why Protecting DOE-Funded Research Matters: Case Studies on How Research Collaboration Likely Advanced PLA Strategic Weapons Development

To underscore the risks of PRC collaboration involving DOE-funded research, the Select Committee identified multiple troubling case studies involving U.S. academics who worked on DOE-funded research or were affiliated with DOE national labs. One involves a Stanford University and SLAC National Laboratory professor concurrently holding a position with a subsidiary of China's primary nuclear weapons research and development complex, CAEP, while also conducting research with Chinese defense-designated laboratories. Another case involves fundamental research on nitrogen conducted by a U.S. professor—who

had worked extensively on DOE-funded projects—in collaboration with a Chinese Academy of Sciences laboratory.

According to Chinese sources, this research allegedly contributed to breakthroughs in high-yield explosives and 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 the same U.S. professor and a Chinese institution, despite the professor's long history of working on both DOE- and DOW-funded research.

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 technology developed was said to have profound practical significance for China's aerospace technology development and modern defense construction.**

Case Study 1: A professor at Stanford University, the SLAC National Accelerator Laboratory[n], and the Stanford Extreme Environments Laboratory who specializes in materials under extreme compression for the development of next-generation energy systems, hydrogen fuel storage, and advanced batteries,[329,330] has maintained extensive research relationships with entities across China's defense research and industrial base—including CAEP, the PRC's primary nuclear weapons research and development complex, and its subordinate institutes. She has co-authored more than 130 publications acknowledging support or funding from the DOE.[331] While conducting DOE-funded research, the professor concurrently held a position at the Center for High Pressure Science and Technology Advanced Research (HPSTAR)—an organization under CAEP oversight that conducts work directly supporting China's nuclear weapons materials and high-energy physics programs.[332] Noteworthy, HPSTAR was created and is run by her father, How-Kwang Mao—who was a selectee of the Thousand Talents Program and a former director within Argonne National Laboratory.

According to publication data, the professor has at least 58 co-authored publications with Chinese researchers acknowledging DOE funding or support,[333] including 31 publications with HPSTAR since 2013, an institute operating under the China Academy of Engineering Physics (CAEP).[334]

[n] SLAC is one of the 17 DOE national laboratories. SLAC is home to the LCLS X-ray free-electron laser, SSRL synchrotron, and FACET test facility for next-gen accelerator technologies.

According to HPSTAR's Chinese website, the Stanford professor is listed with her Stanford email and her HPSTAR email, which indicates she at one point was—or still is—affiliated with HPSTAR.[335]

Figure 10 – HPSTAR Website Lists the DOE National Laboratory-Affiliated Stanford University Professor with Both Their Stanford University Email Address and an HPSTAR Institutional Email Address, Indicating a Dual Affiliation with U.S. Restricted Entity HPSTAR—an Institute Under CAEP, China's Primary Nuclear Weapons Research and Development Complex

The Stanford professor also held a simultaneous Adjunct Professor appointment at Zhejiang University—a SASTIND co-administered university—from 2009 to 2012, overlapping with their faculty position at Stanford University and the SLAC National Accelerator Laboratory.[336] This concurrent affiliation reflects a potential conflict of interest, foreign influence, and foreign institutional entanglement during a period when the professor maintained access to DOE-funded research programs and national laboratory infrastructure, underscoring DOE gaps in federal disclosure, vetting, and compliance enforcement over the years.

A 2024 publication on iron bonding with light elements research was co-authored by the Stanford professor (also acknowledging her SLAC affiliation), another Stanford professor, and a researcher from USTC. The research utilized resources from the Advanced Photon Source, a DOE Office of Science User Facility operated by Argonne National Laboratory. It also acknowledged support from the National Science Foundation's CSEDI Program and NASA's Exoplanet Program (Award No. 80NSSC23K0265).[337] **The publication lists only Stanford and Chinese co-authors yet explicitly acknowledges NASA funding, which—absent an FBI-certified congressional waiver—potentially violates the Wolf Amendment, the federal law prohibiting NASA and NASA-funded researchers from engaging in bilateral collaboration with Chinese entities**. Compounding the issue, the research publication credits USTC's supercomputing center for computational

resources, indicating a direct or material reliance on PRC state infrastructure in connection with NASA-funded research.[338]

The Stanford professor has also conducted research with the Chinese defense-designated laboratory, NWPU's Science and Technology on Thermostructural Composite Materials Laboratory[339] and Shanghai Jiao Tong University's (SJTU, a SASTIND co-administered university) National Key Laboratory of Micro/Nano Fabrication.[340]

The SJTU National Key Laboratory of Micro/Nano Fabrication—also known as the Defense Science and Technology Key Laboratory of Nano- and Microfabrication Technology (纳米加工技术国防科技重点实验室)—is a joint defense-designated laboratory operated between SJTU and Peking University (both universities co-administered by SASTIND). The laboratory conducts advanced research in micro- and nanotechnology processing, 3D microfabrication, and precision device manufacturing,[341,342,343,344] supporting China's strategic objectives in microelectronics, sensors, and defense-related integrated systems. Its research underpins core technologies for aerospace, communications, and electronic warfare applications.

The NWPU Science and Technology on Thermostructural Composite Materials Laboratory (aka Defense S&T Key Laboratory of Super High-Temperature Structural Composites 超高温复合材料国防科技重点实验室) conducts research into ceramic matrix composite (CMC) materials, carbon and carbon composites, and high-temp mechanical properties for aerospace propulsion, hypersonic vehicles, aircraft and vehicle braking technology, and materials for use in space and irradiated environments.[345,346] Despite NWPU being on the export control BIS Entity List since 2001, this lab advertises its use of several pieces of foreign equipment, including Instron8801 hydraulic servo universal testing machine (液压伺服万能试验机) from American company Instron.[347]

This case exposes a profound failure in research security, disclosure safeguards, and potentially export controls. The professor's documented dual affiliation with HPSTAR presents a clear conflict of interest for someone conducting DOE- and NASA-funded research while maintaining access to U.S. national laboratory infrastructure. HPSTAR's BIS Entity List inclusion and affiliation with CAEP places it squarely within the PRC's nuclear weapons enterprise, making any formal or informal association by a U.S. academic or National Laboratory scientist deeply problematic, potentially compromising to U.S. national security interests, and completely against DOE's nonproliferation objectives.

The inclusion of the Stanford researcher on NASA-supported research involving a bilateral research collaboration with USTC (a SASTIND co-administered university), constitutes a potential violation of the Wolf Amendment, which

explicitly prohibits NASA and NASA-funded researchers from engaging in bilateral collaboration with Chinese entities absent an FBI-certified waiver.

Taken together, these affiliations and collaborations demonstrate systemic failures within DOE and NASA's research security and compliance frameworks—failures that have allowed federally funded researchers to maintain direct scientific partnerships with entities integral to China's nuclear weapons modernization, hypersonics, and advanced materials programs. Such entanglements are not academic coincidences; they are clear indicators of how the PRC exploits open research systems to weaponize American taxpayer-funded innovation against the United States itself.

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.[348] He was a selectee of China's Thousand Talents Program,[349] held a concurrent appointment at the Chinese Academy of Sciences' Institute of Solid State Physics, Hefei Institute of Physical Sciences (ISSP),[350] and worked extensively on research funded by the DOE,[o] DOW, and NSF, with DOE-funded work published as recently as 2024.

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.[351,352] This position at the Chinese Academy of Sciences ran concurrently with his Carnegie Institution position and overlaps with numerous DOE, DOW, 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[353]—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.[354]

Since beginning his research partnership with the ISSP, he also conducted research with entities tied to China's defense research and industrial base—including HIT's State Key Laboratory of Advanced Welding and Joining Materials and Structures,[355] HPSTAR,[356] and the CSRC[357]—with many of these publications explicitly acknowledging U.S. government funding.

[o] Due to limitations in grant data access (beyond what is available in USAspending), the Select Committee cannot definitively confirm whether the Carnegie scientist was the named recipient of DOE awards. However, bibliometric and bibliographic metadata clearly show that this individual has conducted extensive research supported by DOE-funded projects. The absence of confirmation that the researcher was the direct award recipient does not negate the underlying fact: U.S. taxpayer dollars have directly enabled this researcher's work.

- HPSTAR states that it "embraces the foundational principles of the Carnegie Institution of Washington."[358] The Carnegie Institution scientist also delivered speaking engagements at HPSTAR.[359] He has published with HPSTAR as recently as April 2024, on research funded by the DOE NNSA.[360]

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.[361] He was presented with the award at the Great Hall of the People in Beijing.[362] 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."[363,364,365,366,367368]

Figure 11 – Carnegie Institution Scientist, Receiving the Friendship Award[369]

This case presents a deeply troubling example of how U.S. taxpayer-funded research, funded by the DOE, DOW, 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.

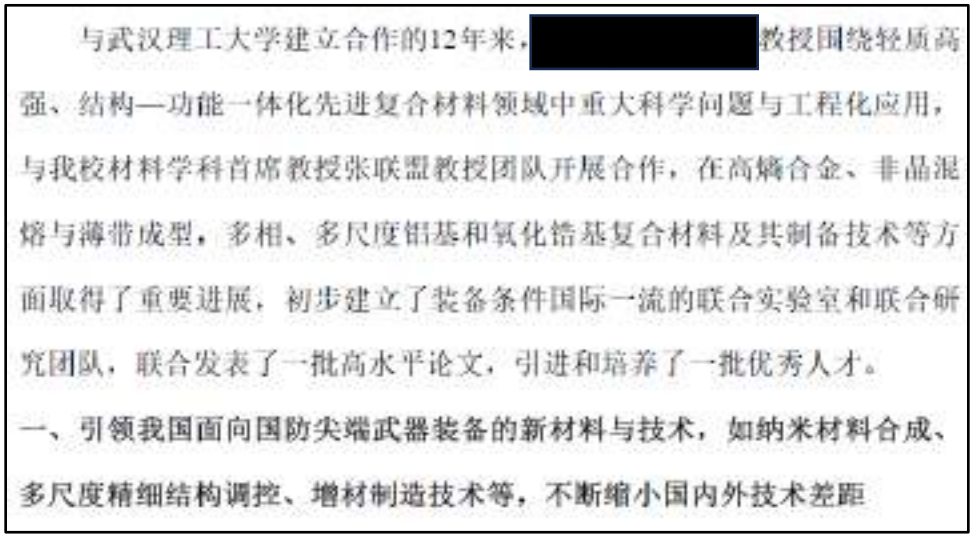
Case Study 3: The Committee obtained documents attributed to the Chinese Academy of Engineering (CAE)—a PRC governmental body—detailing a 12-year research partnership between a U.S. professor and Chinese institutions. The professor had conducted research funded by the DOE and collaborated with DOE national laboratories for years, while simultaneously being recruited into a Chinese talent recruitment program. He later received the Friendship Award, China's highest honor for foreign experts. He also held a dual academic affiliation with a Chinese university, illustrating the depth of Beijing's efforts to cultivate and leverage U.S.-funded scientific expertise for strategic gain.

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 explicitly referenced the U.S. professor's research in high-entropy alloys, nanostructured materials, thermal spray processing, and rapid solidification. It emphasized the strategic importance of these technologies, stating that *"**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.**"*

The document further acknowledged China's ongoing deficiencies in this field, noting that *"all countries attach great importance to the key new material technology of national defense, which the United States ranks as first among key technologies in its National Key Technology Report. China still has obvious weaknesses in the development of new material technology as the material basis for defense-oriented weapons and equipment, and we still have a lot to learn concerning the structural flexibility and*

performance stability of new materials with special functions in extreme service environments."

Figure 12 – Chinese Academy of Engineering Document Detailing a 12-Year Research Partnership with a U.S. Professor Conducting DOE-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. **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** (end translation).

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 previous DOE-funded research and DOE National Labs—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.

DOE Research Security Framework, Practices, and Policy Shortfalls

DOE's research security framework remains incomplete, leaving vulnerabilities in protecting federally funded research—designed to support America's military—from exploitation by foreign adversaries. While DOE has taken limited steps—such as finally establishing a research security due diligence office in 2023—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. Reliance on vague definitions, inconsistent criteria, virtually no post-award monitoring—especially where mitigation was required—and decentralized implementation across DOE 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 research security framework and policy shortfalls outlined below reflect issues identified in publicly available DOE documents, the Select Committee's engagement with DOE National Laboratory Directors via a Select Committee roundtable, and through concerns raised directly in meetings with the DOE.[P]

The DOE is currently operating without a comprehensive research security risk assessment framework beyond its 2022 Science and Technology (S&T) Risk Matrix. This tool appears to apply only to the DOE national laboratory system—not to research conducted within U.S. institutions of higher education—and was first called for in a 2018 DOE policy memorandum but took four years to develop. This delay reflects a broader pattern of inaction and institutional inertia within the Department about safeguarding taxpayer-funded research from foreign exploitation. Moreover, the 2022 S&T Risk Matrix appears to be largely advisory in nature, lax enforcement teeth, and is narrowly focused on scientific subject matter categories rather than evaluating the full spectrum of risk indicators—such as institutional affiliations, researcher background, foreign government funding, or co-authorship with military-linked entities. It offers no clear criteria for disqualifying high-risk collaborations and has proven inadequate for identifying or mitigating partnerships with entities tied to China's defense research and industrial base. Additionally, the technologies outlined in the S&T Risk Matrix should align with those that China is explicitly targeting through its industrial

[P] The Select Committee has held meetings with DOE officials, including national lab directors, counterintelligence, RTES, and Office of Science, during which many of these policy shortfalls were directly raised and discussed.

policies and medium- to long-term development plans. However, the current matrix is largely ineffective, it focuses on the wrong issues and fails to capture many critical technology domains.

Furthermore, the technologies outlined in DOE's Science and Technology (S&T) Risk Matrix fail to meaningfully align with the strategic priorities identified in the PRC own industrial policies, such as Made in China 2025, the 14th Five-Year Plan, and MCF directives. Despite the abundance of open-source intelligence identifying which technology domains the PRC is aggressively targeting—quantum computing, hypersonics, advanced materials, high-performance computing, nuclear technologies, and energy storage among them—the DOE matrix offers a dated, incomplete, and non-binding reference framework that fails to capture these high-priority risk vectors. In practice, this renders the matrix ineffective as a tool for proactively screening foreign collaborations or funding decisions. It focuses on broad scientific disciplines instead of zeroing in on the fusion points where fundamental science meets national security risks such as affiliations with military-linked entities, dual-use applicability, or the presence of high-risk foreign researchers with known PRC state or military ties.

Just as troubling, the DOW's Air Force China Aerospace Studies Institute (CASI) published research—based on Chinese-language primary sources—identifying dozens of Chinese national defense-designated laboratories (some of which outlined and profiled earlier in this report).[370,371] Despite this authoritative internal analysis, there appears to be no publicly declared prohibition placed on research partnerships with these labs.[372] This data is public, produced by the DOW, and grounded in high-confidence Chinese language sourcing. Yet, all indications are that DOE has not acted on these public findings. This reflects either a deliberate unwillingness to protect U.S. taxpayer-funded research or blatant disregard for research security.

For years, U.S. grant agencies—including DOE—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 DOE, given its underlying purpose of supporting technological dominance, nuclear weapons development, and national security capabilities.

This creates a systemic vulnerability where researchers are incentivized to publish openly, and DOE 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.

Despite repeated warnings from the intelligence community, public investigative reports, and even internal reviews acknowledging the vulnerability of its open research environment, the Department has continued to fail to implement binding safeguards or revamp its screening analysis. Instead of responding with urgency, DOE has maintained a status quo approach that implicitly accepts continued exposure to exploitation by adversarial foreign actors. This inaction signals a troubling disconnect between threat awareness and policy enforcement—leaving U.S. taxpayer-funded science vulnerable to strategic diversion by the very entities it should be protected against.

The RTES Office currently lacks full access to the Department's internal grant and award data, which severely constrains its ability to conduct meaningful research security oversight. Despite being tasked with coordinating and strengthening research integrity across the DOE enterprise, RTES does not possess direct, real-time visibility into the complete portfolio of active or historical awards managed by the various program offices under the Office of Science, NNSA, and applied energy programs. Without comprehensive access to proposal, award, and collaborator data, RTES is unable to systematically conduct fully effective due diligence analysis to identify foreign participants, map collaboration networks, or flag research connected to entities tied to adversarial military or intelligence institutions. This lack of integration also prevents RTES from cross-referencing DOE-funded projects against government watchlists, export-control databases, and other national-security data systems.

DOE RTES office lack of creating its own risk matrix for research security and due diligence analysis. DOE's RTES has not developed a risk matrix akin to the DOW's Fundamental Research Risk Matrix, which systematically scores research proposals and institutional affiliations across defined national security risk factors (e.g., PRC defense linkages, talent programs, prior diversion, dual appointments, etc.). That said, while DOW has implemented a risk matrix, DOE should not follow suit by simply replicating its approach. As this Committee's Fox in the Henhouse investigative report laid out, the DOW's matrix is deeply flawed—it fails to capture the most serious indicators of risk and often prioritizes bureaucratic checkboxes over substantive threat vectors. DOE has a critical opportunity to lead, not follow. By developing a risk matrix that is more robust, evidence-based, implementing prohibitions proactively, and aligned with the real-world tactics used by foreign adversaries, DOE can build a stronger, more effective framework that addresses the full scope of research security challenges, something DOW's matrix has repeatedly failed to do.

DOE does not currently share its research security risk assessments with other grant agencies, even when evaluating the same individuals or institutions. This lack of coordination results in redundant due diligence efforts, fragmented visibility across agencies, and increased vulnerability to foreign talent recruitment and technology transfer schemes. Without a mechanism for interagency sharing of flagged risks, malign actors can exploit stove-piped systems, receiving awards from one agency even after being denied or flagged by another. This siloed approach not only wastes taxpayer resources but undermines the effectiveness of the entire U.S. research security enterprise. By DOE's own admission, when discussing due diligence assessments, the Department stated that even if the NSF declined to fund a project—potentially due to research security concerns—DOE might still choose to fund it.

DOE does not currently conduct any post-award compliance and monitoring, including on awards that required mitigation measures to be implemented. This lack of follow-through represents a major vulnerability in the Department's research security posture. Without a mechanism to verify whether risk mitigation plans are implemented or enforced, DOE cannot ensure that high-risk collaborations are actually being managed. This creates a false sense of oversight, where safeguards exist on paper but not in practice—leaving the door open to continued exploitation, diversion, or noncompliance by foreign entities or malign actors. Furthermore, in many instances, it is only after the award period—when co-authored publications are released—that collaborations with Chinese defense laboratories, military-linked researchers, or talent program participants become publicly visible. These disclosures often surface years after the initial grant was awarded.

The DOE has permitted access—directly or indirectly—to U.S. taxpayer-funded advanced computational resources and infrastructure by individuals and institutions affiliated with China's defense research and industrial base. These resources, which include some of the world's most advanced high-performance computing (HPC) environments and modeling software, are intended to support U.S. scientific leadership and national security priorities. Instead, they are being exploited to advance the capabilities of a strategic adversary. DOE's failure to control access to these assets—whether through inadequate vetting of collaborators, publication-based leaks, or open software repositories—represents a fundamental breakdown in research security. Supercomputing and advanced computational platforms supported by DOE, such as those at national labs or partner universities, should not be used to fuel technological advancements in China's nuclear weapons design, hypersonics modeling, or MCF initiatives. This report identified multiple instances where computational tools and modeling software developed through DOE-funded projects at U.S. universities were subsequently used to support collaborative research with co-authors from China's defense research and industrial base.

The DOE RTES office lacks sufficient Chinese-language–capable analysts to perform deep, source-validated research security due diligence into the Chinese vernacular. Given the sheer volume of DOE-funded publications and collaborative research outputs involving Chinese institutions identified in just a two-year window, proper vetting would have required extensive, systematic analysis of Chinese-language sources. This includes lab websites, internal affiliation disclosures, talent program announcements, patent filings, and grant documents—all of which are often only available in Mandarin. Yet, according to DOE's own account, the RTES office had only two contract analysts supporting Chinese vernacular analysis during this period. This shortfall represents a critical vulnerability. It severely limits DOE's ability to detect concealed affiliations with PRC defense labs, SASTIND-administered institutions, or MCF projects—many of which deliberately omit sensitive ties in English-language publications.

China uses its language as a first layer of encryption. For those who know what to look for, how to look for it, where to find it, and how to translate it, Chinese-language sources can be as revealing—and in some cases more insightful—than classified intelligence. The difference is: this information is entirely open-source and publicly shareable. The problem is not access; it's capability. Without trained analysts who can exploit the Chinese vernacular, critical indicators of national security risk will continue to go unnoticed.

The DOE has not publicly taken a clear policy position 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 Baidu in areas such as artificial intelligence, machine learning, biomedical sciences, and genetics raises serious ethical concerns.[373,374] These entities are 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.[375] Despite well-documented public concerns outlining many Chinese entities involved, DOE's does not explicitly proscribe or flag research collaboration with such entities on ethical or human rights grounds. DOE should align its research funding policies with broader U.S. government commitments to human rights and ethical research conduct.

DOE does not currently incorporate Section 117[q] foreign gift and contract disclosure data into its regulatory framework for grant proposals and

[q] 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

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.[376] For conducting due diligence reviews of research proposals, access to Section 117 data—or adoption of NSF's CHIPS Act–aligned disclosure standards within DOE'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.

DOE lacks a centralized, automated proposal submission and tracking system for its fundamental research awards. Instead, each program office manages its own proposal intake, review, and award process through disparate systems or manual workflows. This fragmented structure severely limits DOE's ability to maintain enterprise-wide visibility over who is applying for funding, with whom they are collaborating, and whether risk indicators—such as affiliations with foreign military or intelligence-linked entities—are being consistently reviewed. Without a unified portal or shared database, research security reviews are applied inconsistently across program offices, leaving significant gaps in due diligence and oversight. The absence of a centralized system also prevents DOE from automatically cross-referencing applicants and collaborators against U.S. government restricted-entity lists or intelligence-derived risk data.

While DOE has stated that it conducts due diligence on all foreign students and researchers participating in DOE-funded projects, these processes still allow foreign nationals—some of whom maintain direct or indirect ties to adversarial governments or military-linked institutions—to gain hands-on access to cutting-edge U.S. research, facilities, and data. This access provides opportunities for adversarial nations—particularly the People's Republic of China (PRC)—to train their scientists in U.S. laboratories, learn advanced methodologies, and acquire exposure to emerging technologies that directly support their defense and industrial objectives. In effect, DOE-funded programs risk becoming talent pipelines that accelerate the technical capabilities of foreign militaries, all while operating under the appearance of legitimate academic collaboration. While DOE can claim procedural compliance, the current framework remains reactive and insufficient, enabling adversaries to exploit open U.S. research environments to advance their strategic goals.

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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.

DOE-funded/supported research publications often cite National Laboratory facility contracts, which can obscure the scale and scope of support, technology areas, and typically span decades. In many publications authored by researchers affiliated with DOE-funded projects or National Laboratories, the acknowledgment of support is made through citation of DOE facility contract numbers. While this may appear to be a formality, these facility contracts often represent large-scale, multi-purpose federal funding mechanisms—frequently worth hundreds of millions to billions of dollars—that support not only research, but also infrastructure maintenance, operations, personnel, and a wide array of scientific services. This practice creates a transparency gap in understanding the specific scale, intent, and oversight of research support. Unlike project-specific awards with clearly defined objectives and deliverables, facility contracts can obscure the granularity of the funding stream. As a result, co-authored publications with foreign entities—including Chinese military-linked institutions—may only list a generic facility contract as the source of support, making it difficult for policymakers, oversight bodies, or even internal DOE components to assess:

- Whether the work was pre-reviewed or risk-assessed for foreign affiliations;
- What proportion of the funding enabled the research in question; and
- Whether mitigation measures (if any) were put in place.

The persistent occurrence of joint publications by DOE-funded/affiliated personnel with Chinese defense-affiliated entities suggests systemic failures in the overall 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, restricted foreign access to advanced computational assets, and prohibitions against collaborations with China's defense research and industrial base in federally funded research. While DOE 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 DOE to proactively safeguard research intended for U.S. technological dominance and national security 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.

Even beyond formal research partnerships, the FBI previously stated the DOE is the most targeted U.S. government agency for espionage and technology transfer efforts—particularly by the PRC. Despite this stark warning and decades of well-

documented attempts to infiltrate or exploit DOE's national labs, academic collaborations, and research infrastructure, the Department has consistently failed to implement adequate safeguards to protect taxpayer-funded research and put measures in place quickly. The DOE has been notoriously slow to act on research security, mirroring similar inertia across other federal agencies.

This is not a case of insufficient warning—it is a case of institutional negligence and a willful naivete rooted in outdated assumptions about fundamental research. DOE and its components have repeatedly operated under the flawed belief that because research is "unclassified" or not subject to export controls, it is therefore harmless to share or collaborate on openly. This mindset ignores the reality that China's technology acquisition strategy thrives on exploiting precisely this kind of open, taxpayer-funded research to fuel its military modernization, surveillance infrastructure, and weapons development.

The fact that DOE continues to allow thousands of foreign nationals' access to their laboratory system from adversarial states, fails to conduct proper due diligence, and operates without effective post-award monitoring or compliance mechanisms reflects a systemic failure to treat research security as a national security imperative. This can clearly be seen by DOE's S&T Risk Matrix, which fails on multiple levels as previously outlined.

Just as concerning as the examples in this report, the Select Committee understands that some DOE 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. As stated earlier in this report, the DOE does not fund research solely to advance science or expand the frontiers of knowledge for the general benefit of society. It funds research to drive technological advancement, maintain U.S. dominance in critical fields, and strengthen national security.

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 exploitation, diversion, and military utility for the PRC.

It is neither speculative nor controversial to argue that DOE-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 restricted entity lists—could aid China's own economic, science and technology, and defense development efforts.

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 the 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 DOE program managers to enhance U.S. defense capabilities.

Additionally, the Select Committee heard from multiple DOE executives who defended the continued presence of thousands of PRC national researchers in the labs by claiming, in effect, that we want them in our labs so they can see how advanced we are—and go back to China telling their colleagues, thus giving up on beating the United States. This rationale is not only stunningly naive—it is completely divorced from decades of empirical evidence and the CCP's well-documented strategy of deliberately embedding scientific talent abroad to absorb, replicate, and leapfrog U.S. capabilities through reverse-engineering and targeted technology transfer. This argument lacks any merit for several critical reasons:

- **China is not trying to "catch up"—they are strategically leapfrogging.** The idea that exposure to U.S. superiority will discourage the PRC ignores the CCP's long-standing publicly available doctrine of leveraging foreign scientific openness to bypass indigenous development bottlenecks. In fact, they send their best and brightest to study precisely because they know what they're missing—and how to close the gap using knowledge extracted from the U.S. system.
- **It misreads the adversary's intent.** The PRC's goal is not to compete on equal footing—it is to achieve technological self-reliance in strategic sectors while hollowing out the West's comparative advantage. Believing

they will "give up" after seeing U.S. capabilities fundamentally misunderstands the Party's long-term strategy of asymmetric acquisition, not fair competition.

- **There are decades of evidence showing the opposite effect.** From the Thousand Talents Plan to provincial and municipal "Recruitment Programs of Global Experts," Chinese nationals returning from DOE labs often establish mirror programs, copy U.S. methodologies, and apply them directly to defense-industrial or state-priority objectives—not retreat in despair.
- **This opens the door to intellectual surrender.** Allowing strategic competitors—many with ties to China's defense research and industrial base inside our most advanced scientific facilities erodes the technological advantage that underpins our national security. This is not an academic exercise; it is a matter of deterrence and survivability in an era of intensifying great power competition.
- **It creates training pipelines for China's defense sector.** By providing PRC nationals—especially those tied to China's defense research and industrial base—with hands-on experience in advanced materials, high-performance computing, and nuclear or energy research at DOE labs, the Department is effectively training the next generation of scientists and engineers who return to China and take positions within the PLA, state-owned defense conglomerates, or MCF institutes. These individuals do not abandon their ambitions—they apply the skills, methods, and technologies learned in U.S. facilities to accelerate China's weapons development and strategic modernization programs.
- **The argument reeks of Cold War nostalgia and wishful thinking.** It wrongly assumes that showcasing strength deters rather than informs. It's as if officials have learned nothing from the decades of open-access policies that helped fuel China's advances in hypersonics, nuclear materials, and AI-enabled surveillance systems—many of which were seeded by U.S. research institutions.

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 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 deemed as sensitive.

A recent statement by a Vassar College professor in a news article reflects a dangerously outdated and misleading view of how research security risks actually

manifest. The professor claimed that "there are already guardrails for federally funded research to protect classified information, and anything deemed sensitive," and further suggested that "open research goes both ways, benefiting the U.S. as well."[377] This line of reasoning is deeply flawed and overlooks multiple realities:

- First, the vast majority of U.S. taxpayer-funded research is unclassified—particularly through the DOE, NSF, and basic research portfolios. That means it is not subject to export controls, classification, or ITAR restrictions unless explicitly designated as such. Yet, this unclassified research often underpins core strategic technologies—such as hypersonics, quantum sensing, advanced materials, and nuclear modeling—that are directly exploited by adversaries like the PRC. This argument fails to understand how fundamental research can and does transition into critical and emerging technologies for warfighting, national security, energy security, and economic viability.
- Second, "guardrails" only work if they are properly designed and enforced. Numerous case studies—including those in DOE's own portfolio—demonstrate that foreign military-linked researchers have gained access to sensitive, DOE-funded research, supercomputing facilities, and high-energy density modeling tools due to insufficient vetting, monitoring, and enforcement of even the existing policies.
- Third, the idea that "open research benefits both sides" ignores the asymmetry in intent and transparency. The U.S. system promotes openness and freedom of inquiry, while the PRC's system operates under a MCF doctrine, where nearly all scientific progress is harnessed for state and military objectives. The U.S. is not gaining equivalent access to Chinese defense research institutions in return—there is no reciprocity.
- Finally, this argument fails to grapple with how open-source collaborations, even if not classified, can provide adversaries with technical know-how, experimental methods, modeling tools, and co-authorship legitimacy that accelerates their strategic weapons development. Open research is weaponized by U.S. adversaries, and pretending otherwise is dangerously naïve.

In short, such statements reflect a fundamental misunderstanding of modern research security threats and reinforce the very permissiveness that adversaries exploit. It is not about suppressing science—it is about protecting taxpayer-funded research from strategic exploitation by foreign militaries.

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.[378]
- 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.[379]
- 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.[380]
- Improperly influencing or manipulating federal research grant evaluations and award decisions.[381]
- Applying to U.S. research to enable or enhance the PRC's domestic surveillance apparatus and human rights abuses.[382]
- 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 the DOE has taken some positive first steps, significantly more action is urgently required to meaningfully protect its research ecosystem from exploitation. In 2023—decades into ongoing foreign targeting of DOE labs and grantees—the Department finally established a central research security office, a foundational step that was long overdue. In 2024, DOE's RTES released a memo outlining its due diligence process and risk considerations, providing initial insight into how it approaches research security vetting. DOE has also

implemented a new application requirement mandating that "covered individuals" complete research security training within 12 months prior to proposal submission. While these measures signal progress, they remain limited in scope, slow in implementation, and insufficient given the scale of the threat. Without a robust enforcement mechanism, mandatory compliance checks, interagency coordination, and dedicated analytical support, including linguistically and technically specialized staff, these steps amount to necessary but minimal groundwork rather than a comprehensive defense strategy. DOE must move beyond awareness and into systematic, enforceable protections for U.S. taxpayer-funded science.

DOE must do more. For far too long, DOE has failed to safeguard the very foundation of our technological dominance and national security within its fundamental researcher ecosystem. Additionally, concealing or classifying documents that detail major deficiencies in DOE's research security posture across the National Labs is completely unacceptable. Such actions obstruct accountability, hinder corrective reforms, and allow the same vulnerabilities to persist unchecked. 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, DOE 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 technological and national security capabilities. By remaining stagnant in its duty to proactively protect the research ecosystem, DOE has very likely subsidized the PRC's technological and military modernization—paid for not by Beijing, but by American taxpayers. This failure has turned U.S. taxpayer research dollars into a resource for our foremost adversary, directly eroding the U.S. national security and technological advantage DOE were meant to secure.

RECOMMENDATIONS

CCP on the Quad and Fox in the Henhouse laid out a detailed analysis of the gaps in U.S. policy and regulation that have enabled the CCP to exploit American universities. This report highlights additional issues. Accompanying the Select Committee's broader research security investigations, Chairman Moolenaar introduced legislation in the National Defense Authorization Act 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 DOW 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 Select Committee recommends:

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

DOE Counterintelligence 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. **Consolidate the National Lab S&T Risk Matrix with the New RTES Risk Matrix—When Established—into a Unified, Actionable Framework**

DOE should consolidate its outdated 2022 Science & Technology (S&T) Risk Matrix with the more recent RTES due diligence risk matrix into a single, cohesive, and operationalized framework. The current siloed approach causes confusion, redundancies, and inconsistent application across DOE components. A unified matrix would allow for streamlined risk categorization, improved interagency interoperability, and clearer guidance for program managers, reviewers, and compliance personnel. This consolidated matrix must go beyond broad technology categories and incorporate real-world risk indicators, including foreign talent program affiliations, Entity List ties, MCF participation, dual appointments, and publication patterns with foreign defense labs—enabling proactive risk identification before awards are made**.**

3. **Require Specific Grant Numbers in All Publications—Not Generic Facility Contracts; or Enhance Facility Contracts to Include Technical Sub-Identifiers**

DOE should mandate that all publications supported by Department funding include specific grant numbers, rather than citing only broad, multi-purpose

facility contracts—which often span hundreds of millions or billions of dollars and encompass a wide array of research activities, infrastructure, and services. When publications cite only these overarching facility contracts, it becomes nearly impossible to track the precise funding stream, technical focus, or originating research team responsible for the work.

If continued use of facility contracts for publication acknowledgment is unavoidable, DOE should develop a system to append technical sub-identifiers to each facility contract that correspond to the distinct research areas or funded projects. This would significantly improve traceability, enhance research security screening, and allow for better auditing of potentially problematic collaborations.

4. **Codify All U.S. Government Restricted Entity Lists as Prohibited Entities**

DOE should ensure any new risk matrix categorically prohibits research collaboration—on any award or contract for any dollar amount—with any entity listed on a U.S. government designation or sanctions list, including:

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

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

5. **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.

6. **Establish a Mechanism to Share DOE Due Diligence Reports Across U.S. Government Research Security and Due Diligence Offices**

Establishing a mechanism to share DOE 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, DOE 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.

7. **Prohibit Any Research Funded by the CSC from working on DOE-Funded Research or Working Within DOE National Laboratories**

The DOE should prohibit any individual who is or was funded, sponsored, or otherwise supported by the CSC—an entity under the authority of the PRC's Ministry of Education—from participating in any DOE-funded research activity or accessing DOE National Laboratories. CSC-funded researchers are contractually obligated to serve the interests of the Chinese government and are often embedded in foreign institutions to acquire advanced technologies and scientific know-how. Allowing CSC-sponsored personnel to work within the DOE research ecosystem poses an unacceptable counterintelligence and technology transfer risk.

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 DOE's due diligence and research security mission. Without visibility into the foreign funding streams flowing into U.S. universities, DOE 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, DOE can strengthen its ability to identify high-risk collaborations, apply consistent mitigation measures, and protect taxpayer-funded research from exploitation by foreign adversaries.

9. **Increase the Number of Chinese Language–Capable Analysts to Support Due Diligence and Research Security Analysis**

DOE should significantly expand its cadre of Chinese language–capable analysts, at a minimum doubling current staffing level, to effectively vet foreign collaborations, conduct deep-dive due diligence, and monitor publications for links to China's MCF programs. Given the scale of DOE-funded research, the prevalence of China-related co-authorships, and the strategic use of the Chinese language as a form of "first-level encryption," the current number of analysts is grossly insufficient. Without robust vernacular capabilities, DOE cannot adequately detect risks, assess affiliations, or identify technology transfer

pathways embedded in Chinese-language documents, websites, and academic outputs.

10. Enforce Post-Award Compliance Monitoring and Spot Audits

For all awards requiring mitigation measures, DOE should implement mandatory 100% compliance monitoring to verify adherence to the approved mitigation/safeguards. Additionally, DOE 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. Address Intellectual Property and Patent Theft as a Prohibited Risk Factor in Future Risk Matrix

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

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

DOE RTES 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. Prohibit Chinese Nationals—and Foreign Nationals from Countries of Concern—From Accessing, Using, Observing, or Interacting with U.S. National Laboratory Equipment, Facilities, Computing Resources, or Specialized Tools in Any Manner that Supports—or Could Support—Foreign Research Programs, Foreign Governments, or Foreign-Controlled Companies, or that Provides Exposure to U.S. Companies Conducting Proprietary or Government-Funded Research at National Laboratories

U.S. National Laboratories host unique, taxpayer-funded capabilities that provide early access to cutting-edge research, advanced manufacturing processes, high-performance computing, and proprietary experimental techniques that are not publicly available. Allowing foreign nationals to use, observe, or interact with these capabilities—particularly alongside U.S. companies or federally funded researchers—creates direct pathways for technology transfer and industrial espionage. Even passive observation or informal technical interaction can reveal sensitive methodologies, performance characteristics, and development timelines

that confer strategic and commercial advantages to foreign competitors and adversarial states. Restricting such access is necessary to protect U.S. intellectual property, preserve the competitive advantage of U.S. industry, and prevent taxpayer-funded infrastructure from being leveraged to advance foreign military, intelligence, or commercial interests.

14. Prohibit Collaboration with PRC Researchers Who Have Used Entity-Listed or Tianhe Supercomputers

The DOE should adopt a formal policy prohibiting DOE-funded researchers and National Laboratory personnel from collaborating with any Chinese researcher who has accessed, utilized, or conducted work on Tianhe-class or other supercomputers listed on the BIS Entity List within the past five years. These systems—developed and controlled by PRC defense and intelligence–linked organizations—are integral to China's nuclear weapons modeling, hypersonic vehicle design, and advanced materials research. Allowing DOE-affiliated scientists to collaborate with individuals tied to these facilities risks indirectly advancing China's strategic weapons capabilities, circumventing U.S. export controls, and legitimizing restricted computing platforms under the guise of academic cooperation. A clear prohibition would close a critical loophole in DOE's research-security posture and align national-lab practices with U.S. national-security and nonproliferation objectives.

15. 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.

Left to their own devices, the DOE—and other federal grantmaking agencies—cannot be trusted to police themselves. Despite repeated warnings and documented failures, agencies such as DOE have shown a consistent unwillingness or inability to identify, investigate, and mitigate research security risks. Their fragmented compliance structures, lack of uniform standards, and internal conflicts of interest have allowed foreign adversaries to exploit U.S.-funded research and access sensitive technologies.

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, prohibitions, 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.
- Shares information that poses risks to the U.S. researcher enterprise.
- Provides training on research security to the science and engineering community.
- 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 and ensure the Chips act requirements continue to be met.

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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