Research Security for America's Future in Space

NASA's Enforcement of the Wolf Amendment

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

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Foreword

By Congressman Frank R. Wolf

When I authored the Wolf Amendment in 2011, Congress acted with a clear understanding of the risks associated with engagement between the United States and the People's Republic of China. The intent of the law was straightforward. No NASA funds were to be used for bilateral cooperation, coordination, or collaboration with China or Chinese-owned entities unless Congress authorized it and the FBI certified that the activity posed no risk to national security.

That standard was not created lightly. It reflected longstanding concerns about China's human rights abuses, its lack of transparency, and the need to protect U.S. national security in light of China's well-documented efforts to acquire foreign technology to advance its military and strategic objectives. Congress made a deliberate decision that U.S. tax dollars should not support or enable those efforts.

As Chairman of the Commerce-Justice-Science Appropriations Subcommittee when this law was established - with bipartisan support at the time and reaffirmed annually under both Republican and Democrat majorities over the last 15 years - it was unconscionable to me and my colleagues that we would spend billions for cutting edge R&D at NASA and other federal science agencies to keep America competitive only to watch that research immediately be shared with a country that openly stole and potentially weaponized these investments against the United States and its own people.

This report raises serious concerns that the law has not been adequately enforced. As the author of the Wolf Amendment, it is unacceptable to learn, fifteen years later, that NASA has failed to properly enforce this law and that universities have continued to engage in conduct that appears inconsistent with both the letter and the intent of the statute.

The findings in this report point to a troubling gap between what the law requires and what has occurred in practice. The identification of hundreds of NASA-supported research outputs involving Chinese entities, many of which appear to reflect bilateral research collaborations, stands in sharp contrast to the limited number of certifications issued under the statute.

It calls into question whether the safeguards Congress put in place have been treated as statutory requirements stemming from Congress' Constitutional authority, or as administrative formalities that can be disregarded.

The law is clear: compliance is not optional.

Where violations of federal law have occurred, they must be addressed accordingly. I call on the NASA Office of Inspector General and the Department of Justice to pursue accountability for Wolf Amendment violations. That includes criminal, civil, and administrative remedies. False certifications, undisclosed affiliations, and failures to comply with statutory restrictions are not technical oversights. They are serious matters that undermine the integrity of federally funded research, the trust placed in institutions that receive taxpayer dollars, and the spirit of the law enacted.

Even in the early years following the enactment of the law, I had concerns from my committee's work and whistleblower accounts about NASA's enforcement and broader security culture and enforcement. This led to a Congressionally-directed investigation in 2013 by the National Academy of Public Administration into NASA's security that documented serious concerns and systematic cultural and leadership problems, which rather than be corrected have apparently only persisted over the last decade. As I stated at the time of the initial investigation, "I was taken aback at the breadth and depth of security challenges identified across NASA and I am deeply disappointed the agency has restricted access to the report. The report should be made public as soon as possible, with any necessary redactions in the interest of national security, because it confirms not only the serious security challenges that need to be addressed, but a persistent organizational culture that fails to hold center leadership, employees and contractors accountable for security violations."

While the United States benefits from an open and dynamic research environment that has driven innovation and strengthened our global leadership, openness does not mean the absence of rules. When taxpayer-funded research intersects with national security risks, the United States has both the authority and the obligation to set clear boundaries.

The Wolf Amendment established those boundaries. This report makes clear that more must be done to uphold them.

I appreciate the leadership of Chairman Moolenaar and Members and staff of the Select Committee for their diligence and hard work to ensure that this law is enforced.

Frank R. Wolf
Former Congressman (VA-10), 1981-2015

Executive Summary

Not all espionage looks like a spy thriller. There are no trench coats, no high-tech gadgets, no coded messages, no chalk marks, no brush passes or brief encounters, no multi-hour surveillance detection routes, no dead drops, and no clandestine meetings under the cover of night. Instead, it happens in broad daylight, embedded within America's research and innovation ecosystem. Leveraging openness, research partnerships, and billions in taxpayer funding, China has found a far more effective pathway to acquire sensitive knowledge, using our own institutions, openness, and taxpayer dollars, right under our noses. In some cases, as this investigative report demonstrates, these activities have occurred in potential violation of federal law, including the Wolf Amendment.

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

This investigative report focuses on the Wolf Amendment, a law enacted in 2011 that restricts the National Aeronautics and Space Administration (NASA) from using federal funds to engage in bilateral research, cooperation, or coordination with Chinese entities.[1,2] Unlike most other federal agencies, which do not have explicit statutory prohibitions barring the use of agency funds in connection with broad partnerships with China, NASA is subject to such a statutory prohibition.

The Wolf Amendment prohibits NASA and the White House Office of Science and Technology Policy (OSTP) from using appropriated funds to engage in bilateral cooperation, collaboration, or coordination with the People's Republic of China (PRC) or any Chinese-owned company, unless specifically authorized by Congress or certified by the Federal Bureau of Investigation (FBI) as posing no national security risk.[3]

The amendment was adopted in response to longstanding concerns regarding China's human rights abuses and broader national security risks. The FBI certification requirement underscored Congress' view that unchecked engagement between U.S. space and science agencies and PRC entities posed unacceptable risks to U.S. national security, export control regimes, and technological advantage, particularly given the military-civil fusion strategy employed by the CCP.

Under the Wolf Amendment, NASA is required to ensure that no funding, agreements, or cooperative activities—direct or indirect—enable participation by PRC institutions, researchers, or government entities. This prohibition extends beyond formal bilateral agreements and applies to a wide range of activities,

including joint research, data sharing, personnel exchanges, training, conferences, and grant-funded academic research where PRC participation is involved.

The Wolf Amendment places the responsibility for compliance squarely on the U.S. government. NASA must ensure any funding does not involve prohibited PRC participation and must maintain internal controls to prevent circumvention through intermediaries, subcontractors, academic partners, or foreign nationals affiliated with Chinese institutions. The amendment reflects Congress's underlying intent that, for NASA and OSTP, national security considerations take precedence over scientific convenience or academic openness when U.S. taxpayer funds are at stake. To ensure compliance, NASA includes specific language and attestation requirements into its award and contract terms and conditions that institutions must comply with. **However, the Select Committee's findings demonstrate that universities appear to neither adequately verify nor enforce these requirements, allowing researchers to engage in activities that risk placing NASA in violation of the Wolf Amendment**.

More than a decade after its enactment, the Wolf Amendment remains a critical, yet inconsistently enforced, guardrail within the U.S. research ecosystem. As the Select Committee's investigation demonstrates, vulnerabilities persist where NASA-funded research flows through universities, national laboratories, and international research relationships without adequate scrutiny of foreign affiliations, co-authorships, or downstream technology and know-how transfer risks. These gaps undermine the intent of the Wolf Amendment and expose U.S. taxpayer-funded research to diversion in support of China's military and strategic objectives. In some cases, such conduct may violate federal law as well as the terms and conditions NASA requires universities and research institutions to certify as a condition of receiving federal funding.

On February 12, 2026, Select Committee Chairman John Moolenaar Senate Judiciary Committee Chairman Chuck Grassley issued a joint public letter to NASA following the identification of potential Wolf Amendment violations in recent research security investigative reports published by the Select Committee. The letter requested that NASA provide a detailed accounting of a specific award involving researchers from Arizona State University, Stanford University, and the Department of Energy's SLAC National Accelerator Laboratory. One of the researchers held a position at the Center for High Pressure Science and Technology Advanced Research (HPSTAR), a Commerce Department Bureau of Industry and Security (BIS) Entity List-designated subsidiary of the China Academy of Engineering Physics, China's primary nuclear weapons research and development complex. The Committees identified that the Stanford/SLAC National Lab professor engaged in a bilateral research relationship with Chinese entities and co-authored a 2024 publication that acknowledged NASA funding, raising serious concerns regarding potential noncompliance with the Wolf Amendment. The joint letter also requested that NASA produce materials related to its internal award and subaward data; the number of waivers and certifications issued under the

Wolf Amendment; internal legal guidance and policy interpretations governing NASA's application of the statute; and the processes NASA uses to conduct post-award compliance and monitoring, including how it verifies principal investigator certifications and ensures adherence to the terms and conditions of NASA awards related to the Wolf Amendment.

Reviewing the corpus of NASA publication data from the past ten years, the Select Committee identified <u>hundreds</u> of scientific publications acknowledging NASA funding or support that appear to involve bilateral research relationships with institutions in the PRC.[4,a] Many of these co-authorships were not limited to just any Chinese university but included entities within China's defense research and industrial base,[b] many of which are designated on publicly available U.S. government lists identifying entities posing national security risks. These institutions support Beijing's national defense missions, military modernization objectives, and its broader military-civil fusion strategy.

The bilateral collaboration raises serious concerns that extend beyond just academic research relationships. At a minimum, these findings present potential violations of federal law, federal grant terms and conditions, and agency-specific restrictions governing foreign collaboration, disclosure, and engagement with restricted or defense-affiliated entities. More broadly, they present clear national security implications. When U.S. federally funded research is conducted in partnership with entities within China's defense research and industrial base, it creates pathways through which sensitive knowledge and know-how, technical expertise, and research insights can be accessed, transferred, or otherwise leveraged to support China's technological advancement and military modernization.

These findings continue to underscore a systemic vulnerability within the U.S. research ecosystem. Absent consistent due diligence, enforceable restrictions, compliance and monitoring, and centralized oversight, federally funded research intended to strengthen U.S. technological leadership risks being exploited in ways that directly or indirectly benefit strategic competitors and adversaries.

Further underscoring the Wolf Amendment issues, in December 2024, the Department of Justice announced a civil settlement with the University of Delaware (UD) arising from the university's failure to disclose a professor's foreign government affiliations in connection with a NASA grant issued in June

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[a] China's defense research industrial base includes 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.

[b] The bibliometric analysis identified over 2,000 publications in the past ten years. Not all were directly funded by NASA, as some relied on open-source NASA data. However, review of these publications identified hundreds of legitimate and potential Wolf Amendment violations that warrant further investigation by the NASA Office of Inspector General.

2020. Since 2011, federal law has prohibited NASA from using appropriated funds to engage in bilateral cooperation with China or Chinese-owned companies absent statutory certification. The settlement resolved allegations that UD caused NASA to violate this prohibition by failing to disclose that one of the principal investigators maintained affiliations with the Chinese government, including employment at a Chinese university, participation in a Chinese government talent recruitment program designed to recruit individuals with access to foreign technology and intellectual property, and receipt of funding from the National Natural Science Foundation of China.[5] According to the NASA Office of Inspector General (NASA OIG), the University of Delaware professor was Xiao-Hai Yan, who served as co-principal investigator on the NASA award.[6] He was also a selectee of China's Thousand Talents Program.[7] He worked on synthetic aperture radar (SAR) imagery and deep learning research.

- Further research and analysis by the Select Committee uncovered that Professor Yan served as the scientific lead for a project to develop China's first low-cost SAR small satellite capable of penetrating cloud cover and operating regardless of day or night, achieving all-time and all-weather functionality. It is also the world's first C-band lightweight, high-resolution SAR small satellite dedicated to marine and coastal remote sensing. Chinese documents further outline Xiao-Hai Yan was a primary contributor to research on China's first SAR small satellite benchmarked against advanced international standards, semantic segmentation-based SAR water body extraction technology, and GAN-based SAR image colorization technology, according to Fujian Provincial documents from 2022.[8] The work he conducted in China to advance satellite capabilities appears to have had temporal overlap with his U.S. government-funded research activities, which further raises questions on whether his U.S. government funded research and its derivatives helped support China's development of satellite capabilities.[9]

Arguments that the Wolf Amendment undermines international cooperation in space misunderstand both the purpose of the provision and the nature of the challenge posed by the PRC. The amendment does not prohibit multilateral collaboration in space, nor does it restrict engagement with the vast majority of international partners. Instead, it places targeted limitations on bilateral cooperation between NASA and Chinese entities due to longstanding human rights abuses, national security concerns, and China's well-documented strategy of military-civil fusion. Chinese space activities are conducted within a system where civilian, commercial, and military programs are deeply integrated and ultimately serve the strategic objectives of the CCP and the People's Liberation Army. In this environment, unrestricted cooperation risks transferring sensitive technologies, operational knowledge, and research capabilities to institutions that directly support China's military and strategic space programs.

Moreover, the argument that limiting cooperation increases the risk of misunderstanding assumes that the Chinese government engages transparently and reciprocally in international partnerships. In practice, China tightly controls foreign access to its space programs while actively seeking to benefit from the openness of Western research and technology ecosystems. The Wolf Amendment therefore reflects a prudent risk management measure that protects U.S. technological leadership and national security while still allowing the United States to engage robustly with trusted international partners in multilateral space initiatives.

Findings

1. NASA has had fewer than 50 Wolf Amendment certifications that include conferences, bilateral meetings, and science and aeronautics cooperation. However, in contrast, the Select Committee's extensive research has identified **hundreds** of co-authored publications demonstrating bilateral research relationships with Chinese entities that acknowledge NASA support or funding.

2. Recent NASA-funded research publications reveal clear bilateral research relationships with Chinese entities.[c] The Select Committee identified hundreds of research publications since 2015 that indicate bilateral co-authorship between NASA-funded U.S. researchers and institutions and personnel in China.[10] In many cases, these publications explicitly acknowledge NASA funding while listing co-authors affiliated with only Chinese universities, laboratories, or research institutes. Based on publicly available scientific publication data, these collaborations appear to fall within the scope of the Wolf Amendment's prohibition on NASA-funded bilateral cooperation with China. Each of these cases represents a potential compliance concern that warrants further review and inquiry to determine whether the underlying research activities were conducted in accordance with federal law and the terms and conditions of the relevant NASA awards.

3. NASA-funded research involving China's defense research and industrial base with potential Wolf Amendment violations. Research supported by NASA and other U.S. federal agencies has in several instances involved collaboration with institutions that are part of the China's defense research and industrial base. These institutions include universities within China's "Seven Sons of National Defense," State Administration for Science, Technology, and Industry for National Defense (SASTIND)[d] co-administered schools, and laboratories, some of which are

[c] The Committee acknowledges the use of the Digital Science Dimensions AI Platform for bibliometric data aggregation in support of this section of the report.

[d] 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

designated as "national defense," that support China's military-civil fusion efforts. In some cases, these research relationships involve high-risk entities that appear on U.S. government lists due to their roles in developing military technologies such as rocket systems, unmanned aerial vehicles, and advanced aerospace capabilities. The research areas involved, including autonomous systems, aerospace engineering, hypersonics, advanced materials, and computational modeling, align closely with technologies prioritized under China's military-civil fusion strategy and are directly relevant to next-generation defense systems. These research relationships raise serious national security concerns because they risk enabling the transfer of know-how, methodologies, and technical insights generated through federally funded research to institutions that support the PRC's defense establishment.

4. NASA publication data reveals potentially ambiguous and extralegal areas of activity under the Wolf Amendment. The Select Committee's publication analysis of NASA-funded research identifies cases where the application of the Wolf Amendment is not always clear but nonetheless raise significant compliance concerns. The examples in this report illustrate how evolving research structures, including third-country data involvement, joint venture universities operating within the PRC, incomplete or non-standardized funding disclosures, and researchers holding concurrent affiliations with Chinese institutions, create potential gaps in how the statute is interpreted and enforced. While each case presents distinct factual nuances, they collectively underscore a broader challenge. NASA-funded or supported researchers may engage in bilateral research relationships with Chinese entities that may be subject to Wolf Amendment restrictions, even if they exist in areas not explicitly addressed by current guidance. These ambiguities highlight the need for clearer definitions, guidance, enhanced transparency, and more robust post-award monitoring to ensure that statutory prohibitions are applied consistently and effectively.

5. Arizona State University and Stanford University allegedly submitted false attestations and certifications for a current NASA award. Arizona State University and Stanford University repeatedly certified compliance with NASA's China-related funding restrictions. Despite these certifications, the Principal Investigator reported a 2024 publication involving undisclosed Chinese affiliations as a grant-funded output.[11] This inconsistency reflects a failure to meet disclosure requirements under the Wolf Amendment and indicates that the certifications provided to NASA were false.

6. NASA has provided clear guidance to the public on what constitutes a Wolf Amendment violation. NASA has provided clear, public guidance on what constitutes a violation of the Wolf Amendment, explicitly stating that any bilateral participation, collaboration, or coordination with Chinese entities renders a project

entities engaged in defense research and production, and supporting these efforts through a national-wide network of provincial and municipal SASTIND offices.

ineligible for funding, regardless of whether funds are exchanged. This guidance makes clear that co-authorship falls within the scope of prohibited activity, as NASA defines papers authored solely between U.S. and PRC-affiliated researchers as bilateral collaboration, even when limited to publication-related activities.

7. NASA lacks robust Research security capabilities and did not conduct effective post-award compliance monitoring. For years NASA lacked a dedicated and mature research security program and infrastructure and did not conduct systematic post-award monitoring to identify undisclosed foreign participation or enforce compliance with the Wolf Amendment.

Notably, through the course of multiple Select Committee engagements with NASA officials, the agency has acknowledged deficiencies in its research security posture and has taken significant, concrete steps to address them. NASA has established a dedicated research security office, utilization of software and tools to identify research security issues, updating award terms and conditions to account for national security risks in research relationships; moved swiftly to address potential Wolf Amendment concerns; and ensured coordination with the NASA OIG. **The Select Committee commends NASA for these actions, which represent meaningful progress and demonstrate that large federal agencies can adapt quickly when gaps are identified**. NASA's response should serve as a model for other agencies to take a more proactive, structured approach to safeguarding taxpayer-funded research from diversion and exploitation by authoritarian regimes, including China.

For more than two decades, a substantial and growing body of evidence has documented how the PRC targets Western academic institutions to acquire technology, know-how, expertise, and research that supports its economic ambitions, technological development, and military modernization. This evidence is not speculative or anecdotal. It includes Department of Justice indictments and prosecutions, civil enforcement actions and settlements, administrative remedies, suspension and debarments, investigative journalism, congressional investigative reports, and detailed quantitative and qualitative analyses produced by independent research institutions and national security experts globally.

In many cases, the Chinese government's own openly published policy documents, statutory records, and institutional records describe strategies to leverage international academic collaboration, joint ventures, talent recruitment programs, and technology transfer to advance state and defense objectives. The evidence is overwhelming and cannot be dismissed as isolated incidents or misunderstandings. Continued inaction in the face of such extensive documentation is unacceptable. Allowing federally funded research to remain vulnerable to exploitation undermines U.S. technological leadership, erodes public trust in the stewardship of taxpayer dollars, and creates clear risks to national and economic security.

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

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

Academic and scientific activity is tightly controlled by the CCP, exemplified by China's decision to restrict foreign access—including by U.S. institutions—to its largest academic publication database, the China National Knowledge Infrastructure (CNKI).[12] 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 a system of centralized national planning, with research priorities dictated through Five-Year Plans, industrial policies, statutory records, and long-term science and technology roadmaps established by the State Council and subordinate ministries. In contrast, the United States maintains a decentralized research ecosystem driven by universities, private industry, and multiple federal agencies—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 and legal, illegal, and extralegal acquisition, as a means of advancing its strategic economic, technology, and military objectives. This divergence from global academic norms creates significant risks for open research environments and underscores the need for greater scrutiny and safeguards in international scientific collaboration with China. In fact, over the years, the Chinese government has implemented a series of statutory policies and administrative directives that demonstrate this longstanding and explicitly strategy designed to target and acquire foreign intellectual capital, advanced technology, and scientific know-how:

- The then-Ministry of Personnel (now known as the Ministry of Human Resources & Social Security) "Plan for Working with Overseas Scholars

in the Personnel System during the Ninth 5-Year Plan" (中华人民共和国人事部. 关于在"九五"期间在人事制度中开展与海外学者合作的若干意见) details a plan to encourage technology transfer from ethnic Chinese scholars overseas.[13]

- 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.[14]
- The "Opinions on Building a Green Channel for the Return to China of High-level Overseas Educated Talent Abroad" (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."[15,16]
- 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.[17,18]

- 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.[19]
- 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."[20]
- 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.[21,22]
- 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.[23,24]

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. What often appears as benign academic engagement is, in reality, a deliberate and structured effort to exploit the openness of democratic research systems—frequently without host institutions recognizing the downstream risks—to fuel the PRC's goals of technological self-sufficiency, economic dominance, and military modernization.

Additionally, 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. These include:

- The conversion or diversion of U.S. government-funded research into intellectual property that is commercialized in the PRC may violate the terms and conditions of research grants or university agreements or, at a minimum, confer primary economic benefit to the PRC.[25]

- 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.[26]
- 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.[27]
- Improperly influencing or manipulating federal research grant evaluations and award decisions.[28]
- Applying to U.S. research to enable or enhance the PRC's domestic surveillance apparatus and human rights abuses.[29]
- 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.[30]
- 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.[31]
- 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.[32,33]
- 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.[34,35]

Despite China's broad and coordinated technology acquisition efforts targeting open research environments, academia and some U.S. government scientific grant agencies—notably, not NASA—continue to argue that comprehensive safeguards are already in place to prevent research misuse or foreign interference (**See Appendix A for a detailed discussion of commonly raised arguments and corresponding counterarguments**). They point to mandatory disclosure forms, export-control offices, research integrity training, and compliance frameworks aligned with National Security Presidential MEmorendum-33[e] (NSPM-33) and federal agency guidance. Universities and academic associations insist these

[e] National Security Presidential Memorandum-33 (NSPM-33), issued in 2021, directs federal research agencies to implement a common framework for research security, including standardized disclosure requirements for researchers, enhanced vetting of foreign affiliations and funding, and coordinated policies to safeguard federally funded research from foreign government interference and misuse.

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. In this report, we provide an example in which NASA determined that a university recipient failed to disclose information required under the Wolf Amendment and associated award conditions. NASA's review concluded that the recipient institution submitted certifications and representations that did not accurately reflect the existence of the identified China-related collaboration.

Repeated National Science Foundation, Department of War, Department of Energy, Department of Health and Human Services, and NASA 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.

Leaving risk management on government-funded research to universities, given how China weaponizes open research collaboration, is fundamentally flawed because their primary incentive is to maximize research funding and publication output, not to limit risky collaborations. Universities routinely downplay or dismiss national security concerns to protect foreign partnerships, foreign tuition revenue, and faculty autonomy. When encouraged to implement stronger controls, universities often claim that further action would pose a threat to academic freedom rather than serve as 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.

The findings outlined below reflect a consistent pattern of actions by NASA and academic institutions that fall short of federal legal and compliance expectations, including gaps in due diligence, faculty oversight, and post-award monitoring, which have allowed systemic vulnerabilities to persist and be exploited.

NASA has had Fewer than 50 Wolf Amendment Certifications that Include Conferences, Bilateral Meetings, Research, and Science and Aeronautics Cooperation

Under the Wolf Amendment, NASA is prohibited from engaging in bilateral cooperation with China or Chinese-owned companies unless specific conditions are met. Any such engagement must be explicitly authorized through a certification process in which the FBI determines that the proposed activity poses no risk to U.S. national security. This certification must then be provided to Congress prior to the engagement taking place. The requirement applies broadly to bilateral activities, including joint research, meetings, and other forms of cooperation, and is intended to ensure that any interaction with Chinese entities is subject to rigorous national security review and congressional oversight. Absent this certification and notification, such engagements are prohibited under federal law.

According to production received via the Select Committee's joint letter with the Senate Committee on the Judiciary, **NASA reports fewer than 50 Wolf Amendment certifications to date, spanning categories such as conferences, bilateral meetings, and limited science and aeronautics cooperation**.[36] That figure stands in stark contrast to the scale of NASA-funded research activity identified that potentially violates the Wolf Amendment, and raises serious questions about the agency's compliance, tracking, and enforcement mechanisms. Given the volume of publications and documented interactions involving Chinese institutions over the past decade, it is difficult to reconcile how so few certifications were sought or issued if the statutory requirements were being rigorously applied. At a minimum, this disparity suggests that a significant number of engagements may have proceeded without the required certification.

These potential compliance failures are not limited to NASA. **Universities play a central role in creating the conditions that place NASA at risk of violating the Wolf Amendment**. As the primary recipients of NASA funding, academic institutions bear responsibility for accurate disclosures, adherence to award terms, and ensuring that prohibited collaborations do not occur. When universities fail to fully disclose foreign affiliations, omit relationships with Chinese entities, or allow researchers to engage in undisclosed co-authorship and joint work, they undermine NASA's ability to assess and certify compliance with federal law. This effectively shifts risk onto NASA, which relies on institutional representations to meet its statutory obligations. In this sense, weak institutional oversight, inadequate compliance and monitoring mechanisms, and a tolerance for incomplete or inaccurate reporting do not just represent internal failures. They

directly contribute to potential violations of federal law by creating blind spots in NASA's enforcement of the Wolf Amendment.

Recent NASA-funded Research Publications Reveal Clear Bilateral Research Relationships with Chinese Entities

The following section presents recent research outputs that, based on bibliometric data, *prima facie* appear to be violations of the Wolf Amendment. These cases involve publications in which U.S. federally funded research, explicitly supported by NASA awards, was conducted bilaterally with researchers from institutions in the PRC. In many instances, the publications themselves acknowledge the relevant federal funding and list co-authors from PRC institutions, making the potential compliance concerns readily identifiable through basic due diligence and review of the scholarly record. **The Select Committee identified <u>hundreds</u> of publications indicative of potential Wolf Amendment violations, each of which warrants further investigation by NASA.**[f] Where a publication acknowledges NASA funding and includes co-authors affiliated with PRC institutions that are bilateral in scope, it creates a strong presumption that the underlying research activity was conducted within the scope of the funded award. If such collaboration occurred outside the scope, it raises separate concerns regarding the accuracy of funding acknowledgments, institutional disclosures, and research integrity.

<u>Caste Study 1:</u> A 2026 publication on daytime and nighttime satellite imagery research was co-authored by researchers from NASA Headquarters, the University of Washington (UW), and the University of Hong Kong. The research was supported by NASA award No. 80NSSC24K1247 and 80NSSC24K1039.[37] According to the authorship contributions statement, the University of Washington researcher contributed "Writing – review & editing, Writing – original draft, Visualization, Supervision, Software, Project administration, Methodology, Formal analysis, Conceptualization."[38] The NASA Headquarters researcher contributed "Writing – review & editing, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization."[39] The University of Hong Kong researcher contributed "writing – review & editing, Writing – original draft, Visualization, Validation, Software, Methodology, Formal analysis, Data curation, and Conceptualization."[40] According to the grant

[f] **Methodology**: Using the Digital Science Dimensions AI Platform, the Select Committee conducted an advanced query of bibliometric data to identify publications that included NASA in the funding acknowledgments and co-authors affiliated exclusively with institutions in the United States and China. Each publication's authorship was manually reviewed to confirm it reflected bilateral collaboration with China. The Select Committee then manually reviewed each funding acknowledgment to identify only those that explicitly referenced a NASA grant award number or stated that the research was funded by NASA. Publications that merely referenced the use of NASA data, without acknowledging NASA funding or specific award numbers, were excluded from the analysis. The analysis also excluded hyper-authored publications.

summary, NASA Award No. 80NSSC24K1247, was issued to the University of Washington on August 12, 2024 and is scheduled to conclude August 11, 2027.[41]

- On March 10, 2026, the Select Committee sent a letter to the National Science Foundation urging a full review of the Safeguarding the Entire Community of the U.S. Research Ecosystem (SECURE) initiative based on significant research security concerns. The Committee identified a potential Wolf Amendment violation in a 2023 publication.[42] This case study identifies a separate, recently published instance that raises similar concerns. This finding continues to call into question whether institutions, such as UW, entrusted with millions in taxpayer dollars to design research security frameworks, are themselves meeting baseline compliance obligations, including adherence to grant terms and conditions, Section 117 disclosure requirements, and other federal transparency and reporting standards.

Case Study 2: A 2026 publication on reinforced learning research was co-authored by researchers from Baylor University, Jiangsu University, and the Jiangsu University of Science and Technology. The research was supported by NASA grant 80NSSC22K1015.[43] According to the grant summary, NASA Award No. 80NSSC22K1015 was issued to the University of Michigan (UM) in June 2022 and is scheduled to conclude in May 2026.[44,45] It is unclear why no University of Michigan researcher appears to be associated with the publication, while a Baylor University researcher is listed. It is possible that the Baylor researcher is serving as a co-investigator or a sub-awardee of the award. However, it is relevant to note that UM has previously received research security-related inquiry letters from the Select Committee, including regarding an identified joint institute between UM and Shanghai Jiao Tong University, a university co-administered by China's SASTIND.[46] Additionally, UM is outlined in the NSF SECURE Center announcement as providing support for threat types, sensitive research, and geopolitical analysis and international collaboration.[47]

Case Study 3: A 2025 publication on tidal calculations research was co-authored by researchers from the University of Wisconsin-Madison, Northwestern University, the National Astronomical Observatories, the University of Chinese Academy of Sciences, and Beijing Normal University. The research was supported by NASA grants 80NSSC24K0895 and 80NSSC23K1517.[48] According to the grant summary, NASA Award No. 80NSSC24K0895 was provided to the University of Wisconsin in March 2024 and will conclude in March 2027.[49] According to the grant summary, NASA Award No. 80NSSC23K1517 was provided to the University of Wisconsin in October 2023 and ended in September 2025.[50]

Case Study 4: A 2025 publication on robotic swarm technology research was co-authored by researchers from Marshall University and Peking University. The research was supported by DARPA and the NASA Established Program to Stimulate Competitive Research (EPSCoR) program under grant number

80NSSC22M0027.[51] According to the grant summary, grant 80NSSC22M0027 was provided to West Virginia University in 2022 with an end date of Jun 15, 2027.[52] Additionally, Peking University is co-administered by the SASTIND.

Case Study 5: A 2025 publication on voltage and circuitry research was co-authored by researchers from Brigham Young University, AccuPulse, and Fudan University. The research was supported in part by NASA grant 80NSSC20M0103 and the Department of Defense.[g,53] According to a grant summary of 80NSSC20M0103, the grant was provided to the University of Utah starting in 2020 with an end date of May 2026.[54]

Case Study 6: A 2025 publication on machine learning was co-authored by researchers from Michigan State University (MSU), Sun Yat-sen University (a SASTIND co-administered university), and Wuhan Textile University. The publication acknowledges funding from the National Natural Science Foundation of China, the U.S. National Science Foundation, and NASA under award number 80NSSC21M0023.[55] According to a grant summary for Award No. 80NSSC21M0023, MSU is the recipient of the NASA funding for multi-temporal deep learning approach. The award began in October 2020 and concluded in October 2025.[56] MSU's Office of Sponsored Programs (OSP) acknowledged the Wolf Amendment in its Fall 2020 newsletter, which includes a dedicated section outlining the restriction and its applicability to NASA-funded research. The newsletter further states that for NASA applications "…OSP will copy the restriction language from the solicitation and paste it into an email to the Principal Investigator to make them aware of the restriction language."[57]

Figure 1 – Screenshot of NASA-Restrictions on Funding with China from MSU Fall 2020 Newsletter

[g] In some instances, we use Department of Defense or DoD throughout this study as all compiled information (e.g., scientific publication bibliographic data and research grant data) uses DoD in the acknowledgements.

NASA—Restrictions on Funding with the People's Republic of China

by Dana DeMink and Craig O'Neill, OSP

In 2011, Congress passed a spending bill that restricts work between NASA and the Chinese government. The act is often referred to as the "Wolf amendment", because it was sponsored by U.S. Congressman Frank Wolf. The act must be renewed annually, and is found in Section 1340(a) of Public Law 112-10. NASA's policy implementation states that "In accordance with restrictions in Appropriation Acts, NASA is prohibited from funding any work that involves the bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no exchange of funds arrangement."

It is ironic that in Andy Weir's novel, The Martian, a NASA Mars mission seeks help from the Chinese government. China offers their space probe for NASA to use to bring emergency supplies to a stranded U.S. astronaut. In reality, this may not happen due to the Restriction.

Collaborations with China are not completely unheard of. In 2019, NASA and China collaborated as indicated by Thomas Zurbuchen's comment on Twitter, "With the required approval from Congress, NASA has been in discussions with China to explore the possibility of observing a signature of the landing plume of their lunar lander, Chang'e 4, using our @NASAMoon spacecraft's instrument." Also, as noted by Mike Gould, chairman of the Commercial Space Transportation Authority Committee, in an article in Space News, the provision allows for cooperation if there is certification from the FBI and that such efforts do not pose a national security risk, and if Congress has been notified of the plan.

This Restriction is important for researchers to understand when applying for or spending NASA funding. When OSP submits a proposal on behalf of MSU, when MSU accepts a NASA award and during the life of the NASA project, the following certification applies: By submission of its proposal, the proposer represents that the proposer [MSU and any related subrecipients] is not China or a Chinese-owned company, and that the proposer will not participate, collaborate, or coordinate bilaterally with China or any Chinese-owned company, at the prime recipient level or at any subrecipient level, whether the bilateral involvement is funded or performed under a no-exchange of funds arrangement.

MSU interprets this certification by relying on NASA's Frequently Asked Questions clarification for ROSES 2012, which includes the following statement, "A3: The statute does not restrict individual involvement based on citizenship or nationality. Rather, individuals are subject to the restriction if they are affiliated with institutions of the People's Republic of China or Chinese-owned companies incorporated under the laws of China. Thus, a team member who is a Chinese citizen can work on a NASA project, but an individual affiliated with an institution of the Chinese state will be subject to the statutory restriction."

Therefore, when proposal applications require an authorized signature on the NASA Assurances form, OSP will first send the Principal Investigator a certification form to sign verifying that for the purposes of this project he or she will comply with NASA's Restriction. Once the certification form is signed by the PI, OSP will sign the Assurances form to include with the proposal submission.

For most NASA applications, the NASA Assurances form is not required. For these applications OSP will copy the Restriction language from the solicitation and paste it into an email to the Principal Investigator to make them aware of the Restriction language.

It is interesting to note that the basis for this Restriction continues to be echoed in the current concerns over foreign influence. For additional information on Foreign Influence, see the previous Newsletter Article, Federal Agencies and Foreign Influence.

Please contact your applicable OSP Proposal Team if you have any questions.

Article Sources:

Article on Phys.org, https://phys.org/news/2019-01-nasa-china-collaborate-moon-mission.html

Article on Space News, https://spacenews.com/new-opportunities-emerging-for-u-s-china-space-cooperation/

NASA ROSES FAQ, https://science.nasa.gov/researchers/sara/faqs/prc-faq-roses

Case Study 7: Two 2024 publications on cloud computing research were co-authored by researchers from Texas Southern University and Jiangxi Normal University. The research was supported by the National Science Foundation and NASA under grant number 80NSSC22KM0052.[58,59] According to a Prairie View A&M University announcement, NASA grant 80NSSC22KM0052 is a collaborative project involving teams from Prairie View A&M University (PVAMU), Texas Southern University (TSU), and Texas A&M University (TAMU), with a period of performance from March 2023 through March 2026. The stated objective of the NASA-funded project is to develop AI-based systems.[60]

Case Study 8: A 2023 publication on discrete time-filtering systems research was co-authored by researchers from the University of Illinois at Urbana-Champaign and Southern University of Science and Technology. The research was supported

by the Air Force Office of Science and Technology, the National Science Foundation, and NASA under grant 80NSSC22M0070 and 80NSSC20M0229.[61] According to the grant summary for Award No. 80NSSC22M0070, the University of Illinois is the recipient of the NASA funding for a project titled "Robust and Resilient Autonomy for Advanced Air Mobility." The award began in July 2022 and is scheduled to conclude on June 30, 2026.[62] According to the grant summary for Award No. 80NSSC20M0229, the University of Illinois is the recipient of NASA funding for a project described as "acoustically aware vehicles seeking to minimize noise signatures." The award began in July 2020 and concluded in July 2025.[63]

Case Study 9: A 2023 publication on nitrogen oxides research was co-authored by researchers from the University of California-Berkeley, Washington University in St. Louis, and Peking University. The research was supported by the NASA Advanced Information Systems Technology program (80NSSC20K0281) and the NASA Atmospheric Composition Campaign Data Analysis and Modeling program (80NSSC21K1343). NASA award 80NSSC20K0281 was awarded to Washington University in St. Louis in 2019; NASA award 80NSSC21K1343 was awarded to Washington University in St. Louis, and was awarded in 2021 and ended in June 2025.[64,65]

Case Study 10: A 2023 publication on scalable fabrication of nanowires research was co-authored by researchers from the University of Delaware and Xiamen University. The research was supported by the National Natural Science Foundation of China, AFOSR, and NASA grants 80NSSC20M0142, 80NSSC22M0171, 80NSSC22M0039.[66] According to the grant summary for Award No. 80NSSC20M0142, the University of Delaware is the recipient of the NASA funding for a project described as "space missions for planetary exploration." The Award began in September of 2020 and is scheduled to conclude on August 31, 2026.[67] According to the grant summary for Award No. 80NSSC22M0171, the University of Delaware is the recipient of the NASA funding for a project described as "high performance W-band amplifiers for cloud doppler radar arrays." The award began in September 2022 and is scheduled to conclude on August 31, 2026.[68] According to the grant summary for Award No. 80NSSC22M0039, the University of Delaware is the recipient of NASA funding for a project described as NASA's EPSCoR program. The award began on July 1, 2022, and is scheduled to conclude on June 30, 2027.[69]

- A review of the University of Delaware's 2024 civil settlement and related records indicates that the NASA award at issue was likely Award No. 80NSSC20M0220 and involved Xiao-Hai Yan. Notably, the three NASA awards referenced above do not appear in Xiao-Hai Yan's bibliometric publication history. This suggests that separate, currently active University of Delaware NASA awards, under which bilateral research with China was conducted and published, may independently raise

additional compliance concerns under the Wolf Amendment. If substantiated, those awards could represent additional distinct instances of University of Delaware faculty exposing NASA to statutory violations.

Case Study 11: A 2022 publication on Global Navigation Satellite System (GNSS) was co-authored by researchers from the Ohio State University (OSU), South China Agricultural University, Huazhong University of Science and Technology (HUST), Southwest Petroleum University, and the Guangdong University of Technology. This work is supported by the National Natural Science Foundation of China (41931074, 42004013, 41801389, 41974014, 42061134007), Guangdong Basic and Applied Basic Research Foundation (2022A1515010469), Guangzhou Science and Technology Project (202102020526), by United States National Science Foundation Partnerships for Innovation Program (2044704), and NASA's Earth Surface and Interior Focus Area Program (80NSSC20K0494).[70] Listed in this publication from OSU is Yu Zhang and C.K. Shum. C.K. Shum lists his OSU affiliation and an affiliation to the Institute of Precision Measurement Science and Technology, Chinese Academy of Sciences.[71] According to the grant summary of NASA Award No. 80NSSC20K0494, OSU is the recipient of the NASA award with a start date of January 9th, 2020, and concluded on January 8th, 2024.[72]

- According to a press release from the DOJ, in November 2022, OSU settled civil allegations that it failed to disclose an OSU professor's affiliations with and support from a foreign government in connection with federal research funding from NASA, the National Science Foundation, and the Department of the Army. The OSU professor allegedly failed to disclose funding that he was receiving from a foreign government in connection with: (1) employment at a foreign public university; (2) participation in a foreign talent plan, a program established by the foreign government to recruit individuals with knowledge or access to foreign technology intellectual property; and (3) a grant from the foreign government's natural science foundation.[73] A week later, a local news outlet in Columbus, Ohio reported that an OSU professor, Tin Lun Ho, entered into a plea agreement with federal prosecutors for failing to disclose a bank account in China. The report further noted that Ho participated in China's Thousand Talents Program and held a contractual relationship with Tsinghua University.[74] A review of OSU publications identified multiple papers through 2019 co-authored by Tin Lun Ho that acknowledged funding from the National Science Foundation, Army Research Office, and NASA. The NASA-funded publications appear to involve bilateral collaboration with China, list dual affiliations with OSU and Tsinghua University, and acknowledge multiple NASA grant numbers in potential violation of the Wolf Amendment. Based on this information, the individual referenced in the DOJ settlement is likely Tin Lun Ho.[75,76,77] Additionally, while the DOJ press release does not explicitly reference the Wolf Amendment, the involvement of NASA OIG, the identified

relationships with Chinese institutions, and the bilateral publication activity during the relevant timeframe suggest that a potential Wolf Amendment violation was likely identified and raised during the investigation.

- Given that Yu Zhang and C.K. Shum were likely not included in the DOJ civil settlement referenced above in 2022 since it appears to only involve one professor, this case study raises further concerns that OSU has additional, unaddressed potential violations of the Wolf Amendment. This pattern of conduct is unacceptable. DOJ and NASA OIG should pursue these matters vigorously and to the fullest extent, as OSU appears to be a repeat offender that has demonstrated a sustained and unacceptable pattern of disregard for the terms and conditions governing NASA-funded research and compliance with the Wolf Amendment.

- C.K. Shum not only simultaneously lists his OSU affiliation with the Chinese Academy of Sciences in the aforementioned 2022 bilateral publication involving NASA funding and China, but his 2019 curriculum vitae (CV) also reflects extensive ties to Chinese institutions. Specifically, he reports holding positions at the National Astronomical Observatories of China from 1999 to present; Guest Professor at the Purple Mountain Astronomical Observatory in Nanjing from 2002 to present; Adjunct Professor, Dept. of Geomatics, National Chung Cheng University, Tainan, Taiwan, 4/2006–present; Guest Professor at Southwest Jiaotong University in Chengdu from July 2006 to present; Guest Professor at the Institute of Geodesy and Geophysics, Chinese Academy of Sciences, from 2012 to present; and Guest Professor at Hohai University in Nanjing from 2016 to present.[78] C.K. Shum's 2020 CV removes his previously listed affiliations and appointments with Chinese institutions, while retaining his adjunct position in Taiwan. Despite the removal of these affiliations from his CV, more recent evidence suggests continued ties.[79] As recently as 2025, Shum was listed on a publication exclusively with Chinese researchers, supported by Chinese funding, in which he identified his OSU affiliation and his affiliation with the Institute of Precision Measurement Science and Technology, Chinese Academy of Sciences.[80]

Case Study 12: While this publication does not fall within the specific temporal or analytical parameters applied to certain case studies discussed elsewhere in this report, it nonetheless represents another clear research security concern involving Duke University and warrants inclusion due to the nature of the collaboration and the entities involved. A 2017 publication on two-dimensional sheared amorphous material research was co-authored by researchers from Duke University, Yale University, and Lanzhou University (a SASTIND co-administered school).[81] The research was supported by the National Science Foundation and NASA under Award No. NNX15AD38G. According to the grant summary of NASA Award No.

NNX15AD38G, Duke University is the recipient of the NASA award. The award began on January 12, 2015, and ended on January 12, 2020.

Duke University has demonstrated a repeated failure to address research security concerns and continues to permit such issues to persist. The university has been identified in nearly every major Select Committee investigation related to research security failures.

- Duke Kunshan University: As outlined in the Select Committee's *Joint Institute Divided Loyalties* investigative report, Duke Kunshan University is a joint institute operating in China under Chinese law.[82]
    - 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 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.[83]
    - Duke Kunshan University's Chancellor was a selectee of a Chinese Talent Recruitment Program.[84]
    - Duke Kunshan University advertised Chinese military training on one of the linked front pages of its website.[85]
    - Duke Kunshan University faculty were offered funding opportunities through the National Security Academic Fund, which is overseen by the National Natural Science Foundation of China and the Chinese Academy of Engineering Physics, China's primary nuclear weapons research and development complex.[86]
- In 2006, a Duke University lab—funded by the Air Force Office of Scientific Research (AFOSR)—developed a prototype "invisibility cloak" that could deflect microwave beams and conceal objects from detection. Ruopeng Liu, a Chinese Ph.D. student on the project, encouraged collaboration with a Chinese lab, which Duke faculty approved. By 2009, Liu co-published advanced cloaking research with a Chinese lab, extending the technology to broader wave frequencies and faster production. Unbeknownst to Duke, however, Liu allegedly transferred proprietary research and intellectual property to China. Duke lost significant licensing, patent, and royalty opportunities, and was preempted from publishing its own groundbreaking findings. By 2018, Chinese state media reported the mass production of metamaterials for

stealth applications, likely to be used on J-20 fighter jets.[87] The production line is reportedly under Chinese military control and directly linked to the Chinese defense industry.[88] This case drew national attention when NBC News aired a full segment titled *How a Chinese Student Allegedly Stole Duke University Tech to Create a Billion-Dollar Empire*.[89] It was also featured as a case study in the 2017 book *Spy Schools: How the CIA, FBI, and Foreign Intelligence Secretly Exploit America's Universities*.[90]

- A review of bibliometric data with researchers from Duke University revealed over 200 co-authored publications between 2020-2025 with China's "Seven Sons of National Defense." Research topics include hypersonics, metamaterials, advanced alloys, aerodynamics, new generation sensors, advanced coatings, and encryption.[91]
- A Duke University professor who, while contributing to DoD-, NASA-, NSF-, and ARO-funded research, simultaneously established and led a formal joint laboratory with Northwestern Polytechnical University (NPU), a core Chinese defense university and member of the "Seven Sons of National Defense." The partnership, active since at least 2019 and continuing through at least 2025, focused on highly sensitive aerospace domains including hypersonics, aeroelasticity, propulsion, and aerodynamic heating, all directly relevant to military applications such as hypersonic glide vehicles and advanced aircraft systems. The professor maintained dual roles, including serving as a consulting professor at NPU and co-director of the joint lab, while collaborating with Chinese counterparts deeply embedded in China's defense research ecosystem, including individuals affiliated with national defense key laboratories and recipients of military-linked awards. These collaborations were further reinforced through structured programs, joint funding mechanisms, and co-authored publications, many of which positioned the Duke researcher as the sole U.S. academic, underscoring a leadership role in the partnership. The Duke Professor was Duke University's representation to the University Consortium of Applied Hypersonics (UCAH), which is run through Texas A&M, and its mission is to serve the DOW's requirement for hypersonic research and development.[92]

These cases of recently published publications expose a consistent pattern of potential noncompliance that has gone unchecked. Federally funded research continues to be published with apparent Wolf Amendment concerns that are visible in the public scholarly record. Many of the aforementioned case studies are active awards where taxpayer dollars are still flowing. This is not a failure of complexity. It is a failure of oversight and accountability. R1 institutions,[h] which

[h] An R1 institution is a university designated by the Carnegie Classification as having very high research activity, based on factors such as total research expenditures, number of doctoral degrees awarded, and size of the research enterprise. These institutions receive significant federal funding and conduct large-scale, advanced research across multiple disciplines.

allegedly maintain extensive compliance offices and accept billions in federal funding, have no excuse for failing to enforce the terms and conditions of their received awards, especially when those terms reflect explicit statutory mandates.

NASA-Supported Research with Potential Wolf Amendment Violations and National Security Implications

The following examples involve research relationships that raise significant national security concerns in addition to potential violations of the Wolf Amendment and the terms and conditions set forth in NASA awards. In these cases, NASA-supported research was conducted with institutions in the PRC that fall within China's defense research and industrial base. Many of the Chinese partner institutions identified below are co-administered by defense authorities, are national defense designated laboratories, or have been placed on U.S. government restricted entity lists due to their involvement in military technology development.

Federally funded research outputs span technology areas such as algorithms, fluid dynamics, gene sequencing, and radar systems. Many of these fields have clear dual-use applications, and the risks increase significantly when such research is conducted with known Chinese defense-affiliated entities that seek to leverage these technologies in support of China's military-civil fusion strategy. Importantly, regardless of whether these entities appear on U.S. government blacklists, readily available Chinese-language sources, including those published years ago, make clear that many are defense or defense-affiliated entities deeply embedded in China's defense ecosystem, supporting military technology and equipment development.

Case Study 1: A 2025 publication on sequential and algorithmic decision-making processes was co-authored by researchers from the University of Texas at Austin, Arizona State University, Shanghai Jiao Tong University, and Beihang University. The research was supported by the Office of Naval Research (ONR), the Army Research Office (ARO), and NASA[93] under multiple federal awards issued to the University of Texas at Austin. According to award data cited in the publication and federal grant records, ONR funded this research under a grant titled "Attack-Resilient Mission Planning for Swarms of Autonomous Systems," which began in August 2022 and remains active through July 31, 2026. ARO funded related research under a grant titled "Synthesis of Strategies for Information Integrity and Manipulation in Adversarial Environments," with a period of performance from August 2023 through June 2, 2027. NASA also supported this research under grant number 80NSSC21M0071, which was awarded to the University of Texas at Austin and began in September 2021 and is scheduled to continue through August 2027.[94] The stated objective of the NASA award is to support research on "autonomous

aerial cargo operations at scale." Notably, this ARO award was issued after Beihang University's designation on the DOW Section 1286 list in 2023.[95]

- Shanghai Jiao Tong University is co-administered by SASTIND,[96,97]
- Beihang University is one of China's "Seven Sons of National Defense," a group of universities closely tied to the PLA. Beihang University (aka Beijing University of Aeronautics and Astronautics) was added to the BIS Entity List in 2001, due to its involvement in rocket systems and unmanned air vehicle activities.[98]

Case Study 2: A 2023 publication on computational fluid dynamics research was co-authored by researchers from Embry Riddle Aeronautical University and the State Key Laboratory of Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences. The publication acknowledges support from the NASA EPSCoR program but does not provide an award number (see next section on potential Wolf Amendment ambiguity).[99]

- The Institute of Mechanics, Chinese Academy of Sciences (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.[100,101,102] 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.[103] The labs also conduct classified research as indicated with "XXX" in the titles of their research.[104] **The "XXX" nomenclature is a deliberate and common practice in Chinese scientific literature, used to obscure the nature of research or equipment assets that are classified, highly sensitive, or directly connected to military and weapons development programs.**
- To assist in the research and development of hypersonic technology, CAS IOM launched the "shock reproducing hypersonic flight conditions"

program in 2008.[105] 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.[106]

- The IoM State Key Laboratory of Nonlinear Mechanics (非线性力学国家重点实验室) specializes in fundamental theoretical research in the field of non-linear mechanics, including non-linear mechanical properties of solid deformation, damage, and destruction; non-linear laws of fluid motion; and basic theory and methods for non-linear problems in materials and environmental systems.[107] According to multiple researchers' biographical pages within the State Key Laboratory of Nonlinear Mechanics, they have worked on projects funded the "National Security Academic Fund" (**国家安全学**术基金),[108] a joint research program operated by the National Science Foundation of China and CAEP,[109] China's primary nuclear weapons research, development, and production complex. The other worked on a National Defense 973 Program project.[110]

Figure 2 – CAS IOM JF-12 Shock Tunnel, Duplicating Hypersonic Flight Conditions at Mach 5 – Mach 9[111]

Case Study 3: A 2020 publication on plasma science research was co-authored by researchers from Princeton University's Plasma Physics Laboratory, Utah State University, the University of Rochester, NASA's Goddard Space Flight Center, and the Harbin Institute of Technology (HIT).[112] HIT is one of the "Seven Sons of National Defense" universities and has been on the BIS Entity List since 2020. In this case, a NASA employee is listed as a co-author on a publication reflecting bilateral collaboration with a Chinese institution.

Case Study 4: A 2020 publication on ribosomal ribonucleic acid (rRNA) gene sequencing research was co-authored by researchers from Louisiana State University, and Harbin Institute of Technology. The research was funded by the NASA Established Program to Stimulate Competitive Research (EPSCoR) Program.[113]

Case Study 5: A 2020 publication on carbon-based solar cell research was co-authored by researchers from South Dakota State University and Northwestern Polytechnical University's Shaanxi Institute of Flexible Electronics.[114] The research was supported by NASA's EPSCoR Program under award number NNX15AM83A which is intended to develop research to enable printable spacecraft.[115] According to a grant summary for NASA award No. NNX15AM83A, it was awarded to South Dakota School of Mines and Technology.[116]

- Northwestern Polytechnical University is one of the "Seven Sons of National Defense" universities and was added to the BIS Entity List in 2001.[117]
- Northwestern Polytechnical University's Shaanxi Institute of Flexible Electronics (柔性电子研究院) maintains extensive ties to China's defense industry, including collaboration with the state-owned defense conglomerate Aviation Industry Corporation of China (AVIC).[118]

NASA Publication Data Reveals Potentially Ambiguous and Extralegal Areas of Activity Under the Wolf Amendment

NASA publication data also reveals a set of cases that fall into more ambiguous and potentially extralegal areas under the Wolf Amendment, where compliance is not as clear-cut as in the most direct findings. In some instances, publications acknowledge NASA funding but do not cite specific award numbers, complicating efforts to determine whether the work is tied to a covered grant. In others, collaborations are framed as multilateral through the inclusion of third-country partners or foreign data sources, even where the substantive research relationship appears primarily bilateral between U.S. and Chinese entities.

These examples create gray areas that can be used, intentionally or not, to obscure the true nature of the engagement and avoid triggering certification requirements. The result is a potential gap between the intent of the statute and how collaborations are structured and reported in practice, underscoring the need for clearer definitions, more rigorous disclosure standards, and stronger post-award monitoring to ensure that nominal or indirect arrangements do not circumvent the restrictions Congress put in place.

Case Study 1: A 2025 publication on altimetry and landsat imagery research was co-authored by researchers from Texas A&M University (TAMU) and two

researchers (Gang Zhao and Yao Li) who appear to be postdoctoral scholars at TAMU while simultaneously acknowledging affiliations with two institutions in China, Southwest University and the Chinese Academy of Sciences. The research was supported by the TAMU supercomputing facility and NASA grants 80NSSC22K0586 and 80NSSC22K0933.[119] According to a grant summary, the recipient of NASA Award No. 80NSSC22K0586 is TAMU. The award began in May 2022 and concluded in February 2026.[120] According to a grant summary, the recipient of NASA Award No. 80NSSC22K0933 is TAMU. The award started in July 2022 and is scheduled to conclude in June 2026.[121]

- A review of researcher Gang Zhao's publication record indicates that by 2026 he was publishing papers listing only his affiliation with the Chinese Academy of Sciences, without reference to TAMU. This suggests that during the period of the earlier publication he was likely a postdoctoral researcher at TAMU while simultaneously maintaining an affiliation or position with the Chinese Academy of Sciences.[122]
- The second researcher, Dr. Yao Li, who acknowledged dual affiliations with TAMU University and the Chinese institution Southwest University, also appears to have been a postdoctoral researcher at TAMU.[123]
- TAMU was also included in the Select Committee's March 10, 2026, letter to the National Science Foundation regarding the SECURE Initiative.[124] This inclusion was based on identified research relationships with Chinese defense-affiliated and U.S. government blacklisted institutions, as well as a 2025 publication that raises potential concerns of a Wolf Amendment violation.

The statutory restriction focuses on the bilateral nature of cooperation involving NASA-funded activities with China or Chinese-affiliated organizations, rather than requiring a formal institutional partnership. In this case, the collaboration occurred within the United States and the U.S. research environment but involved individuals who simultaneously acknowledged affiliations with Chinese institutions.

The ambiguity arises in determining whether such dual affiliations effectively create a bilateral collaboration when research supported by NASA funding includes contributions from individuals representing, or simultaneously affiliated with, institutions in the PRC, and conducting such research at a U.S. institution. While postdoctoral researchers commonly retain affiliations with prior institutions, the presence of concurrent affiliations with entities such as the Chinese Academy of Sciences raises questions about whether the collaboration could fall within the scope of the bilateral cooperation restriction contemplated by the Wolf Amendment.

Case Study 2: A 2024 conference proceeding for the American Control Conference on aerial vehicle protection was co-authored by researchers from the University of Illinois at Urbana-Champaign and the University of Nottingham Ningbo China.

The research was funded in part by NASA Award No. 80NSSC22M0070.[125] According to the grant summary of Award No. 80NSSC22M0070, the University of Illinois is the recipient of NASA funding for a project described as "robust and resilient autonomy for advanced air mobility." The award started in July 2022 and is scheduled to conclude in June 2026.[126]

The University of Nottingham Ningbo China (UNNC) is a Sino-foreign joint venture university physically located in the PRC and operating under Chinese law within PRC jurisdiction.[127,128] However, it is not formally a Chinese state university; it is affiliated with the University of Nottingham in the United Kingdom and structured as a "joint venture university."[129]

The ambiguity arises as to whether a PRC-based joint venture university—operating under Chinese law but affiliated with a foreign institution—constitutes a "China-affiliated organization" for purposes of the statute. While UNNC is not technically a Chinese ministry-run university, its legal status within China, governance structure, regulatory obligations, and exposure to PRC national security and data laws raise legitimate compliance questions when NASA-funded research is conducted bilaterally.

This case illustrates a structural enforcement challenge: joint venture institutions located in China operating under Chinese laws, but affiliated with foreign universities may fall into a jurisdictional gap not explicitly addressed in existing guidance, creating uncertainty regarding the scope and application of the Wolf Amendment.

Case Study 3: A 2023 publication on acoustic frequency monitoring research was co-authored by researchers from Purdue University West Lafayette and the Nanjing University of Science and Technology (a "Seven Sons of National Defense" university). The research was supported by the U.S. Department of Agriculture Hatch Program and a NASA A.7 Biodiversity grant.[130]

Unlike many other examples identified in this review, the publication does not reference a specific NASA award number. As a result, it is not possible to independently verify whether NASA funding directly supported the research described in the publication or whether the acknowledgment refers more broadly to unrelated research support received by one of the authors. If NASA funds supported the collaborative research described in the publication, the bilateral co-authorship between a U.S. university and Nanjing University of Science and Technology could raise compliance concerns under the statute. However, if the acknowledgment merely reflects general support such as usage of data by the U.S. researcher that, the applicability of the Wolf Amendment becomes less clear.

Additionally, the absence of a specific grant number or award identifier complicates independent verification and highlights a broader transparency challenge within the research ecosystem. Without standardized reporting of federal award numbers in publications, it becomes difficult to determine whether

federally funded research directly supported the work described in a publication or whether the funding acknowledgment refers to unrelated support received by one or more authors.

Including precise award identifiers in research publications is important for several reasons. First, it promotes research integrity and transparency by clearly linking published findings to the specific funding sources that supported the work. Second, it enables verification by funding agencies, oversight bodies, and the broader research community to ensure that federal funds are being used in accordance with statutory requirements, grant terms, and agency policies. Third, it allows for meaningful public scrutiny and accountability over how taxpayer-funded research is conducted and whether such funding supports collaborations that may raise national security, export control, or statutory compliance concerns.

In cases involving statutory restrictions such as the Wolf Amendment, the absence of clearly identifiable award numbers makes it significantly more difficult for the public to determine whether a publication reflects federally funded research conducted in collaboration with foreign entities subject to those restrictions. Establishing consistent standards for reporting federal award numbers in publications would improve traceability of research funding, strengthen oversight mechanisms, and enhance the ability of agencies, Congress, and the public to assess compliance with federal law.

Case Study 4: A 2019 publication on radar technology research was co-authored by researchers from the University of Houston and Xidian University's National Key Laboratory of Radar Signals Processing.[131] The award under NASA grant number 80NSSC18K0423 was issued to the University of Houston to support research on satellite-based water management predictions and applications, satellite imaging, and integrated altimetry-based monitoring. The award began in 2018 and ended in 2023.[132] Importantly, the publication acknowledged data provided by the Japan Aerospace Exploration Agency (JAXA) under Principal Investigator No. 3069. The specific Advanced Land Observing Satellite (ALOS) Phased Array type L-band Synthetic Aperture Radar (PALSAR)[i] data referenced in the acknowledgments appears to be publicly available through open-source channels.

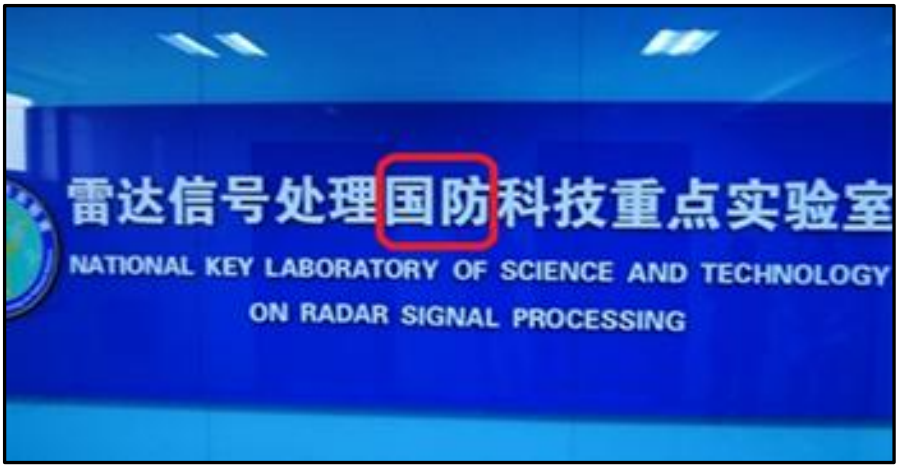
- Separate from the Wolf Amendment question, it is important to note this PRC lab is a national defense-designated laboratory. Xidian University's National Key Laboratory of Radar Signal Processing (雷达信号处理全国重点实验室). The laboratory's other Chinese name (雷达信号处理国防科技重

[i] The objective of the Alaska Satellite Facility (ASF) ALOS PALSAR RTC Project was to generate an analysis-ready synthetic aperture radar (SAR) product suitable for use in a variety of Earth science applications. Radiometric terrain correction (RTC) removes the inherent geometric and radiometric distortions from an image caused by side-looking radar. Processing of the Advanced Land Observing Satellite (ALOS) Phased Array type L-band Synthetic Aperture Radar (PALSAR) RTC products began in October 2014 and was completed one year later.

点实验室), translated as the National Defense Science and Technology Key Laboratory of Radar Signal Processing.[133] This is plainly visible on the billboard outside the lab, where the Chinese name includes "national defense," while the English translation omits it entirely.[134]

- This lab is involved in the development of the PRC's most advanced radar systems for the PLA.
  - Of note is the lab's development of an anti-stealth meter-wave radar [**反**隐身米波雷达], the first in the world, which is allegedly capable of detecting the F-22 aircraft and rendering stealth technology obsolete. It first detected an F-22 near China in February 2016.[135]
  - Also related to anti-stealth radar, this lab is developing an L-band 16-transmit 16-receiver MIMO radar test system.[136]
  - In 2013, this lab developed an airborne/satellite-mounted radar ground motion target Detection (GMTI) system [**机**载/**星**载雷达地面运动目标检测(GMTI)**系**统] for military use.[137]
  - The lab's 3rd Research Office oversees research on Battlefield Reconnaissance Radars.[138]
  - This lab and the Defense S&T Key Laboratory of Electronic Measurement Technology set up a "New-System Radar Research and Test Base" [**新体制雷达研究**试验基地] in the Qingdao Development Zone in 2005 to research and explore new radar detection technologies, design and manufacture an autonomously developed new radar system, and contribute to the development of "informationized" national defense technology.[139]

Figure 3 –Xidian University Key Laboratory of National Defense Science and Technology for Radar Signal Processing, the Laboratory's English Signage Notably Omits the Words "National Defense"[140]



The core collaboration reflected in the publication is between a U.S. university and a PRC defense-designated laboratory. However, the acknowledgment of JAXA-provided data introduces a third-country element.

The question is whether the inclusion of third-country data or funding acknowledgment transforms the research relationship into a "multilateral" activity outside the scope of the Wolf Amendment bilateral prohibition, or whether the operative legal inquiry remains whether NASA funds supported direct cooperation between U.S. and PRC entities, regardless of ancillary third-party data sources.

Where the third-country contribution consists of publicly available, open-source satellite data, the multilateral characterization may be largely superficial rather than substantive. In that scenario, the underlying collaboration would still involve NASA-funded U.S. researchers working directly with a PRC defense-affiliated laboratory, which may fall within the core concerns the Wolf Amendment was designed to address.

Additionally, this case highlights a broader enforcement ambiguity: whether nominal participation or data acknowledgment from a non-U.S., non-PRC entity meaningfully alters the bilateral character of a collaboration for purposes of statutory compliance.

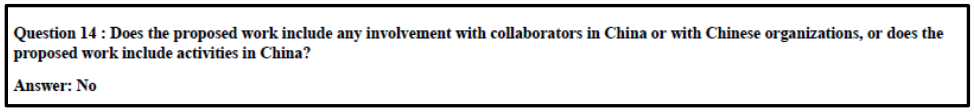
Arizona State University's Attestations and Certifications for NASA Award No. 80NSSC23K0265 Appear to be False

Arizona State University (ASU), the prime recipient, and Stanford University, the sub-awardee, repeatedly certified compliance with NASA's China-related funding

restrictions under Award No. 80NSSC23K0265. Despite these certifications, the prime recipient, ASU, reported a 2024 publication involving undisclosed Chinese affiliations as a grant-funded output.[141] Additionally, the co-principal investigator did not disclose in the original proposal to NASA that they held a position at a subsidiary of China's primary nuclear weapons research and development complex.[142]

As a result of an oversight letter from Select Committee Chairman John Moolenaar and Senate Committee on the Judiciary Chairman Chuck Grassley, NASA conducted a review of Award No. 80NSSC23K0265, which runs from January 2023 through December 2026. NASA's review revealed a significant breakdown in compliance with the Wolf Amendment driven by inaccurate and incomplete institutional disclosures.[143] ASU, as the prime recipient, repeatedly certified that the project involved no collaboration with China or Chinese entities. These certifications were legally binding and formed the basis upon which NASA obligated federal funds. Despite these representations and certifications, the Principal Investigator, Dr. Wendy Mao later submitted a 2024 co-authored publication involving previously undisclosed Chinese entities as a direct output of the NASA-funded award. The failure to disclose these relationships in the proposal and subsequent progress reports, coupled with explicit certifications denying such collaboration, indicates that the representations made to NASA were false and in violation of longstanding disclosure requirements tied to the Wolf Amendment.

Figure 4 –NASA Grant and Cooperative Agreement for Arizona State University Acknowledging No Collaboration with China or Chinese Organizations[j]


Question 14 : Does the proposed work include any involvement with collaborators in China or with Chinese organizations, or does the proposed work include activities in China?

Answer: No

NASA acknowledged that Dr. Wendy Mao failed to disclose her affiliation with the Center for High Pressure Science and Technology Advanced Research (HPSTAR). Dr. Mao was also previously identified in the Select Committee's investigative report on DOE research security failures involving bilateral co-authorship with Chinese entities. This same publication was subsequently highlighted in the aforementioned Chairmen Moolenaar and Grassley letter to NASA regarding potential Wolf Amendment concerns associated with the award.

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.[144]

[j] Materials Produced by NASA in Response to the Joint Letter from the Select Committee on China and the Senate Committee on the Judiciary.

Figure 5 – 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 the Chinese Academy of Engineering Physics, China's Primary Nuclear Weapons Research and Development Complex

NASA further determined that multiple certifications of "no Chinese collaboration," signed by the Institution's Authorized Organizational Representative (AOR) and submitted to the agency, appear to be false, thereby violating the terms of the award tied to the Wolf Amendment.

This case demonstrates how the public scholarly record can be used to identify potential violations of federal law. It also underscores the importance of leveraging bibliometric analysis, including co-authorship data, as a research security tool to surface undisclosed affiliations, validate institutional disclosures, and strengthen post-award compliance and oversight.

NASA Has Provided Clear Guidance to the Public on What Constitutes a Wolf Amendment Violation

NASA's public guidance via a PRC Frequently Asked Questions (FAQ) webpage on the Wolf Amendment makes clear that the restriction on bilateral engagement with China is broad, deliberate, and not limited to direct funding arrangements. The agency explicitly states that any bilateral participation, collaboration, or coordination with Chinese entities may render a project ineligible for funding, including activities conducted under a "no exchange of funds" arrangement.[145] This underscores that compliance is not satisfied simply by avoiding financial transfers. Rather, the use of NASA funds in connection with any portion of a bilateral project involving Chinese-affiliated entities is prohibited. Additionally, NASA's FAQ guidance has been publicly available since at least March 2013, providing clear and longstanding notice of how the agency interprets and enforces the Wolf Amendment.[146] This public guidance reflects that academic institutions

had ample opportunity to understand what constitutes prohibited bilateral activity, including co-authorship and other forms of collaboration. Universities cannot credibly claim ignorance where the agency has made its expectations explicit and accessible for over a decade.[147] At a minimum, institutions receiving federal funding have a responsibility to conduct basic due diligence and review applicable agency guidance. Failure to do so is not an oversight, it is a breakdown in compliance and accountability that rests with the institution, not the government.

The guidance also directly addresses co-authorship, removing any ambiguity around whether publication-related activities fall within the scope of the restriction. NASA defines papers authored solely between U.S. and PRC-affiliated researchers as bilateral activity, meaning NASA funds cannot be used to support associated publication costs or related work. By contrast, papers that include additional international collaborators may be considered multilateral and therefore permissible.[148] This distinction reflects NASA's view that co-authorship is not a passive or incidental act, but a form of collaboration that constitutes participation in a shared research effort.

NASA further clarifies that the restriction is based on institutional affiliation, not nationality. Individuals who are Chinese citizens may participate in NASA-funded research so long as they are not affiliated with Chinese state institutions or entities. This reinforces that the policy is targeted at institutional ties and associated risks, rather than individuals themselves. At the same time, NASA makes clear that ongoing affiliations with Chinese entities can jeopardize continued funding, as projects involving such ties are not eligible for incremental support.

With respect to travel and engagement, NASA draws a clear line between bilateral and multilateral activity. Attendance at widely attended, multilateral conferences, even if held in China, is generally permitted. However, any engagement that constitutes bilateral collaboration or coordination with Chinese entities remains prohibited. Similarly, general scientific discussions are allowed only to the extent they do not evolve into collaborative activity.[149] This distinction highlights NASA's effort to allow limited academic exchange while preventing structured or sustained collaboration.

Finally, NASA's guidance addresses data use and related activities, emphasizing that access to publicly available Chinese data is permissible, but entering into agreements with Chinese organizations to obtain data is not. Researchers may utilize open-source or multilateral data repositories, but cannot formalize arrangements with Chinese entities. Taken together, NASA's framework demonstrates a consistent principle: passive access to publicly available information may be allowed, but any form of coordinated, bilateral engagement, whether through co-authorship, agreements, or structured collaboration, falls within the scope of the Wolf Amendment restriction.[150]

Given the clarity of NASA's own guidance, there is little room for ambiguity in how the Wolf Amendment should be interpreted or enforced. Co-authorship, bilateral engagement, and other forms of coordinated activity are explicitly addressed and fall within the scope of the restriction. As such, the Department of Justice and NASA should vigorously investigate instances where NASA-funded research appears to involve prohibited bilateral activity, including co-authored publications with PRC-affiliated entities. Where violations are identified, cases should not be dismissed on the basis that such activities were informal, incidental, or purely academic in nature. The standard has already been set by NASA itself. Failure to enforce it not only undermines the law, but signals that clear statutory and policy prohibitions can be disregarded without consequence, eroding both accountability and the integrity of federally funded research.

NASA Research Security Framework, Practice, and Policy Shortfalls

NASA's research security framework, practices, and policies have historically exhibited notable gaps that limited the agency's ability to effectively identify, assess, and mitigate risks associated with foreign collaboration, particularly in the context of the Wolf Amendment. NASA has not conducted meaningful post-award monitoring of funded research, limiting its ability to identify compliance issues. In addition, program managers do not appear to systematically scrutinize or review publications submitted through Research Performance Progress Reports (RPPRs). Had such reviews been conducted, many of these publications, which clearly reflect disclosable or prohibited collaborations, could have been identified.

This approach created vulnerabilities where undisclosed affiliations, co-authorships, or collaborative activities could proceed without detection, as evidenced by cases identified through review and bibliometric analysis. While these shortcomings are significant, it is important to recognize that many of these structural limitations persisted prior to the agency's more recent efforts to formalize and strengthen its research security posture.

In meetings with the Select Committee, NASA has demonstrated a clear recognition of these challenges and has taken steps to address them. The agency has shown a willingness to update award terms and conditions, enhance disclosure requirements, and explore the development of more robust post-award compliance and monitoring mechanisms. These efforts reflect a proactive and positive shift toward strengthening research security oversight and aligning implementation more closely with statutory requirements. NASA's engagement on these issues and its responsiveness to identified risks are positive indicators that the agency is taking research security and Wolf Amendment compliance seriously and is moving to close previously existing gaps.

Recommendations

1. Congress Should Pass the Securing Innovation and Research from Adversaries (SIRA) Act

The SIRA Act would prohibit any individual, while participating in or performing work under a federally funded research award, from conducting research with any entity, or any individual affiliated with an entity, on a United States Government restricted entity list.[k]

2. Establishing a NASA Office of Inspector General and Department of Justice Task Force to Investigate Potential Wolf Amendment Violations

Establishing a joint NASA–Department of Justice task force to investigate the hundreds of potential Wolf Amendment violations is critical not only for ensuring compliance with federal law, but also for restoring accountability across the research ecosystem. Where institutions and principal investigators have made false certifications, omitted required disclosures, or otherwise misrepresented compliance with statutory restrictions, those actions may give rise to liability under the False Claims Act and related authorities. In such cases, the federal government has the ability to recover taxpayer funds that were improperly obtained or used, including potential treble damages and civil penalties.

Beyond financial recovery, a coordinated investigative effort would serve as a powerful deterrent, signaling that misrepresentations tied to federally funded research will be identified and enforced. It would also reinforce the integrity of federal grant-making by ensuring that institutions cannot benefit from noncompliance while adhering entities are placed at a disadvantage. In short, this is not only a compliance issue, but a matter of safeguarding taxpayer resources, upholding the rule of law, and restoring trust in the federal research enterprise. Additionally, where the Department of Justice is unable or unwilling to pursue these matters, NASA may rely on administrative remedies, including the Administrative False Claims Act, to recoup damages resulting from these violations.

3. Resourcing for NASA's Research Security Program and NASA OIG

Congress should direct NASA, through appropriations and authorizing language, to prioritize and resource its Research Security Program and the NASA OIG,

[k] "Restricted entity list" refers collectively to United States government lists identifying foreign individuals, companies, universities, laboratories, or organizations subject to sanctions, export controls, procurement restrictions, or other national security-related prohibitions or limitations. These lists include, but are not limited to, the Department of Commerce Bureau of Industry and Security (BIS) Entity List, the Department of Defense lists established under Sections 1260H and 1286 of the National Defense Authorization Act (NDAA), the Department of the Treasury Office of Foreign Assets Control (OFAC) sanctions lists, and the Uyghur Forced Labor Prevention Act (UFLPA) Entity List. Inclusion on such lists generally reflects U.S. government determinations related to national security, military end use or end users, human rights abuses, sanctions evasion, or other activities contrary to the national security or foreign policy interests of the United States.

including dedicated funding, increased staffing, and enhanced analytic and post-award monitoring capabilities tied to Wolf Amendment compliance. Congress should also require regular reporting on certification reviews, enforcement actions, and identified violations to ensure sustained oversight and accountability.

At the same time, NASA has the authority to act without additional congressional approval. The agency can reprioritize and reprogram existing funds, strengthen award terms and conditions, expand vetting of principal investigators and collaborators, and implement more rigorous post-award monitoring and certification verification. These actions would allow NASA to immediately improve compliance and enforcement while longer-term resourcing is addressed by Congress.

4. **NASA Should Review Identified Potentially Ambiguous Case Study Examples and Provide Public Guidance**

NASA should review identified case studies that present potential ambiguity under existing research security authorities, including the Wolf Amendment and related federal requirements. The objective is to assess these cases against current statutory and policy frameworks, determine where uncertainty or inconsistent interpretation exists, and develop clear, public-facing guidance to resolve those gaps. Providing such guidance will help standardize how institutions and agencies evaluate similar scenarios, reduce reliance on subjective or ad hoc determinations, and strengthen overall compliance with federal research security obligations.

5. **NASA Should Pursue Suspensions and Debarments for Universities Identified as Repeat Offenders of the Wolf Amendment**

For repeat violations of the Wolf Amendment, NASA should consider suspension or debarment from federal awards for a period of at least one year, or until the institution demonstrates that it has implemented effective compliance mechanisms to ensure adherence to statutory requirements**.**

6. **Prohibit Collaboration with any Entity on a U.S. Government Entity List**

The Committee recommends prohibiting federally funded research collaboration with any entity or individual affiliated with an entity listed on a U.S. government restricted entity list. This prohibition should apply regardless of whether the collaboration is bilateral or occurs through multilateral engagements, including coauthored publications that fall outside the narrow category of "hyper-authored" research. This approach builds on the Department of War's updated risk matrix, which now restricts such collaboration.[151] By closing gaps that allow indirect or distributed collaboration with entity listed entities, this policy would strengthen research security, ensure compliance with existing restrictions, and prevent federally funded research from supporting entities designated as national security risks**.**

7. **Require Standardized Inclusion of NASA Award Numbers in All NASA-Supported Publications to Improve Compliance, Oversight, and Accountability**

A number of publications that acknowledge NASA funding or support do not include specific award numbers, creating a critical gap in traceability and oversight. Without clear linkage to a grant, NASA and oversight bodies cannot readily determine whether the research was conducted in compliance with statutory restrictions, including the Wolf Amendment. This lack of standardized attribution impedes effective post-award monitoring, obscures the ability to match research outputs to specific funding streams, and limits the government's capacity to identify potential violations in a timely manner. It also creates an environment where noncompliant collaborations can go undetected, as publications may appear disconnected from federally funded work despite being supported by taxpayer dollars. Requiring consistent inclusion of award numbers in all publications acknowledging NASA support is therefore essential to ensuring transparency, enabling enforcement, and maintaining accountability within the research ecosystem.

8. **NASA Should Require Program Managers to Undergo Training to Identify Potential Wolf Amendment Violations in Publications Submitted Through Research Performance Progress Reports (RPPRs)**

Requiring program managers to identify potential Wolf Amendment violations in publications submitted through Research Performance Progress Reports (RPPRs) is critical to ensuring timely detection and enforcement during the period of performance. When publications are actively reviewed, NASA can identify undisclosed collaborations, foreign affiliations, or prohibited co-authorships in near real time, rather than years after funds have been fully expended. This creates a meaningful enforcement window where the agency can take corrective action, including suspending funding, halting ongoing work, or requiring remedial disclosures. Importantly, early identification also preserves the government's ability to recover taxpayer funds where violations are tied to false certifications or noncompliance with award terms, including through clawbacks or referral for False Claims Act enforcement. Absent this level of oversight, violations may go undetected until after the period of performance has concluded, significantly limiting the government's ability to hold institutions accountable, recover funds, or prevent further noncompliant activity.

9. **Require NASA to Issue Clear Guidance Addressing "Gray Area Scenarios"**

Requiring NASA to provide clear legal interpretations of ambiguous applications – including those identified in this report – of the Wolf Amendment is essential to ensuring consistent enforcement and closing gaps that allow noncompliant activity to persist. As this report demonstrates, evolving research structures,

including co-authorship, joint institutes, third-country involvement, and incomplete funding disclosures, have created gray areas that can be used, intentionally or not, to avoid triggering statutory safeguards. Without formal guidance, program managers, investigators, and institutions are left to rely on inconsistent or overly narrow interpretations, increasing the risk of both inadvertent violations and deliberate circumvention. Clear legal interpretations would establish uniform standards, improve compliance across the research ecosystem, and provide a defensible basis for enforcement actions. They would also ensure that the Wolf Amendment is applied as Congress intended, based on the substance of research relationships rather than technicalities in how those relationships are structured or reported.

10. **NASA Should Ensure Inquiries Sent to the FBI Are Clearly Marked as Wolf Amendment Certification Requests**

The Wolf Amendment requires FBI certification before NASA can engage in any authorized interaction with China or Chinese-owned entities. If these inquiries are not explicitly identified as certification requests, they risk being misrouted, delayed, or treated as routine coordination rather than a legally required determination. This creates gaps in oversight, increases the likelihood of unauthorized engagements, and undermines accountability. Standardizing this process ensures proper tracking, timely review, and a clear audit trail, which is essential for both compliance and enforcement.

11. **NASA Office of Inspector General Should Initiate an Investigation into the NASA-Acknowledged Wolf Amendment Violations Involving Arizona State University and Stanford University**

NASA OIG should investigate these violations to ensure independent, fact-based accountability for potential noncompliance with federal law and grant conditions. The record already indicates false certifications and undisclosed collaborations, which warrant formal review beyond program-level oversight. An OIG investigation can determine the full scope of the conduct, assess whether funds were improperly obtained or used, and develop evidence suitable for referral to the Department of Justice for civil or criminal enforcement where appropriate. Taking this step reinforces that statutory requirements are enforceable and not optional, and deters similar conduct across the research enterprise.

12. **NASA Should Require Accurate Disclosure of Author Contributions for All Co-Authors in NASA-Funded Research**

Accurate author affiliation disclosures are essential for transparency, accountability, and effective research security oversight. When affiliations are incomplete, misleading, or omitted, it becomes significantly more difficult for agencies, institutions, and oversight bodies to identify potential conflicts of interest, undisclosed foreign ties, or prohibited collaborations. As this report demonstrates, affiliations often serve as a primary indicator of research

relationships, including links to foreign defense entities or government-directed programs. Inaccurate disclosures therefore undermine the integrity of the scholarly record and create blind spots that can allow noncompliant or high-risk activity to go undetected. Publishers play a critical role in addressing this issue and should implement and enforce policies requiring verified, complete, and standardized author affiliation reporting. This should include mandatory disclosure of all institutional appointments, cross-checking mechanisms where feasible, and correction procedures when inaccuracies are identified. Ensuring the accuracy of affiliation data is not merely an editorial issue; it is a necessary safeguard for maintaining trust, transparency, and compliance across the global research ecosystem.

13. The Executive Branch Should Establishment a 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 federal grantmaking agencies have resoundingly failed to police themselves. Despite repeated warnings and documented failures, agencies 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 as outlined below:

- 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 about risks to the U.S. federal research 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 could 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 relevant Chips and Science 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: Assessment of Common Arguments Used to Oppose Strengthened Research Security Measures

Since initiating its investigations into research security failures across institutions of higher education and federal agencies, the Select Committee has encountered a wide range of arguments opposing stronger safeguards and downplaying research security issues. Many of these arguments are flawed, incomplete, or detached from the empirical evidence and realities of how research is conducted and exploited. This section details such claims and systematically dismantles them.

1. **Co-authorship vs. Collaboration**

Co-authored publications are the visible output of a broader process that often includes data sharing, methodological input, iterative feedback, ongoing technical exchange, and more. The claim that co-authorship does not equate to collaboration is a distinction without meaningful difference in the context of research security. While it is technically true that not every co-author engages at the same level or in the same way, this argument ignores how modern research is conducted. Co-authorship reflects a research relationship that exists on a spectrum, not a binary distinction. At one end, it may involve close, sustained collaboration with shared experimental design, data exchange, and iterative problem-solving. At the other, it may reflect more limited contributions, such as discrete analysis, validation, or technical input. But in all cases, co-authorship signifies some level of intellectual participation. These interactions frequently occur outside the final published record, yet they are precisely where sensitive knowledge, early-stage insights, and tacit expertise are most likely to be transferred. Treating co-authorship as disconnected from collaboration disregards the cumulative and networked nature of research activity. However, an important exception arises in cases of "hyper-coauthorship," such as large-scale particle physics or astrophysics collaborations involving dozens or even hundreds of authors. In these instances, authorship is often spread out and does not reflect meaningful research relationships between individual contributors or institutions, limiting its value for assessing collaboration or risk. Accordingly, such publications should be excluded from research security analyses, as they provide little actionable insight into substantive engagement between entities.

Many publications include detailed author contribution statements precisely to clarify each individual's role, whether in conceptualization, methodology, experimentation, data curation, analysis, writing, or editing. Co-authorship reflects more than a passive acknowledgment of contribution. These disclosures underscore that authorship is tied to defined participation in the research process, not incidental association. Even when contributions differ in scope or depth, inclusion as a co-author signals engagement with the underlying work. Additionally, it confers legitimacy and expertise, signals a working relationship, and demonstrates inclusion in a shared research effort. In many cases, co-authored

work is supported by overlapping funding streams, shared infrastructure, or coordinated lines of inquiry. Even where direct interaction may be limited, the integration of U.S. taxpayer-funded research into joint outputs that include foreign entities, particularly those tied to adversary governments, creates clear pathways for knowledge transfer and amplification. Moreover, it also confers legitimacy on those entities by associating them with U.S.-funded work and experts, enhancing their credibility, visibility, and ability to attract additional partnerships, funding, and talent. From a research security perspective, the relevant question is not just whether every author collaborated equally, but whether the research ecosystem itself enables the flow of sensitive capabilities, expertise, or credibility to high-risk actors.

If co-authorship is dismissed as incidental or non-substantive, it raises a separate concern: why are individuals or institutions listed as authors at all? Authorship carries professional, academic, and reputational weight. It is used to justify promotions, secure funding, and establish technical authority. If contributors did not meaningfully participate, their inclusion is not benign, it is a misrepresentation of contribution and a potential breach of academic standards and integrity. **Institutions that assert co-authorships are not indicative of collaboration cannot simultaneously rely on those same publications as evidence of scholarly output and impact.**

According to multiple law enforcement officials, law enforcement has long relied on publication data, including co-authorship, as a foundational investigative tool.[152] Over the past decade, agents have used bibliometric analysis to generate leads in cases involving undisclosed financial ties, hidden foreign affiliations, and unreported research relationships.[153] Patterns in co-authorship, institutional linkages, and publication acknowledgments often provide the first visible indicators of relationships that were not properly disclosed through official channels. These data points have supported not only preliminary inquiries but also criminal, civil, and administrative investigations.

Publication records are one of the most transparent and accessible sources for mapping research networks and identifying potential risk vectors. In many cases, publication data has been incorporated into affidavits supporting search warrants, one of the highest legal thresholds in law enforcement. The use of such information at that level underscores its evidentiary value and credibility. Numerous Department of Justice (DOJ) indictments and civil settlements and fact-based suspensions and debarments over the past ten years have drawn, in part, on publication records and co-authorship patterns to establish undisclosed relationships. These dynamics are further reinforced by the structure of PRC research and talent recruitment programs, which explicitly incentivize and, in many cases, require co-authored publications. Chinese research and employment contracts routinely mandate that researchers publish high-quality papers, often in collaboration with domestic institutions.[154] Talent program agreements have gone further, requiring principal investigators to publish multiple papers with PRC-

based instructors and graduate students as co-authors.[155] These provisions are not benign academic expectations; from the PRC's perspective they are mechanisms designed to formalize and expand collaborative ties, embed foreign expertise within PRC research ecosystems, and generate tangible outputs that demonstrate integration.

Co-authorship is a critical indicator within a broader pattern of activity that includes funding sources, institutional affiliations, known ties to foreign defense ecosystems, and the subject matter of the research itself. Dismissing co-authorship as irrelevant or insufficient on its own is an attempt to narrow the aperture of analysis in a way that obscures risk. When evaluated alongside other available data, co-authorship remains one of the most accessible and revealing indicators of research relationships that may carry national security implications.

The Select Committee has also heard the claim from non-governmental organizations and advocacy groups that no one understands the full extent of a research relationship better than the institution itself in the context of co-authorship vs collaboration. That assertion raises a fundamental question: are proponents disregarding the author contribution sections of publications, which are intended to transparently document who did what? If those disclosures are accurate, then institutions should be able to point to them as evidence of the nature and scope of the research relationship. If, however, those author contribution statements are incomplete or inaccurate, and institutions possess more precise knowledge of the actual contributions, then the issue is far more serious. It calls into question the reliability of the scholarly record and exposes a gap between what universities publicly espouse about research integrity and transparency and what they are willing to enforce and publicly provide in practice.

Furthermore, when universities engage in research with high-risk or defense-affiliated foreign entities, there can be real reputational consequences, due to the visibility in the public record. Co-authored publications serve as a permanent, searchable ledger of these relationships, exposing institutions to scrutiny from Congress, federal agencies, law enforcement, and the broader public. Public publication records shape perceptions of institutional judgment, governance, and integrity. Universities that appear repeatedly in publication data alongside entities linked to adversarial governments, particularly those supporting military objectives or known and documented military entities, risk being viewed not as responsible stewards of taxpayer-funded research, but as willing participants in high-risk ecosystems. This erodes credibility with federal funding agencies, undermines public trust, and invites heightened oversight, enforcement actions, and potential funding restrictions. Moreover, by lending their name, expertise, and federally supported research to such relationships, institutions confer legitimacy on those entities, amplifying their global standing while simultaneously degrading their own. In an environment where publication data is routinely used by investigators, policymakers, and oversight bodies to identify undisclosed relationships and compliance failures, universities cannot

assume these partnerships will remain obscure or inconsequential. They are documented, they are analyzed, and they carry consequences.

Lastly, universities cannot have it both ways. They cannot claim superior insight into research relationships while simultaneously relying on or tolerating inaccurate disclosures in the published record. Maintaining non-public knowledge of author contributions that is not accurately reflected in federally-funded publications amounts to *de facto* concealment of the true nature of research relationships. Such practices undermine the credibility of the research enterprise, and the integrity standards universities should uphold. Ultimately, universities and researchers have used this argument as a rhetorical device used to downplay risk and avoid accountability.

2. **Researchers are Added to Publications Without their Knowledge**

The assertion that researchers are added to publications without their knowledge cannot be a defense. It is an admission of a breakdown in research integrity, authorship accountability, and institutional oversight. Established guidelines, including those from most major journals, require that authors make a substantive intellectual contribution, participate in drafting or revising the work, approve the final version, and accept accountability for its contents. Being listed as an author is not ceremonial. It is a formal certification of contribution and responsibility. Additionally, author disclosure practices in publications in some cases are inconsistent and often lack standardization. Some papers include detailed author contribution statements and clearly identify funding sources with specific grant numbers tied to individual researchers, while others provide only vague acknowledgments (e.g., "supported by NASA" or a general program reference) without grant identifiers or attribution of funding to specific coauthors.

If individuals are being added without their knowledge, then one of two things is true, and neither is acceptable. Either the authorship process is being manipulated in a way that undermines the credibility of the research, or the individual is aware and later disclaims involvement when scrutiny arises. Both scenarios cut directly against the principles of transparency and integrity that universities publicly espouse. More importantly, the downstream use of these publications exposes the weakness of this argument. Faculty routinely rely on their publication record for career advancement, grant applications, federal funding proposals, awards, and professional recognition. Universities themselves use these outputs to justify funding, rankings, and institutional prestige. One cannot simultaneously claim that authorship is meaningless or accidental while continuing to derive professional and financial benefit from those same publications.

If a researcher truly did not materially contribute to the research and was added without consent, then the academic integrity and ethical obligation is clear. The scholarly record must be corrected. That means notifying the journal, removing the individual from authorship, and issuing a formal correction or retraction as

appropriate. Anything short of that signals that the publication is still being treated as valid currency when it is convenient.

Institutions cannot selectively invoke research and academic integrity. If they espouse transparency, accountability, and accuracy in the scholarly record, then they must be willing to enforce those principles even when it is inconvenient. That includes retracting or correcting publications where authorship is improper and ensuring the record accurately reflects who performed the work.

3. **Fundamental Research is Openly Published; Thus, Restricting any Collaboration is Pointless since the Research will be Shared Broadly and Internationally**

Open publication does not mean equal access to knowledge. The premise of that argument is flawed because it treats published research as the full value of scientific work, when in reality it is only the final output of a much larger and more valuable process. What is published is a distilled, sanitized version of the work. It captures conclusions, selected methodologies, and results. It does not capture the full body of tacit knowledge generated during the research lifecycle: failed experiments, parameter tuning, workarounds, troubleshooting decisions, informal exchanges between collaborators, lab techniques, data conditioning choices, or the iterative reasoning that led to the final outcome. Those elements are often far more valuable than the paper itself because they dramatically reduce the time, cost, and uncertainty required to replicate or extend the research. When foreign entities are embedded in the research process, whether physically in the lab, virtually through ongoing engagement, or indirectly through co-authorship, they gain insight into how the work is actually done, not just what was ultimately published. They observe experimental design decisions in real time, understand why certain approaches failed, and gain early visibility into emerging results before publication. That is not "open science." That is privileged access to the development pipeline.

Not all actors operate under the same constraints. State-directed systems, particularly those pursuing military-civil fusion strategies like China, are structured to rapidly absorb, adapt, and operationalize openly available research in ways that U.S. institutions often cannot or will not. The issue is not whether information is technically accessible. It is how efficiently and for what purpose it is exploited.

A further flaw in this argument is the assumption that fundamental research remains confined to the open domain. In practice, that is not how the U.S. research and development ecosystem operates. **In some cases, federally funded fundamental research, including work supported by the Department of War, serves as the foundation for subsequent applied, controlled, or classified efforts. Early-stage discoveries may transition into sensitive programs, including controlled research, classified initiatives, and, in some instances, Special Access Programs that directly support warfighting capabilities.** The

initial "fundamental" phase is therefore not an endpoint, but part of a broader development pipeline. Allowing foreign entities, particularly those tied to adversarial governments, to participate at the front end of that pipeline provides them with significant insights and hands-on knowledge into technologies that may later underpin sensitive or classified capabilities. By the time such work transitions out of the open domain, the foundational knowledge and technical expertise have already been shared. Restricting some research relationships with certain entities at the early stages is not about limiting open science. It is about protecting the upstream inputs that ultimately enable downstream military and strategic advantages.

Furthermore, if research relationships truly added no value beyond what is already published, there would be no reason to pursue it so aggressively. Yet foreign entities, particularly those tied to strategic competitors, consistently seek collaborative arrangements, joint labs, visiting researcher positions, and co-authorship opportunities. They do so precisely because collaboration provides access to the non-public, high-value aspects of research that publications do not capture.

4. **The United States Derives Greater Benefit from Research Relationships with China than China Derives from the United States, and Therefore Restrictions on Research are Unnecessary**

The claim that the United States benefits more than China from scientific collaborations is, at this point, an assertion rather than an empirically established fact. In the context of U.S. government-funded research, that is not a trivial distinction. If proponents want to argue that unrestricted collaboration with Chinese defense research and industrial base entities produces net benefits for the United States, then they should be required to demonstrate that with evidence, not rhetoric. There is a substantial and growing body of evidence, including court cases, indictments, investigations, compliance reviews, suspensions and debarments, congressional reports, think tank analyses, and both quantitative and qualitative research that provide empirical evidence on how China exploits U.S. research and academia. This evidence spans not only the United States but also allied and partner nations around the world.

The burden of proof rests with those arguing against restrictions. That is especially true where the collaboration involves U.S. taxpayer-funded defense research and institutions tied to a strategic competitor's military, defense industrial, or state-directed technology transfer ecosystem. It is not enough to vaguely suggest that scientific exchange is mutually beneficial or that American researchers "learn something too." Those are generalities. What matters is whether there is concrete, documentable evidence showing that these collaborations generated unique, material, and operationally relevant benefits for the United States that could not have been obtained through domestic research, allied partnerships, or other lower-risk channels.

All of us should demand the same rigor here that science demands elsewhere. If someone makes the claim that these research relationships produced meaningful benefits for the United States, they should be able to produce evidence that is specific, measurable, and capable of scrutiny. What exactly did the PRC-side collaborator provide? What was truly unique about it? Why could it not have been obtained elsewhere or from a trusted partner? Did the Chinese co-author or institution provide unique data, specialized materials, proprietary methods, access to equipment, or some other indispensable contribution the U.S. side did not already possess or could not independently acquire? Was the U.S. researcher given access to Chinese defense laboratories, facilities, or technical capabilities that materially changed the outcome of the work? More importantly, what concrete U.S. scientific, economic, or defense gain resulted from these collaborations, where was that gain implemented or translated into real-world benefit, and how often did this actually occur across the broader universe of research relationships? If proponents argue these collaborations produced substantial value to the United States, then that assertion should be tested like any other serious scientific or policy claim through direct, evidence-based inquiry with principal investigators and co-investigators. Did the collaboration lead to commercialization, a government program transition, a prototype, an acquisition pathway, or an operational capability? If so, where is the evidence?

There is also a deeper flaw in the argument. It assumes that the relevant metric is whether the United States got something out of the collaboration. That is too low a bar. The real question is whether the United States got enough unique benefit to justify the transfer of knowledge, access, legitimacy, and relationship-building that the collaboration simultaneously provided to entities tied to China's defense ecosystem.

Even if a U.S. researcher gained something of marginal value, that does not mean the exchange was prudent or advantageous overall. A collaboration can produce some academic benefit for the American side while still delivering far greater strategic value to the Chinese side. Those are not mutually exclusive. In fact, that is often the central risk.

This is particularly important because the benefits flowing to authoritarian regimes such as China are not limited to what appears in the publication itself. Chinese defense-linked entities may gain access to tacit knowledge, insight into experimental design, troubleshooting approaches, early-stage findings, and sustained professional relationships with U.S. researchers and laboratories. They gain credibility through co-authorship, proximity to U.S. institutions, and opportunities for future engagement. Those benefits are diffuse, cumulative, and often difficult to quantify, but they are real. By contrast, proponents of unrestricted collaboration tend to describe U.S. benefits in abstract and anecdotal terms while ignoring the broader and more systemic advantages conferred on the foreign side.

The argument also fails to account for alternatives. Even if some collaborations produced useful information, that does not mean those benefits required collaboration with Chinese defense-linked entities. The relevant question is not simply whether the collaboration yielded something valuable. The relevant question is whether the same or better result could have been achieved through domestic capability, allied partnerships, commercial procurement, open literature, or collaboration with institutions that do not present the same national security risks. If the answer is "yes," then the claimed benefit does not justify the risk.

In other words, the appropriate standard is not whether any benefit was obtained, but whether the collaboration produced unique, significant, and otherwise unavailable value, and whether that value outweighed the known risks of conducting U.S. government-funded research with entities tied to a strategic competitor's defense ecosystem.

Until proponents of collaboration with China can answer that question with empirical evidence, they should not be taken at face value. There is plenty of evidence against unrestricted research relationships and how they benefit China. It includes Department of Justice indictments and prosecutions, civil enforcement actions and settlements, administrative remedies, suspension and debarments, quantitative and qualitative studies, investigative journalism, congressional investigative reports, and detailed analyses produced by independent research institutions and national security experts globally. In many cases, the Chinese government's own policy documents, statutory records, and institutional records openly describe strategies to leverage international academic collaboration, joint ventures, talent recruitment programs, and technology transfer to advance state and defense objectives. The evidence is overwhelming and cannot be dismissed as isolated incidents or misunderstandings.

If those answers do not exist, then the claim that "we get more out of it than they do" is not a serious evidence-based argument. Assertions of net benefit cannot stand on their own and must be supported by evidence.

This argument is a presumption used to avoid confronting the national security implications of these relationships. The U.S. government has a duty and obligation to protect American tax dollars and has a right to decide who and what they fund in the interest of national security, technology dominance, and American interests. And in the U.S. government-funded research context, presumptions in favor of collaboration with China's defense research and industrial base entities are exactly backwards. The default should be caution, not assumption. The burden should be on those seeking to preserve such collaboration to prove, with hard evidence, that the benefits are real, substantial, and worth the risk. Until such evidence is produced and evaluated against the scale of these research relationships and the risks they create, there is no basis to assume that unrestricted collaboration on U.S. government-funded research serves U.S.

interests. In a national security environment and in the context of adversary nations, claims of net benefit must be demonstrated, not presumed.

5. Claims of Xenophobia and Allegations of Targeting Ethnic and Ethnically Connected Chinese Researchers

The claim that research security and law enforcement efforts are driven by xenophobia or target individuals based on ethnicity mischaracterizes both the intent and the evidentiary basis of these concerns. The focus is not on race, nationality, or background. It is on documented behaviors, institutional affiliations, and malign activities that create risk to U.S. research and national security. The United States has long benefited from the contributions of Chinese American researchers and those who wish to emigrate, and that remains true. The issue at hand is not who someone is, but what they are doing, who they are working with, and whether those activities implicate legal, policy, or security concerns.

Critically, this argument cannot ignore the Chinese government's own publicly stated policies and directives, some of which are outlined later in this report. Chinese laws, policy documents, and official programs explicitly call for the mobilization of global talent, including individuals of Chinese descent overseas, to support national strategic objectives, including technology acquisition and military-civil fusion. They are outlined in publicly available statutes, talent program agreements, and government strategies that "encourage technology transfer from ethnic Chinese scholars overseas,"[156] transfer of knowledge, research outputs, and expertise back to China. In some cases, these programs include contractual obligations tied to intellectual property, co-authorship, or the establishment of research ties with Chinese institutions, including those linked to the defense ecosystem.

Yet, notably absent from this debate is any meaningful acknowledgment or criticism of China's policies targeting individuals of Chinese descent abroad by the same universities and academic associations that are quick to label U.S. research security efforts as discriminatory. There is little to no public condemnation by universities, university associations, or advocacy groups like the Committee of 100 of the Chinese government explicitly targeting individuals based on ethnicity to advance state-directed strategic objectives. This silence is difficult to reconcile and exposes a glaring double standard that undermines the credibility of these claims. Institutions that claim to champion academic integrity, transparency, and non-discrimination have largely avoided confronting the implications of China's policies (while they simultaneously take foreign gifts and contracts from China and partner with foreign entities of concern), even as they directly shape the risk environment within which U.S. research operates. It raises a fundamental question: why is there significant scrutiny of U.S. efforts to address documented risks, but little to no scrutiny of the foreign policies and practices that actively seek to exploit those very systems? Why are universities, university

associations, or organizations not taking a more active role in protecting Chinese students and nationals, and Chinese Americans from exploitation by the Chinese government?

By ignoring or downplaying the role of these foreign government policies, the conversation is reframed away from conduct and risk and toward identity-based narratives that obscure the underlying issue. Addressing research security risks is not about targeting individuals. It is about responding to a strategic environment that is openly defined by foreign governments themselves. If institutions are serious about the principles they espouse, they must be willing to confront both sides of that equation, not just the one that is politically convenient.

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