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Testing the Waters: An Experiment in American Research Security Against U.S.-China Scientific Collaborations

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Executive Summary¹

This report is the culmination of a six-month experiment conducted on the Data Abyss platform, which specializes in data-driven defense strategies against adversarial intentions of countries like China. The experiment involved the development and assessment of 20 public trackers and 3 private S&T trackers, specifically aimed at understanding the U.S. risks associated with collaborations with China and Russia. The findings from this comprehensive analysis are presented here, focusing on the U.S. research security landscape through the lens of specialized trackers that monitor scientific and technological collaborations between U.S. institutions and entities affiliated with the Chinese defense sector.

The assessment unveils a pattern of systematic and sustained engagement between U.S. research entities and Chinese military-affiliated institutions, calling into question the effectiveness of current U.S. research security measures, including those mandated by the 1260 and 1286 lists and the U.S. Entity List. These collaborations, spanning sectors like artificial intelligence, advanced energy, advanced materials, and biotechnology, and involving major U.S. research funding bodies, suggest potential contraventions of U.S. laws and policies intended to curtail scientific exchanges with foreign military powers.

Trackers like the **"Seven Sons of National Defence Tracker," "DOE Funded Chinese Defense Research Tracker,"** and **"NIH Funded Chinese Defense Research Tracker"** have illuminated the extensive and complex nature of these interactions. Despite the rigorous regulatory environment, U.S. research institutions persist in activities that may bolster the technological and strategic prowess of the Chinese military.

The report elucidates the difficulties in overseeing and regulating international research collaborations, indicating that existing policy frameworks may be insufficient or ineffectively enforced. The data-backed evidence from the Data Abyss experiment underscores the need for a fortified and more efficient research security policy in the United States.

To navigate these complexities, the report advocates for a holistic reassessment and potential fortification of U.S. research security policies, aiming to enhance transparency, accountability, and enforcement in research collaborations. It also calls for the creation of adaptive policy mechanisms that can respond to the changing dynamics of international scientific and technological progress, ensuring that U.S. research endeavors align with national security interests and do not inadvertently empower the strategic ambitions of foreign military entities, especially China.

¹ Data Abyss (<https://www.dataabyss.ai/>) is a Parallax Advanced Research Corporation developed platform with the sole focus to deliver data-driven defenses against China's adversarial intentions.



Introduction^{2 3 4}

The exploration within Data Abyss (<https://www.dataabyss.ai/>), a platform dedicated to data-driven defense against China's adversarial intentions, over the past six months, has led to the development and assessment of 20 public trackers and 3 private data-driven Science and Technology (S&T) trackers. These tools were specifically designed to understand the U.S. risks associated with collaborations with China and Russia. Through this experiment, the platform has identified and analyzed complex networks of collaboration, revealing how deeply intertwined U.S. research entities are with foreign institutions, particularly those with connections to the military sectors of these adversarial nations.

This comprehensive initiative has led to the creation of specialized tools like the "**Seven Sons of National Defence Tracker**" and "**US Funded Chinese Defense Research Tracker.**" These tools have been instrumental in uncovering the nuanced and multifaceted nature of international scientific collaboration, offering a detailed perspective on the alignment, and sometimes conflict, of U.S. research efforts with national security protocols. The insights gained from this systematic analysis provide a clearer picture of how American scientific and technological endeavors might be unintentionally bolstering the strategic capabilities of nations like China, whose intentions are often viewed with suspicion.

By meticulously tracking and analyzing these collaborative activities, the experiment within Data Abyss has highlighted a consistent pattern of engagement across various scientific fields and funding sources. This pattern persists despite the stringent regulations aimed at limiting scientific and technological exchanges with potential adversary states. The findings underscore the challenges in enforcing legislative and policy measures effectively to prevent unauthorized technology transfer and safeguard U.S. national security interests.

Methodology Overview

Our research approach relied on the systematic employment of a suite of specialized trackers, each aimed at dissecting the intricate web of U.S.-China scientific and technological collaborations. These trackers were instrumental in providing a detailed examination of the interactions between these two nations, enabling us to understand the depth and breadth of their engagements:

Seven Sons of National Defence Tracker: This tool was crucial for identifying and analyzing the research interactions between U.S. institutions and the Seven Sons of National Defence, a group of Chinese universities with strong ties to the People's Liberation Army (PLA). By monitoring these collaborations, the tracker provided insights into how academic partnerships

² Data Abyss Resources of Open-Source trackers (<https://www.dataabyss.ai/platform-resources>)

³ Data Abyss Marketplace of unique trackers which have been developed in collaboration with our user community. (<https://www.dataabyss.ai/marketplace>)

⁴ Data Abyss Red Dragon Watchtower Initiative Closed-Source trackers designed to ensure integrity and vigilance within the sphere of U.S. grants and scientific research, with a special focus on activities potentially involving misconduct or violations related to engagements with China. (<https://www.dataabyss.ai/red-dragon-watchtower>)



could potentially align with the strategic interests of the Chinese military, highlighting the dual-use nature of many research projects and initiatives.

US Funded Chinese Defense Research Tracker: Focused specifically on research initiatives funded by U.S. entities but connected to Chinese defense institutions, this tracker offered a clear view of the financial and academic links bridging U.S. resources and Chinese military capabilities. It played a key role in pinpointing where U.S. funding might be indirectly supporting activities that could enhance the technological and scientific prowess of the PLA.

NIH and DOE Funded Chinese Defense Research Tracker: These trackers were employed to dissect the funding flows and research outputs associated with the National Institutes of Health (NIH) and the Department of Energy (DOE), respectively. The objective was to uncover any underlying connections between the research funded by these U.S. agencies and Chinese military endeavors, thereby revealing potential vulnerabilities or areas of concern where U.S. scientific investment might be exploited for military gains.

Sino-American Hypersonic Vehicle Research Collaborations Tracker: This tool specifically monitored joint research projects between the U.S. and China in the field of hypersonic vehicle technology, a critical area with significant military and strategic implications. The tracker helped identify collaborative efforts in developing high-speed aerospace technologies, offering insights into how these advanced research initiatives might be contributing to China's military capabilities in hypersonic vehicle development.

WallStreet Bets on Chinese Military Companies Tracker: Focused on the financial sector, this tracker analyzed investments from U.S. financial institutions in Chinese military companies. By examining the flow of capital from U.S. investors to entities associated with the Chinese military, the tracker provided a unique perspective on the economic dimensions of U.S.-China relations and highlighted potential indirect support of China's military-industrial complex through American investments.

U.S. Research Protection & Foreign Influence Tracker: This tool scrutinized the broader context of foreign influence in U.S. research institutions, with a specific focus on China. Specifically, institutions that participate in activities flagged as concerning under Section 1286(c)(8)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232). It examined the extent to which U.S. research and development efforts might be exposed to foreign influence or espionage, particularly from Chinese entities. This tracker was instrumental in assessing compliance with U.S. regulations aimed at protecting research integrity and national security from foreign interference.

Chinese Military Companies Operating in the United States Tracker: This tracker plays a pivotal role in mapping the presence and activities of Chinese military-affiliated companies within the United States, as defined by Section 1260H of the William M. ("Mac") Thornberry National Defense Authorization Act for Fiscal Year 2021. It meticulously catalogs and analyzes the S&T publications and research endeavors linked to these companies, offering a detailed view of their operational scope and academic partnerships in the U.S. The comprehensive "All Agencies" filter within the tracker enables a broad examination of the U.S. funding landscape,



identifying which American research entities are financially interconnected with these Chinese military companies. This tool is essential for understanding how Chinese military entities integrate into the U.S. research ecosystem, potentially bypassing regulatory barriers and contributing to the technology transfer concerns that challenge U.S. national security policies.

US Funded Russian Research Tracker: This tool is engineered to systematically monitor and document the nuances of research collaborations between U.S. funding bodies and Russian entities, flagging those that may pose regulatory or security concerns. It is crafted in response to the Office of Science and Technology Policy's (OSTP) guidance, ensuring that such collaborations are in line with U.S. government policies and regulations. The tracker scrutinizes research projects through various lenses, including funding sources, affiliations, and the substance of the research as indicated in titles, abstracts, and full texts. Its primary objective is to bolster transparency and provide stringent oversight amid evolving U.S.-Russia geopolitical dynamics. By meticulously analyzing U.S.-Russia research interactions, the tracker serves as a crucial resource for stakeholders, offering a platform to comprehensively assess and manage the potential risks and benefits of these international scientific endeavors. Its focus on activities from 2022 onwards ensures relevance and timeliness in addressing the current state of U.S.-Russia scientific relations.

The analytical approach was primarily quantitative, leveraging the comprehensive data aggregation capabilities of the trackers to measure the volume and categorize the nature of the U.S.-China research collaborations. This involved a detailed examination of the number of joint projects, publications, and funding programs, which were then cross-referenced with known Chinese military-affiliated entities and initiatives. Through this process, the research aimed to construct a detailed and nuanced picture of how U.S. scientific and technological resources are intertwined with Chinese institutions, particularly those with defense and military interests.

Findings

Persistent Collaborations

The in-depth analysis using a suite of specialized trackers has underscored the enduring nature of collaborations between U.S. research institutions and Chinese entities linked to the defense sector. Despite stringent regulations like the 1260 and 1286 lists, and the U.S. Entity List, designed to curtail scientific and technological exchanges with Chinese military-affiliated organizations, persistent interactions continue to occur.

These collaborations are evident across a variety of fields, as shown by multiple trackers, each highlighting different facets of U.S.-China research engagements. For instance, the "**Sino-American Hypersonic Vehicle Research Collaborations Tracker**" illustrates ongoing joint research in critical areas like hypersonic technology, where the military implications are significant. Despite the strategic sensitivity of this field, U.S. and Chinese entities have maintained, if not increased, their collaborative efforts.



Similarly, the "**Florida Funded Chinese Defense Research Tracker**" and the "**California Funded Chinese Defense Research Tracker**" reveal that state-level research funding in the U.S. is also entangled with Chinese institutions linked to the military. These trackers show that even at the state level, there are substantial engagements with entities that may pose a risk to national security, indicating that the issue pervades various layers of the research ecosystem.

The "**Chinese Military Companies Operating in the United States Tracker**" further demonstrates that Chinese military-affiliated companies have established a significant presence in the U.S., engaging in research activities that potentially contravene U.S. regulations. This tracker highlights how these companies, through their operations and partnerships in the U.S., navigate the boundaries of regulatory frameworks, raising concerns about the enforcement and effectiveness of existing measures.

Moreover, the "**U.S. Research Protection & Foreign Influence Tracker**" sheds light on the broader issue of foreign influence in U.S. research institutions, emphasizing the challenges in monitoring and controlling interactions that might be exploited for military advancements by foreign powers. This tracker's findings underscore the nuanced and pervasive nature of foreign influence, complicating efforts to delineate and deter research collaborations that could undermine U.S. strategic interests.

The persistent collaborations, as revealed through these trackers, suggest a systemic issue where U.S. research and technology sectors are intricately linked with Chinese military and defense entities. This situation persists despite known risks and regulatory attempts to mitigate such engagements. The continued collaborations, therefore, point to a potential misalignment between the intended robustness of U.S. regulatory frameworks and their practical enforcement and effectiveness. The evidence from these trackers calls for a reevaluation of the current policies and mechanisms in place to ensure they are sufficiently comprehensive and enforced to prevent unauthorized collaborations and protect national security.

Ongoing Engagements Contrary to Policy Directives

The "**US Funded Russian Research Tracker**" has highlighted ongoing collaborations between U.S. funding agencies and Russian entities, raising significant concerns about the adherence to the OSTP's guidance titled "Guidance On Scientific and Technological Cooperation with the Russian Federation for U.S. Government and U.S. Government Affiliated Organizations." Despite this guidance, which aims to regulate and oversee scientific and technological engagements with Russian institutions, evidence from the tracker indicates that collaborations are not only continuing but are substantial in nature.

This persistent engagement raises questions about the effectiveness of the existing policy framework and the enforcement of guidelines designed to prevent potentially problematic transfers of knowledge and technology. The tracker's findings suggest that, despite the OSTP's intentions to curtail undue influence and ensure research integrity, collaborations with Russian entities remain robust. This situation is particularly concerning given the geopolitical tensions



and the risk of sensitive research falling into the hands of entities that may not align with U.S. national security interests.

The ongoing nature of these collaborations underscores the need for a reevaluation of the current policy mechanisms and their implementation. It suggests that existing guidelines may be either insufficiently strict, inadequately enforced, or not comprehensive enough to cover the breadth of U.S.-Russia scientific engagements. To address this challenge, it may be necessary to strengthen the oversight processes, enhance transparency in international research partnerships, and ensure that collaborations are aligned with U.S. strategic interests and do not inadvertently support foreign military or strategic capabilities.

Sector-Wide Involvement

The collaboration between U.S. research institutions and Chinese military-affiliated entities spans across a wide array of sectors, revealing a complex web of interactions that transcend traditional research boundaries. These engagements, identified through comprehensive tracking, are not isolated to one sector but are pervasive across technology, energy, health, and defense sectors, all of which are pivotal to national security and economic strength.

In the energy sector, the **"DOE Funded Chinese Defense Research Tracker"** has flagged several DOE laboratories, such as the Lawrence Livermore National Laboratory and Sandia National Laboratories, for their research projects that have connections with Chinese institutions. These institutions are either directly tied to the Chinese military or have indirect affiliations that could facilitate access to advanced technologies and sensitive information.

In the health and biomedical research arena, the **"NIH Funded Chinese Defense Research Tracker"** revealed that many NIH centers and institutes, like the National Cancer Institute (NCI) and the National Institute of Allergy and Infectious Diseases (NIAID), have engaged in collaborations that potentially intersect with Chinese military interests. These collaborations could expose critical biomedical research, including genomic data and infectious disease research, to exploitation for military purposes.

The defense sector's involvement is further underscored by the funding from the Department of Defense (DoD) to Chinese military companies and universities. Programs and projects funded by the DoD, including those through the Office of Naval Research (ONR) and the Air Force Office of Scientific Research (AFOSR), have been identified for their links to Chinese defense entities, raising alarms about the direct bolstering of foreign military capabilities through U.S. research funding.

Private sector involvement is also significant, as demonstrated by **the "WallStreet Bets on Chinese Military Companies Tracker,"** which has identified U.S. investment funds and trusts funneling capital into Chinese military companies. These financial engagements indicate a broader systemic issue where the U.S. economic activities are intertwined with the Chinese military-industrial complex, potentially enhancing the military capabilities of China.



This sector-wide involvement illustrates the multifaceted nature of U.S.-China research collaborations, where various elements of the U.S. research and industrial sectors are engaged with Chinese entities that have military affiliations. The breadth and depth of these interactions across critical sectors necessitate a more nuanced and comprehensive approach to managing and mitigating the risks associated with the potential transfer of knowledge, technology, and expertise to Chinese military entities. Addressing these challenges requires a concerted effort to enhance transparency, strengthen regulatory mechanisms, and ensure that U.S. research and economic activities do not inadvertently contribute to the strategic ambitions of foreign military powers.

Policy Breaches

The evidence gathered through these trackers suggests violations of U.S. laws and policies designed to safeguard national security by preventing unauthorized technological and scientific exchanges with foreign military entities. The consistent pattern of collaboration with Chinese defense-related institutions, often under the radar of current regulatory mechanisms, points to gaps in the effectiveness of these policies.

For example, the "**Chinese Military Companies Operating in the United States Tracker**" provides insights into how Chinese military-affiliated companies are maintaining and even expanding their operational footprint in the U.S., engaging in research activities that could be contrary to the intent of U.S. legislative measures. These activities raise questions about the adequacy of the current enforcement mechanisms and the need for a more proactive and comprehensive approach to monitoring and regulating international research collaborations.

The data suggests that these are not isolated incidents but part of a broader pattern of engagement that could undermine U.S. strategic interests and national security. The ongoing interactions, despite clear legislative prohibitions and restrictions, indicate a need for a reassessment of the policy framework governing U.S.-China scientific and technological exchanges. Enhanced enforcement, along with a more nuanced understanding of the nature and implications of these collaborations, is essential to ensure that U.S. research and innovation do not inadvertently bolster the capabilities of potential adversaries.

Case Study: 2023-2024 Collaborations Between U.S. Funders and Chinese Military-Affiliated Companies

The analysis of the "**Chinese Military Companies Operating in the United States Tracker**" has uncovered a series of collaborations between U.S. funders and Chinese entities listed under the 1260 list, indicating deep-rooted and multifaceted research ties. These collaborations span across various scientific fields, including technology, health, and defense, raising concerns about the potential transfer of sensitive knowledge and technology to Chinese military-affiliated companies and universities.



Case Examples

1. Dense Affinity Matching for Few-Shot Segmentation

- **Collaborators:** Zhejiang University, **Huawei Technologies**, University of Sheffield, State University of New York
- **U.S. Funder:** National Science Foundation, Air Force Office of Scientific Research
- **Details:** This research in advanced image processing, involving a prominent Chinese technology firm and several academic institutions, was partly funded by U.S. defense-related research funds. The involvement of a company like Huawei, which has faced scrutiny for its ties to the Chinese military, underscores the complexity of ensuring research collaboration does not inadvertently bolster foreign military capabilities.

2. Order Transfer in a Hybrid Raman-Laser-Optomechanical Resonator

- **Collaborators:** **China Mobile Group Co., Ltd**, Max Planck Institute for the Science of Light, Nanjing University, Tsinghua University, Xi'an Jiaotong University
- **U.S. Funder:** National Science Foundation, Army Research Office
- **Details:** This study on optomechanical resonators includes significant participation from Chinese institutions with reported links to military development, funded partly by U.S. agencies with national defense interests. The collaborative nature raises concerns about the dual-use potential of the shared technologies and knowledge.

3. The Age of Incorrect Information: An Enabler of Semantics-Empowered Communication

- **Collaborators:** Paris Research Center, **Huawei Technologies**; TCL Chair on 5G, Laboratoire des Signaux et Systèmes, CentraleSupélec; University of Maryland
- **U.S. Funder:** National Science Foundation, Office of Naval Research
- **Details:** Research in communication technologies by Huawei, listed on the 1260 list due to military affiliations, and funded by U.S. organizations emphasizes the need for stringent oversight to prevent unauthorized technology transfer in the field of advanced digital communication and semantics.

4. Dense Affinity Matching for Few-Shot Segmentation

- **Collaborators:** Zhejiang University, **Huawei Technologies Ltd**, The University of Sheffield, State University of New York



- **U.S. Funder:** National Science Foundation, Air Force Office of Scientific Research
- **Details:** This project in image processing and machine learning involves direct collaboration with Huawei, flagged for its military ties. The involvement of U.S. military funding agencies complicates the scenario, spotlighting the challenges in segregating civilian from potential military applications in technological research.

5. An Excitatory Projection from the Basal Forebrain to the Ventral Tegmental Area That Underlies Anorexia-like Phenotypes

- **Collaborators:** McGovern Medical School, University of Texas; Baylor College of Medicine; Peking University School of Life Sciences; **PKU-IDG/McGovern Institute for Brain Research**
- **U.S. Funder:** U.S. Department of Defense, National Institutes of Health
- **Details:** This neuroscience research involves collaboration with Peking University's IDG/McGovern Institute. Funded by the U.S. Department of Defense and NIH, the study's connections to an institution involved in military-linked research activities highlight potential risks in biomedical research collaborations.

Analysis

These case studies demonstrate a pattern of sustained and diversified U.S.-China research collaborations involving entities with potential ties to the Chinese military. The involvement of U.S. funding, particularly from agencies with mandates to advance scientific knowledge while safeguarding national security, like the NSF and DoD, highlights the challenges in balancing international scientific collaboration with national security concerns.

The collaborations span across various scientific disciplines, indicating that the potential for sensitive technology and knowledge transfer is not confined to traditionally scrutinized fields like defense technology but extends into broader research areas. This widespread engagement necessitates a reevaluation of the mechanisms in place to regulate and monitor international research collaborations, ensuring they align with U.S. national security interests.

Conclusion

The case studies underscore the need for a robust and nuanced approach to managing U.S.-China research collaborations. While international cooperation in research can foster scientific advancement and innovation, the identified collaborations with Chinese military-affiliated entities call for enhanced due diligence and regulatory mechanisms. Strengthening the framework for international research collaboration, particularly with entities on the 1260 list, is imperative to safeguard against inadvertent contributions to foreign military capabilities.



Case Study: DOE 2023-2024 Collaborations with Seven Sons Institutions Case Study

The analysis of recent publications from 2023 and 2024 highlights ongoing collaborations between U.S. research entities, including those funded by the DOE, and Chinese institutions linked to the "Seven Sons of National Defence." These partnerships span a range of scientific disciplines, from energy storage and materials science to environmental engineering and space weather forecasting.

- 1. Lattice Dynamics and Heat Transport in Zeolitic Imidazolate Framework Glasses** (Journal of Applied Physics)
 - Collaborators: Aalborg University, Dalian University of Technology, Northwestern Polytechnical University, and Corning Incorporated
 - Funding: China Scholarship Council; the DOE's interest in advanced materials research implies indirect support or interest in such collaborative efforts, especially given the involvement of institutions like Corning Incorporated, known for its material science innovations.
- 2. Electron-Assisted Generation and Straight Movement of Skyrmion Bubble in Kagome TbMn₆Sn₆** (Advanced Materials)
 - Collaborators: Chinese Academy of Sciences, University of Chinese Academy of Sciences, Renmin University of China, and Beijing Institute of Technology
 - Funding: U.S. Department of Energy, highlighting direct financial contributions to research involving critical materials and magnetic phenomena, areas of strategic interest to both U.S. scientific advancements and national security.
- 3. Integrating Online Deliberation into Ecosystem Service Valuation** (Journal of Environmental Management)
 - Collaborators: Oak Ridge Institute for Science and Education, University College London, and Tongren University
 - Funding: U.S. Department of Energy and U.S. Department of Agriculture; this collaboration indicates DOE's investment in environmental and ecological research, extending to international partnerships that include Chinese educational institutions.
- 4. Corridor-Level Impacts of Battery-Electric Heavy-Duty Trucks and the Effects of Policy in the United States**
 - Collaborators: University of California, Berkeley; University of Canterbury; Lawrence Berkeley National Laboratory; Peking University; Beihang University
 - Funding: U.S. Department of State, Energy Biosciences Institute, Fulbright New Zealand, Office of Science, Vehicle Technologies Office



5. Outstanding Energy-Storage Density Together with Efficiency of above 90% via Local Structure Design

- Collaborators: University of Science and Technology Beijing; Nanjing University of Science and Technology; Oak Ridge National Laboratory
- Funding: National Natural Science Foundation of China, DOE's Office of Science

6. Robust Interfacial Effect in Multi-interface Environment through Hybrid Reconstruction Chemistry for Enhanced Energy Storage

- Collaborators: Northwestern Polytechnical University; Lawrence Berkeley National Laboratory; Nanjing University of Science and Technology
- Funding: National Natural Science Foundation of China, DOE's Office of Science

7. The Lyman- α forest catalog from the Dark Energy Spectroscopic Instrument Early Data Release

- Collaborators: Beihang University; Lawrence Berkeley National Laboratory; Tsinghua University
- Funding: National Science Foundation, U.S. Department of Energy

8. Protein-activated atomic layer deposition for robust crude-oil-repellent hierarchical nano-armored membranes

- Collaborators: Argonne National Laboratory; Harbin Institute of Technology; University of Chicago
- Funding: National Natural Science Foundation of China, the Natural Science Foundation of Heilongjiang Province for Distinguished Young Scholars, Heilongjiang Touyan Team, and Fundamental Research Funds from the Central Universities of Ministry of Education of China, China National Postdoctoral Program for Innovative Talents, China Postdoctoral Science Foundation

Analysis

The collaborations between DOE-funded U.S. research entities and Chinese institutions with military ties highlight a multifaceted relationship characterized by shared scientific objectives intertwined with broader national interests. These partnerships span across critical areas such as energy storage, environmental engineering, and advanced materials science, showcasing a deep integration of resources and expertise. However, the dual-use nature of many scientific advancements—where civilian research can be repurposed for military applications—poses significant challenges.

The intersection of U.S. scientific innovation and Chinese military-affiliated institutions raises strategic concerns, particularly regarding the potential for unintended technology transfer and



knowledge spillover that could enhance China’s military capabilities. This complexity is compounded by the geopolitical landscape, where the lines between civilian and military technological advancements are increasingly blurred. The collaborations, while fruitful in advancing scientific knowledge and addressing global challenges, necessitate a vigilant approach to safeguarding sensitive technologies and intellectual property.

Conclusion

The enduring nature of these collaborations between DOE-funded American research entities and China’s Seven Sons institutions calls for a sophisticated and dynamic approach to managing international research partnerships. While these collaborations can drive scientific breakthroughs and contribute to global knowledge, it is crucial to balance these benefits with national security considerations. Effective oversight mechanisms, transparent reporting structures, and rigorous vetting processes are essential to ensure that these partnerships do not compromise U.S. strategic interests.

Furthermore, the development of clear guidelines and frameworks for international collaborations, particularly with entities having military ties, is vital. These should aim to foster scientific innovation while preventing the inadvertent enhancement of foreign military capabilities. In this delicate balance, the goal should be to maintain robust scientific exchange and cooperation, ensuring that such endeavors serve peaceful and constructive purposes, aligning with long-term national and global security objectives.

Redefining U.S. Research Security: Addressing Persistent U.S.-China Collaborations with Robust Policies

The ongoing and systematic collaborations between U.S. research institutions and Chinese military-affiliated entities have illuminated significant vulnerabilities within the U.S. research security framework. Analysis from dedicated trackers has revealed not only the extensive interactions but also their deep integration within critical scientific fields, involving key U.S. funding agencies such as the Department of Energy, the National Institutes of Health, and various Department of Defense entities. These interactions highlight a troubling misalignment between the goals of fostering scientific innovation and ensuring national security, suggesting a possibly institutionalized engagement pattern with profound implications for national security.

The ineffectiveness of existing legislative and regulatory frameworks—such as the 1260 and 1286 lists and the U.S. Entity List—is evident, as these mechanisms have failed to adequately restrict interactions with potential military implications. Furthermore, financial entanglements complicate the landscape, with U.S. investments inadvertently supporting the capabilities of Chinese military-affiliated entities.



Strategic Recommendations:

1. **Establishment of New Research Security Guidelines:** Move beyond entity lists to implement comprehensive guidelines that proactively assess and manage the risks of international collaborations. This includes creating criteria for collaboration that consider the potential dual-use nature of research and the military affiliations of foreign entities.
2. **Creation of a National Research Security Center:** Develop a central hub to inform the research community about policy updates, best practices, and potential risks associated with international collaborations. This center would serve as a resource for institutions seeking guidance on compliance with national security protocols.
3. **Implementation of Defined Frameworks for Collaboration:** Replace broad guidance with specific frameworks that outline clear criteria and processes for evaluating and approving research collaborations. These frameworks should be detailed and tailored to address the unique challenges posed by the integration of foreign research entities with potential military ties.
4. **Enactment of Clear Policies and Laws:** Transition from non-binding guidance to enforceable laws that clearly define prohibited activities and the penalties for non-compliance. This would provide a legal backbone to research security policies, enhancing their enforceability and deterrent effect.
5. **Enhanced Transparency and Accountability:** Strengthen mechanisms to ensure transparency in international collaborations, requiring detailed disclosures about the nature of the research and the parties involved. Establish strict accountability measures for entities that fail to comply with U.S. research security policies.

By adopting these recommendations, the U.S. can create a more resilient and responsive research security framework capable of adapting to the evolving landscape of international research collaborations. This framework would not only protect the U.S.'s technological and scientific assets but also ensure that they contribute positively to the country's economic and security objectives without inadvertently enhancing the strategic capabilities of foreign military powers. The pressing need for a robust and transparent research security policy framework is undeniable, and addressing this need is essential for maintaining national security in a complex global research environment.

