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Threats to the U.S. Research Enterprise: China's Talent Recruitment Plans

STAFF REPORT

PERMANENT SUBCOMMITTEE ON INVESTIGATIONS

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Threats to the U.S. Research Enterprise: China's Talent Recruitment Plans

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I. EXECUTIVE SUMMARY

American taxpayers contribute over $150 billion each year to scientific research in the United States. Through entities like the National Science Foundation, the National Institutes of Health and the Department of Energy's National Labs, taxpayers fund innovations that contribute to our national security and profoundly change the way we live. America built this successful research enterprise on certain values: reciprocity, integrity, merit-based competition, and transparency. These values foster a free exchange of ideas, encourage the most rigorous research results to flourish, and ensure that researchers receive the benefit of their intellectual capital. The open nature of research in America is manifest; we encourage our researchers and scientists to "stand on the shoulders of giants." In turn, America attracts the best and brightest. Foreign researchers and scholars travel to the United States just to participate in the advancement of science and technology.

Some countries, however, seek to exploit America's openness to advance their own national interests. The most aggressive of them has been China. China primarily does this through its more than 200 talent recruitment plans—the most prominent of which is the Thousand Talents Plan. Launched in 2008, the Thousand Talents Plan incentivizes individuals engaged in research and development in the United States to transmit the knowledge and research they gain here to China in exchange for salaries, research funding, lab space, and other incentives. China unfairly uses the American research and expertise it obtains for its own economic and military gain. In recent years, federal agencies have discovered talent recruitment plan members who downloaded sensitive electronic research files before leaving to return to China, submitted false information when applying for grant funds, and willfully failed to disclose receiving money from the Chinese government on U.S. grant applications.

This report exposes how American taxpayer funded research has contributed to China's global rise over the last 20 years. During that time, China openly recruited U.S.-based researchers, scientists, and experts in the public and private sector to provide China with knowledge and intellectual capital in exchange for monetary gain and other benefits. At the same time, the federal government's grant-making agencies did little to prevent this from happening, nor did the FBI and other federal agencies develop a coordinated response to mitigate the threat. These failures continue to undermine the integrity of the American research enterprise and endanger our national security.

* * * *

China aims to be the world's leader in science and technology ("S&T") by 2050. To achieve its S&T goals, China has implemented a whole-of-government campaign to recruit talent and foreign experts from around the world. China's campaign is well financed. According to an analysis by the FBI, China has pledged

to spend 15 percent of its gross domestic product on improving human resources from 2008 to 2020. That amounts to an investment of more than $2 trillion. For the Chinese government, international scientific collaboration is not about advancing science, it is to advance China's national security interests.

China's Talent Recruitment Plans. Foreign trained scientists and experts provide China access to know-how, expertise, and foreign technology—all necessary for China's economic development and military modernization. While China has created and manages more than 200 talent recruitment plans, this report focuses on the Thousand Talents Plan. China designed the Thousand Talents Plan to recruit 2,000 high-quality overseas talents, including scientists, engineers, entrepreneurs, and finance experts. The plan provides salaries, research funding, lab space, and other incentives to lure experts into researching for China. According to one report, by 2017, China dramatically exceeded its recruitment goal, having recruited more than 7,000 "high-end professionals," including several Nobel laureates.

The Chinese Communist Party (the "Party") plays a lead role in administering the Thousand Talents Plan. The Party recognized the need to control overseas talent recruitment efforts to ensure the program served its priorities. The Party created a "complex system of administration and oversight to coordinate its recruitment efforts." The Party is able to "exert exceptional" levels of control over the Thousand Talents Plan and other talent recruitment plans. To ensure control, Thousand Talents Plan members sign legally binding contracts.

Contracting with the Chinese Government. Thousand Talent Plan members sign legally binding contracts with Chinese institutions, like universities and research institutions. The contracts can incentivize members to lie on grant applications to U.S. grant-making agencies, set up "shadow labs" in China working on research identical to their U.S. research, and, in some cases, transfer U.S. scientists' hard-earned intellectual capital. Some of the contracts also contain nondisclosure provisions and require the Chinese government's permission to terminate the agreement, giving the Chinese government significant leverage over talent recruitment plan members. These provisions are in stark contrast to the U.S. research community's basic norms, values, and principles. Annexed to this report are Chinese talent recruitment plan contracts that illustrate exactly what talent recruitment plan members agree to when they become members.

Case Examples. This report includes selected examples from U.S. grant-making agencies involving Chinese talent recruitment plan members. For example, talent recruitment plan members removed 30,000 electronic files before leaving for China, submitted false information when applying for grant funds, filed a patent based on U.S. government-funded research, and hired other Chinese talent recruitment plan members to work on U.S. national security topics. One Chinese talent recruitment plan member stole proprietary defense information related to U.S. military jet engines, and others have contractually agreed to give Chinese institutions intellectual property rights that overlapped with research conducted at

U.S. institutions. Annexed to this report are case examples provided by several federal agencies.

Talent Plans Go Underground. Following public testimony and U.S. government scrutiny, the Chinese government started deleting online references to the Thousand Talents Plan in October 2018. For example, China deleted news articles featuring Thousand Talents Plan members, Chinese universities stopped promoting the program on their websites, and the official Thousand Talent Plan site deleted the names of scientists participating in the program. The Chinese government has also instructed talent recruitment organizations that "the phrase 'Thousand Talents Plan' should not appear in written circulars/notices." Despite this censorship, China's talent recruitment plans continue.

* * * *

The Subcommittee reviewed seven federal agencies' efforts to mitigate the threat that Chinese talent recruitment plans pose to the U.S. research enterprise, including U.S.-funded research. While China has a strategic plan to acquire knowledge and intellectual property from researchers, scientists, and the U.S. private sector, the U.S. government does not have a comprehensive strategy to combat this threat.

The National Science Foundation ("NSF") funds approximately 27 percent of all federally funded basic research at U.S. colleges and universities, leading to 12,000 annual awards to more than 40,000 recipients. In light of Chinese talent recruitment plan members' misappropriation of NSF funding, NSF has taken several steps—albeit insufficient ones—to mitigate this risk. As of July 2019, NSF policy prohibits federal employees from participating in foreign talent recruitment plans, but the policy does not apply to NSF-funded researchers. These NSF-funded researchers are the individuals mostly likely to be members of foreign talent recruitment plans. The NSF also does not vet grantees before awarding them funding. Instead, NSF relies on sponsoring institutions to vet and conduct due diligence on potential grantees. NSF has no dedicated staff to ensure compliance with NSF grant terms.

The National Institutes of Health ("NIH") invests over $31 billion annually in medical research through 50,000 competitive grants to more than 300,000 researchers. NIH has recently found instances of talent recruitment plan members committing grant fraud and transferring intellectual capital and property. It also found possible malign foreign influence in its peer review process. NIH has attempted to address these issues, but significant gaps in NIH's grant integrity process remain. Much like the NSF, NIH relies on institutions to solicit and review disclosures of financial conflicts by its employees participating in NIH-funded research. Unlike the NSF, the NIH has a Division of Grants Compliance and Oversight that conducts site visits at institutions to advance compliance and provide oversight. The number of oversight visits to institutions has fallen from 28

in 2012 to only three last year. NIH officials remain concerned that China's talent recruitment plans are more pervasive than what they have uncovered to date.

The Department of Energy ("Energy") is the largest federal sponsor of basic research in the physical sciences. Energy awards $6.6 billion in grants and contracts annually that support over 25,000 researchers at over 300 institutions and National Labs. Energy's research funding and prominent role in advanced research and development make it particularly attractive to the Chinese government. Energy has recently identified Thousand Talent Plan members working on sensitive research at National Labs and Thousand Talent Plan members with security clearances. Energy has been slow to address vulnerabilities surrounding the openness of its National Labs and its scientific collaboration with the 35,000 foreign nationals who conduct research at the National Labs each year. For example, in December 2018, Energy began requiring all foreign nationals' curricula vitae be included in Foreign Visits and Assignments requests to Energy facilities as well as in the Foreign Access Central Tracking System database. Despite 30-year old federal regulations prohibiting U.S. government employees from receiving foreign compensation, Energy clarified only this year that employees and contractors are prohibited from participating in foreign talent recruitment plans.

The State Department ("State") issues nonimmigrant visas ("NIV") to foreign nationals seeking to visit the United States to study, work, or conduct research. It is on the front line in the U.S. government efforts to protect against intellectual property theft and illicit technology transfers. While State has a process to review NIV applicants attempting to violate export control laws, State's authority to deny visas is limited. State's review process leads to less than five percent of reviewed applicants being denied a visa. Nor does State systematically track visa applicants linked to China's talent recruitment plans, even though some applicants linked to Chinese talent recruitment plans have engaged in intellectual property theft.

The Department of Commerce's ("Commerce") Bureau of Industry and Security conducts assessments of defense-related technologies and "administers export controls of dual-use items which have both military and commercial applications." Commerce is also responsible for issuing deemed export licenses to firms that employ or host foreign nationals seeking to work on controlled technology projects. The Subcommittee found that Commerce rarely denies an application for a deemed export license. Commerce's denial rate in 2018 for deemed export licenses was only 1.1 percent. Commerce officials told the Subcommittee that it has not revoked a deemed export license in the past five years, despite the recent listing of new entities on Commerce's Entity List that require additional scrutiny. Commerce issued deemed export licenses to Chinese nationals who participated in talent recruitment plans, had ties to Huawei, and were affiliated with other concerning entities.

The Federal Bureau of Investigation ("FBI") protects the United States from foreign intelligence operations and espionage. The FBI, however, has recognized that it was "was slow to recognize the threat of the Chinese Talent Plans." It was not until mid-2018, however, that FBI headquarters in Washington, D.C. took control of the FBI's response to the threat. Moreover, after collecting information on suspected talent plan participants, the FBI waited nearly two years to coordinate and provide those details to federal grant-making agencies. This delay likely prevented the federal government from identifying talent recruitment plan members who engaged in illegal or unethical grant practices or the unauthorized transfer of technology. The FBI has yet to develop an effective, nationwide strategy to warn universities, government laboratories, and the broader public of the risks of foreign talent recruitment plans.

The White House Office of Science and Technology Policy ("OSTP") has formal authority to convene all research funding agencies on matters of policy through the National Science and Technology Council. OSTP formally established a joint committee in May 2019 to begin a policy review to coordinate efforts to adopt best practices across the federal government to mitigate foreign exploitation of the U.S. open innovation system. This review is intended to develop a longer-term strategy for balancing engagement and risk without stifling innovation. The U.S. government's vast and varied array of grant-making agencies complicates this policy review.

* * * *

As American policy makers navigate an increasingly complicated relationship with China, it is not in our national security interest to fund China's economic and military development with taxpayer dollars. China's talent recruitment plans, including the Thousand Talents Plan, undermine the integrity of our research enterprise and harm our economic and national security interests.

U.S. universities and U.S.-based researchers must take responsibility in addressing this threat. If U.S. universities can vet employees for scientific rigor or allegations of plagiarism, they also can vet for financial conflicts of interests and foreign sources of funding. If U.S. researchers can assess potential collaborators' research aptitude and their past publications, they should know their collaborators' affiliations and their research intentions.

The U.S. academic community is in the crosshairs of not only foreign competitors contending for the best and brightest, but also of foreign nation states that seek to transfer valuable intellectual capital and steal intellectual property. As the academic community looks to the federal government for guidance and direction on mitigating threats, the U.S. government must provide effective, useful, timely, and specific threat information and tools to counter the threats.

Based on this investigation, the Subcommittee finds that the federal government has failed to stop China from acquiring knowledge and intellectual

property from U.S. taxpayer funded researchers and scientists. Nor do federal agencies have a comprehensive strategy to combat this threat.

The Subcommittee's Investigations

This investigation continues the Subcommittee's examination of national security issues involving China. During the 115th Congress, the Subcommittee highlighted China's leading role in the opioid crisis by investigating how illicit opioids like fentanyl are shipped from China to the United States through international mail. The Subcommittee held an initial oversight hearing on May 25, 2017, titled *Stopping the Shipment of Synthetic Opioids: Oversight of U.S. Strategy to Combat Illicit Drugs*. On January 25, 2018, the Subcommittee held a second hearing and issued a bipartisan report titled *Combatting the Opioid Crisis: Exploiting Vulnerabilities in International Mail*. On October 24, 2018, the President signed into law the Synthetic Trafficking & Overdose Prevention Act ("STOP Act"), legislation designed to assist law enforcement in identifying and stopping fentanyl being shipped into the United States.

In the current 116th Congress, on February 28, 2019, the Subcommittee held a hearing and issued a bipartisan report titled *China's Impact on the U.S. Education System*. The Subcommittee examined China's propaganda efforts at U.S. colleges and universities through Confucius Institutes. The Chinese government funds Confucius Institutes and hires Chinese teachers to teach language and culture classes to students and non-student community members. Confucius Institute funding comes with strings that can compromise academic freedom. The Chinese government approves all teachers, events, and speakers. Some U.S. schools contractually agree that both Chinese and U.S. laws will apply. The Chinese teachers sign contracts with the Chinese government pledging they will not damage Chinese national interests. The Subcommittee found that these limitations export China's censorship of political debate to the United States and prevent the academic community from discussing topics that the Chinese government believes are politically sensitive.

Next, the Subcommittee turned to China's talent recruitment plans. The Subcommittee focused specifically on China's most prominent plan, the Thousand Talents Plan. The Subcommittee reviewed documents, received briefings, or interviewed individuals from the following agencies: Office of Director of National Intelligence; Central Intelligence Agency; Department of State; Department of Commerce; Department of Energy; Federal Bureau of Investigation; Department of Health and Human Services; National Science Foundation; and the White House Office of Science and Technology Policy. The Subcommittee also met with members of the academic community, including the American Public and Land Grant Universities, Association of American Universities, the American Council on Education, a Chinese American advocacy group, and the JASON independent scientific advisory group.

II. FINDINGS OF FACT AND RECOMMENDATIONS

Findings of Fact

1) **China seeks to become a science and technology ("S&T") world leader by 2050.** The Chinese government elevated the importance of S&T as a key national strategic goal in 2006. China seeks to become an "innovative country" by 2020 and an S&T world leader by 2050. To accomplish its goals, China systematically targets critical technologies and advanced S&T capabilities as a way to enhance national strength and achieve Chairman Xi Jinping's goal of "national rejuvenation."

2) **China prioritizes military-civilian fusion as a national goal.** In 2016, Chairman Xi designated a policy known as Military-Civilian Fusion ("MCF") as a national strategy. MCF seeks to pool talent and financial resources to jointly develop technologies, conduct research, and attract talent that mutually reinforces both the military and civilian sectors. MCF blurs the lines between China's defense and civilian sectors, enabling China to continue international scientific collaboration while obfuscating that this collaboration also assists in modernizing China's military.

3) **China aggressively recruits overseas researchers and scientists.** China has a coordinated global campaign to recruit overseas S&T experts as part of its S&T strategy. These experts provide access to know-how, expertise, and foreign technology—all necessary for China's economic development and military modernization. Chinese recruitment efforts also have begun to reverse China's brain drain, as more Chinese students than before are returning to China after studying abroad.

4) **The *Thousand Talents Plan* ("TTP") is China's most prominent talent recruitment plan.** Launched in 2008 and controlled by the Chinese Communist Party, the TTP recruits thousands of high-quality overseas talents. As of 2017, China reportedly has recruited 7,000 researchers and scientists. The TTP targets U.S.-based researchers and scientists, regardless of ethnicity or citizenship, who focus on or have access to cutting-edge research and technology. The TTP is just one of over 200 Chinese talent recruitment plans over which the Chinese Communist Party is able to "exert exceptional" levels of control. In response to U.S. government scrutiny, China has attempted to delete online references to its talent recruitment plans and reportedly instructed Chinese institutions on how to avoid additional U.S. scrutiny.

5) **TTP employment contracts violate U.S. research values.** TTP members sign legally binding contracts with Chinese institutions that contain provisions that violate U.S. research values, including non-disclosure provisions related to their research and employment with Chinese institutions. The contracts require TTP members to undermine fundamental U.S. scientific norms of transparency, reciprocity, merit-based competition, and integrity. Fundamentally, these contracts incentivize TTP members to put China's interests ahead of U.S. institutions.

6) **Chinese talent plans target unrestricted, basic research.** China seeks access to non-public fundamental research to accelerate its technological capabilities at the U.S. taxpayer's expense. The U.S. government may restrict some research for proprietary or national security reasons but as fundamental research is generally designed to be openly shared, federal law enforcement agencies have limited means to thwart China's extralegal activities.

7) **TTP members have willfully failed to disclose their TTP membership.** Some TTP members willfully failed to disclose their affiliation with China's talent recruitment plans to U.S. institutions and U.S. grant-making agencies. In some cases, TTP members received both U.S. grants and Chinese grants for similar research, established "shadow labs" in China to conduct parallel research, and stole intellectual capital and property. U.S. government agencies also discovered that some TTP members used their access to research information to provide their Chinese employer with important information on early stage research.

8) **Federal agencies are not prepared to prevent China from transferring taxpayer funded research and stealing intellectual property.** The U.S. government was slow to address the threat of China's talent recruitment plans, leading to U.S. government grant dollars and private sector technologies being repurposed to support China's economic and military goals. Though some federal agencies have begun to take action, the federal government lacks an effective interagency strategy and continues to have shortfalls in its processes to mitigate the threat that Chinese talent recruitment plans pose.

9) **Federal grant-making agencies lack standards and coordination.** U.S. grant-making agencies, such as the National Science Foundation ("NSF") and the National Institutes of Health ("NIH"), each require grant applicants to use different forms and processes to apply for federally funded research grants. This increases administrative burdens on researchers applying for grants from multiple federal agencies. It also complicates

effective grant oversight of the more than $150 billion in U.S. funding awarded annually for research and development.

10) **U.S. grant-making agencies' policies on foreign talent recruitment plans differ.** For example, the Department of Energy's new policy effectively bans both employee and contractor participation in foreign talent recruitment plans. The NSF's new policy, however, only applies to NSF employees, but not researchers. These differences can complicate the research community's understanding of the scope and scale of the problem.

11) **The NSF does not have a compliance office to perform grant oversight functions.** Instead, the NSF relies on the institutions submitting grant applications and the NSF Inspector General to conduct due diligence, vetting, and oversight. The NSF's policy on participation in foreign talent recruitment plans does not extend to the more than 40,000 researchers and scientists that receive U.S. funding for research and development.

12) **The NIH awards over $31 billion annually in medical research in 50,000 competitive grants to more than 300,000 researchers.** The NIH has not issued new policies addressing talent recruitment programs. Instead, it relies on existing policies regarding conflict of interest, conflict of commitment, and disclosure of outside support. The NIH is conducting additional oversight of potential links between federal funding and foreign talent recruitment plans. As part of that process, it identified at least 75 individuals potentially linked to foreign talent recruitment plans that also served as peer reviewers.

13) **The Department of Energy ("Energy") is the largest federal sponsor of basic research in the physical sciences, funding $6.6 billion in grants and contracts that support over 25,000 researchers at over 300 institutions and National Labs.** Energy's research funding and prominent role in advanced research and development make it particularly attractive to the Chinese government. Despite 30-year old federal regulations prohibiting U.S. government employees from receiving foreign compensation that conflicts with their official duties, Energy clarified only this year that employees and contractors are prohibited from participating in foreign talent plans.

14) **The Commerce Department ("Commerce") granted deemed export licenses to Chinese nationals associated with talent recruitment plans, Chinese military affiliated universities, and other entities on Commerce's entity list.** The entity list includes individuals and entities "who have engaged in activities that could result in an increased risk of the diversion of exported, re-exported, and transferred items to weapons of mass

destruction programs." The list also includes "activities contrary to U.S. national security and/or foreign policy interests." Commerce is responsible for issuing deemed export licenses to U.S. firms that employ or host foreign nationals seeking to work on controlled technology projects. Commerce rarely denies deemed export license applications, denying only 1.3 percent in 2018.

15) **The FBI recognized that it and other federal agencies were "slow to recognize the threat of the Chinese talent [recruitment] plans" until recently.** Despite the Chinese government publicly announcing in 2008 its intent to recruit overseas researchers with access to advanced research and technology, FBI's headquarters in Washington D.C. did not take control of the response to the threat until mid-2018. The FBI took nearly two years to coordinate the dissemination of information identifying potential talent recruitment plan participants to federal grant-making agencies. The FBI has yet to develop an effective, nationwide strategy to warn universities, government laboratories, and the broader public of the risks of foreign talent recruitment plans.

16) **The State Department is on the frontline in the U.S. government effort to protect against intellectual property theft and illicit technology transfers.** While State has a process to screen for non-immigrant visa applicants attempting to steal sensitive technologies or intellectual property, State's authority to deny visas is limited. This results in a denial rate of less than five percent of all visa applicants reviewed. State also does not make available visa applicant files and supporting documentation to U.S. law enforcement in easily accessible formats to assist national security investigations.

17) **The White House's OSTP launched an effort in May 2019 to coordinate interagency work related to improving the safety, integrity, and productivity of research settings.** Currently, federal grant-making agencies' policies and processes are not standardized or uniform. These differences complicate the grant process for applicants, stifle U.S. law enforcement's ability to investigate grant-related crimes, and frustrate the federal government's ability to comprehensively understand grant spending.

Recommendations

1) **Federal agencies must develop a comprehensive strategy to combat both illegal and extralegal transfers of U.S. intellectual capital.** China uses illegal and extralegal mechanisms to acquire U.S. intellectual property, research, and sensitive technologies. Federal agencies should work with the U.S. research community to balance the need for international collaboration while securing U.S.-government funded research.

2) **Federal agencies should declassify and disseminate more information on foreign talent recruitment plans.** Additional information from the U.S. intelligence community, federal law enforcement, and federal grant-making agencies will help define the scope and scale of the problem so that U.S. research institutions can effectively mitigate risks associated with foreign talent recruitment plans.

3) **While taking steps to better protect research and intellectual property, Congress and the Executive Branch should reaffirm the critical importance of foreign students and researchers in the United States and the importance of international research collaboration.** Congress should provide stable and sustained funding for scientific research sponsored by federal agencies and support programs aimed at keeping scientists and their work in the United States.

4) **Federal law enforcement agencies and members of the intelligence community must better tailor engagement with the U.S. research community to ensure that threat information is accessible and actionable.** The FBI should develop a cohesive strategy to ensure outreach by its headquarters and 56 field offices is effective, consistent, and timely.

5) **U.S. grant-making agencies should harmonize the grant proposal process and standardize reporting requirements for disclosing <u>all</u> foreign conflicts of interest, conflicts of commitment, and all outside and foreign support.** Standardization and harmonization will reduce the administrative burden on research institutions applying for federal research funding and promote data sharing across the U.S. research enterprise. A government-wide standard should require documents be machine readable to encourage automation to assist with identifying grant fraud.

6) **The U.S. research community should establish a "Know Your Collaborator" culture.** U.S. research institutions should establish best practices in monitoring scientific and research collaboration with foreign nationals and determining whether such collaboration adheres to U.S. scientific research values, especially in the area of research integrity. U.S.

research institutions also should investigate and adjudicate allegations of failures to disclose conflicts of interest, commitment, or other outside support.

7) **U.S. grant-making agencies should implement a compliance and auditing program to ensure grantees accurately report conflicts of interest and conflicts of commitment.** Congress should provide adequate resources to support agency compliance programs and inspectors general.

8) **U.S. grant-making agencies conducting or funding U.S. government research should share information regarding grant recipients with access to U.S. government funding and research facilities.** This information should be made available as appropriate to foster scientific collaboration and used by funding agencies to assess the qualifications of researchers.

9) **The Commerce Department should ensure its interagency process for identifying emerging and foundational technologies that are essential to the national security of the United States includes a review of fundamental research.** As appropriate and necessary, the Commerce Department should add foundational technologies and areas of fundamental research to its export control lists.

10) **The State Department should identify any additional authorities needed to deny non-immigrant visas for individuals suspected of engaging in illegal or extralegal transfers of technology, intellectual property, and fundamental research.** State also should include additional security related questions designed to detect foreign government sponsorship of research conducted in the United States and whether the visa applicant intends to legally or illegally transfer research and technology back to their home country on visa applications. State should automate security reviews of visa applicants for illicit transfers of technology, intellectual property, and fundamental research.

11) **The administration should consider updating NSDD-189 and implement additional, limited restrictions on U.S. government funded fundamental research.** NSDD-189 was issued in 1985 and established the national policy that products of fundamental research are to remain unrestricted to the maximum extent possible. Federal agencies must not only combat illegal transfers of controlled or classified research, but assess whether openly sharing some types of fundamental research is in the nation's interest.

12) **Federal law enforcement and other relevant agencies should identify U.S.-based entities that serve as recruitment networks, platforms, or foreign government proxies that facilitate or broker in state-sponsored talent recruitment.** Additional investigations and publications are needed to fully understand the impact of foreign talent recruitment efforts in the United States. Federal law enforcement and other relevant agencies should examine the extent of foreign talent recruitment activity in the private sector for foreign talent recruitment-related programs, including venture capital contests and entrepreneurial programs.

13) **U.S. grant-making agencies should work with research institutions to ensure they have the necessary cybersecurity practices in place to reduce the risk of research data misappropriation.** Universities, research institutions, and other recipients of federal research funding should periodically demonstrate that they are adhering to cybersecurity best practices.

14) **Grant-making agencies should not award U.S. funding to participants of foreign talent recruitment programs absent full disclosure of the terms and conditions of membership in any talent recruitment program.**

III. BACKGROUND

This section discusses China's goal to be the leader in science and technology ("S&T") by 2050. To achieve that goal, China is executing a coordinated global campaign to recruit S&T experts and foreign talent. These experts provide access to know-how, expertise, and foreign technology—all necessary for China's economic development and military modernization. While the Chinese government manages more than 200 talent recruitment plans, this section discusses the most prominent plan—the Thousand Talents Plan—and details the plan's centrally managed structure and contracts. Finally, this section highlights recent congressional testimony by U.S. intelligence and law enforcement officials concerning the threats posed by foreign talent recruitment plans.

A. China's Goal to be the Science and Technology Leader by 2050

In 2006, the Chinese government's State Council released the National Medium and Long-Term Program for Science and Technology Development ("MLP"), elevating the importance of S&T development as a key Chinese strategic goal.[1] First commissioned by the 16th National Congress of the Communist Party of China ("CPC") in 2002, Chinese leadership fully endorsed the MLP during the 17th Party Congress in October 2007.[2] Former Chinese Chairman Hu Jintao remarked in his 17th Party Congress address that China would implement the MLP to make China an innovative country and enhance national strength.[3] China aimed to become an "innovation-oriented country" by 2020 and an S&T world leader by 2050.[4]

At that time, China's goals under the MLP were ambitious. China was known more as the workshop of the world than as a source of innovative research and technology. In 2007, for example, China filed only a little over 245,000 patents—roughly half the number of patents filed in the United States.[5] China also had a weak domestic base for conducting innovative research and developing cutting-edge technologies. Only 14 Chinese universities were among the top 500

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[1] *China's Program for Sci. and Tech. Modernization: Implications for American Competitiveness*, U.S.–CHINA ECON. AND SECURITY REV. COMMISSION, 17 (Jan. 2011), https://www.uscc.gov/sites/default/files/Research/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf [*hereinafter* SECURITY COMMISSION REPORT (Jan. 2011)].

[2] *Promoting Sound and Rapid Development of the National Economy*, CHINA DAILY (Oct. 24, 2007), http://www.chinadaily.com.cn/china/2007-10/24/content_6204564_6.htm.

[3] *Id.*

[4] JAMES MCGREGOR, U.S. CHAMBER OF COMMERCE, CHINA'S DRIVE FOR 'INDIGENOUS INNOVATION': A WEB OF INDUS. POLICIES, 6 (2010), https://www.uschamber.com/sites/default/files/documents/files/100728chinareport_0_0.pdf.

[5] *WIPO IP Statistics Data Center*, WORLD INTELLECTUAL PROPERTY ORG., https://www3.wipo.int/ipstats.

universities in the world.[6] And China's highest ranked university, Tsinghua University, failed to crack the top 150.[7] Compounding these problems, some of China's best talent and experts were overseas. More than 1.2 million Chinese nationals left the country to study and conduct research between 1978 and 2007, but only a quarter had ever returned to China.[8]

1. From Brain Drain to Brain Gain

Though the Chinese government had initiated several plans designed to recruit and retain S&T talent in the 1990s, it mainly issued awards to individuals in China with limited foreign experience.[9] As such, those plans failed to attract the caliber of talent the Chinese government sought in fields deemed critical to strengthening China.[10] For a short period, the Chinese government also attempted to retain talent by imposing a "service period" on students pursuing overseas studies.[11] Deng Xiaoping, the former paramount leader of China, however, ended this policy after 1992, recognizing that China would be better served even if it succeeded in convincing only half of overseas Chinese students to return.[12]

By the early 2000s, China's strategy to recruit S&T talent underwent a paradigm shift. As former CPC General Secretary Zhao Ziyang suggested years earlier, China was not losing brainpower, but rather it was storing its talent overseas to tap later.[13] Chinese leaders, therefore, determined that it could be more

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[6] *Academic Ranking of World Universities 2007*, ACADEMIC RANKING OF WORLD U., http://www.shanghairanking.com/World-University-Rankings-2007/China.html.
[7] *Id.*
[8] In 2007, for example, 80,000 Chinese nationals were studying in the United States. Approximately 66 percent of them were pursuing graduate studies, and approximately another 10 percent were putting their U.S. acquired skills and knowledge to use under the Optional Practical Training. *See Academic Level and Place of Origin: Previous Years*, INSTITUTE OF INT'L EDUC., https://www.iie.org/Research-and-Insights/Open-Doors/Data/International-Students/Places-of-Origin/Academic-Level-and-Place-of-Origin/2007-08; Cong Cao, *China's Brain Drain at the High End: Why Government Policies Have Failed to Attract First-Rate Academics to Return*, 4 ASIAN POPULATION STUD. 331 (2008) (https://www.researchgate.net/publication/240534512).
[9] Cong Cao, U. OF NOTTINGHAM, NINGBO. CHINA, *China's Approaches to Attract and Nurture Young Biomedical Researchers*, 6 (2018), http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_184821.pdf.
[10] *Id.* at 8.
[11] *See* Cong Cao, *China's Brain Drain at the High End: Why Government Policies Have Failed to Attract First-Rate Academics to Return*, 4 ASIAN POPULATION STUD. 331, 333 (2008), https://www.researchgate.net/publication/240534512. (Undergraduate students and graduate students were required to work in China for 5 years and 2 years respectively before pursuing overseas studies).
[12] *Id.*
[13] *Id.*; David Zweig & Stanley Rosen, *How China Trained a New Generation Abroad*, SCIDEVNET (May 22, 2003), https://www.scidev.net/global/migration/feature/how-china-trained-a-new-generation-abroad.html.

efficient to allow its nationals to learn how to conduct research and develop cutting-edge technologies overseas and later find ways for these nationals to assist China.[14]

The CPC soon changed its approach towards overseas Chinese nationals, emphasizing their role in China's development.[15] Chinese officials even reportedly changed a political slogan referring to overseas Chinese nationals from "returning and serving the country" (回国服务) to simply "serve the country" (为国服务).[16] Chinese officials began actively encouraging overseas Chinese nationals to "serve the country overseas" (海外人才为国服务) through investment, giving lectures, starting businesses, and transferring technology back to China.[17]

The MLP reflected this dramatic shift, noting the Chinese government must "attract high caliber talents from overseas" with a priority on areas where China is particularly weak.[18] The MLP called for the government to formulate plans to attract overseas talents to return to China to "serve the country," establish talent recruitment organizations taking into account the "characteristics" of overseas talents, increase financial incentives for overseas talents to return to China, and "establish policy mechanisms for overseas talents to serve the country."[19] According to the MLP, such "policy mechanisms" would focus on getting overseas talents and their teams to return to China to work.[20]

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[14] *Id.*

[15] THE STATE COUNCIL THE PEOPLE'S REPUBLIC OF CHINA, *CPC Central Committee and the State Council Decision on Further Strengthening Talent Work* (Dec. 26, 20103), http://www.gov.cn/test/2005-07/01/content_11547.htm.

[16] Cong Cao, *China's Brain Drain at the High End: Why Government Policies Have Failed to Attract First-Rate Academics to Return*, 4 ASIAN POPULATION STUD. 331 (2008), https://www.researchgate.net/publication/240534512.

[17] *Overseas Talents for the Country's Service Plan*, CHINAQW, http://www.chinaqw.com/node2/node2796/node2880/node2920/node2989/userobject6ai241511.html. *See also* David Zweig & Stanley Rosen, *How China Trained a New Generation Abroad*, SCIDEVNET (May 22, 2003), https://www.scidev.net/global/migration/feature/how-china-trained-a-new-generation-abroad.html; He Finland, *"Overseas Talents for the Country's Service Plan" Will Start Next Year*, MOFCOM (Sept. 8, 2019), http://www.mofcom.gov.cn/article/bi/200409/20040900276042.shtml.

[18] THE STATE COUNCIL THE PEOPLE'S REPUBLIC OF CHINA, *The National Medium-and Long-Term Program for Science and Technology Development (2006-2020): An Outline*, https://www.itu.int/en/ITUD/Cybersecurity/Documents/National_Strategies_Repository/China_2006.pdf [*hereinafter* MLP S&T STRATEGY]. *See also* James McGregor, *China's Drive for 'Indigenous Innovation': A Web of Industrial Policies* U.S. CHAMBER OF COMMERCE (2010), https://www.uschamber.com/sites/default/files/documents/files/100728chinareport_0_0.pdf. *See also* CONG CAO, U. OF NOTTINGHAM, NINGBO. CHINA, *China's Approaches to Attract and Nurture Young Biomedical Researchers* (2018), http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_184821.pdf.

[19] Xinhua News Agency, *Ten, The Construction of Talent Team,* CHINESE GOVERNMENT PORTAL (Feb. 9, 2006), http://www.gov.cn/jrzg/2006-02/09/content_183787_10.htm. *See* MLP S&T STRATEGY.

[20] *See* MLP S&T STRATEGY.

2. China's Systematic Targeting of Critical Technologies

For the Chinese government, the main purpose of international scientific collaboration is to advance China's national security interests, not solely to advance science. According to China's Ministry of Science and Technology[21] ("MOST"), China's participation in international S&T cooperation projects strives for a "win-win and mutually beneficial outcome," but prioritizes Chinese interests under the premise of safeguarding national security.[22] MOST formulates and facilitates the "implementation of strategies and policies for innovation-driven development, and plans and policies for S&T development and the attraction of foreign talent."[23] MOST also "coordinates the development of the national innovation system and the reform of the national S&T management system, and works with relevant government departments to improve incentive mechanisms for technological innovation."[24]

MOST is responsible for identifying and supporting international S&T cooperation projects in selected target areas.[25] These target areas are publicly well documented. MOST outlined more than a dozen major S&T projects in the MLP.[26] These "National Major S&T Projects" identify China's top priorities and focus on strategic technologies and engineering projects with the goal of achieving significant technological advances.[27]

1. Core Electronic Devices, High-End Chips, and Basic Software Parts
2. Large-Scale Integrated Circuit Manufacturing
3. Next Generation Broadband Wireless Mobile Communications
4. High-End Machine Tools and Manufacturing Equipment
5. Large-Scale Oil and Gas Fields Development
6. Large-Scale Advanced Pressurized Water Reactor
7. Water Pollution and Control
8. Genetically Modified Organisms
9. Major New Drug Development
10. Major Infectious Disease Prevention and Cure

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[21] SECURITY COMMISSION REPORT, 22 (Jan. 2011) (MOST "plays a leading role in developing national science policy and in designing and implementing many of the national funding programs.").
[22] *Key International S&T Cooperation Projects,* MINISTRY OF SCI. AND TECH., http://www.most.gov.cn/eng/cooperation/200610/t20061008_36195.htm.
[23] *Missions of the Ministry of Science and Technology*, MINISTRY OF SCI. AND TECH., http://www.most.gov.cn/eng/organization.
[24] *Id*.
[25] *Key International S&T Cooperation Projects,* MINISTRY OF SCI. AND TECH., http://www.most.gov.cn/eng/cooperation/200610/t20061008_36195.htm.
[26] *Id*.
[27] JAMES MCGREGOR, U.S. CHAMBER OF COMMERCE, CHINA'S DRIVE FOR 'INDIGENOUS INNOVATION': A WEB OF INDUS. POLICIES, 40–42 (2010), https://www.uschamber.com/sites/default/files/documents/files/100728chinareport_0_0.pdf.

11. Large-Scale Airplanes
12. High Resolution Earth Observation Technology
13. Manned Spaceflight

China has additional blueprints aimed at transforming the country into a global S&T leader, including the "Made in China 2025 ("MIC 2025") plan.[28] According to a U.S. Chamber of Commerce report on MIC 2025's goals, the program targets ten strategic industries—including next-generation information technology, aviation, rail, new energy vehicles, and agricultural machinery—that are critical to China's economic competitiveness and high-tech growth.[29] MIC 2025 "appears to provide preferential access to capital to domestic companies in order to promote their indigenous research and development capabilities, support their ability to acquire technology from abroad, and enhance their overall competitiveness."[30] The U.S. Chamber also found that in concert with China's state-led development plans, including the MLP, MIC 2025 constitutes a "broader strategy to use state resources to alter and create comparative advantage[s] in these sectors on a global scale."[31]

3. China's Military-Civilian Fusion Strategy

China's efforts to improve its S&T base and leapfrog ahead of the United States have significant implications for U.S. national security beyond economic and scientific competition. Since 2013, Chairman Xi Jinping has emphasized Military-Civilian Fusion" ("MCF") (军民融合) as critical to the nation's economic development and national security.[32] In 2016, he elevated the importance of MCF as one of the pillars of China's military modernization and made it a national strategy.[33]

Unlike prior Chinese military-industrial policies such as Civilian-Military Integration (军民结合), MCF seeks to move beyond integrating civilian technologies and management expertise into China's military industrial complex.[34] Now, MCF

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[28] *See* U.S. CHAMBER OF COMMERCE, MADE IN CHINA 2025: GLOBAL AMBITIONS BUILT ON LOCAL PROTECTIONS (2017), https://www.uschamber.com/sites/default/files/final_made_in_china_2025_report_full.pdf.
[29] *Id*.
[30] *Id*. at 6.
[31] *Id*.
[32] Brian Lafferty, *Civil-Military Integration and PLA Reforms*, *in* CHAIRMAN XI REMAKES THE PLA: ASSESSING CHINESE MILITARY REFORMS (Phillip C. Saunders et al eds., 2019), https://ndupress.ndu.edu/Portals/68/Documents/Books/Chairman-Xi/Chairman-Xi_Chapter-16.pdf?ver=2019-02-08-112005-803.
[33] *Xi Jinping Talks about the Integration of Military and Civilian: About National Security and Development*, QIUSHI JOURNAL (October 16, 2018), http://www.qstheory.cn/zhuanqu/rdjj/2018-10/16/c_1123565364.htm.
[34] Elsa B. Kania, *In Military-Civil Fusion, China is Learning Lessons from the United States and Starting to Innovate*, REAL CLEAR DEFENSE (August 27, 2019), https://www.realcleardefense.com/articles/2019/08/27/in_military-civil_fusion_china_is_learning_lessons_from_the_united_states_and_starting_to_innovate_114699.html.

calls for the seamless "fusing" of the military and civilian sectors with resources, technologies, information, and people.[35] This allows China to pool its talent and resources from the two sectors to jointly develop technologies, conduct research, and attract talent that mutually reinforces both the military and civilian sector. MCF significantly blurs the lines between China's defense and civilian sectors, enabling China to continue international collaboration with scientists while not disclosing that such collaboration may be for modernizing China's military.[36]

In 2017, the State Council published a MCF policy document detailing how China planned to promote defense-related science and technology fusion.[37] In its document, the State Council calls for the Chinese military to declassify National Defense Patents for the civilian sector's use, the sharing of military and civilian research centers, including facilities at the China Academy of Sciences and universities, and the coordination of research efforts.[38] The document also calls for China's military and its defense industry to rely on higher education institutions to establish defense research and civilian research institutions as well as a talent recruitment plan to recruit personnel to work in the defense sector.[39] Another key provision calls for establishing an information sharing platform between civilian and military research institutions to collect information on frontier and advanced technologies.[40]

Chairman Xi's elevation of MCF as a national strategy encourages China's military industrial complex to implement its own "going out" strategy (走出去) to acquire overseas companies, establish research and development centers, and attract overseas talent.[41] For example, in 2013 China's Aviation Industry Corporation ("AVIC"), a Chinese aerospace and defense conglomerate, purchased the German aircraft engine manufacturer Thielert Aircraft—which makes engines

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[35] *Id.*
[36] *Id.*
[37] *See* OFFICE OF THE STATE COUNCIL, GUO BAN FA NO. 91, THE GENERAL OFFICE OF THE STATE COUNCIL PROMOTES THE NAT'L DEFENSE SCI. AND TECH. INDUS. (Dec. 4, 2017), http://www.gov.cn/zhengce/content/2017-12/04/content_5244373.htm.
[38] *Id.*
[39] *Id.*
[40] *Id.*
[41] *Chinese Military Innovation in Artificial Intelligence*: *Hearing On Tech., Trade, And Military-Civil Fusion—China's Pursuit Of Artificial Intelligence, New Materials, And New Energy Before the U.S.-China Econ. and Security Review Commission*, 116th Cong. (2019) (statement of Elsa B. Kania, Adjunct Senior Fellow, Tech. and Nat'l Security Program, Center for a New American Security Research Fellow, Center for Security and Emerging Tech., Georgetown U.); GREG LEVESQUE & MARK STOKES, POINTE BELLO, BLURRED LINES: MILITARY-CIVIL FUSION AND THE "GOING OUT" OF CHINA'S DEFENSE STRATEGY, 6–7 (December 2016), https://static1.squarespace.com/static/569925bfe0327c837e2e9a94/t/593dad0320099e64e1ca92a5/1497214574912/062017_Pointe+Bello_Military+Civil+Fusion+Report.pdf.

for large unmanned aerial vehicles.[42] AVIC also established the AVIC Centre for Structural Design and Manufacture at the Imperial College of London to research aircraft design and manufacturing technologies.[43] Through such research collaborations, China's military industrial complex is able to "exploit the openness of the scientific community" and western academic norms that encourage research collaborations.[44]

4. China's Strategic Plan for Talent Recruitment

Over the past decade, the Chinese government has refined its centrally organized foreign talent recruitment plans into a strategy to "use talent to strengthen the country" by targeting the specific technology sectors previously discussed.[45] These plans help facilitate technology transfer and typically include people-to-people exchanges, international S&T cooperation projects, and the recruitment and repatriation of S&T experts on a temporary or permanent basis.[46] China's most prominent national talent recruitment plan is the "Recruitment Program of Global Experts," more commonly known as the Thousand Talents Plan ("TTP").[47]

Launched in 2008, a year after the adoption of the MLP, China designed the TTP to recruit 2,000 high-quality overseas talents within five to ten years.[48] By 2017, according to one report, China recruited more than 7,000 "high-end professionals" under the TTP.[49]

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[42] GREG LEVESQUE & MARK STOKES, POINTE BELLO, BLURRED LINES: MILITARY-CIVIL FUSION AND THE "GOING OUT" OF CHINA'S DEFENSE STRATEGY, 36 (December 2016) (https://static1.squarespace.com/static/569925bfe0327c837e2e9a94/t/593dad0320099e64e1ca92a5/1497214574912/062017_Pointe+Bello_Military+Civil+Fusion+Report.pdf).

[43] *AVIC Centre for Structural Design and Manufacture*, IMPERIAL LONDON COLLEGE, http://www.imperial.ac.uk/avic-design/.

[44] Elsa B. Kania, *In Military-Civil Fusion, China is Learning Lessons from the United States and Starting to Innovate*, REAL CLEAR DEFENSE (August 27, 2019), https://www.realcleardefense.com/articles/2019/08/27/in_military-civil_fusion_china_is_learning_lessons_from_the_united_states_and_starting_to_innovate_114699.html.

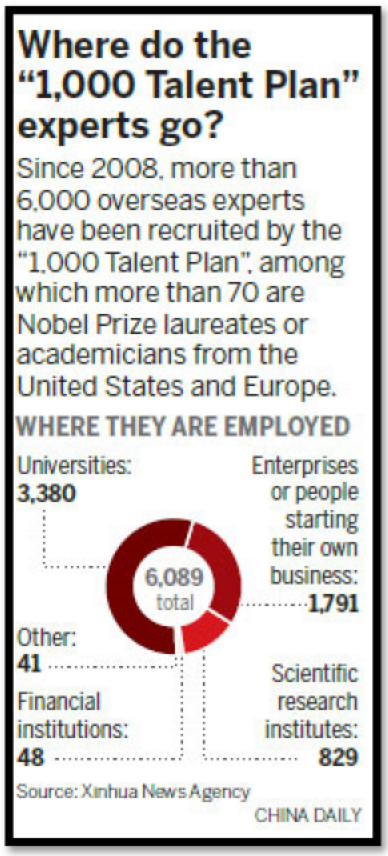
[45] *Implementing the Talent Strategy to Strengthen the Country*, THE CENTRAL PEOPLE'S GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA (Mar. 20, 2007), http://www.gov.cn/ztzl/2007zfgzbgjd/content_555796.htm.

[46] WHITE HOUSE, *How China's Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World*, 14, (June 18, 2018), https://www.whitehouse.gov/wp-content/uploads/2018/06/FINAL-China-Technology-Report-6.18.18-PDF.pdf.

[47] U.S. FED. BUREAU OF INVESTIGATION, Counter Intelligence, Strategic Partnership Intelligence Note (SPIN), *Chinese Talent Programs,* SPIN: 15-007 (Sept. 2015), https://info.publicintelligence.net/FBI-ChineseTalentPrograms.pdf.

[48] *The Recruitment Program of Global Experts*, THOUSAND PEOPLE PLAN, http://www.1000plan.org/qrjh/section/2?m=rcrd.

[49] Su Zhou, *Returnees finding big opportunities*, CHINA DAILY (Feb. 26, 2017), http://www.chinadaily.com.cn/china/2017-02/25/content_28345785.htm.



The TTP is just one of China's more than 200 talent recruitment plans.[50] For example, another popular Chinese talent recruitment plan is the Changjiang Scholars program. Started in 1998, the Changjiang Scholars program is run by the Ministry of Education and recruits individuals both in China and abroad to work in Chinese universities and research institutions.[51] According to one public report, as of June 2014, a total of 2,251 Changjiang Scholars had been appointed, including 1,546 distinguished professors and 705 visiting professors.[52] China's talent recruitment plans do not only target U.S. universities or researchers; there are

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[50] Timothy Puko and Kate O'Keefe, *Energy Department to Ban Foreign Talent- Recruitment Programs*, WALL STREET J. (Feb. 1, 2019), https://www.wsj.com/articles/energy-department-to-ban-foreign-talent-recruitment-programs-11549052674.

[51] The People's Daily, *The Ministry of Education Implemented the Yangtze River Scholars Program for 16 Years*, NATIONAL DEGREE AND GRADUATE EDUCATION DATA CENTER (June 9, 2014), http://web.archive.org/web/20140613205523/http://www.chinadegrees.cn/xwyyjsjyxx/sy/syzhxw/278915.shtml (Internet Archive Wayback Machine reproduction).

[52] Hepeng Jia, *How to find a job in China*, NATURE (Jan. 17, 2018), https://www.nature.com/articles/d41586-018-00537-0.

venture capital recruitment plans and talent recruitment competitions that engage entrepreneurs and the private sector directly.[53]

The Chinese government is investing significant resources in its talent recruitment plans. According to one 2015 FBI analysis, China pledged to spend 15 percent of the country's gross domestic product on human resources during the period covered by the plan, potentially more than $2 trillion.[54]

i. Administration

In contrast to other previous talent recruitment plans, the Party, specifically through the Central Committee's Organization Department, plays a lead role in implementing the TTP.[55] The Organization Department is one of the most powerful CPC departments, controlling more than 90 million Party officials' assignments at all levels of the Chinese government.[56] The CPC recognized the need to control overseas talent recruitment efforts "to ensure they were in line with Party priorities, so it created a complex system of administration and oversight to coordinate its recruitment efforts."[57] This coordination allows the CPC to "exert exceptional" levels of control over the TTP and other talent recruitment plans.[58]

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[53] *North American leg of the 7th 1000 Talents Plan Startup Contest Concludes*, Venture Capital Community, Association of Thousand Talents Program (Aug. 15, 2018), http://1000.sandlake.com/English/News/2018-08-15/314.html. Rolfe Winkler, *Chinese Cash That Powered Silicon Valley Is Suddenly Toxic,* Wall Street J. (June, 11, 2019), https://www.wsj.com/articles/chinese-cash-is-suddenly-toxic-in-silicon-valley-following-u-s-pressure-campaign-11560263302. Press Release, U.S. DEP'T OF JUSTICE, *One American and One Chinese National Indicted in Tennessee for Conspiracy to Commit Theft of Trade Secrets and Wire Fraud* (Feb. 14, 2019), https://www.justice.gov/opa/pr/one-american-and-one-chinese-national-indicted-tennessee-conspiracy-commit-theft-trade.
[54] U.S. FED. BUREAU OF INVESTIGATION, Counter Intelligence, Strategic Partnership Intelligence Note (SPIN), *Chinese Talent Programs,* SPIN: 15-007 (Sept. 2015), https://info.publicintelligence.net/FBI-ChineseTalentPrograms.pdf.
[55] Fed. Bureau of Investigation production, 10 (Oct. 12, 2018).
[56] Eleanor Albert and Beina Xu, *The Chinese Communist Party*, COUNCIL ON FOREIGN REL. (Sept. 27, 2019), https://www.cfr.org/backgrounder/chinese-communist-party.
[57] Fed. Bureau of Investigation production, 10 (Oct. 12, 2018).
[58] *Id.*

The Organization Department oversees the Talent Work Coordination Small Group ("TWCSG"), the Overseas High-Level Talent Recruitment Working Small Group, and the Overseas High-Level Talent Recruitment Work Special Office ("Special Office").[59] The Organization Department's director and deputy director chair the TWCSG, which is comprised of 18 government agencies, CPC affiliated entities including the Organization Department, and academic entities.[60]

In 2008, the Chinese government issued two policy documents detailing the administration and implementation of the TTP. On December 23, 2008 the "General Office of the CPC Central Committee" published the "Central Committee Talent Work Coordination Small Group's Advice for Implementing the [TTP]."[61] This document provides initial guidance and organizing infrastructure, including by creating leadership positions, defining roles and responsibilities, and creating smaller working groups charged with more discrete tasks.[62]

The policy document also created the "Overseas High-Level Talent Introduction Small Group." This group published an "Interim Measures" guidance

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[59] *Interim Measures for the Introduction of High-Level Overseas Talent, Organization Department Document No. 28*, MINISTRY OF NAT. RESOURCES (2008), http://www.mnr.gov.cn/zt/kj/kjfz/kjrc/gjkjrcjh/201811/t20181129_2370185.html.
[60] *Id.*
[61] Li Fang Quanjuan, *Notice of the General Office of the Central Committee of the Communist Party of China on Forwarding the Opinions of the Central Talent Work Coordination Group on Implementing the Overseas High-Level Talents Introduction Program,* CHINA COMMUNIST PARTY NEWS NETWORK (June 20, 2012), http://cpc.people.com.cn/GB/244800/244856/18246001.html.
[62] *Id.* (The "General Office of the CPC Central Committee" published the "Central Committee Talent Work Coordination Small Group's Advice for Implementing the [TTP]").

document designed to implement the overseas high-level talent recruitment plans, including the TTP.[63] The Interim Measures stated TTP's goals were as follows:

> [The TTP] focuses on the national development strategy. Starting from 2008, it will take 5-10 years to focus on national key innovation projects, key disciplines and key laboratories, central enterprises and state-owned commercial financial institutions, and high-tech industries. Various types of parks, mainly in the development zone, have introduced and focused on supporting 2,000 overseas high-level talents to return to China for innovation and entrepreneurship.[64]

The TWCSG also develops strategic plans, conducts policy research, and coordinates 18 participating government agencies, CPC affiliated entities, and academic entities. These 18 entities and agencies include:[65]

- CPC Central Committee Organization Department
- Chinese Academy of Sciences ("CAS")
- Chinese Academy of Engineering ("CAE")
- National Natural Science Foundation ("NSFC")
- China Association for Science and Technology ("CAST")
- Ministry of Education ("MOE")
- Ministry of Science and Technology ("MOST")
- Foreign Experts Bureau[66]
- Ministry of Industry and Information Technology ("MIIT")
- National Development and Reform Commission
- Ministry of Human Resources and Social Security ("MHRSS")
- State-owned Assets Supervision and Administration Commission ("SASAC")
- People's Bank of China
- Ministry of Finance
- United Work Front Department
- Communist Youth League of China ("CYLC")
- Ministry of Foreign Affairs

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[63] *Central Organization Department: Interim Measures for Introducing Overseas High-level Talents*, SCHOOL OF OPTICAL AND ELECTRONIC INFO. HUST (Mar. 14, 2014), https://web.archive.org/web/20140323045245/http://oei.hust.edu.cn/Discipline/1/2012-11-09/183257640.html (Internet Archive Wayback Machine reproduction).

[64] *Id.*

[65] *Interim Measures for the Introduction of High-Level Overseas Talent, Organization Department Document No. 28*, MINISTRY OF NAT. RESOURCES (2008), http://www.mnr.gov.cn/zt/kj/kjfz/kjrc/gjkjrcjh/201811/t20181129_2370185.html.

[66] The Foreign Experts Bureau is now part of MOST. *See* Kristin Huang & Alice Yan, *New Immigration Bureau Set Up to Handle Growing Number of Foreigners in China,* SOUTH CHINA MORNING POST (Mar. 13, 2018), https://www.scmp.com/news/china/policiespolitics/article/2137058/new-immigration-bureau-set-handle-growing-number.

- Ministry of Public Security

The participating agencies and entities each fulfill an important role in the process for targeting, recruiting, financing, and absorption of TTP members' scientific research and technology as well as identifying China's scientific, technological, and industrial needs.[67] The Special Office collects information from these agencies, decides China's priority technical areas, and approves the TTP finalists.[68]

ii. Application Process

Applicants work through a three-phase application process to be admitted into the TTP.[69] First, the applicant's future Chinese employer submits an application to one of the platforms discussed below.[70] At this stage, the applicant must provide documents detailing his or her credentials and scientific achievements.[71] In some cases, U.S.-based applicants have submitted significant amounts of sensitive information from their institutions to bolster their credentials.[72] Second, the lead organization for the platform evaluates the application and makes a recommendation.[73] Third, the Thousand Talent's Special Office, in conjunction with the Overseas High-Level Talent Introduction Small Group, makes an application decision.[74] All TTP applications for the national-level plans, however, "are ultimately reviewed by the Communist Party's Organization Department, which decides whether or not to officially recruit the foreign expert."[75]

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[67] *Interim Measures for the introduction of high-level overseas talent, Organization Department Document No. 28,* MINISTRY OF NAT. RESOURCES (2008), http://www.mnr.gov.cn/zt/kj/kjfz/kjrc/gjkjrcjh/201811/t20181129_2370185.html.
[68] *Id.*
[69] *The Recruitment Program of Global Experts*, THOUSAND PEOPLE PLAN, (Jan. 19, 2012), https://web.archive.org/web/20141208104715/http://www.1000plan.org/qrjh/article/18582 (Internet Archive Wayback Machine reproduction).
[70] *General Procedure for Reporting Thousands of People*, THOUSAND PEOPLE PLAN, http://www.1000plan.org.cn/qrjh/section/2?m=rcrd.
[71] *Id.*
[72] *See* Transcript of Detention Hearing at 18, United States of America v. You, et al (E.D. Tenn. April 24, 2019) (No. 2:19-CR-00014); Fed. Bureau of Investigation production, 10 (Oct. 12, 2018) (Dr. Long Yu, a Chinese citizen stole "materials included design information for the F-22 and JSF-35 military jet engines. Dr. Long later admitted he had taken this information to China in support of his Chinese Talent Plan position at a Chinese government laboratory.").
[73] *General Procedure for Reporting Thousands of People*, THOUSAND PEOPLE PLAN, http://www.1000plan.org.cn/qrjh/section/2?m=rcrd.
[74] *Id.*
[75] Fed. Bureau of Investigation production, 10 (Oct. 12, 2018).

iii. Implementation

The Chinese government relies on four major platforms for implementing the TTP.[76] These four platforms provide the systematic guidance and structure to recruit overseas experts for Chinese universities, research labs, business development parks, and other state-owned enterprises, all with the aim of modernizing China's indigenous innovation capabilities.[77]

1) ***National Key Innovation Projects Platform.*** The National Key Innovation Projects Platform recruits overseas high-level S&T talent as defined and required under the MLP.[78]

2) ***Key Disciplines and Key Laboratories Platform.*** The Key Disciplines and Key Laboratories Platform recruits overseas high-level talent for China's domestic education system, including universities.[79] The Chinese government intended this platform to increase its research capabilities, serve as an "important base for training innovative talents and developing scientific research," and occupy the "backbone and leading position within the higher education disciplines system."[80]

3) ***Central Enterprises and State-Owned Commercial and Financial Organizations Platform.*** The Central Enterprises and State-Owned Commercial and Financial Organizations Platform aims to attract overseas high-level talent for state-owned financial institutions.[81]

4) ***Parks or Zones Based at High-Tech Industrial Development Zones Platform.*** The Parks or Zones Based at High-Tech Industrial Development Zones platform aims to attract overseas high-level talents to return and create or operate businesses in China's business development parks.[82]

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[76] *The Recruitment Program of Global Experts*, THOUSAND PEOPLE PLAN, (Jan. 19, 2012), https://web.archive.org/web/20141208104715/http://www.1000plan.org/qrjh/article/18582 (Internet Archive Wayback Machine reproduction).
[77] *Id.*
[78] *Four Platforms and Specific Requirements*, THOUSAND PEOPLE PLAN, http://www.1000plan.org.cn/qrjh/section/2?m=rcrd.
[79] *The Recruitment Program of Global Experts,* THOUSAND PEOPLE PLAN, http://www.1000plan.org/qrjh/section/2?m=rcrd.
[80] *Four Platforms and Specific Requirements*, THOUSAND PEOPLE PLAN, http://www.1000plan.org.cn/qrjh/section/2?m=rcrd; China Academic Degrees and Graduate Information, *Introduction to National Key Disciplines Project*, THOUSAND PEOPLE PLAN (2008), http://www.chinadegrees.cn/xwyyjsjyxx/zlpj/zdxkps/257697.shtml.
[81] *Four Platforms and Specific Requirements*, THOUSAND PEOPLE PLAN, http://www.1000plan.org.cn/qrjh/section/2?m=rcrd.
[82] *Id.*

These four programs assist China in accomplishing its national S&T goals by strengthening research in fundamental and cutting-edge technologies and drastically improving the quality of Chinese universities and research laboratories.

iv. Chinese Talent Recruitment Contracts Violate U.S. Standards on Research Integrity

After selection, TTP members sign contracts or "letter of intent to work" agreements with Chinese institutions.[83] The Subcommittee obtained several of these contracts and one of the Chinese government's template contracts. The contracts include provisions that violate U.S. standards of research integrity, place TTP members in compromising legal and ethical positions, and undermine fundamental U.S. scientific norms of transparency, reciprocity, and integrity. The FBI has concluded that TTP members are "usually contractually obligated to essentially use the knowledge they have obtained from their foreign employers to successfully fulfill the terms of their contract."[84] U.S. institutions and U.S. grant-making agencies must be fully aware of such contractual obligations as they could limit the ability to protect and retain intellectual capital here in the United States.

China's State Administration of Foreign Experts Affairs ("SAFEA") created a template contract on which TTP contracts reviewed by the Subcommittee are based.[85] In addition to basic information such as salary and benefits, the template includes intellectual property ownership provisions and non-disclosure clauses related to research and intellectual property developed in China, underscoring the Chinese government's focus on technology acquisition.[86] The template also encourages entities in China that employ TTP members to incorporate additional non-disclosure requirements and intellectual property agreements.[87]

Provisions in some TTP contracts control ownership of intellectual property created during the performance of the contract, including intellectual property created in the United States, at U.S. institutions, and with U.S. funds. Though provisions among the reviewed contracts varied, every contract contained clauses that gave Chinese institutions at least some rights in any intellectual property created by the TTP member in the United States. For example, one contract states, "The intellectual property rights obtained by [the TTP member] during the work of [the Chinese institution], including copyright, patent rights, trademark rights, etc., are owned by the [Chinese institution]."[88] The contract permits some sharing of the intellectual property, but only with the TTP member: "According to the definition of

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[83] Fed. Bureau of Investigation production, 11 (Oct. 12, 2018).
[84] *Id.*
[85] *Contract of Employment/Letter of Intent*, STATE ADMIN. OF FOREIGN EXPERTS AFF., https://wenku.baidu.com/view/b6ed88102a160b4e767f5acfa1c7aa00b42a9d5e.html?rec_flag=default.
[86] *Id.*
[87] *Id.*
[88] Documents on file with the Subcommittee (Sept. 10, 2019).

intellectual property rights between the two parties, [the talent recruitment plan member] has certain sharing rights within the defined scope."[89] The contract did not mention the rights of the U.S. institution. This contract also requires that the TTP member will "apply for more than 2 invention patents" during the course of the grant and also included non-disclosure and confidentiality provisions.[90]

Another contract references the possibility that the U.S. institution where the TTP member works could retain some ownership of any intellectual property created during the grant, yet that ownership would be "joint" with the Chinese institution. The U.S. institutions, however, are not parties to the TTP contracts. This particular contract provides:

> Should Chinese scientists contribute to your discoveries in China, as we anticipate, [the U.S. institution] and our institutions will jointly own, protect, and manage the commercialization of these jointly-made discoveries.[91]

That same contract also states that, "In any publication describing research that was primarily conducted in China, you will list our institution as your primary, and [the U.S. institution] as your secondary, site of academic appointment."[92]

The scope of work described in TTP contracts also raises concerns. In many cases, the contracts detail specific expectations regarding research the TTP member will perform or the business he or she will develop in China.[93] This research could resemble or replicate the work the TTP applicant performs or has performed for his or her U.S.-based employer. For example, one contract stated, "We recognize that your research in China will relate closely to your ongoing work at the [U.S. institution], and that it may be difficult to avoid comingling the results of your work."[94] In other cases, the Chinese institution has asked the TTP member to continue operating labs in China characterized as "shadow labs."[95] Another letter agreement between a TTP member and Chinese institution stated, "We anticipate that you will make several trips to China each year during the term of your engagement, but will perform much of your work remotely. [ ] When you are not in China, your laboratory here will be overseen by [REDACTED]."[96]

Some contracts explicitly require TTP members to train or recruit additional students to work for them in the United States. This recruitment model enables

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[89] *Id.*
[90] *Id.*
[91] PorCTP-0000652.
[92] *Id.*
[93] Fed. Bureau of Investigation production, 11 (Oct. 12, 2018).
[94] PorCTP-0000627; PorCTP-0000651.
[95] PorCTP-0000627; PorCTP-0001128. *See also* Kelvin K. Droegemeier, Director, *Letter to the United States Research Community*, OFF. SCIENCE AND TECH. POLICY (Sept. 16, 2019).
[96] PorCTP-0000627; PorCTP-0000615.

Chinese officials to place additional talent recruitment plan members under the supervision of current members already in the United States. As the recruits develop expertise and access, they are more desirable as TTP members and this encourages rapid program growth. For example, one contract's recruitment clause required the talent recruitment plan member to build and train a team of 8 to 10 post-doctoral students.[97] Another contract provides more detail, stating the Chinese institution will provide the TTP member with a list of doctoral and graduate students from which the TTP member should recruit 1 to 2 post-doctoral students each year.[98]

One federal agency provided the Subcommittee with a case study detailing how TTP recruitment can also serve as a way to circumvent export controls.[99] A professor at a U.S. university specialized in a critical, dual-use science, technology, engineering, and mathematics ("STEM") field.[100] He received numerous U.S. government research grants and was also a member of several Chinese talent recruitment plans.[101] The professor also directed a China-based laboratory performing applied military research and development.[102] Instead of traveling to China for this work, the professor sponsored visiting students from the Chinese laboratory to study under him in the United States.[103] "This technique, commonly seen throughout the United States with talent recruitment plan selectees, allowed the professor to pass dual-use research, and potentially export-controlled research, to China via the visiting students and scholars without having to physically leave the United States."[104] In this case, many of the visiting students were "directly affiliated with research and development organizations involved in China's military modernization efforts."[105]

The contracts also place TTP members in compromising legal and ethical positions. Some contract provisions reflect an intent to keep the TTP members' work in China secret. For example, one contract said "Party A and B shall keep the contents of the contract confidential. Neither party may disclose it to unrelated parties without consent from the other party."[106] Several contracts noted that the TTP member could not cancel their contracts unless their Chinese employer consented, providing Chinese officials with significant leverage over the TTP

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[97] Documents on file with the Subcommittee (Sept. 10, 2019).
[98] PorCTP-0000247.
[99] Documents on file with the Subcommittee (Oct. 25, 2019).
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] *Id.*
[105] *Id.*
[106] Documents on file with the Subcommittee (Sept. 10, 2019).

member.[107] Given these obligations, U.S. institutions should be aware that TTP members may not voluntarily disclose their other affiliations or external funding during routine requests for disclosures.

Though TTP members were known to be working for U.S. institutions, some contracts state that the member cannot "take on any substantive part-time work in other organizations or institutions" or "conduct any part-time job assigned by any other party."[108] Yet another contract explicitly recognizes the TTP member's employment outside China, but requires he or she to work nine months of the year for their Chinese employer, raising potential conflicts of commitment.[109] The same contract also requires the member to resign from his or her U.S. position within four years of the start of the TTP contract.[110]

B. Congressional Testimony on Chinese Talent Recruitment Plans

Recent hearings in the Senate and the House have highlighted Chinese efforts to use the TTP and other talent recruitment plans to leverage U.S. research spending for their own goals. In July 2019, FBI Director Christopher Wray expressed concern over the "abuse" of Chinese talent recruitment plans such as the TTP at a Senate Judiciary Committee hearing.[111] Director Wray stated:

> The Chinese government and the Chinese Communist Party have a number of so-called talent plans so you hear about the thousand talent plans and there is nothing inherently unlawful about the talent plans themselves. However we have seen through lots of investigations of abuse of those talent plans and essentially we have situations where it has created a pipeline in some cases at major universities especially at the graduate level more so than at the undergraduate level of key intellectual properties sometimes that has dual use potential flowing back to China for the advancement of its various strategic plans and the irony is that the U.S. is essentially funding that economic resurgence through various money that it provides through grants, etc.[112]

He also warned of the potential implications that may arise through the TTP:

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[107] PorCTP-00001114; PorCTP-00001140. Other TTP contracts permitted TTP members to terminate the agreement with 30 days written notice. This shows that "mutual consent" to terminate a contract is not necessarily a requirement under Chinese labor law. *See* PorCTP-00001127.
[108] PorCTP-00001108. PorCTP-00001140.
[109] HHS PorCTP-00001138.
[110] HHS PorCTP-00001140.
[111] *Oversight of the Fed. Bureau of Investigation: Hearing Before the S. Comm. on Judiciary*, 116th Cong. (July 23, 2019) (testimony of Christopher Wray, Dir., Fed. Bureau of Investigation).
[112] *Id.*

> So I think we do have to be a little bit careful that we don't find ourselves in a situation where essentially U.S. taxpayer money has been misappropriated for the advancement of China's achievements of economic dominance over us. There are a lot of cases where those plans become violations of U.S. law or at the very least violate non-competes and things like that that might exist and I think universities need to be more and more aware of who it is they are inviting over and what safeguards they can put in place.[113]

At a December 2018 Senate Judiciary Committee hearing, Bill Priestap, the former Assistant Director of the FBI's Counterintelligence Division, stated that China's talent recruitment plans are effectively "brain gain programs" that "encourage theft of intellectual property from U.S. institutions."[114] Priestap continued, "For example, China's talent recruitment plans, such as the Thousand Talents Program, offer competitive salaries, state-of-the-art research facilities, and honorific titles, luring both Chinese overseas talent and foreign experts alike to bring their knowledge and experience to China, even if that means stealing proprietary information or violating export controls to do so."[115]

In April 2018, the House Science, Space, and Technology Committee's Subcommittee on Research and Technology and Subcommittee on Oversight held a joint hearing titled "Foreign Plots Targeting Research and Development." Michael Wessel, Commissioner of the U.S.-China Economic and Security Review Commission, emphasized key threats posed by talent recruitment plans such as the TTP. Commissioner Wessel referenced a 2011 FBI report that stated:

> Chinese talent programs pose a serious threat to U.S. businesses and universities through economic espionage and theft of intellectual property. The different programs focus on specific fields deemed critical to China, to boost China's national capability in [science and technology] fields. These subject matter experts often are not required to sign non-disclosure agreements with U.S. entities, which could result in loss of unprotected information. … One of the greatest threats toward these experts is transferring or transporting proprietary, classified, or export

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[113] *Id.*

[114] *China's Non-Traditional Espionage Against the United States: Hearing on The Threat and Potential Policy Responses Before the S. Comm. on the Judiciary*, 115th Cong. (Dec. 12, 2018) (testimony of E.W. "Bill" Priestap, Assistant Director, Counterintelligence Division, Fed. Bureau of Investigation).

[115] *Id.*

> controlled information, or intellectual property, which can lead to criminal charges.[116]

In a July 2018 House Permanent Select Committee on Intelligence hearing titled, "China's Threat to U.S. Research/Innovation Leadership," Michael Brown, a Presidential Innovation Fellow who focuses on Chinese S&T policy issues, explained how the Chinese government engages in technology transfers through talent recruitment plans. According to Brown, China has been able to conduct technology transfers by "sponsoring professional organizations to target talent and using Chinese students by placing them in sensitive areas of U.S. research."[117]

C. China Deletes References to the Thousand Talents Plan

Following public testimony and other U.S. government scrutiny, some Chinese government websites deleted online references to the Thousand Talents Plan, according to several U.S. and foreign media reports even though the talent recruitment plans continue. Some Chinese universities also stopped promoting the program, and the official TTP site removed a post containing a list of the names of participating scientists.[118] According to one U.S.-based news outlet, China's self-censorship followed the August 2018 high-profile arrest of a TTP member who worked for General Electric and was alleged to have stolen technology secrets from the company.[119]

One Chinese language news outlet reported that Chinese authorities had ordered media outlets to suspend reporting on the TTP.[120] That report continued:

> An official document, with signatures of the Thousand Talents Plan's Youth Program Review Team and the seal of the Representative of the National Natural Science Foundation of China, has been circulated online recently. The document shows the team has listed precautionary measures, asking that for the sake of ensuring the safety of overseas

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[116] *Foreign Plots Targeting Research and Development*: *Hearing Before the H. Subcomm. on Research and Technology and H. Subcomm. on Oversight of the H. Comm. on Science, Space and Technology*, 115th Cong. (Apr. 11, 2018) (testimony of Michael Wessel, Comm'r of the U.S. China Econ and Sec Review Commission).

[117] *China's Threat to U.S. Research/Innovation Leadership: Hearing Before the H. Perm. Select Comm on Intelligence*, 115th Cong. (July 19, 2018) (testimony of Michael A. Brown, Presidential Innovation Fellow).

[118] Meng Jeng, *China Mutes Volume on Thousand Talents Plan as US Spy Concerns Rise But Scientists Still Covet Funding*, SOUTH CHINA MORNING POST (Dec. 8, 2018), https://www.scmp.com/tech/science-research/article/2176897/china-mutes-volume-thousand-talents-plan-us-spy-concerns-rise.

[119] *Spy Fears Prompt China to Censor Its Own Recruitment Drive*, BLOOMBERG (Sept. 19, 2018), https://www.bloomberg.com/news/articles/2018-09-19/china-censors-mentions-of-thousand-talents-as-spy-fears-grow.

[120] *Id.*

> talents, all work units should use phones or fax instead of emails when sending interview notifications, and that notices should be sent as invitations to attend academic conferences or forums in China.[121]

In the most specific decree from the Chinese government on limiting references to the TTP, "[t]he official document clearly requests that the phrase 'Thousand Talents Plan' should not appear in written circulars/notices."[122] And, finally, according to one news outlet, one TTP member "was asked to delete anything related to the Thousand Talents Plan from [his or her] homepage."[123]

The Subcommittee examined Chinese websites that previously provided information on talent recruitment plans that were no longer available. For example, Northwestern Polytechnical University, a prominent Chinese university focusing on STEM, scrubbed references to talent recruitment plans from its English-version online job application.[124] In mid-2018, the website highlighted two different talent recruitment plans, as shown below.[125]

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[121] *Id.*
[122] *Id.*
[123] Kristin Huang & Kinling Ho, *Why Chinese Scientists Would Rather Not Talk about Their Talent Awards*, ASIAONE (Jan. 7, 2019), https://www.asiaone.com/china/why-chinese-scientists-would-rather-not-talk-about-their-talent-awards.
[124] As of this report, Northwestern Polytechnical is now on Commerce's Entity List. *Lists of Parties of Concern,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (2019), https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern.
[125] *Overview*, NORTHWESTERN POLYTECHNICAL UNIVERSITY (Sept. 28, 2018), https://web.archive.org/web/20180828021039/https://en.nwpu.edu.cn/EnglishNew/Jobs/Overview.htm (Internet Archive Wayback Machine reproduction of the Northwestern Polytechnical University "Overview" page which mentioned "scholars in Thousand Talents Program" through Sept. 2018).

Join Us

Overview

Current Employment Opportunities

High-level Talents

Post-doctoral Researchers

New Staff Registration Process

High-level Talents: scholars in Thousand Talents Program, Distinguished Professors and Chair Professors of Changjiang Scholars Program and etc.

1. Qualifications:

a. The talents will be appointed as professors, doctoral supervisors, and NPU provides full payment for 1 or 2 post-doctoral research assistants.

2. Compensation and Support:

a. Besides the bonus provided by National Government and Shaanxi Government, NPU provides 600,000 - 1,000,000 RMB (pre-tax) annual basic salaries for talents. Short-term scholars will be paid according to attendance time.

b. NPU provides 148 m2 apartment in Youyi Campus or 230 m2 apartment in Chang'an Campus and no less than 300,000 RMB resettlement allowances for full-time employed scholar. NPU provides apartments for short-term employed scholars.

c. NPU provides public laboratory platforms, scientific research and work facilities and scientific research start-up funds.

Young Scholars in Thousand Talents Program

1. Qualifications:

In 2019, the university then changed the website and deleted both references to its talent recruitment plans, as shown here.[126]

Join Us

Overview

Current Employment Opportunities

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c. NPU provides public laboratory platforms, scientific research and work facilities and scientific research start-up funds.

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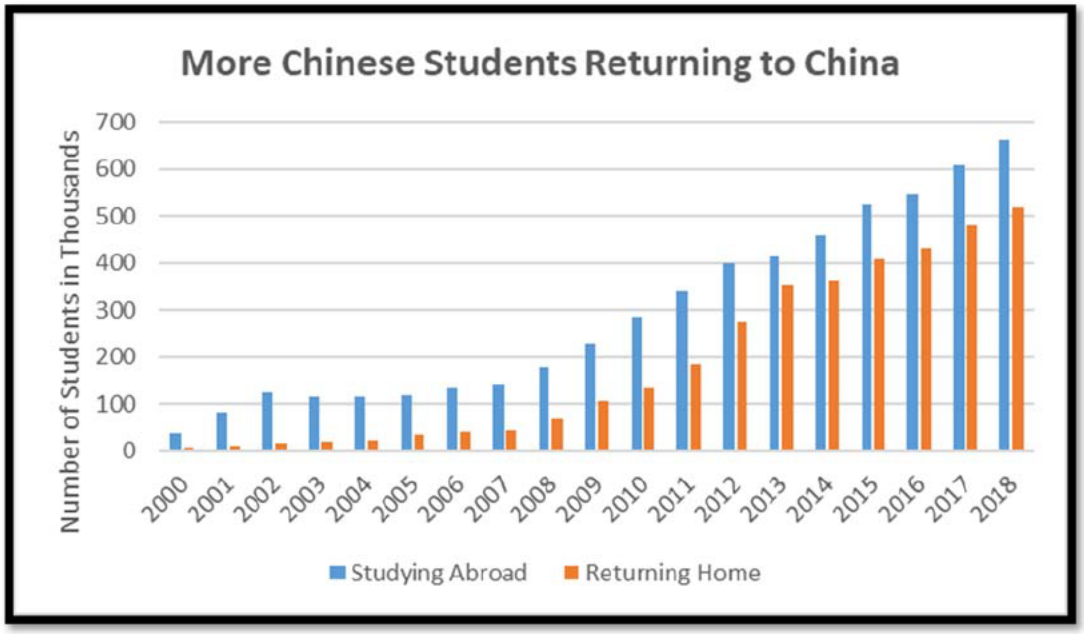
[126] *Overview*, NORTHWESTERN POLYTECHNICAL UNIVERSITY, https://en.nwpu.edu.cn/EnglishNew/Jobs/Overview.htm.

D. After Implementation of Talent Recruitment Plans, More Chinese Students, Researchers, and Scientists are Returning to China

China's talent recruitment plans designed to repatriate Chinese students and professionals abroad are succeeding as more Chinese students are returning to China. Chinese government reports and data show the number of Chinese students returning from working or studying abroad has increased significantly over the past decade.[127] In 2018, 662,100 students went abroad and 480,900 returned—a 78 percent return rate that China boasted on its government website.[128] This was a marked increase from the 30.6 percent return rate recorded in 2007 and the approximate 5 percent return rate in 1987.[129] China's Ministry of Education ("MOE") data, as shown below, highlights the growth of Chinese students studying abroad and the increase in these students returning.[130]



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[127] Xinhua, *More Chinese Study Abroad in 2018*, MINISTRY OF EDUC. (Mar. 28, 2019), http://en.moe.gov.cn/news/media_highlights/201904/t20190401_376249.html.
[128] *Id.*
[129] David Zweig & Zoe Ge, *How Chinese Students Who Return Home after Studying abroad Succeed – and Why they Don't*, SOUTH CHINA MORNING POST (July 27, 2018), https://www.scmp.com/comment/insight-opinion/asia/article/2157081/how-chinese-students-who-return-home-after-studying.
[130] Xinhua, *More Chinese Study Abroad in 2018*, MINISTRY OF EDUC. (Mar. 28, 2019), http://en.moe.gov.cn/news/media_highlights/201904/t20190401_376249.html; MINISTRY OF EDUCATION, BRIEF REPORT ON CHINESE OVERSEAS STUDENTS AND INT'L STUDENTS IN CHINA (Mar. 31, 2018), http://en.moe.gov.cn/documents/reports/201901/t20190115_367019.html; Youyou Zhou, *Chinese Students Increasingly Return Home after Study Abroad*, QUARTZ (July 29, 2018), https://qz.com/1342525/chinese-students-increasingly-return-home-after-studying-abroad/.

The MOE has publicly touted China's success in increasing the return rate of Chinese students. On April 4, 2018, the MOE issued an English language press release stating, "The momentum in the number of Chinese students studying abroad and returning from overseas studies continued last year."[131] It continued, "An overview of statistics on Chinese students studying abroad between 1978 and 2017 reveals that the number of students returning from overseas studies, especially high-caliber graduates, has been growing steadily."[132] A year later, the MOE relayed on March 28, 2019 to Chinese media that:

> Nearly 5.86 million Chinese studied overseas from 1978 to the end of 2018. … Among them, over 1.53 million are still in the process of studying and conducting research overseas, over 4.32 million have already completed their studies, and more than 3.65 million chose to pursue a job in China after completing their studies overseas.[133]

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[131] *2017 Sees Increase in Number of Chinese Students Studying Abroad and Returning after Overseas Studies*, MINISTRY OF EDUC. (Apr. 3, 2018), http://en.moe.gov.cn/News/Top_News/201804/t20180404_332354.html.
[132] *Id.*
[133] Xinhua, *More Chinese study abroad in 2018*, MINISTRY OF EDUC. (Mar. 28, 2019), http://en.moe.gov.cn/news/media_highlights/201904/t20190401_376249.html.

IV. EFFORTS TO SECURE U.S. RESEARCH

Openness, transparency, reciprocity, integrity, and merit-based competition define U.S. success in S&T development.[134] The collaborative openness of the U.S. research enterprise attracts investment, researchers, and students, promotes a free exchange of ideas, and ensures the distribution of timely and relevant research.[135] International collaboration is also a hallmark of the U.S. research enterprise.[136] Foreign researchers collaborate with U.S.-based researchers, conduct research at U.S. universities and government facilities, and receive U.S. government funding.[137] The U.S. S&T base has benefited greatly from such international collaboration.

Scientific research and development falls into two categories: "fundamental," or "basic" research, and applied research. Fundamental research is "systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind."[138] Fundamental research lends itself to international collaboration and relies on the broad sharing of research results with the scientific community so as to confirm research findings and create intellectual capital.[139] Applied research, on the other hand, uses this intellectual capital to

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[134] *See* NAT'L ACAD. OF SCI. ET AL, RISING ABOVE THE GATHERING STORM: ENERGIZING AND EMPLOYING AMERICA FOR A BRIGHTER ECON. FUTURE, 70 (2007); NAT'L RES. COUNCIL, SCI. AND SECURITY IN A POST 9/11 WORLD: A REP. BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCI. AND SECURITY COMMUNITIES, 2 (2007).

[135] *See* NAT'L RES. COUNCIL, SCIENCE AND SECURITY IN A POST 9/11 WORLD: A REP. BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCI. AND SECURITY COMMUNITIES, 27 (2007). *See also* L. Rafael Reif, *How to Maintain America's Edge*, FOREIGN POLICY (May/June 2017), https://www.foreignaffairs.com/articles/united-states/2017-03-23/how-maintain-america-s-edge ("U.S. universities have long been a magnet for the world's most brilliant people, as both students and faculty.")

[136] *See* NAT'L RES. COUNCIL, SCI. AND SECURITY IN A POST 9/11 WORLD: A REP. BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCI. AND SECURITY COMMUNITIES (2007). *See also About the Office of International Science & Engineering (OISE)*, NAT'L SCI. FOUND., https://www.nsf.gov/od/oise/about.jsp (the US "collaborates internationally to advance the U.S. economy, enhance our nation's security; give the U.S. the competitive edge to remain a global leader; and advance knowledge and global understanding").

[137] *See* NAT'L RES. COUNCIL, SCI. AND SECURITY IN A POST 9/11 WORLD: A REP. BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCI. AND SECURITY COMMUNITIES (2007). *See also* Désirée Schauz, *What is Basic Research? Insights from Historical Semantics*, 52 MINERVA 273, 318-19 (2014) (detailing the development of "basic research" as a concept so federal funding could be secured for research that does not produce immediate commercial benefit).

[138] NAT'L RES. COUNCIL, ASSESSMENT OF DEP'T OF DEFENSE BASIC RES. APP. D, at 49 (2005), https://www.nap.edu/read/11177/chapter/8#49.

[139] *See* VANNEVAR BUSH, SCI.: THE ENDLESS FRONTIER, 21 (1945) (explaining that the "international exchange of scientific information is of growing importance … *the Government should take an active role in promoting the international flow if scientific information*") (emphasis in original).

solve specific problems or to develop a particular scientific application.[140] As its purpose is clear, it is easier to judge the commercial value or national security implications of technology that comes out of applied research than from basic research.[141] The federal government's regulatory framework reflects a compromise of balancing national security and the openness of research. This compromise has allowed basic science to flourish, largely uninhibited, while placing additional scrutiny on applied research for national security reasons.[142]

This section provides an overview of the NSF, NIH, and DOE and the roles these agencies play with respect to oversight of scientific research and development. The Subcommittee found that Chinese talent recruitment plan members misappropriated U.S. government funding, provided early basic research ideas to their Chinese employers, stole intellectual capital from U.S. basic research before it was published, and engaged in intellectual property theft. Next, this section details the FBI's failure to effectively warn the U.S. academic community of the threat of Chinese talent recruitment plans, Commerce's issuance of export licenses of sensitive technologies to Chinese talent recruitment plan members and other concerning Chinese entities, and the State Department's limitations on denying visas to applicants who may be part of China's efforts to acquire intellectual capital and property.

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[140] NAT'L RES. COUNCIL, ASSESSMENT OF DEP'T OF DEFENSE BASIC RES. APP. D, at 49 (2005), https://www.nap.edu/read/11177/chapter/8#49.
[141] *See generally id.*
[142] NAT'L RES. COUNCIL, SCI. AND SECURITY IN A POST 9/11 WORLD: A REP. BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCI. AND SECURITY COMMUNITIES, 80 (2007) ("the cost of one potential leak … must be balanced against the national competitiveness and economic benefits gained from encouraging foreign students and scholars to come to American universities and perform fundamental research with minimal restrictions").

A. THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation ("NSF") is an independent federal agency established by Congress in 1950.[143] The NSF's mission is "to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense."[144] The NSF funds basic research that forms a foundational knowledge base that helps drive the U.S. economy, advances national security, and sustains global leadership.[145] While the NSF's funding of fundamental research is nearly always unclassified, the research can have unforeseen future applications in sensitive areas such as artificial intelligence or chemical and nuclear weapons development.

The NSF annually provides about 27 percent of all federal funds devoted to basic scientific research at U.S. research institutions.[146] This money funds about 12,000 new awards each year, mostly in the form of limited-term grants with an average duration of three years.[147] A small portion of funding goes to equipment and facilities that would be too expensive for any one researcher or organization to fund, such as U.S. Antarctic research sites.[148] Most awards, however, go to individuals and small groups of principal investigators through institutions for specific research proposals judged using "a rigorous and objective merit review system."[149]

Though the NSF requires disclosures from grant applicants, the agency does not have effective policies and procedures in place to prevent foreign talent recruitment plan members from misappropriating U.S.-funded research. Recently, the NSF implemented a new policy in July 2019 prohibiting employees from participating in foreign talent recruitment plans. The policy, however, does not apply to NSF-funded researchers despite the fact that they are most likely to be members of foreign talent recruitment plans. The NSF also does not vet grantees before awarding them funding. The NSF has no dedicated staff to ensure compliance with NSF grant terms. Instead, the NSF relies on sponsoring institutions to vet and conduct due diligence on potential grantees. It relies on the NSF inspector general to also conduct grant oversight.

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[143] *At a Glance*, NAT'L SCI. FOUND., https://www.nsf.gov/about/glance.jsp.
[144] *NSF Statutory Mission,* NAT'L SCI. FOUND., https://www.nsf.gov/pubs/2014/nsf14002/pdf/02_mission_vision.pdf. *See generally* National Science Foundation Act of 1950, Pub. L. No. 81-507, 64 Stat. 154 (codified as amended at 42 U.S.C. § 1861, et seq).
[145] *At a Glance*, NAT'L SCI. FOUND., https://www.nsf.gov/about/glance.jsp.
[146] *Id.*
[147] *Id.*
[148] *Id.*
[149] *Id.*

1. Fundamental Research

Fundamental research is comprised of basic science and engineering results that are "published and shared broadly within the scientific community."[150] Fundamental research is often considered the bedrock of scientific success and innovation and requires a research environment that is conducive to creativity and the free exchange of ideas.[151] Though the participation of international researchers in this type of research is crucial, America's "leadership position in science and technology is an essential element in our economic and physical security."[152] Accordingly, the U.S. government may restrict some research for "proprietary or national security reasons."[153]

Concerns about the balance of national security risks and collaborative university environments began in the early 1980s.[154] In 1981, five presidents from prominent American research universities sent a letter to the Secretaries of State, Defense, and Commerce raising concerns about a Defense Department policy that sought to restrict participation by foreign students in, and dissemination of information on, a sensitive research program.[155] In response, the National Academy of Sciences ("NAS")—a private, nonprofit, self-governing membership corporation for the furtherance of science and technology for the general welfare[156]—convened a panel to "examine the various aspects of the application of controls to scientific communication and to suggest how to balance competing national objectives so as to best serve the general welfare."[157] The resulting study sought to preclude—as a matter of policy—the imposition of special restrictions on the bulk of university research.[158]

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[150] EXEC. OFFICE OF THE PRESIDENT, NSDD-189, NATIONAL POLICY ON THE TRANSFER OF SCI., TECH. AND ENGINEERING INFO, 1 (1985).
[151] *Id.*
[152] *Id.*
[153] *Id.*
[154] *See* Neal Lane, *Tighter Controls to Prevent Espionage at U.S. Research Laboratories Are Harmful*, in ESPIONAGE AND INTELLIGENCE GATHERING, 106-07 (Louise I. Gerdes ed., 2004).
[155] David A. Wilson, *National Security Control of Technological Information*, 25 JURIMETRICS J. 109, 119–20 (1985).
[156] NAT'L ACAD. OF SCI., SCI. COMM. AND NAT'L SECURITY, *ii* (1982). Additionally, the NAS "shall, whenever called upon by any department of the Government, investigate, examine, experiment, and report upon any subject of science or art…" An Act to Incorporate the National Academy of Sciences, Ch. 111, 12 Stat. 806 § 3 (1863).
[157] NAT'L ACAD. OF SCI., SCI. COMM. AND NAT'L SECURITY, 24-25 (1982) (describing the usual means and importance of scientific communication). The study, prepared with support from the Defense Department, was the first major study of the conflict between national security goals and open academic and research communication. *See also* NAT'L SCI. BOARD, REP. OF THE COMMITTEE ON OPENNESS OF SCI. COMM. (1988) (describing the need and requirements for open communications in science).
[158] *See* NAT'L ACAD. OF SCI., SCI. COMM. AND NAT'L SECURITY, 1–8 (1982).

As a result of the NAS study, President Reagan issued National Security Decision Directive 189 ("NSDD-189") in 1985, which to this day ensures the openness of fundamental research by exempting unclassified information from control or access limitations.[159] NSDD-189 defines fundamental research and the desire to keep fundamental research unrestricted.[160] In reaffirming NSDD-189's foundations, the NSF emphasized that "the United States' commitment to freedom of inquiry, innovation, and the marketplace of ideas has helped the U.S. grow, attract, and retain our world-class science and engineering workforce."[161]

NSDD-189 includes some limitations on the use and transfer of even unclassified foundational research. For example, NSDD-189 specified "where the national security requires control, the mechanism for control of information generated during federally funded fundamental research in science, technology and engineering at colleges, universities and laboratories is classification."[162] Finally, NSDD-189 suggests that the U.S. government should periodically review "all research grants, contracts, or cooperative agreements for potential classification."[163]

2. The NSF Grant Process

The Proposal and Award Policies and Procedures Guide ("PAPPG") outlines the merit review system and provides guidance on the preparation and submission of grant proposals to the NSF.[164] The merit review system contains three phases: (1) proposal preparations and submission; (2) proposal review and processing; and (3) award processing—each containing additional discrete tasks.[165]

Phase I: Proposal Preparation and Submission. The NSF publishes information about funding opportunities through various sources including: *Find Funding*, a tool on the NSF website; *National Science Foundation Update*, an email newsletter; and *grants.gov*.[166] Next, the individual or organization seeking funding

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[159] *See* EXEC. OFFICE OF THE PRESIDENT, NSDD-189, NATIONAL POLICY ON THE TRANSFER OF SCIENTIFIC, TECHNICAL AND ENGINEERING INFORMATION (1985).
[160] *Id.* at 1.
[161] *Statement of the National Science Board on Security and Science*, NAT'L SCI. FOUND. (Oct. 24, 2018), https://www.nsf.gov/news/news_summ.jsp?cntn_id=297039.
[162] EXEC. OFFICE OF THE PRESIDENT, NSDD-189, NATIONAL POLICY ON THE TRANSFER OF SCI., TECH. AND ENGINEERING INFO., 2 (1985).
[163] *Id.*
[164] *See generally* THE NAT'L SCI. FOUND., NSF 19-1, PROPOSAL AND AWARD POLICIES AND PROC. GUIDE (2019), https://www.nsf.gov/pubs/policydocs/pappg19_1/nsf19_1.pdf.
[165] *Merit Review*, NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/merit_review.
[166] *Phase I: Proposal Preparation and Submission,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/merit_review/phase1.jsp#funding.

must develop and submit a grant proposal.[167] Once the proposal is submitted to the NSF, it is routed to the appropriate NSF Program Officer for review.[168]

Phase II: Proposal Review and Processing. NSF program officers then conduct a preliminary review of the proposal to ensure conformance with the PAPPG guidelines.[169] If the proposal conforms to PAPPG guidelines, the NSF program officer will "identify at least three external experts to review the proposal."[170] The external peer reviewers evaluate the proposal on two criteria: Intellectual Merit and Broader Impacts.[171] NSF program officers are responsible for ensuring that no disqualifying conflicts of interest exist among the reviewers.[172] The NSF program officer considers several additional factors "in developing a portfolio of funded projects."[173] After the review is completed, the NSF program officer makes a funding recommendation decision to the division director.[174] Final approval for the proposal occurs at the division level.[175]

Phase III: Award Processing. An NSF grants and agreements officer reviews the recommendation made by the program officer and division director for business, financial, and policy implications, and then processes and issues a grant agreement.[176] The grants and agreements officer then transmits the acceptance notification and grant agreement to the applicant.[177]

3. Foreign Support and Affiliation Disclosure

Since 1978, the PAPPG requires applicants to make two disclosures that relate to foreign support and affiliations.[178] First, PAPPG guidelines require the disclosure of "all current and pending support for ongoing projects and proposals," including the proposed project.[179] Current project support that must be disclosed includes that from "[f]ederal, state, local, foreign, public or private foundations,

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[167] *Id.*
[168] *Id.*
[169] *Phase II: Proposal Review and Processing,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/merit_review/phase2.jsp.
[170] *Id.* NSF may elect to have review conducted by *ad hoc* reviewers, a panel of experts, or a combination of both.
[171] *Id.*
[172] *Id. See infra* §2.
[173] *Phase II: Proposal Review and Processing,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/merit_review/phase2.jsp.
[174] *Id.*
[175] *Id.*
[176] *Phase III: Award Processing,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/merit_review/phase3.jsp.
[177] *Id.*
[178] THE NAT'L SCI. FOUND., NSF 19-1, PROPOSAL AND AWARD POLICIES AND PROC. GUIDE, II-6, II-24 (2019).
[179] *Id.* at II-24.

industrial or other commercial organizations, or internal funds allocated toward specific projects."[180]

Second, all senior personnel involved in the project must disclose Collaborators and Other Affiliations ("COA").[181] Senior personnel includes any principal investigator or project director who is "designated by the proposer, and approved by NSF, who will be responsible for the scientific or technical direction of the project."[182] Senior personnel also includes any individual participating in the project considered to be a faculty member by the performing institution or who holds an appointment as a faculty member at another institution.[183] The NSF's definition of senior personnel does not include postdoctoral positions, graduate or undergraduate students working on the project.[184] As such, NSF's COA process does not cover a large number of individuals who may be involved with foreign talent recruitment plans.

The COA submission template contains five tables that each cover a particular area of disclosure.[185] Table One requires the applicant to disclose all organizational affiliations within the last 12 months.[186] The NSF makes clear that "foreign" individuals, "regardless of whether an individual is located outside the [United States]," must complete the COA template to declare their affiliations.[187] The NSF, however, does not define organizational affiliations.[188]

The four remaining tables request information meant to assist NSF program officers in screening peer reviewers for conflicts.[189] Applicants must disclose personal, family, and business relationships; names and organizational affiliations for the applicant's Ph.D. advisor and any Ph.D. advisees; names and affiliations of any co-authors or co-collaborators in the last 48 months; and any editorial boards, editors-in-chief, or co-editors the individual interacted with over the last 24 months.[190]

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[180] *Id.*
[181] *Id.* at II-6.
[182] *Id.*
[183] *Id.*
[184] *Id.*
[185] *COA Template,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/coa/coa_template.xlsx.
[186] *Id.*
[187] *Frequently Asked Questions (FAQs) On Collaborators and Other Affiliations (COA) Info. Template,* NAT'L SCI. FOUND. (2018), https://www.nsf.gov/bfa/dias/policy/coa/faqs_coatemplatemay18.pdf.
[188] *COA Template,* NAT'L SCI. FOUND., https://www.nsf.gov/bfa/dias/policy/coa/coa_template.xlsx; NSF 19-1, THE NAT'L SCI. FOUND., NSF 19-1, PROPOSAL AND AWARD POLICIES AND PROC. GUIDE (2019).
[189] *Frequently Asked Questions (FAQs) On Collaborators and Other Affiliations (COA) Info. Template,* NAT'L SCI. FOUND. (2018), https://www.nsf.gov/bfa/dias/policy/coa/faqs_coatemplatemay18.pdf.
[190] *Id.*

4. The NSF is Unprepared to Stop Foreign Talent Recruitment Plan Members From Misappropriating U.S.-Funded Research

Though the NSF requires a wide array of disclosures from grant applicants, the agency does not have effective policies and procedures in place to prevent foreign talent recruitment plan members from misappropriating U.S. funds and U.S.-funded research. While the NSF recently implemented a new policy prohibiting NSF employees from participating in foreign talent recruitment plans, that policy does not extend to the principal investigators or researchers actually performing NSF-funded grant work.

Furthermore, an overall lack of vetting, internal controls, compliance infrastructure, and fraud detection abilities puts NSF's grant programs and funding at risk of being exploited or misappropriated by foreign talent recruitment plan members. The NSF relies on institutions and sponsors to conduct their own vetting and due diligence as it does not have a compliance office. NSF also lacks a uniform grant application despite receiving more than 50,000 grant applications annually in an unsearchable PDF format.[191] This effectively precludes a systematic review of potential foreign conflicts of interest and commitment, complicating NSF's ability to provide oversight and ensure compliance with grant terms and federal regulations. Though NSF plans to standardize the form and make future grant applications searchable in 2021, NSF officials admitted that they would still primarily rely on institutions to conduct vetting and due diligence.[192]

i. The NSF's Policy on Foreign Talent Recruitment Plans Does Not Apply to Researchers or Principal Investigators

The NSF released a policy in July 2019 regarding "Foreign Government Talent Recruitment Programs," which applies only to NSF employees. The policy does not apply to the more than 40,000 principal or co-principal investigators, senior researchers, scientists, mathematicians, engineers, and educators who work on NSF-funded projects.[193] The policy states that NSF personnel "are not permitted to participate in foreign government talent recruitment programs."[194] The policy further states that "[p]ublic service is a public trust, requiring NSF personnel and [Intergovernmental Personnel Act assignees] to place loyalty to the Constitution, the laws, and ethical principles above private gain. NSF personnel and IPAs shall

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[191] Interview with Rebecca Keiser, Nat'l Sci. Found., Office of International Science and Engineering (Aug. 19, 2019) (On file with the Subcommittee). [hereinafter KEISER INTERVIEW (Aug. 19, 2019)].
[192] KEISER INTERVIEW (Aug. 19, 2019).
[193] NAT'L SCI. FOUND., FY 2020 NSF BUDGET REQUEST TO CONGRESS: NUMBER OF PEOPLE INVOLVED IN NSF ACTIVITIES, at Summary Tables 5 (2019), https://www.nsf.gov/about/budget/fy2020/pdf/05_fy2020.pdf.
[194] *Personnel Pol'y on Foreign Gov't Talent Recruitment Programs,* NAT'L SCI. FOUND. (July 11, 2019), https://www.nsf.gov/bfa/dias/policy/researchprotection/PersonnelPolicyForeignGovTalentRecruitment%20Programs07_11_2019.pdf.

not hold financial interests that conflict with the conscientious performance of duty."[195]

The policy does not apply to a large part of the scientific community, including researchers or principal investigators conducting working at universities and other research institutions around the country.[196] Rebecca Keiser, NSF's Director of the Office of International Science and Engineering, told the Subcommittee that the NSF did not believe it had the capacity to apply the policy to individuals who are not NSF employees.[197] Additionally, she stated that she believed there would be "significant backlash from the community" if the policy was applied more broadly as, at this time, "it's hard to be clear enough about what the threat actually is."[198] Keiser stated that the NSF planned to revisit the policy after more communication with law enforcement and after the NSF's outside study of this threat was completed by the end of 2019.[199]

The NSF also issued a "Dear Colleague Letter" on "Research Protection" in conjunction with the new policy. NSF Director France Córdova provided additional commentary on the policy change:

> [W]e are issuing a policy making it clear that NSF personnel and IPAs detailed to NSF cannot participate in foreign government talent recruitment programs. There is a risk that participation in foreign government talent recruitment programs by NSF personnel and IPAs will compromise the ethical principles that bind us. Moreover, such participation poses significant risks of inappropriate foreign influence on NSF policies, programs, and priorities, including the integrity of NSF's merit review process—risks we simply cannot accept.[200]

Córdova's letter also detailed other NSF efforts meant to confront the challenge.[201] The NSF is proposing an electronic format for filing grant proposals, including the grant applicant's background materials and has hired an independent scientific advisory group to further study grant security.[202]

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[195] *Id.*
[196] KEISER INTERVIEW (Aug. 19, 2019).
[197] *Id.*
[198] *Id.*
[199] *Id.*
[200] *Dear Colleague Letter, NSF 19-200, Research Protection,* NAT'L SCI. FOUND., (July 11, 2019), https://www.nsf.gov/pubs/2019/nsf19200/research_protection.jsp.
[201] *Id.*
[202] *Id.*

ii. Existing Conflict of Interest and Commitment Reporting to the NSF Does Not Adequately Capture All Researcher Activities

Existing conflict of interest and conflict of commitment reporting requirements do not adequately capture all principal investigator or researcher activities.[203] As a result, the NSF has proposed clarifying disclosure provisions concerning "Current and Pending Support" to include in-kind support and activities outside a principal investigator's institutional appointment, such as consulting work during the summer months.[204] One research advocacy group asserts that the research community's common understanding, however, of existing "Current and Pending Support" reporting requirements is limited to reporting details that relate to principal investigators' involvement in projects within the scope of their institutional appointment in the United States.[205]

Many researchers and principal investigators working at U.S. universities are on nine-month contracts, with three months free in the summer months. Prior to the new PAPPG proposal, it was unlikely that U.S. institutions disclosed information on what its principal investigators did during the summer months. The disclosure requirement, therefore, may not have been effectively capturing potential conflicts related to activities outside a principal investigator's institutional appointment.[206]

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[203] A conflict of interest may exist: (i) if "significant financial interests of the investigator (including those of the investigator's spouse and dependent children) [would] reasonably appear to be affected by the research or educational activities funded or proposed for funding by NSF; or (ii) if [the investigator has significant financial interest in] entities whose financial interests would reasonably appear to be affected by such activities." THE NAT'L SCI. FOUND., NSF 19-1, PROPOSAL AND AWARD POLICIES AND PROC. GUIDE, Ch. IX: Grantee Standards (A)(2) IX-1 (2019), https://www.nsf.gov /pubs/policydocs/pappg19_1/nsf19_1.pdf. While there is no standard federally recognized definition of a conflict of commitment, the University of Illinois indicates a conflict of commitment arises "when the external activities of a [staff member] are so demanding of time or attention that they interfere with the individual's responsibilities to the [institution]" *Id.*. The term "significant financial interest" means anything of monetary value, including, but not limited to, salary or other payments for services (e.g., consulting fees or honoraria); equity interest (e.g., stocks, stock options or other ownership interests); and intellectual property rights (e.g., patents, copyrights and royalties from such rights). *Policy on Conflicts of Commitment and Interest*, U. OF ILLINOIS, https://www.vpaa.uillinois.edu/UserFiles/Servers/Server_420372/File/RNUA/COCI_Policy_2018.pdf.

[204] NAT'L SCI. FOUND., NSF-20-1, PROPOSED CHANGES TO THE PROPOSAL AND AWARD POLICIES AND PROC. GUIDE, II-23 (May 29, 2019), https://www.nsf.gov/bfa/dias/policy/papp/pappg20_1/ FedReg/draftpappg_may2019.pdf. Letter from Wendy D. Streitz, President, Council on Governmental Relations, to Suzanne Plimpton, Reports Clearance Officer, NAT'L SCI. FOUND. (July 29, 2019), https://www.cogr.edu/sites/default/files/NSF%20PAPPG%20final.pdf.

[205] Letter from Wendy D. Streitz, President, Council on Governmental Relations, to Suzanne Plimpton, Reports Clearance Officer, NAT'L SCI. FOUND. (July 29, 2019), https://www.cogr.edu/sites/ default/files/NSF%20PAPPG%20final.pdf.

[206] KEISER INTERVIEW (Aug. 19, 2019).

Keiser told the Subcommittee that the NSF views these PAPPG proposals as a clarification to help the community understand the disclosure obligations.[207] The research community, however, views these as significant changes to current reporting requirements that will add to institutional and investigator burdens.[208] The Council of Government Relations, responding to the NSF's proposed changes, wrote, "[W]e urge NSF to consider the consequential impact to institutions this change in practice will create and work with the community to minimize the additional burden."[209]

iii. The NSF Does Not have a Compliance Staff and Relies on Applicants or Sponsoring Institutions to Conduct Due Diligence

According to interviews with NSF staff, the NSF relies on applicants and sponsoring institutions to conduct the vetting and due diligence for potential grant recipients.[210] The NSF does not have employees dedicated to vetting grant applicants or to ensure compliance with the terms of the grant.[211] Instead, Keiser told the Subcommittee that the NSF relies on the sponsoring entity, typically a university or hospital, to conduct the due diligence of the principal investigator as that investigator is nearly always an employee of that institution.[212] The institutions themselves also have an interest in ensuring that the principal investigator is complying with the terms of the grant as the NSF could potentially disbar an institution from receiving NSF funding because of violations.[213]

iv. The NSF Relies on its Inspector General to Identify Grant Fraud

Since the NSF does not have a compliance staff, the agency relies on its Inspector General ("NSF IG") to identify instances of potential grant fraud, conflicts of commitment, and conflicts of interest. The NSF IG told the Subcommittee that investigating foreign talent recruitment plans, including the TTP, resulted in a 20 percent increase in the office's per-agent caseload.[214] TTP investigations alone now amount to approximately 25 percent of the NSF IG's Office of Investigations' overall workload.[215] The NSF IG indicated that as "universities become more familiar with

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[207] *Id.*
[208] Letter from Wendy D. Streitz, President, Council on Governmental Relations, to Suzanne Plimpton, Reports Clearance Officer, NAT'L SCI. FOUND. (July 29, 2019), https://www.cogr.edu/sites/default/files/NSF%20PAPPG%20final.pdf.
[209] *Id.*
[210] KEISER INTERVIEW (Aug. 19, 2019).
[211] *Id.*
[212] *Id.*
[213] *Id.*
[214] Interview with the Office of Inspector Gen., Nat'l Sci. Found. (Sept. 19, 2019).
[215] *Id.*

the challenges posed by faculty affiliations with [the TTP], that percentage could increase."[216]

The NSF IG told the Subcommittee that that there are some unique challenges it faces when investigating cases involving talent recruitment plans. These investigations require significant expenditures in addition to those incurred with other civil, criminal, and administrative investigations.[217] As another department's inspector general's office noted to the Subcommittee, relying on the inspector general is not an adequate substitute for maintaining an effective internal compliance program.[218]

5. Talent Recruitment Plan Members Misappropriated NSF Research

According to public and non-public information obtained by the Subcommittee, TTP members have misappropriated NSF research grants. The Subcommittee identified public cases that resulted in prosecutions of talent recruitment plan members involved in NSF grants or with NSF grantees. These cases involved the TTP and other related talent recruitment plans.

Public Case Examples. First, Percival Zhang, a biological systems engineering professor at Virginia Polytechnical Institutes and State University ("Virginia Tech"), founded Cell-Free Bioinnovations, Inc. ("CFB"), a private research firm located in Blacksburg, Virginia.[219] CFB relied exclusively on federal grants, including funds from the NSF, "for funding its research activities."[220] Zhang had begun working as a paid researcher for the Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences by, at least, 2014.[221] In 2015, Zhang submitted fraudulent grant proposals to the NSF.[222] "Evidence presented at trial indicated grant funds obtained would be used for research Zhang knew had already been done in China."[223] "Zhang intended to use the grant funds for other CFB projects rather than for the projects for which the funds were requested."[224] In an

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[216] Email from the Office of Inspector Gen., Nat'l Sci. Found. to the Subcommittee (Sept. 19, 2019) (on file with Subcommittee).
[217] *Id.*
[218] Briefing with the Subcommittee (Oct. 2, 2019).
[219] Press Release, U.S. Dept. of Justice, Former Virginia Tech Professor Found Guilty of Grant Fraud, False Statements, Obstruction (Feb. 25, 2019) (https://www.justice.gov/usao-wdva/pr/former-virginia-tech-professor-found-guilty-grant-fraud-false-statements-obstruction). *See also U.S. v. Yiheng Percival Zhang.*, 2019 WL 2263835 (W.D.Va. May 3, 2019).
[220] *Id.*
[221] *Id.*
[222] *Id.*
[223] *Id.*
[224] *Id.*

effort to obstruct the investigation into his activities, Zhang submitted falsified timesheets to government investigators.[225]

In the second case, Feng "Franklin" Tao "signed a five-year contract with Fuzhou University in China that designated him as a Changjiang Scholar Distinguished Professor."[226] The contract required him to be a full time employee of the Chinese university.[227] "While Tao was under contract with Fuzhou University, he was conducting research at Kansas University funded through two Energy contracts and four NSF contracts."[228] Tao is alleged to have "defrauded the US government by unlawfully receiving federal grant money at the same time that he was employed and paid by a Chinese research university—a fact that he hid from his university and federal agencies."[229]

Third, "beginning in 2010, and while employed at NOAA, Chunzai Wang entered into contractual agreements to work under China's Changjiang Scholars Program, the TTP, and was also involved in China's 973 Program which mobilizes scientific talents to strengthen basic research in line with national strategic targets of the People's Republic of China."[230] "Wang knowingly and willfully received a salary for his services as an employee of NOAA/AOML, from the People's Republic of China."[231] Wang was also listed as an investigator on at least one NSF-funded project.[232]

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[225] *Id.*
[226] Press Release, U.S. Dept. of Justice, University of Kansas Researcher Indicted for Fraud for Failing to Disclose Conflict of Interest with Chinese University (Aug. 21, 2019), https://www.justice.gov/usao-ks/pr/university-kansas-researcher-indicted-fraud-failing-disclose-conflict-interest-chinese.
[227] *Id.*
[228] *Id.*
[229] *Id.*
[230] Press Release, U.S. Dept. of Justice, Former Research Oceanographer Sentenced for Accepting a Salary from the People's Republic of China (Feb. 22, 2018) (https://www.justice.gov/usao-sdfl/pr/former-research-oceanographer-sentenced-accepting-salary-people-s-republic-china*). See also U.S. v. Chunzai Wang*, 2018 WL 1391892 (S.D.Fla. Feb. 20, 2018).
[231] *Id.*
[232] *Award Abstract #1041145; Collaborative Research: The Southern Subtropical Anticyclones,* NAT'L SCI. FOUND., https://www.nsf.gov/awardsearch/showAward?AWD_ID=1041145&HistoricalAwards=false.

B. THE NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health ("NIH"), part of the U.S. Department of Health and Human Services ("HHS"), is the world's largest biomedical research agency.[233] NIH's mission "is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability."[234] NIH invests over $39 billion annually in medical research and distributes 80 percent of this money through about 50,000 grants to more than 300,000 grantees or principal investigators at universities, medical schools, and research institutions in every U.S. state and around the world.[235]

NIH has attempted to address the threats presented by foreign talent recruitment plans like the TTP, but significant gaps in grant integrity efforts remain unaddressed. These gaps have made it difficult for NIH to engage in proactive efforts to prevent foreign exploitation of U.S.-funded research. Instead, NIH is now conducting investigations based on a review of behavior that has already occurred, identifying the loss of intellectual property and intellectual capital to China. NIH acknowledged that at least 75 individuals potentially linked to foreign talent recruitment plans also served as peer reviewers within the last two years.[236] NIH guidelines for vetting peer reviewers for potential participation in foreign talent recruitment plans do not require that potential researchers be vetted against any law enforcement database.[237] Instead, NIH officials rely on "reviewing the first page of results from a Google search."[238] NIH also recently acknowledged the difficulty in fully preventing foreign governments from coopting U.S.-funded research. NIH's Director of Extramural Research publicly stated that NIH does not

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[233] *About NIH*, NAT'L INST. OF HEALTH, https://www.nih.gov/about-nih.

[234] *Mission and Goals*, NAT'L INST. OF HEALTH, https://www.nih.gov/about-nih/what-we-do/mission-goals.

[235] *Budget*, NAT'L INST. OF HEALTH, https://www.nih.gov/about-nih/what-we-do/budget. Principal Investigator "is defined as the individual(s) judged by the applicant organization to have the appropriate level of authority and responsibility to direct the project or program supported by the grant … Each principal investigator is responsible and accountable to the applicant organization, or, as appropriate, to a collaborating organization, for the proper conduct of the project or program including the submission of all required reports." *Frequently Asked Questions: Multiple Principal Investigators*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/. *Budget*, NAT'L INST. OF HEALTH, https://www.nih.gov/about-nih/what-we-do/budget/multi_pi/faq.htm.

[236] OFFICE OF THE INSPECTOR GEN., DEP'T OF HEALTH AND HUMAN SERV., OEI-01-19-00160, VETTING PEER REVIEWERS AT NIH'S CENTER FOR SCI. REV.: STRENGTHS AND LIMITATIONS, 12 (Sept. 2019) [hereinafter HHS IG REPORT: PEER REVIEW (Sept. 2019)]. OFFICE OF THE INSPECTOR GEN., DEP'T OF HEALTH AND HUMAN SERV., A-03-19-03003, THE NAT'L INST. OF HEALTH HAS LIMITED POLICIES, PROC., AND CONTROLS IN PLACE FOR HELPING TO ENSURE THAT INST. REPORT ALL SOURCES OF RES. SUPPORT, FIN. INT., AND AFFILIATIONS, 2 (Sept. 2019) [hereinafter HHS IG REPORT: REPORTING (Sept. 2019)].

[237] HHS IG REPORT: PEER REVIEW at 13 (Sept. 2019).

[238] *Id.*

"know the scale of the problem" and that it is "concerned that the scale is much worse than what [it is] seeing."[239]

1. NIH Grant Process

NIH's General Instructions outlines the grant application process.[240] NIH advertises opportunities for grant funding through funding opportunity announcements ("FOAs") on both the NIH Guide for Grants and Contracts and Grants.gov.[241] All grant applications must be submitted in response to a FOA.[242] The FOAs provide specific instructions that are used in conjunction with the general instructions.[243] NIH has seven different groups of grant funding and each include a variety of individual grant programs identified by a specific activity code.[244]

Generally, NIH's application process follows three steps: (1) application for grant funding; (2) application referral and review; and (3) pre-award and award process.[245] The application phase begins after a researcher has identified an appropriate FOA.[246] The FOA and the general instructions provide direction on the appropriate forms to complete for the chosen grant.[247] The forms that need to be completed are specific to each type of grant and will be communicated in the FOA.[248] They also contain links for unstructured responses to fields such as a cover page, a biographical sketch, current and pending support, and a project narrative.[249]

The Center for Scientific Review ("CSR") reviews the application for completeness before assigning the application to a specific NIH Institute or Center

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[239] David Bonazzi & Salzman Art, *NIH Reveals Its Formula for Tracking Foreign Influences*, NEWSFLASH (Sept. 27, 2019), https://newsflash.one/2019/09/27/nih-reveals-its-formula-for-tracking-foreign-influences/.
[240] NAT'L INST. OF HEALTH, SF424 ("R&R") APPLICATION PACKAGES: GEN. INSTRUCTIONS FOR NIH AND OTHER PHS AGENCIES (2018) (https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general-forms-e.pdf).
[241] *Understand Funding Opportunities*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/how-to-apply-application-guide/prepare-to-apply-and-register/understand-funding-opportunities.htm.
[242] *Plan Your Application*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/planning_application.htm.
[243] *Understanding Funding Opportunities*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/how-to-apply-application-guide/prepare-to-apply-and-register/understand-funding-opportunities.htm.
[244] *Types of Grant Programs*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/funding/funding_program.htm.
[245] *Grants Process Overview*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/grants-process-overview.pdf.
[246] *Plan Your Application*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/planning_application.htm.
[247] *How to Apply – Application Guide*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/how-to-apply-application-guide.html.
[248] *Id.*
[249] *Id.*

for possible funding.[250] The CSR also assigns the application to a review committee with the expertise to evaluate the scientific merit of the application.[251]

The grant application then undergoes two levels of peer review.[252] The first level of review is conducted primarily by "non-federal scientists who have expertise in relevant scientific disciplines and current research areas."[253] The peer review process is intended "to ensure that applications for funding submitted to NIH are evaluated on the basis of a process that is fair equitable, timely, and conducted in a manner that strives to eliminate bias."[254] The second level of review is performed by Institute and Center Advisory Councils or Boards composed of "both scientific and public representatives chosen for their expertise, interest, or activity in matters related to health and disease."[255] Only applications recommended for approval at both stages of review may be considered for funding.[256] Following the funding recommendation, NIH decides whether to grant an award and what level of funding to provide.[257] The Notice of Award is the legal document used to notify the applicant that an award has been made.[258] The notice includes all applicable terms of the grant and "contact information for the assigned program officer and grants management specialist."[259]

2. Disclosure of Foreign Support and Affiliations

Current law does not require NIH to "proactively ensure that investigators disclose all sources of research support, financial interests, and affiliations."[260] The compliance relationship between NIH and its grant recipients is predicated on trust—institutions are therefore responsible for soliciting and reviewing disclosures of significant financial interests from each investigator who is planning to participate in or is participating in NIH-funded research.[261] Institutions are also responsible for reporting to NIH any significant financial interests that may constitute a financial conflict of interest ("FCOI").[262] An FCOI exists when an institution reasonably determines that an "investigator's significant financial

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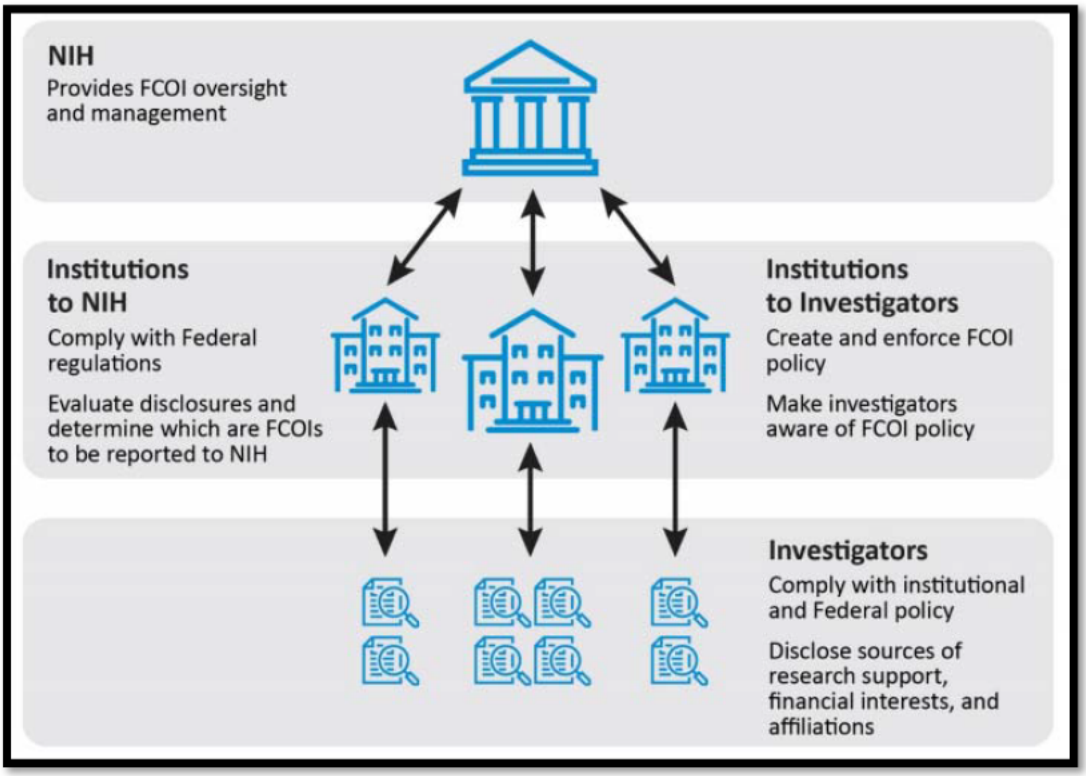
[250] *Receipt and Referral*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/receipt-referral.htm.
[251] *Id.*
[252] *Peer Review*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/peer-review.htm.
[253] *Id.*
[254] NAT'L INST. OF HEALTH, NIH GRANTS POLICY STATEMENT I-67–68 (Oct. 2018), https://grants.nih.gov/grants/policy/nihgps/nihgps.pdf.
[255] *Peer Review*, NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/peer-review.htm.
[256] *Id.*
[257] *Id.*
[258] *Id.*
[259] *Pre-Award and Award Process,* NAT'L INST. OF HEALTH, https://grants.nih.gov/grants/pre-award-process.htm.
[260] HHS IG REPORT: REPORTING at 4 (Sept. 2019).
[261] *See* 42 C.F.R. § 50.604(d).
[262] *See* 42 C.F.R. § 50.605(b).

interest … could directly and significantly affect the design, conduct, or reporting" of the research.[263]

Investigators are required to disclose any significant financial interests to the official at their institution who is responsible for such disclosures.[264] "The institution then determines whether the investigator's conflict is related to his or her institutional responsibilities and if so, whether the significant financial interest constitutes an FCOI."[265] Because an investigator's research support, financial interests, and affiliations may constitute a significant financial interest, they must be disclosed to both the institution and NIH.[266] The HHS IG produced the following graphic illustrating the responsibilities of the investigators, the institutions, and NIH for identifying and reporting FCOIs.[267]



3. NIH's Division of Grants Compliance and Oversight

NIH's Division of Grants Compliance and Oversight ("DGCO") serves as the "focal point to advance external compliance with policy and legislative mandates

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[263] *See* 42 C.F.R. § 50.604(f).
[264] *See* 42 C.F.R. § 50.604(e)(1).
[265] HHS IG REPORT: REPORTING at 5 (Sept. 2019).
[266] *Id.*
[267] *Id.* at 6.

and enhance compliance oversight by recipient institutions."[268] By accepting NIH-funding, recipients indicate acceptance of the associated terms and conditions, including compliance with applicable federal statutes, regulations, and policies.[269] Though NIH expects grant recipients to properly administer sponsored activities and comply with relevant regulations and policies, DCGO conducts two types of routine site visits at recipient institutions to advance compliance and provide oversight:

- *Proactive Compliance Site Visits.* These site visits assess institutional understanding of federal policies and regulations, seek to minimize or eliminate areas of non-compliance, and nurture partnerships between NIH and its recipient institutions. These visits are not designed to address specific problems and are not considered audits or investigations.[270]

- *Targeted Site Review.* These site reviews are an NIH initiative focusing specifically on compliance with FCOI regulations.[271] The reviews are meant to determine if "(1) recipient institutions are fully and correctly implementing the FCOI regulation, and (2) reporting requirements are being met."[272]

4. The HHS IG Identified Weaknesses in Tracking and Reporting Foreign Financial Conflicts of Interest

In September 2019, the HHS IG released three reports focused on identifying and reporting financial conflicts of interest and foreign talent recruitment plans—including the TTP. The HHS IG identified vulnerabilities in all three reports. First, the HHS IG evaluated NIH's reliance on the peer review process for evaluating grant applications.[273] The HHS IG noted that because peer reviewers conduct "the initial review of research grants submitted to NIH, they have a unique opportunity to access confidential information in grant applications."[274] While NIH has taken some steps to address the threat from potential conflicts of interest with peer reviewers, significant problems remain with NIH's overall visibility into potential conflicts. For example, HHS IG found that "NIH focuses on preventing undue influence generally, but does not specifically focus on undue foreign influence" like foreign talent recruitment plans.[275]

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[268] *Grants Compliance and Oversight*, NAT'L INST. OF HEALTH, https://grants.nih.gov/policy/compliance.htm#activities.
[269] *Id.*
[270] *Id.*
[271] *See* 42 C.F.R. pt. 50, Subpart F.
[272] *Grants Compliance and Oversight*, NAT'L INST. OF HEALTH, https://grants.nih.gov/policy/compliance.htm#activities.
[273] *See* HHS IG REPORT: PEER REVIEW (Sept. 2019).
[274] *Id.* at 2.
[275] *Id.* at 11.

NIH also has identified 250 scientists as "individuals of possible concern," of which roughly 30 percent served as a peer reviewer over the past two years.[276] Additionally, NIH's guidelines for the vetting of peer reviewers "do not advise vetting nominees against any type of law enforcement database. Instead, [the guidelines] suggest generally reviewing the first page of results from a Google search."[277] As a result, NIH "has efforts underway to address" identifying potential sources of undue foreign influence with its peer reviewers.[278]

In an attempt to raise awareness of the importance of confidentiality in the peer review process, NIH has launched ongoing communications with its staff, the research community, and grantee institutions—some of which have proactively raised concerns with NIH. Specifically, NIH issued a notice titled "Reminders of NIH Policies on Other Support and on Policies Related to Financial Conflicts of Interest and Foreign Components" on July 10, 2019.[279] This notice served as a reminder to the research "community about the need to report foreign activities through documentation of other support, foreign components, and financial conflict of interest to prevent scientific, budgetary, or commitment overlap."[280] NIH issued this notice more than three years after the FBI notified NIH of an extensive peer review violation in June 2016.[281] NIH also "convened a working group of the Advisory Committee to the NIH Director to explore additional steps to protect the integrity of [NIH]'s peer review."[282] In addition to the working group, on June 4, 2019, HHS's Office of National Security issued a policy proposal to create an Insider Threat program.[283] On October 2, 2019, HHS started the first program of this kind to focus on identifying possible risk, mitigation measures, and technical outreach assistance to U.S. institutions receiving NIH funding.[284]

According to NIH, it will be difficult to find a viable solution to address concerns about talent recruitment plan members and the peer review process.[285]

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[276] *Id.* at 12.
[277] *Id.*
[278] *Id.* at 12.
[279] *Reminders of NIH Policies on Other Support and on Policies related to Financial Conflicts of Interest and Foreign Components*, NAT'L INST. OF HEALTH (July 10, 2019), https://grants.nih.gov/grants/guide/notice-files/NOT-OD-19-114.html.
[280] *Id.*
[281] Briefing with Nat'l Inst. of Health (Oct. 17, 2019). *See also,* Andrea Widener, *Amid Tensions with China, US Emphasizes Rules Around Research Security*, C&EN (Sept. 25, 2019), https://cen.acs.org/policy/research-funding/Amid-tensions-China-US-emphasizes/97/i38. ("The NIH first learned about concerns regarding China in June 2016, when the FBI approached the agency about 'significant breaches in peer review confidentiality,' says Michael Lauer, deputy director for extramural research at the NIH.").
[282] HHS IG REPORT: PEER REVIEW at 2 (Sept. 2019).
[283] *NIH CI/Insider Threat Proposal – Decision*, NAT'L INST. OF HEALTH (June 4, 2019) (document on file with the Subcommittee).
[284] *Id.*
[285] Briefing with Nat'l Inst. of Health (Oct. 17, 2019).

NIH officials said it would take "at least 6 months to a year" to come up with a "risk-based approach for identifying peer reviewer nominees who warrant extra security."[286] That effort would also require an additional 100 fulltime employees.[287]

Second, the HHS IG completed a broader review of NIH's efforts to uncover FCOIs with researchers and principal investigators.[288] Since a 2008 HHS IG report that identified "serious gaps in NIH's oversight of extramural investigators,"[289] the HHS IG found that NIH "has made progress in overseeing FCOIS that extramural grantee institutions report for their research investigators."[290] Nevertheless, the NIH could do more to protect taxpayer dollars and national security.[291] The HHS IG noted that NIH does not perform any quality assurance to "ensure the adequacy or consistency of program officials' reviews" of potential FCOIs.[292] Most alarming, however, is that NIH could not provide "the number of FCOIs reported in FY 2018 that involved a significant financial interest in a foreign entity (e.g., the investigator with the FCOI was conducting research in the United States but had a significant financial interest in a foreign entity)."[293] This is because NIH does not have a mechanism within the FCOI reporting software to identify foreign entities.[294]

Third, the HHS IG evaluated the policies, procedures, and controls NIH has in place to help institutions report all sources of outside research support, financial interests, and affiliations.[295] The HHS IG noted that, as shown below, "[t]he number of reviews conducted under the FCOI compliance program significantly decreased from 28 reviews in FY 2013 to only 3 reviews in FY 2018."[296] NIH officials told the Subcommittee that the decrease in compliance reviews was due to staffing shortages.[297]

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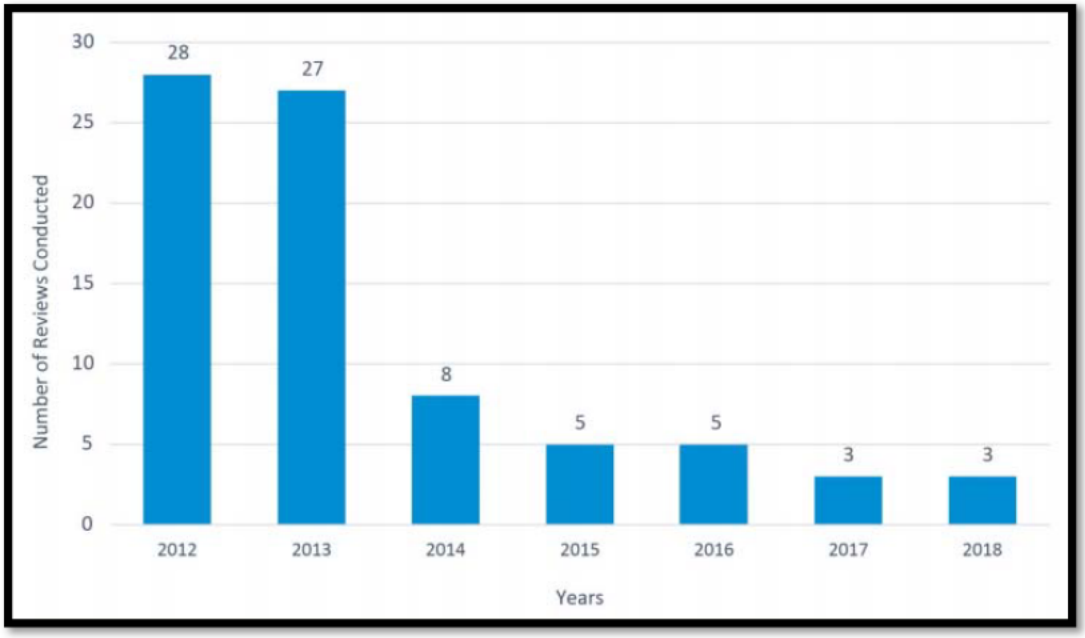
[286] David Bonazzi & Salzman Art, *NIH Reveals Its Formula for Tracking Foreign Influences*, NEWSFLASH (Sept. 27, 2019), https://newsflash.one/2019/09/27/nih-reveals-its-formula-for-tracking-foreign-influences/.
[287] *Id.*
[288] OFFICE OF THE INSPECTOR GEN., DEP'T OF HEALTH AND HUMAN SERV., OEI-03-19-00150, NIH HAS MADE STRIDES IN REVIEWING FIN. CONFLICTS OF INTEREST IN EXTRAMURAL RES., BUT COULD DO MORE (Sept. 2019) [hereinafter HHS IG REPORT: FCOIS (Sept. 2019)].
[289] *Id.* at 2.
[290] *Id.* at Report in Brief.
[291] *Id.*
[292] *Id.* at 13.
[293] *Id.* at 15.
[294] *Id.*
[295] HHS IG REPORT: REPORTING (Sept. 2019).
[296] *Id.* at 7.
[297] Briefing with Nat'l Inst. of Health (Oct. 3, 2019).



[298]

Additionally, the report found "[n]ot all NIH-funded investigators may be aware that they are required to disclose significant financial interests with regard to research support, financial interests, and affiliations."[299] Moreover, "[o]f the 1,875 institutions that received NIH funding in FY 2018 and were required to have FCOI policies, 1,013 did not have FCOI policies posted on their websites."[300]

5. Weaknesses in NIH's Internal Controls for Monitoring and Permitting Foreign Access to Sensitive Data

The HHS IG also found weaknesses in NIH's ability to properly control foreign investigator access to sensitive information. In February 2019, the HHS IG released a report assessing whether NIH had adequate internal controls in place when permitting and monitoring foreign principal investigators access to NIH genomic data.[301] The IG found that "NIH did not consider the risk presented by foreign principal investigators when permitting access to United States genomic data."[302] NIH expects foreign principal investigators to "safeguard NIH data and use sound security practices in accordance with signed user agreements," but the IG's report notes that "NIH does not verify that foreign [principal investigators]

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[298] HHS IG REPORT: REPORTING at 7 (Sept. 2019).
[299] *Id.* at 8.
[300] *Id.*
[301] OFFICE OF THE INSPECTOR GEN., DEP'T OF HEALTH AND HUMAN SERV., A-18-18-09350, OPPORTUNITIES EXIST FOR THE NAT'L INS. OF HEALTH TO STRENGTHEN CONTROLS IN PLACE TO PERMIT AND MONITOR ACCESS TO ITS SENSITIVE DATA (Feb. 2019).
[302] *Id.* at Report in Brief.

have completed security training, even though NIH's Security Best Practices for Controlled-Access Data emphasize security training as a key control."[303]

Additionally, the report found that NIH had not assessed the risks to national security when permitting access to foreign principal investigators, and did not ensure that NIH Policy reflected the current emerging threat to national security.[304] For example, NIH permitted access to genomic data to for-profit entities, including WuXi Nextcode Genomics and Shenzhen BGI Technology Company, which the FBI said have ties to the Chinese government.[305] In another example, "NIH did not consider any restrictions on which foreign principal investigators were permitted access to research data based on national security risks, such as weaponizing for biological warfare."[306] Finally, the HHS IG noted that "NIH officials did not consider risks related to the United States' national security by foreign [principal investigators] connected to state-sponsored activities, the presence of United States and international sanctions, or whether the [principal investigator] is in a foreign country that is on a United States Government watch list."[307]

6. TTP Members Misappropriated NIH Research

While NIH continues to investigate cases of undisclosed foreign support, it has already identified instances in which TTP members misappropriated NIH-funded research. As of September 13, 2019, NIH had contacted 70 institutions regarding more than 130 individuals who received or are receiving NIH funding.[308]

NIH sent confidential communications to institutions that received NIH funding: "It has come to our attention that there are issues of potential noncompliance with NIH policies regarding disclosures of outside research support and relevant affiliations or foreign components."[309] NIH then provided the NIH researcher or investigator's name and specific details about that individual's alleged participation in the TTP or other source of foreign funding.[310] NIH then instructed the institution to within 30 days to "review these issues" and "confirm that this investigator and the [U.S. institution that received NIH funding] complied with [NIH's] policies."[311]

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[303] *Id.*
[304] *Id.* at 4.
[305] *Id.*
[306] *Id.* at 5.
[307] *Id.* at 4.
[308] Email from U.S. Health and Human Serv. to the Subcommittee (Sept. 13, 2019) (on file with Subcommittee); Nat'l Inst. of Health briefing with the Subcommittee (Oct. 3, 2019).
[309] Documents on file with the Subcommittee (PorCTP-0000144).
[310] *Id.*
[311] *Id.*

As of this report, NIH has only received complete responses concerning 51 individuals believed to have undisclosed foreign affiliations.[312] NIH was able to determine that taking administrative action, such as holding awards, changing the principal investigator, or other grants actions, was necessary for 66 individuals.[313] NIH indicated that this statistic does not include those grant recipients who were either terminated or resigned.[314] Additionally, as of late 2018, NIH told the Subcommittee that it identified roughly 45 individuals who could no longer work on NIH grants due to their participation in foreign talent recruitment plans.[315]

The Subcommittee worked with NIH to produce the below case examples of NIH research grants and connections to the TTP.[316] These examples detail specific instances of misappropriation, or in some instances theft, of U.S.-funded intellectual property.

Individual Z

In early 2019, NIH contacted a medical school concerning three principal investigators with potential affiliations with the TTP, Chinese universities, and other Chinese government funded grant programs.[317] The institution conducted an internal review and initially indicated that it did not identify any financial conflicts of interests.[318] The internal review involved phone interviews and written questions and answers with the principal investigators at issue.[319]

NIH, however, submitted additional questions concerning one of the principal investigators who told the institution that he or she never worked at Peking University and did not receive any funds from any talent recruitment plans.[320] NIH sent the institution a screenshot of Peking University's website that identified the principal investigator as a "Professor" since 2012.[321] NIH also sent the institution information indicating that the principal investigator was likely a TTP member.[322] The institution later provided NIH with an affidavit from the principal investigator stating he or she never held a position at Peking. The principal investigator also told the institution that Peking University's web site must be an oversight as he or

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[312] Email from U.S. Health and Human Serv. to the Subcommittee (Oct. 19, 2018) (on file with Subcommittee).
[313] *Id.*
[314] *Id.*
[315] *Id.*
[316] NIH primarily wrote the case examples due to law enforcement equities. The Subcommittee edited for clarity and uniformity.
[317] PorCTP-0000506.
[318] PorCTP-0000504.
[319] PorCTP-0000501.
[320] PorCTP-0000504.
[321] PorCTP-0000503.
[322] PorCTP-0000503.

she never actually accepted the position.[323] NIH then informed the institution that the principal investigator likely had a potential conflict as he or she maintained an active, unreported Natural Science Foundation of China ("NSFC") grant.[324] The institution's representative wrote back to NIH: "Obviously concerning to us."[325]

Despite these violations of NIH grant policy, the institution allowed the individual to continue as a principal investigator on the NIH grant and NIH has yet to take any further action. [326]

Individual X

In early 2019, NIH contacted a medical research institution concerning a principal investigator, Individual X.[327] That individual also was publicly listed as serving in several positions at Huazhong University of Science and Technology.[328] Additionally, NIH alleged that the principal investigator also worked on two active NSFC grants that Individual X did not disclose.[329]

Subsequently, the institution conducted an internal investigation and stated that it

> may have failed to completely disclose [Individual X's] affiliation at Huazhong University of Science and Technology, funding from the National Natural Science Foundation of China, and the Chinese Thousand Talents Program, and foreign components of the awarded projects in applications and progress reports which designate [Individual X] as the [principal investigator] or Key Personnel.[330]

After the institution's inquiry into the individual's foreign associations, Huazhong University deleted the individual's online resume.[331] The institution, however, asserted that the work did not overlap with past or existing NIH grants.[332] Despite these violations of NIH grant policy, the institution allowed the individual to continue as a principal investigator on the NIH grant and NIH has yet to take any further action.[333]

Individual Y

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[323] PorCTP-0000501.
[324] PorCTP-0000500.
[325] PorCTP-0000499.
[326] *Id.*
[327] PorCTP-0000145.
[328] *Id.*
[329] *Id.*
[330] PorCTP-0000155.
[331] Documents on file with the Subcommittee.
[332] PorCTP-0000172.
[333] *Id.*

In early 2019, NIH contacted a hospital institution regarding alleged foreign support for an NIH-sponsored medical researcher, Individual Y.[334] Individual Y worked at the institutions' Biomedical Informatics and Division of Biostatistics.[335] The institution conducted an internal investigation and located a TTP contract signed by Individual Y.[336] The TTP contract required Individual Y to "recruit three undergraduate students each year … focus on recruiting 1-2 post-doctoral students each year … [and] publish 12 papers in mainstream international journals."[337]

The institution's internal investigation also discovered that in addition to being a member of the TTP on contract through 2020, Individual Y had faculty appointments at two universities in China: Jianghun and Wuhan.[338] Individual Y also received a 2018 award from the National Natural Science Foundation of China.[339] Individual Y also proposed using a U.S. data set for the NSFC-funded project.[340] The institution did not disclose any of the sources of foreign support to NIH.[341] The institution subsequently counseled Individual Y on the "importance of full and accurate disclosure."[342]

NIH also identified potential conflicts of commitment. For example, NIH asked if the institution was aware that Individual Y "was spending 6 months a year in China working on this project?"[343] The institution reported that it was not aware.[344] As a corrective measure, the institution refunded to NIH Individual Y's salary draws for time periods where there was "most likely potential for effort overlap."[345] NIH continues to investigate the alleged violations.[346]

Individual 1[347]

Individual 1 was a professor and researcher working in cellular and molecular physiology. Individual 1 is also a principal investigator who worked on an NIH Exploratory/Developmental Research Grant Award. On April 11, 2014,

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[334] PorCTP-0000245.
[335] *Id.*
[336] *Id.*
[337] PorCTP-0000247–248.
[338] PorCTP-0000236.
[339] *Id.*
[340] *See* PorCTP-0000238 (Upon further investigation, the Institution was unable to locate a "Data Use Certification" for use of the U.S. data relating to an NSFC funded project. Ultimately, the Institution was unable to definitively determine if Individual Y used the U.S. data in an unauthorized manner).
[341] PorCTP-0000237.
[342] *Id.* (emphasis in original).
[343] PorCTP-0000231.
[344] *Id.*
[345] PorCTP-0000240.
[346] *Id.*
[347] Health and Human Serv. production (Oct. 2, 2019) (documents on file with the Subcommittee).

Individual 1 requested and received a one-year unpaid leave of absence starting in July 2014 to work at Tsinghua University.

Individual 1 joined Tsinghua Medical School as a recipient of a TTP award in July 2014. While working at Tsinghua Medical School, Individual 1 worked on developing special antibodies. Tsinghua provided Individual 1 with other special opportunities, such as the ability to work with a distinguished Nobel Prize winner, the use of first-class technology and facilities, and access to the institution's renowned structural biology center. Individual 1 even received an award from the Chinese government that fully supported his or her research and salary at Tsinghua University from July 2014 to June 2017.

On April 6, 2015 Individual 1 requested and received extended leave permitting the individual to maintain a 50 percent appointment at the institution while working at Tsinghua University. The institution also granted permission for Individual 1 to continue to conduct research at the institution.

While Individual 1 was supposed to conduct all the work at the U.S. institution's facilities, Individual 1 directed some of the work to be done in China at Tsinghua University.[348] Individual 1 did not submit a financial disclosure form to the U.S. institution in 2014 as required by the U.S. institution. The individual also did not disclose to the U.S. institution the salaries received from Tsinghua University in subsequent disclosure forms.[349]

"The institution's internal investigation determined that it should have reported to NIH the possibility of collaboration with investigators at a foreign site that could result in co-authorship and should have provided a Foreign Justification attachment to Individual 1's award application."[350] In addition, the institution failed to include Individual 1's Tsinghua University's position on supplementary reports and failed to report the continuing arrangement with Tsinghua. In response to repeated violations of NIH policies and TTP membership, the institution's only actions was to develop a remediation plan that required Individual 1 to file annual conflict of interest disclosures.[351]

Individual 3[352]

A medical school reported that a pharmacology and dermatology professor, Individual 3, potentially failed to comply with NIH policies requiring disclosure of outside research support and foreign affiliations or research components. Individual 3 has an NIH grant from the National Cancer Institute. On several publications, Individual 3 listed foreign support, in addition to his or her NIH

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[348] PorCTP-0001532.
[349] PorCTP-0001533.
[350] *Id.*
[351] PorCTP-0000240.
[352] *Id.*

support, and held affiliations with at least five Chinese institutions. None of the foreign support or foreign affiliations, however, were disclosed on Individual 3's NIH grant documents.

When questioned by the institution, Individual 3 said his or her publications included reference to support from the NSFC because he or she considered it an honor. Individual 3, however, also claimed that he or she received no financial support from the NSFC award for his or her NIH-funded, or any other, research. He or she also claimed that the aim of the project was different than the subject of his or her NIH award.

During its internal investigation, the institution found online reports suggesting Individual 3 was a Dean at Jiangsu University, participated in the Jinshan Scholars Program, and in the TTP. Individual 3 said he or she rejected the position and never participated in the alleged programs. Individual 3 also worked with three post-doctoral students on an NIH grant who held concurrent positions at Chinese institutions. Though these post-doctoral researchers did not list their foreign government support in co-authoring publications with Individual 3, these post-doctoral researchers' co-authors at their affiliated Chinese institutions listed Chinese government support.

As part of its response to this matter, the institution convened a Committee on Research Security and Conflicts of Commitment to make recommendations about how to secure research on its campuses and ensure that researchers' commitments supporting their research are not compromised by external relationships. The institution told NIH that it will also review all of Individual 3's grant applications for the next two years.

Individual 4[353]

NIH contacted a medical research institution after identifying issues of potential willful non-disclosure of outside research support and relevant affiliations or foreign components. NIH found that Individual 4, who serves as the Principal Investigator on an NIH grant from the National Cancer Institute, may have willfully failed to disclose the following affiliations:

1. A distinguished professorship Zhejiang University;
2. Selection for the Chinese Talents Program;
3. At least two NSFC grants;
4. One National Key R&D Program of China grant;
5. One Shanghai Education Development Foundation "Shuguang Program" grant;
6. One Chinese Minister of Science and Technology grant; and
7. Two Department of Education of Jiangxi grants.

[353] Health and Human Serv. production (Oct. 11, 2019) (documents on file with the Subcommittee).

The TTP contract required Individual 4 to work "at least 9 months" in China from January 2014 to December 2018 while the individual was a faculty member at the institution. Further, the Chinese Talents Program contract required awards, patents, and projects during the contract period would be under the Chinese Institutions name. The contract also required the individual to resign from the institution by January 2019 and work full-time for the Chinese institution.

As part of its response to this matter, the institution prepared several communications to raise awareness across the university research community on the importance of fully reporting foreign components and relationship with foreign collaborators as required by NIH policy and other sponsors. The institution also revised help guides and business processes and outside interest disclosure forms to better identify the need for faculty to disclose outside relationships with foreign entities.

The institution, after conducting a preliminary investigation, told NIH that the only failure to disclose concerned was the affiliation with Zhejiang University. The other awards did not overlap with the NIH award. The institution did express concern that the Thousand Talents contract required Individual 4 to work "at least 9 months" in China. NIH continues to investigate the matter.

Individual 5[354]

NIH contacted Individual 5's institution after identifying issues of potential noncompliance regarding disclosure of outside research support and relevant affiliations or foreign support. Individual 5 serves as a principal investigator on a current NIH award from the National Institute on Mental Health. While working on the NIH award, Individual 5 also has a position at Guangzhou Medical University in China and holds at least two NSFC grants. Several of Individual 5's NIH-supported publications were also supported by foreign awards, suggesting foreign collaborations. The grants and affiliations were not disclosed in applications to NIH. The institution, however, stated that research activities conducted in China as part of the consulting agreement did not overlap with the NIH application.

[354] Health and Human Serv. production (Oct. 2, 2019) (documents on file with the Subcommittee).

C. THE DEPARTMENT OF ENERGY

The Department of Energy ("Energy") is a cabinet-level agency whose mission is "to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions."[355] Energy is also tasked with "reducing the threat of nuclear proliferation, overseeing energy supply, carrying out the environmental clean-up from the Cold War nuclear mission," and overseeing the 17 National Laboratories ("National Labs").[356] Energy's Office of Science is the country's largest federal sponsor of basic research in the physical sciences.[357]

Energy's prominent role in advanced research and development makes it particularly attractive to China's talent recruitment plan efforts. According to the FBI, Energy is the U.S. government agency subject to the "most penetration attempts" for technology transfers because of its "prominent role in advanced R&D, particularly in energy and nuclear weapons development."[358] It comes as no surprise then that Energy recently identified TTP members who worked on sensitive research at National Labs.[359] Examples include a post-doctoral researcher who stole 30,000 electronic files from a National Lab and a National Lab contract employee who filed for a U.S. patent overlapping with Energy-funded research.[360] In the most egregious cases, National Lab personnel recruited through foreign talent recruitment plans later worked on foreign military programs.[361]

Energy has been slow to address vulnerabilities surrounding the openness of the U.S. scientific community and its scientific collaboration with countries of risk. For more than 30 years, federal regulations have prohibited U.S. government employees from receiving compensation from foreign entities that conflict with their official duties; however, Energy did not issue guidance to its employees or contractors on participation in foreign talent recruitment plans until 2019.[362]

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[355] *About Us,* U.S. DEP'T OF ENERGY (2019), https://www.energy.gov/about-us.
[356] *Id.*
[357] *Office of Science Funding,* U.S. Dep't of Energy (2019), https://www.energy.gov/science/office-science-funding.
[358] Dep't of Energy production (June 26, 2019).
[359] *See infra* § IV(C)(5).
[360] *Id.*
[361] Dep't of Energy production (June 26, 2019).
[362] Executive Order 12674 ordered individual agencies to consolidate conduct regulations, setting out comprehensive basic principles of ethical conduct for executive branch employees. *See* Exec. Order No. 12,674, 54 Fed.Reg. 15,159 (Apr. 14, 1989) (*as modified by* Exec. Order No. 12731, 55 Fed. Reg. 42547 (Oct. 17, 1990)). Accordingly, the Office of Gov't Ethics published the Standards of Ethical Conduct for Employees of the Executive Branch in 1992, codified as amended at 5 C.F.R. pt. 2635. *See* § 2635.802 (specifically noting that a federal government "employee shall not engage in outside employment or any other outside activity that conflicts with his official duties."); U.S. DEP'T OF

1. National Laboratories

Energy's National Labs began as an outgrowth of scientific investment by the U.S. government during World War II and now serve as leading institutions of science, with an emphasis on translating basic science research into innovation.[363] The National Labs provide access to large-scale, costly research and scientific facilities that universities typically cannot afford.[364] The 17 National Labs use cutting-edge research to address complex and critical scientific challenges.[365]

Sixteen of the 17 National Labs are Government Owned, Contractor Operated ("GOCO") Federally Funded Research and Development Centers. The federal government owns GOCO labs, but third-party contractors such as a universities, non-profits, or for-profit firms operate them.[366] These facilities are designed to address long-term research that cannot be completed effectively at other government research facilities or in the private sector.[367] The other category of National Lab is Government Owned, Government Operated ("GOGO").[368] A GOGO lab is operated by a federal agency where all management and staff are considered government employees and are subject to government employment regulations.[369]

Each National Lab is overseen by one of six Energy's program areas and supports at least one of Energy's missions, typically the mission of its sponsoring program area.[370] Many National Labs, however, support multiple missions and receive funding from multiple program areas.[371] Three National Labs fall under the NNSA: Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories.[372] The NNSA is responsible for "enhancing national security through the military application of nuclear science."[373]

ENERGY, DOE O 486.1, FOREIGN GOV'T TALENT RECRUITMENT PROGRAMS (June. 7, 2019), https://www.directives.doe.gov/directives-documents/400-series/0486-1-border/@@images/file.

[363] *National Laboratories,* U.S. DEP'T OF ENERGY (2019), https://www.energy.gov/national-laboratories.

[364] *Office of Science User Facilities,* U.S. Dep't of Energy (2019), https://www.energy.gov/science/science-innovation/office-science-user-facilities.

[365] *Id*.

[366] *Id*. at 19.

[367] BELFER REPORT at 20.

[368] *Id*. at 20.

[369] *Id*. at 18.

[370] *Id*. at 25.

[371] *Id*. at 24.

[372] *National Laboratories,* U.S. DEP'T OF ENERGY, (2019), https://www.energy.gov/national-laboratories.

[373] *About NNSA,* NAT'L NUCLEAR SECURITY ADMIN. (2019), https://www.energy.gov/nnsa/about-nnsa.

2. Foreign Scientists and the Department of Energy

International competition to develop the most advanced scientific facilities is fierce and is an important component of economic competitiveness.[374] Foreign nationals play a significant research role at the National Labs. In 2018, for example, there were more than 35,000 foreign nationals conducting research in National Labs—about 10,000 from China.[375] According to one public report, while the number of Chinese scientists who previously conducted research at one of Energy's National Labs and then returned to China is unknown, "so many scientists from Los Alamos have returned to Chinese universities and research institutes that people have dubbed them the 'Los Alamos club.'"[376]

Energy's Office of Science has focused on the construction and operation of large federally sponsored scientific user facilities. These user facilities are accessible to foreign researchers.[377] These facilities are federally sponsored research facilities available to scientists and provide access to utilize the most advanced tools of science, including accelerators, colliders, supercomputers, and light- and neutron-sources.[378] The Office of Science currently operates 26 user facilities at the National Labs "as shared resources for the scientific community, with access determined on a competitive basis using peer review."[379] Open user facilities are federally sponsored research centers utilized by external users to advance scientific or technical knowledge.[380] Researchers, both foreign and domestic, from academia, industry, and other government institutions can conduct research at these facilities, but are required to publish their results.[381] Proprietary users can access user facilities, but are subject to full cost recovery.[382]

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[374] *Id.*
[375] Dep't of Energy production (June 26, 2019). Will Thomas, *DOE Barring Researchers From Rival Nations' Talent Programs*, AMERICAN INS. OF PHYSICS (June 13, 2019), https://www.aip.org/fyi/2019/doe-barring-researchers-rival-nations%E2%80%99-talent-programs.
[376] Stephen Chen, *America's Hidden Role in Chinese Weapons Research*, SOUTH CHINA MORNING POST (Mar. 29, 2017), https://www.scmp.com/news/china/diplomacy-defence/article/2082738/americas-hidden-role-chinese-weapons-research.
[377] *Office of Science User Facilities,* U.S. DEP'T OF ENERGY (2019), https://www.energy.gov/science/science-innovation/office-science-user-facilities.
[378] *Id.*
[379] *Id.*
[380] *Id.* at 2.
[381] *Proposal Guidelines,* U.S. DEP'T OF ENERGY, CENTER FOR INTEGRATED NANOTECHNOLOGIES (2019), https://cint.lanl.gov/becoming-user/proposal-guidelines.php.
[382] *Id.*

3. Department of Energy Financial Assistance Programs

Energy is the largest federal sponsor of basic research in the physical sciences.[383] Energy's Office of Science FY 2019 budget of "$6.6B supports a portfolio of basic research, which includes grants and contracts supporting over 25,000 researchers, including students, located at over 300 institutions and all 17 DOE national laboratories."[384] The Office of Science solicits grant funding proposals from "universities, non-profit and for-profit research organizations, National Labs, small businesses, and other federal research organizations."[385] It provides grants through two types of funding announcements: (1) Funding Opportunity Announcements ("FOAs") which are available to universities, non-profit and for-profit research organizations, National Labs, and small businesses; and (2) Energy's National Laboratory Announcements which are open only to National Labs.[386]

Funding Opportunity Announcements. All grant proposals must be submitted in response to an FOA.[387] The FOA contains the required application forms and instructions for the grant application.[388] Each FOA issued by the Office of Science provides: a technical description of the type of work to be funded; information about the type, size, number, and duration of awards expected; eligibility criteria; instructions for any submission of letters of intent, pre-applications or preproposals, and applications or proposals; due dates and times; review and selection information, including merit review criteria; and agency points of contact.[389]

Energy's National Laboratory Announcements. Energy's National Laboratory Announcements provide National Labs with multi-year funding for specific research projects.[390] These announcements function like the FOAs, but are exclusive to National Labs. Responses to an announcement include a proposal that Energy staff evaluate to ensure alignment with Energy's research priorities.[391] Energy awards

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[383] *Office of Science Funding,* U.S. DEP'T OF ENERGY (2019), https://www.energy.gov/science/office-science-funding.
[384] *Id.*
[385] *Funding Opportunity,* U.S. DEP'T OF ENERGY, OFFICE OF SCI. FUNDING (2018), https://www.energy.gov/science/office-science-funding/office-science-funding-opportunities.
[386] *Id.*
[387] *Funding Opportunity Announcements (FOAs),* U.S. DEP'T OF ENERGY, OFFICE OF SCI. (2019), https://science.osti.gov/grants/FOAs.
[388] *Grants Process,* U.S. DEP'T OF ENERGY, OFFICE OF SCI. (2019), https://science.osti.gov/grants/Grants-Process.
[389] *Funding Opportunity Announcements (FOAs),* U.S. DEP'T OF ENERGY, OFFICE OF SCI. (2019), https://science.osti.gov/grants/FOAs.
[390] *National Laboratory Research,* U.S. DEP'T OF ENERGY, OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY, (2019), https://www.energy.gov/eere/solar/national-laboratory-research.h.
[391] *Id.*

this funding based on competitive merit review and other criteria communicated in the announcement.[392]

Grant Process. After an applicant submits an application, the Office of Science conducts an initial review for completeness and responsiveness.[393] A Program Manager then conducts the merit review.[394] During the merit review, both federal and non-federal technical experts review the application and provide their assessment to the Program Manager.[395] The Program Manager then decides whether to recommend funding the application.[396] Grants and Contracts Support reviews the file after a series of senior officials approve the recommendation for funding.[397] The Integrated Service Center then releases the Notice of Financial Assistance Award, the binding award document that contains the assistance agreement, terms and conditions of award, and other items.[398]

Disclosure of Foreign Support and Affiliations. During the application process, Energy requires the disclosure of current and pending support, and affiliations in the applicant's biographical sketch.[399] At the time of this report, Energy requires the disclosure of the name and institutional affiliation for any collaborators and co-editors up to 48 months preceding the submission of the application.[400] The name and organizational affiliations of any graduate and postdoctoral advisors and advisees must also be disclosed.[401]

The awardee must also provide a list of all current and pending support for project directors and senior personnel, including sub awardees, for any ongoing projects or pending applications.[402] A list of all sponsored activities and awards that required a "measurable commitment of effort, whether paid or unpaid" must also be provided.[403] For every activity, the awardee must provide the following information:

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[392] *Funding Opportunity Announcements (FOAs),* U.S. DEP'T OF ENERGY, OFFICE OF SCIENCE (2019), https://science.osti.gov/grants/FOAs.
[393] *Grants Process,* U.S. DEP'T OF ENERGY, OFFICE OF SCI. (2019), https://science.osti.gov/grants/Grants-Process.
[394] *Id*.
[395] *Id*.
[396] *Id*.
[397] *Id*.
[398] *Id*.
[399] U.S. DEP'T OF ENERGY, OFFICE OF SCIENCE, DE-FOA-0001968, FY 2019 CONTINUATION OF SOLICITATION FOR THE OFFICE OF SCI. FIN. ASSISTANCE PROGRAM, 61-62 (Dec. 31, 2018), https://science.osti.gov/-/media/grants/pdf/foas/2019/SC_FOA_0001968.pdf.
[400] *Id*.
[401] *Id*. at 62.
[402] *Id*.
[403] *Id*.

- Name of the activity sponsor or the source of funding;
- Title of the award or activity;
- Total cost or value of the award or activity, including direct and indirect costs;
- Total amount of requested funding for pending proposals;
- Award period;
- Months of effort per year being dedicated to the award or activity; and
- Brief description of the research being performed, explicitly identifying any overlaps with the proposed research.[404]

4. Energy Did Not Implement Policies Prohibiting Involvement in Foreign Talent Recruitment Plans Until 2019

Energy recently ramped up efforts to address vulnerabilities in its collaborative research systems, particularly those risks associated with countries of risk and foreign talent recruitment plans. Energy formalized its efforts in December 2018 when it approved "immediate policy changes" to prevent foreign countries of concern from exploiting the openness of the U.S. scientific community to the detriment of U.S. national security.[405] These new policies will eventually require all foreign nationals' resumes be included in Foreign Visits and Assignments requests to all National Labs, sites, and plants as well as in the Foreign Access Central Tracking System database.[406] Energy also began enhanced vetting of foreign nationals from sensitive countries seeking Foreign Visits and Assignments approval.[407]

Energy is implementing the Strategic International Science and Technology Engagement Policy ("SISTEP") to mitigate risks in scientific collaboration with countries of risk. SISTEP limits scientific engagement on sensitive, but unclassified technologies with countries and individuals of concern.[408] Under SISTEP, a newly established Federal Oversight Advisory Body reviews and maintains an S&T Risk Matrix.[409] The S&T Risk Matrix details areas of international scientific collaboration that pose potential risks to U.S. national interests and recommends research areas and technologies whose access by countries of risk should be limited

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[404] *Id.*
[405] Dep't of Energy production (June 26, 2019).
[406] *Id.* In 2013, Energy's Inspector General identified concerns about FACTS. *See* ENERGY INSPECTOR GEN., INS-O-13-05, UNCLASSIFIED FOREIGN NAT'L VISITS AND ASSIGNMENTS AT OAK RIDGE NAT'L LABORATORY, 3 (Sept. 2013), https://www.energy.gov/sites/prod/files/2013/09/f2/INS-O-13-05.pdf.
[407] *Id.*
[408] Dep't of Energy production (June 26, 2019).
[409] *Id.*

or restricted.[410] Energy is still developing the S&T Risk Matrix in consultation with its National Labs and plans to implement that policy in early 2020.[411]

Months before finalizing SISTEP, however, policy drafts were leaked and at least two news reports detailed how Energy was looking to crack down on participation in foreign talent recruitment plans.[412] On February 11, 2019, an Energy employee wrote in an email, "I'm sure everyone has seen Science Magazine published an article and referenced the International S&T memo, which has been leaked. … I think this places greater urgency in getting the S2 guidance memo signed and disseminated to the labs so we can address any confusion behind the intent of the memo."[413] Research institutions and an advocacy group contacted Energy to try to better understanding the situation after a news report based on the leak generated confusion "among leaders of the academic research enterprise."[414]

In early 2019, Dan Brouillette, Energy's Deputy Secretary, announced that Energy personnel, including contractors, fellows, interns, and grantees, would be subject to limitations and possible prohibitions on their participation in foreign talent recruitment plans.[415] Energy issued its policy through directive DOE O 486.1 on June 10, 2019.[416] The directive states that Energy will prohibit "DOE employees and DOE contractor employees, while employed by the DOE or performing work under a contract, from the unauthorized transfer of scientific and technical information to foreign government entities through their participation in foreign government talent recruitment programs" as designated by Energy's Office of Intelligence and Counterintelligence.[417]

This directive requires Energy employees to disclose any participation in a foreign talent recruitment plan to their immediate supervisor and Designated Agency Ethics Official before entering into discussions with a foreign talent recruitment plan.[418] If an Energy employee is already participating in the foreign talent recruitment plan, they must report in writing such participation to their immediate supervisor and to the Designated Agency Ethics Official within 30 days.[419] Those who fail to report are "subject to discipline up to and including

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[410] *Id.*
[411] Dep't of Energy briefing with the Subcommittee (Oct. 10, 2019).
[412] DOE 01 [169]; *See also* Jeffrey Mervis, *New DOE Policies Would Block Many Foreign Research Collaborations*, SCI. MAGAZINE (Feb. 2, 2019), https://www.sciencemag.org/news/2019/02/new-doe-policies-would-block-many-foreign-researchcollaborations.
[413] Dep't of Energy production (June 26, 2019).
[414] *Id.*
[415] Dep't of Energy production (Sept. 25, 2019).
[416] U.S. DEP'T OF ENERGY, DOE O 486.1, FOREIGN GOV'T TALENT RECRUITMENT PROGRAMS (June. 7, 2019), https://www.directives.doe.gov/directives-documents/400-series/0486-1-border/@@images/file.
[417] *Id.*
[418] *Id.*
[419] *Id.*

removal from federal service."[420] If the Designated Agency Ethics Official determines that participation in a foreign talent recruitment plan conflicts with legal requirements or Energy's policies and directives, the employee must cease participation in the foreign talent recruitment plan within 30 days.[421]

By September 24, 2019, all Energy contractors were required to revise employee contracts and implement these new requirements regarding foreign talent recruitment plans.[422] The effectiveness of these policies, however, remains to be seen. As of October 10, 2019, after full implementation of the policy, less than 12 Energy employees or contractors self-reported participation in a talent recruitment plan as defined by Energy's policies.[423] Energy's policy defines foreign talent recruitment plans as the following:

> In general, such programs include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working or educated in the United States. These recruitment programs are often part of broader whole-of-government strategies to reduce costs associated with basic research while focusing investment on military development or dominance in emerging technology sectors.[424]

Energy's definition of a talent recruitment plan is helpful in that it is the first publicly available federal agency definition that will aid research institutions in better understanding the issues and threats.

5. TTP Members Likely Stole Energy Research and Intellectual Property

Energy's Office of Intelligence and Counterintelligence produced three case examples of National Labs and connections to foreign government talent recruitment plans.[425] These case examples detail specific instances of TTP members likely stealing U.S.-funded intellectual property. The three case studies provided by Energy are detailed below. Separate from these limited case examples, Energy officials told the Subcommittee that it is "aware of hundreds of persons who

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[420] *Id.*
[421] *Id.*
[422] Dep't of Energy briefing with the Subcommittee (Sept. 19, 2019).
[423] Dep't of Energy briefing with the Subcommittee (Oct. 10, 2019).
[424] U.S. DEP'T OF ENERGY, DOE O 486.1, FOREIGN GOV'T TALENT RECRUITMENT PROGRAMS (June. 7, 2019), https://www.directives.doe.gov/directives-documents/400-series/0486-1-border/@@images/file.
[425] Energy's Office of Intelligence and Counterintelligence primarily wrote these three case examples or "vignettes" due to law enforcement equities and classification issues. The Subcommittee edited them for clarity and uniformity.

have participated in Talent Programs and have ties to the Department of Energy."[426] In more detailed public testimony before the U.S. Senate Judiciary Committee, a U.S. defense contractor explained that "Thousand Talents websites name more than 300 U.S. government researchers who have accepted the program's money."[427] Most concerning, however, was Energy's admission that as of December 2018 it was aware of at least nine former employees linked to TTP who also maintained U.S.-issued security clearances.[428]

Individual M

A National Lab employee, Individual M, who accepted a joint appointment at a Chinese university as part of the TTP likely took National Lab intellectual property and patent information without consent of other laboratory scientists, in order to file a similar patent with Chinese collaborators. Individual M subsequently filed for a U.S. patent that overlapped with the design and claims of the patent held by the National Lab.[429]

Individual N

Energy's Office of Intelligence and Counterintelligence conducted an investigation of Individual N that applied to the TTP while working at a National Lab. The investigation determined that Individual N was a supervisor at the National Lab and oversaw other TTP applicants who worked on sensitive but unclassified national security topics.[430]

While employed at the National Lab, Individual N hosted dozens of other Chinese nationals, worked on numerous Energy funded projects, and visited multiple Energy labs. The individual hired at least four Chinese nationals and TTP participants, while at least eight others were known to be no-pay appointments paid for by other Chinese organizations. The investigation revealed a disproportionate collaboration with Chinese institutions, and the individual attempted to initiate official sharing agreements between the laboratory and a Chinese organization. Additionally, the investigation found that monitoring the group's work was complicated by the language barrier, the revolving door of personnel, and the somewhat insular nature of the group. A later review identified at least six projects designated as sensitive.[431]

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[426] Documents on file with the Subcommittee (Sept. 22, 2019).
[427] *China's Non-Traditional Espionage Against the United States: Hearing on The Threat and Potential Policy Responses Before the S. Comm. on the Judiciary*, 115th Cong. (2018) (testimony of James Mulvenon, Ph.D. General Manager, Special Programs Division SOS International, LLC).
[428] Dep't of Energy briefing with the Subcommittee (Dec. 7, 2018).
[429] Documents on file with the Subcommittee (Aug. 13, 2019).
[430] *Id.*
[431] *Id.*

Individual O

Energy's Office of Intelligence and Counterintelligence investigated a post-doctoral researcher, Individual O, whom China selected for the TTP. The investigation determined that Individual O removed multiple gigabytes of unclassified data totaling over 30,000 electronic files from the National Lab prior to departing for China.[432]

While employed at the National Lab, Individual O was selected for China's TTP. In support of the TTP application, the researcher obtained recommendation letters from U.S. colleagues and detailed some ongoing projects. Shortly after being selected for the TTP, the researcher took a professorial position in China.[433]

After Individual O departed for China, Energy discovered that the researcher uploaded multiple gigabytes of information including presentations, technical papers, research, and charts, from the National Lab network to a personal cloud storage account. Individual O told his or her prospective Chinese employer that his or her research area in the United States would play a critical role in advanced defense applications. Individual O furthermore planned to leverage the Chinese university's strength in national defense and military research to support the modernization of the People's Republic of China's national defense. After returning to China, Individual O committed to keeping a close and collaborative relationship with several named research teams at the National Lab.[434]

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[432] *Id.*
[433] *Id.*
[434] *Id.*

D. THE DEPARTMENT OF STATE

The U.S. Department of State ("State") "leads America's foreign policy through diplomacy, advocacy, and assistance by advancing the interests of the American people, their safety and economic prosperity."[435] State adjudicates nonimmigrant visa ("NIV") applications and manages the application process at U.S. embassies and consulates overseas in coordination with other federal departments and agencies.[436] NIVs are temporary permits given to foreign nationals seeking to visit the United States to study, work, or conduct research.[437] State considers every visa adjudication to be a national security decision.[438]

State's role in reviewing NIV applications puts it on the front line in the U.S. government's efforts to protect against intellectual property theft and technology transfers.[439] State has a process to examine NIV applicants who may be attempting to steal sensitive technologies or intellectual property. State's authority under the Immigration and Nationality Act to deny visas is limited, leading to a low denial rate for visa applicants. State denied less than five percent of the visa applications it determined warranted additional scrutiny due to concerns that the applicant might violate export control laws. State makes visa applicant files and supporting documentation available to U.S. law enforcement, but not in easily accessible or useful formats. Finally, State does not systematically track visa applicants linked to China's talent recruitment plans.

1. The Nonimmigrant Visa Application Review Process

State's Bureau of Consular Affairs ("Consular Affairs") is responsible "for the issuance of passports and other documentation to citizens and nationals" and for the "facilitation of legitimate travel to the United States."[440] Consular Affairs is funded in part through consular fees it collects for its services.[441] Foreign scientists,

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[435] *About the U.S. Department of State*, U.S. DEP'T OF STATE, https://www.state.gov/about/about-the-u-s-department-of-state.
[436] U.S. GOV'T ACCOUNTABILITY OFF., GAO-18-608, NONIMMIGRANT VISAS: OUTCOMES OF APPLICATIONS AND CHANGES IN RESPONSE TO 2017 EXECUTIVE ACTIONS, 6 (Aug. 2018), https://www.gao.gov/assets/700/693763.pdf.
[437] *Requirements for Immigrant and Nonimmigrant Visas*, U.S. CUSTOMS AND BORDER PROTECTION, https://www.cbp.gov/travel/international-visitors/visa-waiver-program/requirements-immigrant-and-nonimmigrant-visas.
[438] *See U.S. Nonproliferation Policy and the FY 2020 Budget: Hearing Before the Subcomm. on Asia, the Pacific, and Nonproliferation of the H. Comm. on Foreign Affairs*, 116th Cong. 2–3 (2019) (statement of Christopher A. Ford, Assist. Secretary for Int'l Security & Nonproliferation, U.S. Dep't of State).
[439] *See* Complaint at 4, 10, *United States v. Zhongsan Liu*, 19MAG-864 (S.D.N.Y Sept. 13, 2019) [hereinafter LIU COMPLAINT (Sept. 13, 2019)].
[440] *Bureau of Consular Affairs: Mission*, U.S. DEP'T OF STATE, https://travel.state.gov/content/travel/en/about-us.html.
[441] *Id.*

students, and others seeking to acquire a NIV begin the visa process by filling out an online application called the DS-160.[442] The DS-160 collects a significant amount of information about a visa applicant such as name, marital status, travel companions, home address, places of employment, previous military experience, and educational history.[443] In addition, the applicant may be asked to provide supporting documentation such as a resume, research plans and publications, and information on any universities or other entities with which the applicant is associated.[444] There currently is no online form that would require applicants to submit these materials in a standardized format, and as a result, State stores these documents as unsearchable PDFs.[445]

After completing the DS-160, the foreign national schedules a visa interview with a consular officer.[446] During the interview, a consular official reviews the visa application, checks the applicant's name in State's databases for potential criminal activity, adverse information, previous visa denials, and other immigration violations.[447] The official also obtains fingerprints and a photograph and ensures the applicant is eligible for the type of visa.[448] Once the consular official determines that the applicant is eligible for the visa, the applicant is typically notified within 24 hours.[449] Consular officials, however, can request a more in-depth review of the visa application and supplemental documentation from the visa applicant.

2. Security Advisory Opinions

A consular official can request a Security Advisory Opinion or "SAO" if the visa applicant appears to pose a national security risk to the United States. U.S. national security agencies screen over 100,000 visa applications every year for potential issues ranging from the proliferation of weapons of mass destruction to

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[442] *Online Nonimmigrant Visa Application: DS-160 Exemplar*, U.S. DEP'T OF STATE, BUREAU OF CONSULAR AFFAIRS, https://travel.state.gov/content/dam/visas/PDF-other/DS-160-Example_07292019.pdf.
[443] *Id.*
[444] *Id.*
[445] Interview with U.S. State Dep't, Bureau of Int'l Security and Nonproliferation (July 23, 2019) [hereinafter STATE DEP'T, BISN INTERVIEW (July 23, 2019)].
[446] *Id.* The foreign national provides all of the necessary paperwork concerning their proposed U.S. institutional assignment, unlike the situation with export license applicants where the U.S. company is responsible for providing information.
[447] U.S. GOV'T ACCOUNTABILITY OFF., GAO-05-198, BORDER SECURITY: STREAMLINED VISAS MANTIS PROGRAM HAS LOWERED BURDEN ON FOREIGN SCI. STUDENTS AND SCHOLARS, BUT FURTHER REFINEMENTS NEEDED 3 (Feb. 2005), https://www.gao.gov/new.items/d05198.pdf [hereinafter 2005 GAO MANTIS REPORT].
[448] *Id.*
[449] *Id.* at 4.

illicit transfers of sensitive technology.[450] According to a 2005 Government Accountability Office report on SAOs:

> SAOs are required for a number of reasons, including concerns that a visa applicant may engage in illegal transfers of sensitive technology. An SAO based on sensitive technology transfer concerns is known as Visas Mantis and, according to State officials, is the most common type of SAO applied to science applicants.[451]

State designed the Visa Mantis process to further four important national security objectives:

- prevent the proliferation of weapons of mass destruction and their missile delivery systems;
- restrain the development of destabilizing conventional military capabilities in certain regions of the world;
- prevent the transfer of arms and sensitive dual-use items to terrorists and states that sponsor terrorism; and
- maintain U.S. advantages in certain militarily critical technologies.[452]

After a consular officer requests a Visa Mantis review, the officer submits the application package and visa interview notes through State's cabling system to Consular Affairs in Washington, D.C.[453] Consular Affairs coordinates with DHS and other U.S. government agencies to conduct a review of the application and supporting documents for the visa application.[454] State typically gives DHS ten business days to conclude its review, with extensions granted on a case-by-case basis.[455] After the interagency review process is completed, a consular official abroad "reviews the SAO and, based on the information from Washington, decides whether to deny or issue the visa to the applicant."[456] The 2005 GAO report provides a graphic that further explains the visa adjudication process, including the Visa Mantis review.[457]

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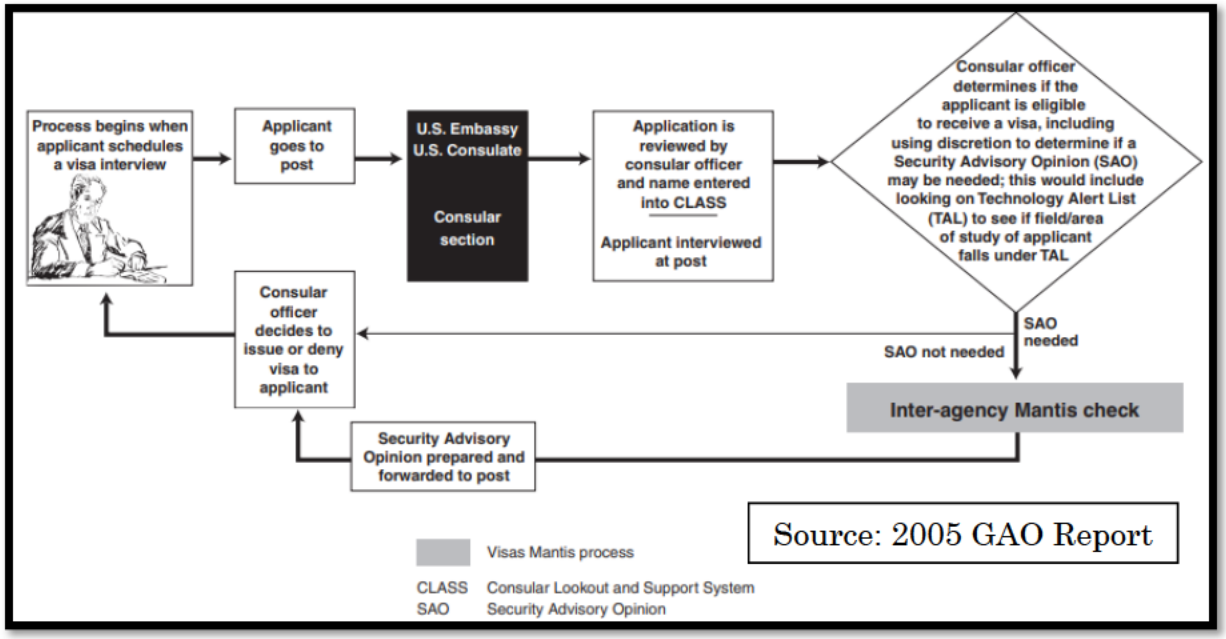
[450] *U.S. Nonproliferation Policy and the FY 2020 Budget: Hearing Before the Subcomm. on Asia, the Pacific, and Nonproliferation of the H. Comm. on Foreign Affairs*, 116th Cong. 2–3 (2019) (statement of Christopher A. Ford, Assist. Secretary for Int'l Security & Nonproliferation, U.S. Dep't of State).
[451] 2005 GAO MANTIS REPORT at 5.
[452] *Id.* at 5.
[453] *Id.* at 6.
[454] A DHS official told the Subcommittee that this and other similar reviews can be delayed as State does not make the attachments to the visa applications, typically the resume and other supporting documents, keyword searchable. Interview with U.S. Dep't of Homeland Security, Office of Intelligence (Sept. 11, 2019). *See also* 2005 GAO MANTIS REPORT.
[455] 2005 GAO MANTIS REPORT at 7.
[456] *Id.*
[457] *Id.* at 6.



3. Consular Affairs Has Limited Authority to Deny Visa Applicants on National Security Grounds Related to Intellectual Property Theft

According to State officials, Consular Affairs has limited authority to deny visa applicants suspected of involvement in intellectual property theft. This is because denial must be specifically linked to violations of export control laws related to controlled technology.[458] The commonly cited export control laws include the Export Administration Regulations, including the Commerce Control list, and the International Traffic in Arms Regulations.[459] Edward Ramotowski, with State's Consular Affairs, elaborated on State's limited authorities under the Immigration and Nationality Act in recent congressional testimony when he stated that a consular officer can consider "whether there are reasonable grounds to believe that a visa applicant seeks to enter the United States to engage solely, principally, or incidentally in activity to violate or evade U.S. law prohibiting the export from the United States of goods or technology."[460]

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[458] STATE DEP'T, BISN INTERVIEW (July 23, 2019). If the visa applicant's field of study or work is not covered by an export law, State indicated that it can rely on a "catch all" provision, 15 C.F.R. § 744.3, to make denial recommendations. To rely on this provision, however, State would need to explain how a visa applicant visit could contribute to a controlled end use.
[459] *Student Visa Integrity: Protecting Educational Opportunity and National Security: Hearing Before the Subcomm. on Border Security and Immigration of the S. Comm. on the Judiciary*, 115th Cong. (2018) (statement of Edward J. Ramotowski, Dep. Assist. Secretary of Consular Affairs, U.S. Dep't of State) [hereinafter RAMOTOWSKI TESTIMONY (June 6, 2018)].
[460] *Id.*

As a result, denials must be linked to tightly controlled commodities and technology that are subject to export controls under the Export Administration Regulations, International Traffic in Arms Regulations, or other U.S. regulations such as those imposing economic sanctions.[461] Ramotowski further stated that, "[t]he broader these export controls are, the more often we can use them to deter and disrupt activities of concern."[462] The Export Control Reform Act of 2018, which requires Commerce to regularly update Commerce Control List to include "emerging and foundational technologies," may provide State greater flexibility to deny NIV applicants seeking to steal intellectual property as Commerce updates its list.[463]

Because consular officials must base a denial on a specific anticipated violation of an already existing export law, they cannot currently deny a visa application if they have reason to believe that the visa applicant seeks to "lawfully gain knowledge through work or study in a sensitive area of technology that is not export controlled—for example, certain technology related to robotics or artificial intelligence."[464] Furthermore, State officials told the Subcommittee that participation in a foreign talent recruitment plan does not automatically lead to visa ineligibility.[465] Those same officials, however, said that State has denied some TTP members NIVs.[466]

4. Consular Officers Manually Search State's "Technology Alert List" and Other Supporting Documentation

When deciding whether to conduct a Visa Mantis review, a consular official determines whether the applicant's background or proposed activity in the United States could include exposure to technologies on the Technology Alert List ("TAL").[467] The TAL is a list based on U.S. export control laws published by State in coordination with the interagency community that "includes science and technology-related fields where, if knowledge gained from research or work in these fields were used against the U.S., it could be potentially harmful."[468]

While older, incomplete versions of the TAL are publicly available online, the Subcommittee reviewed the most recent, comprehensive version.[469] The more than

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[461] *Id.*
[462] *Id.*
[463] Pub. L. No. 115–232, 132 Stat. 2208 (codified as amended at 50 U.S.C. §4801 et seq).
[464] RAMOTOWSKI TESTIMONY (June 6, 2018).
[465] STATE DEP'T, BISN INTERVIEW (July 23, 2019).
[466] *Id.*
[467] 2005 GAO MANTIS REPORT at 5.
[468] *Id.* at 5–6.
[469] *U.S. Dep't of State: Tech. Alert List*, BOSTON U. (Aug. 2002), https://www.bu.edu/isso/files/pdf/tal.pdf; *Tech. Alert List – Info. for Scholars/Students*, CARNEGIE MELLON U., https://www.cmu.edu/oie/foreign-students/docs/tal-students.pdf.

60-page document provides 16 categories of technologies that State considers sensitive, including for example nuclear and missile technologies.[470] The TAL also contains additional instructions on how to evaluate visa applicants and an FAQ for consular officers.[471] The TAL, however, does not contain entities of concern or any references to foreign talent recruitment plans.[472]

The Subcommittee identified some shortcomings in Consular Affairs' process for reviewing a visa applicant according to the TAL. For example, State officials told the Subcommittee that a consular officer would have a copy of the TAL available while interviewing the applicant. As the process is not automated, consular officers search the TAL manually.[473] Some consular officers even refer to printed copies of the TAL during interviews.[474] State officials indicated that while there are not concrete plans to automate the process of reviewing visa applicants for concerns related to export controlled technology, there are ongoing discussions within Consular Affairs to determine if automation would be more efficient.[475]

5. Chinese Visa Applicants Comprise a Majority of Visa Mantis Reviews, But Are Rarely Denied

State classified the specific number of visa applicants that receive a Visa Mantis review. In 2005, however, the last time State publicly released data regarding State's Mantis program, the GAO found that "China and Russia account for roughly 76 percent of all Visa Mantis cases."[476] The Subcommittee learned that Chinese visa applicants also continue to comprise a majority of Visa Mantis reviews in 2019.[477] State rarely denies visa applicants after the review. A Subcommittee survey of Visa Mantis reviews showed that State denied less than five percent of reviewed Chinese visa applicants.[478]

The Subcommittee asked State to provide case examples of Visa Mantis files related to visa applicants with connections to China's talent recruitment plans, including the TTP.[479] State could not provide any of the requested files. State wrote that it was "unable to provide specific examples of applicants involved in China's talent recruitment plans, as [State] does not systematically track this

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[470] State Dep't briefing with the Subcommittee (Sept. 24, 2019).
[471] *Id.*
[472] *Id.*
[473] STATE DEP'T, BISN INTERVIEW (July 23, 2019).
[474] *Id.*
[475] *Id.*
[476] 2005 GAO MANTIS REPORT at 16.
[477] U.S. Dep't of State letter to the Subcommittee (July 21, 2019) (documents on file with Subcommittee).
[478] *Id.*
[479] Subcommittee letter to U.S. Dep't of State (July 31, 2019).

information."[480] Instead, State provided 20 classified case examples—unrelated to talent recruitment plans—of denied Chinese visa applicants to demonstrate State's review process.[481]

6. Ongoing Criminal Prosecution Highlights Problems with State's Lack of Scrutiny of Research Scholar Visas

A recent indictment from the Southern District of New York shows that Chinese government officials are aware of State's weakness in screening certain types of visas, particularly student and researcher scholar visas. On September 17, 2019, a complaint was unsealed, detailing an alleged Chinese government conspiracy to commit visa fraud.[482] Zhongshan Liu, a Chinese citizen, was charged in connection with "his involvement in a conspiracy to fraudulently obtain U.S. visas for Chinese government employees."[483] As alleged in the complaint, "Liu conspired to obtain research scholar visas fraudulently for people whose actual purpose was not research but recruitment" of scientists and researchers.[484] Liu allegedly provided assistance in obtaining visas for individuals claiming to be research scholars, but in reality his assignment was to recruit for China's talent recruitment plans.[485]

According to the complaint, Liu operated the New York office of the China Association for International Exchange of Personnel ("CAIEP-NY").[486] CAIEP-NY is a Chinese government agency that, among other things, recruits scientists, academics, engineers and other experts in the United States to work in China.[487] Liu worked with other Chinese government employees in the United States, including at Chinese consulates, to fraudulently procure J-1 Research Scholar visas for a CAIEP-NY employee and a prospective CAIEP-NY employee.[488] In addition, Liu attempted to assist a CAIEP-NY hire to obtain a J-1 research scholar visa

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[480] U.S. Dep't of State letter to the Subcommittee (Sept. 19, 2019) (unclassified cover letter when separated from classified enclosures).
[481] U.S. Dep't of State production to the Subcommittee (Sept. 19, 2019) (classified S//NF).
[482] Press Release, U.S. Dept. of Justice, Chinese Government Employee Charged in Manhattan Federal Court with Participating in Conspiracy to Fraudulently Obtain U.S. Visas (Sept. 16, 2019) (https://www.justice.gov/opa/pr/chinese-government-employee-charged-manhattan-federal-court-participating-conspiracy).
[483] *Id.*
[484] *Id.*
[485] *Id.*
[486] *See* LIU COMPLAINT at 6 (Sept. 13, 2019).
[487] Press Release, U.S. Dept. of Justice, Chinese Government Employee Charged in Manhattan Federal Court with Participating in Conspiracy to Fraudulently Obtain U.S. Visas (Sept. 16, 2019) (https://www.justice.gov/opa/pr/chinese-government-employee-charged-manhattan-federal-court-participating-conspiracy).
[488] The J-1 Research Scholar visa program permits foreign nationals to come to the United States for the primary purpose of conducting research at a corporate research facility, museum, library, university or other research institution. LIU COMPLAINT at 11 (Sept. 13, 2019).

under false pretenses.[489] Liu contacted multiple U.S. universities to try to arrange for a university to invite the CAIEP-NY hire to come as a J-1 Research Scholar.[490] Liu was in communication with an individual affiliated with a U.S. university who explained that it would "be very easy for us to give him/her a J-1 [visa]."[491]

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[489] Press Release, U.S. Dept. of Justice, Chinese Government Employee Charged in Manhattan Federal Court with Participating in Conspiracy to Fraudulently Obtain U.S. Visas (Sept. 16, 2019) (https://www.justice.gov/opa/pr/chinese-government-employee-charged-manhattan-federal-court-participating-conspiracy).
[490] *Id.*
[491] LIU COMPLAINT at 15 (Sept. 13, 2019).

E. THE DEPARTMENT OF COMMERCE

The Department of Commerce's ("Commerce") mission is to create "the conditions for economic growth and opportunity."[492] Commerce has offices in every state and territory and more than 86 countries worldwide.[493] Commerce consists of multiple operating units, including the National Oceanic and Atmospheric Administration, International Trade Administration, Bureau of Economic Analysis, National Institute of Standards and Technology, United States Patent and Trademark Office, and the Bureau of Industry and Security ("BIS").[494]

Commerce relies on BIS to advance "U.S. national security, foreign policy, and economic objectives by ensuring an effective export control and treaty compliance system, and by promoting continued U.S. leadership in strategic technologies."[495] BIS conducts industrial base assessments of defense-related technologies and also "administers export controls of dual-use items which have both military and commercial applications."[496]

To work with controlled dual-use technology in the United States, foreign nationals and the firms that employ or sponsor them must comply with U.S. export controls and visa regulations. Commerce, through an interagency review process, is responsible for issuing deemed export licenses to firms that employ or host foreign nationals seeking to work on controlled technology projects.[497] A Subcommittee review of those license applications found that Commerce issued deemed licenses to Chinese nationals who participated in talent recruitment plans and were affiliated with other concerning entities, including some now on Commerce's Entity List.[498]

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[492] *History,* U.S. DEP'T OF COMMERCE (2019), https://www.commerce.gov/about/history; *Strategic Plan 2018–2022,* U.S. DEP'T OF COMMERCE, 2 (Oct. 7, 2017), https://www.commerce.gov/sites/default/files/us_department_of_commerce_2018-2022_strategic_plan.pdf.

[493] *Strategic Plan 2018–2022,* U.S. Dep't of Commerce, 2 (Oct. 7, 2017), https://www.commerce.gov/sites/default/files/us_department_of_commerce_2018-2022_strategic_plan.pdf.

[494] *Organizational Chart Final,* U.S. Dep't of Commerce (2015), https://www.commerce.gov/sites/default/files/media/files/2015/docorgchartfinal.pdf.

[495] *Budget in Brief Fiscal Year 2019*, U.S. DEP'T OF COMMERCE, 47 (2019), http://www.osec.doc.gov/bmi/budget/FY19BIB/FinalBiBFY2019.pdf.

[496] U.S. GOV'T ACCOUNTABILITY OFF., GAO-19-516, DEFENSE SUPPLIER BASE: CHALLENGES AND POL'Y CONSIDERATIONS REGARDING OFFSHORING AND FOREIGN INVESTMENT RISKS, 7 (Sept. 2019), https://www.gao.gov/assets/710/701170.pdf.

[497] U.S. GOV'T ACCOUNTABILITY OFF., GAO-02-972, EXPORT CONTROLS: DEPARTMENT OF COM. CONTROLS OVER TRANSFERS OF TECHNOLOGY TO FOREIGN NATI'LS NEED IMPROVEMENT, 2 (Sept. 6, 2002), https://www.gao.gov/products/GAO-02-972.

[498] *Lists of Parties of Concern,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (2019), https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern. ("The Entity List identifies foreign parties that are prohibited from receiving some or all items subject to the EAR unless the exporter secures a license. These parties present a greater risk of diversion to weapons of

1. Deemed Export Licensing

BIS is charged with administering the Export Administration Regulations which impose licensing requirements on the export of items that are controlled for national security and foreign policy reasons.[499] The Regulations' export control provisions serve the national security, foreign policy, and other interests of the United States by restricting access to items by countries or persons that might use such items in a way hostile to U.S. interests.[500] According to the GAO's 2002 review of BIS licensing standards:

> Under U.S. export control regulations, a firm is required to seek a deemed export license if the export of the technology to the foreign national's country of citizenship would require a license. If a license is required, the exporter must submit a license application to Commerce identifying the technology, the reason it is controlled, the proposed destination, and the intended end user. In the case of deemed export license applications, firms must also provide the foreign national's resume, visa type, and a list of his or her publications.[501]

The Regulations obligate U.S. individuals and corporations to apply for and receive a license from the U.S. government before releasing to foreign-individuals and employees in the United States certain types of technology.[502] This obligation is commonly known as the "deemed export rule," as releases of controlled technology to foreign individuals in the U.S. are "deemed" to be an export to that person's country.[503]

Organizations that commonly use deemed export licenses include high-tech research and development institutions, bio-chemical firms, and the medical and computer sectors.[504] Individuals with legal permanent residence status or U.S.

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mass destruction (WMD) programs, terrorism, or other activities contrary to U.S. national security and/or foreign policy interests. By publicly listing such parties, the Entity List is an important tool to prevent unauthorized trade in items subject to the EAR.").

[499] *Fact Sheet for Revised Form I-129,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, 1 (Feb. 18, 2011), https://www.bis.doc.gov/index.php/documents/deemed-exports/101-dhs-non-immigrant-form-i-129/file.

[500] CONG. RESEARCH SERV., R41916, THE U.S. EXPORT CONTROL SYSTEM AND THE EXPORT CONTROL REFORM INITIATIVE, 3 (Apr. 5, 2019), https://fas.org/sgp/crs/natsec/R41916.pdf.

[501] U.S. GOV'T ACCOUNTABILITY OFF., GAO-02-972, EXPORT CONTROLS: DEPARTMENT OF COM. CONTROLS OVER TRANSFERS OF TECH. TO FOREIGN NAT'LS NEED IMPROVEMENT, 6 (Sept. 6, 2002), https://www.gao.gov/products/GAO-02-972.

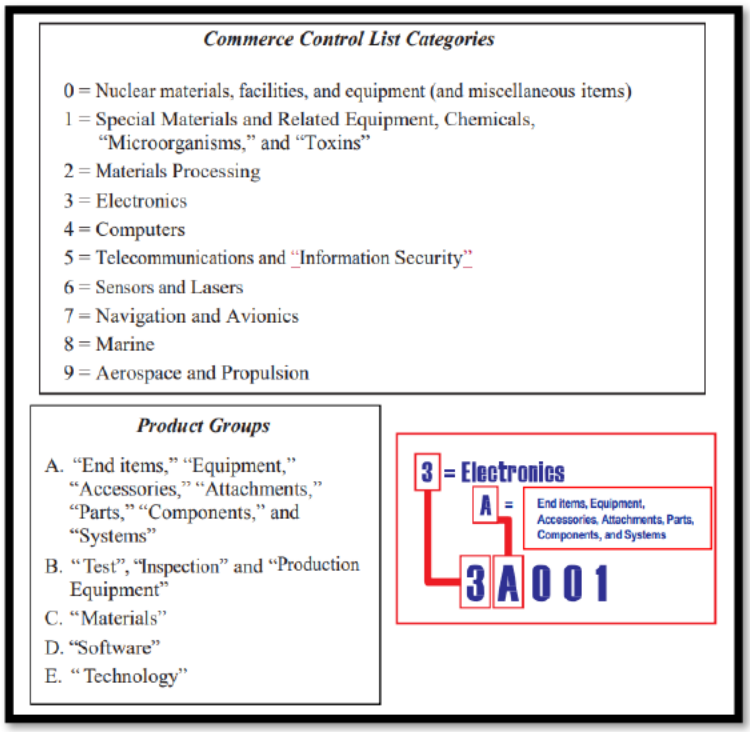
[502] *Fact Sheet for Revised Form I-129,* U.S. DEP'T OF COMMERCE, BUREAU OF INDUS. AND SECURITY , 1 (Feb. 18, 2011), https://www.bis.doc.gov/index.php/documents/deemed-exports/101-dhs-non-immigrant-form-i-129/file.

[503] *Id.*

[504] *Deemed Exports,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (2019), https://www.bis.doc.gov/index.php/policy-guidance/deemed-exports.

citizenship and persons granted status as "protected individuals" are exempt from the deemed export rule.[505] A deemed export license is only required for release of controlled technology or software to a foreign individual if a license would be required for the export of such items to the individual's country of origin.[506]

A deemed export license is required if an export license is needed to export technology described under an Export Control Classification Number listed on the Commerce Control List and if the foreign national' country of most recent citizenship or affiliation would require an export control license.[507] An Export Control Classification Number describes the item that is exported and indicates licensing requirements.[508] The Commerce Control List consists of ten broad categories with each subdivided into five product groups, as shown in the example below.[509]



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[505] *Id.*

[506] *Guidelines for Preparing Export License Applications Involving Foreign Nationals,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, 1 (2018), https://www.bis.doc.gov/index.php/documents/deemed-exports/709-guidelines-for-foreign-national-license-applications/file.

[507] *Commerce Control List,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (2019), https://www.bis.doc.gov/index.php/regulations/commerce-control-list-ccl.

[508] *Id.*

[509] *Id. See also Introduction to Commerce Department Export Controls,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, 3, https://www.bis.doc.gov/index.php/documents/regulations-docs/142-eccn-pdf/file.

If an item under Commerce's jurisdiction is not listed on the Commerce Control list—typically low-technology consumer goods—it generally does not require a license.[510] If the item is being shipped to an embargoed country, to an end user of concern, or in support of a prohibited end use, an export license may still be required.[511] Commerce does not regulate all goods, services, and technologies being exported; other federal agencies have export control responsibilities for regulating exports that are more specialized.[512]

To be granted a deemed export license, an employer must fill out an application requiring the disclosure of the following three items:

(1) how the controlled technology will be used by the foreign individual;

(2) the immigration status of the foreign individual; and

(3) a resume including personal background, educational and vocational background, employment history, military service, and optionally special information the applicant believes the BIS should take into account when reviewing the application.[513]

Commerce and other reviewing agencies use this information to determine the risk that the technology could be diverted for unauthorized uses or unauthorized users.[514] Commerce, under Executive Order 12981, conducts the review of license applications with the Departments of Defense, State, and Energy.[515] Commerce also may request information or input from other federal agencies, including the FBI, but the Executive Order nor the Export Control Reform Act, grants the FBI specific authority or responsibility in this process.[516] Commerce's intelligence analysts review open source, classified, and law enforcement databases when reviewing license applications.[517]

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[510] *Commerce Control List,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (2019), https://www.bis.doc.gov/index.php/regulations/commerce-control-list-ccl.
[511] *Id.*
[512] *Frequently Asked Questions to Export Licensing Requirements,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, 2, https://www.bis.doc.gov/index.php/documents/pdfs/286-licensing-faq/file. *See also* CONG. RESEARCH SERV., R41916, THE U.S. EXPORT CONTROL SYSTEM AND THE EXPORT CONTROL REFORM INITIATIVE, 3 (Apr. 5, 2019), https://fas.org/sgp/crs/natsec/R41916.pdf.
[513] *Guidelines for Preparing Export License Applications Involving Foreign Nationals,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, 1 (2018), https://www.bis.doc.gov/index.php/documents/deemed-exports/709-guidelines-for-foreign-national-license-applications/file.
[514] *Id.*
[515] Dep't of Commerce briefing with the Subcommittee (Sept. 20, 2019).
[516] *Id.*
[517] *Id.*

2. A Majority of Deemed Export Licenses are for Chinese Nationals

Since 2013, Commerce has processed 7,777 deemed export license applications.[518] More than 52 percent of all deemed license applications were for Chinese nationals during that time.[519] "In 2018, 3,102 companies submitted a total of 34,851 license applications, including deemed exports."[520] "1,101 companies applied for only one license, 506 companies applied for two licenses and 937 companies applied for three to nine licenses."[521] In 2018, applications for Chinese nationals accounted for approximately 35 percent of approved applications, as shown below.[522]

Top 15 Countries of Origin for Deemed Export Licenses
2013-2018
Approved

Country of Origin	Top ECCN 2018	2013	2014	2015	2016	2017	2018	Country Approvals/ Total Applications 2018
China	3E001	852	633	697	799	771	350	34.8%
Iran	5E002	162	162	172	224	267	184	18.3%
India	3E001	67	29	108	50	79	77	7.6%
Mexico	9E610	2	9	15	18	20	31	3.1%
United Kingdom	3E611	0	11	24	28	25	20	2.0%
Japan	9E002	26	0	13	8	21	16	1.6%
Syria	5E002	6	8	15	20	16	14	1.4%
Armenia	3E001	2	1	0	2	8	12	1.2%
France	9E610	1	4	12	16	9	12	1.2%
Vietnam	3E001	16	6	14	19	15	9	0.9%
Russia Federation	3E001	39	43	52	85	44	9	0.9%
Germany	0E606	0	2	13	8	6	9	0.9%
Taiwan	3E001	1	2	2	2	2	8	0.8%
Finland	0E982	0	0	1	0	0	7	0.7%
Brazil	0E606	2	2	13	3	9	6	0.6%
Total applications		1,325	1,063	1,381	1,476	1,525	1,007	

Source: Commerce U.S. Exports Exporter Support System, retrieved on March 5, 2019

Note: 1. Ranking is based on 2018 data.
2. All previously reported numbers are subject to revision based on changes in the source data on the retrieving date.

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[518] *Deemed Export Licenses,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY (Mar. 5, 2019), https://www.bis.doc.gov/index.php/documents/technology-evaluation/ote-data-portal/licensing-analysis/2410-2018-statistical-analysis-of-bis-licensing-pdf/file.
[519] *Id.*
[520] *Statistics of 2018 BIS License Authorization,* U.S. DEP'T OF COM., BUREAU OF INDUS. AND SECURITY, https://www.bis.doc.gov/index.php/documents/technology-evaluation/ote-data-portal/licensing-analysis/2453-2018-statistical-analysis-of-bis-licensing-pdf-1/file.
[521] *Id.*
[522] *Id.*

3. Commerce Rarely Denies License Applications

Commerce rarely denies deemed export license applications. As shown below, Commerce's denial rate in 2018 was 1.1 percent.[523] Commerce also told the Subcommittee that it has not revoked a deemed export license in the past five years, despite the recent listing of new entities on Commerce's Entity List.[524]

Deemed Export Licenses Processed by BIS
2013-2018

	2013	2014	2015	2016	2017	2018	% Change from 2017
Approved	1,245	964	1,268	1,377	1,394	846	-39.3%
Rejected	13	18	18	13	24	11	-54.2%
RWA*	67	81	95	86	107	150	40.2%
Total	1,325	1,063	1,381	1,476	1,525	1,007	-34.0%
RWA: Return without action							
Source: Commerce U.S. Exports Exporter Support System, retrieved on March 5, 2019							
Note: All previously reported numbers are subject to revision based on changes in the source data on the retrieving date.							

4. Commerce Issued Deemed Export Licenses for Chinese Nationals Linked to Talent Recruitment Plans and Other Concerning Entities

The Subcommittee examined nearly 2,000 deemed export license applications for Chinese nationals that Commerce issued over the past three years. Following an interagency review, Commerce issued deemed export licenses to Chinese foreign nationals linked to talent recruitment plans and other concerning entities, including Huawei and Chinese universities with connections to the Chinese military. Most of the issued licenses allow "foreign nationals from countries of concern to work with advanced computer, electronic, or telecommunication and information security technologies."[525]

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[523] *Id.*

[524] Email from Dep't of Commerce Legis. Aff. to the Subcommittee (Aug. 5, 2019) (on file with Subcommittee).

[525] Note, however, that not "all domestic transfers of controlled technology to foreign nationals require a license. For example, certain types of dual-use technology and software may be provided to foreign nationals from India, Pakistan, and Israel without a license." U.S. GOV'T ACCOUNTABILITY OFF., GAO-02-972, EXPORT CONTROLS: DEP'T OF COM. CONTROLS OVER TRANSFERS OF TECHNOLOGY TO FOREIGN NATIONALS NEED IMPROVEMENT, 2 (Sept. 6, 2002),

Talent Recruitment Plans. Commerce issued at least 20 licenses to Chinese nationals associated with various Chinese talent recruitment plans.[526] A sample of these license applications follow below.

- In 2017, a U.S. company applied for a Chinese national to work on digital cellular radio equipment. According to the application, the nature of the work would allow the foreign national access to controlled technology and capabilities of various products in development by the U.S. company. That same foreign national previously worked on at least two research projects concerning video-based, real-time object tracking supported by two talent recruitment plans.[527]

- In 2016, a U.S. company applied for a Chinese national to work on controlled and proprietary wireless technology. That same individual published a research paper in 2016 on wireless technology that was funded, in part, by a talent recruitment plan.[528]

- In 2016, a U.S company applied for a Chinese national to work on controlled cellular technology. That same individual published a research paper on similar technology funded by a talent plan.[529]

China's National Defense Universities. Commerce issued licenses to individuals associated with one of the seven Chinese universities, known as the "Seven Sons" that are under "direct supervision" by China's Military Commission.[530] Two of these universities, Beihang University and Northwest Polytechnical University, are currently on Commerce's Entity List.[531] The other five institutions, Beijing Institute of Technology, Harbin Institute of Technology, Harbin Institute Engineering University, Nanjing University of Aeronautics and Astronautics, and Nanjing University of Science and Technology, are not on Commerce's Entity List as of this report.[532] Commerce granted more than 150 licenses to Chinese nationals linked to one of the seven defense universities.[533] A sample of these license applications follow below.

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[526] Production from the Dep't of Commerce (June 17, 2019).
[527] *Id.*
[528] *Id.*
[529] *Id.*
[530] C4ADS, OPEN ARMS: EVALUATING GLOBAL EXPOSURE TO CHINA'S DEFENSE INDUS. BASE, 21 (Sept. 26, 2019), https://static1.squarespace.com/static/566ef8b4d8af107232d5358a/t/5d95fb48a0bfc672d825e346/1570110297719/Open+Arms.pdf; PEIJIE WANG, CHINA'S GOVERNANCE: ACROSS VERTICAL AND HORIZONTAL CONNEXIONS, 54 (2017).
[531] *Lists of Parties of Concern,* U.S. DEP'T OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, (2019), https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern.
[532] *Id.*
[533] Production from the Dep't of Commerce (June 17, 2019).

- In 2018, a U.S. company applied for a Chinese national to access semiconductor technology and converter integrated circuits. That same individual received a Bachelor's of Electronic Information Engineering from Beihang University.[534]

- In 2017, a U.S. company applied for a Chinese national to work as a packaging engineer, providing packaging design, development, and support for semiconductor technology. That same individual received a Bachelor's in Optical Information Science and Technology and a Masters in Optics from the Northwestern Polytechnical University.[535]

Huawei. According to information reviewed by the Subcommittee, Commerce issued at least 65 licenses to Chinese nationals who previously worked for or were supported by Huawei. Huawei is on Commerce's Entity List as of this report. A sample of these license applications follow below.

- In 2018, a U.S. company applied for a Chinese national to work on systems for telecommunications carriers, cable providers, and data center customers. This individual previously worked at Huawei as a software engineer.[536]

- In 2017, a U.S. company applied for a Chinse national that previously worked on machine learning and embedded software for Huawei and also graduated from Harbin Institute of Technology with a bachelor's degree in engineering.[537]

The Chinese Academy of Sciences ("CAS"). CAS has been referred to as the "backbone" of the Chinese innovation system. According to the U.S.-China Economic and Security Review Commission, CAS has a research staff of 50,000 and "employs much of China's best scientific and engineering talent and has an extensive system of roughly 100 research institutes and laboratories."[538] The U.S. Department of Defense also found that CAS is the:

> [H]ighest academic institution for comprehensive R&D in the natural and applied sciences in China and reports directly to the State Council

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[534] *Id.*
[535] *Id.*
[536] *Id.*
[537] *Id.*
[538] SECURITY COMMISSION REPORT at 18 (Jan. 2011).

in an advisory capacity, with *much of its work contributing to products for military use*.[539]

According to information reviewed by the Subcommittee, Commerce, after an interagency review, issued more than 60 licenses to Chinese nationals associated with CAS. A sample of these license applications follow below.

- In 2018, a U.S. company applied for a Chinese national to work on microelectronics fabrication intended for semiconductor technology. That same individual received a Master's in Electrical Engineering from the Institute of Microelectronics at CAS.[540]

- In 2017, a U.S. company applied for a Chinese national to have access to semiconductor technology for the development and production of integrated circuits. That same individual received a Masters of Electronics and Communication Engineering from the Institute of Semiconductors at CAS.[541]

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[539] U.S. DEP'T OF DEFENSE, ANNUAL REP. TO CONGRESS: MILITARY AND SECURITY DEVELOPMENTS INVOLVING THE PEOPLE'S REPUBLIC OF CHINA 2019, 97–98 (May 2, 2019), https://media.defense.gov/2019/May/02/2002127082/-1//1/2019_CHINA_MILITARY_POWER_REPORT.pdf (emphasis added); WAYNE M. MORRISON, CONG. RES. SERV., IF10964, THE MADE IN CHINA 2025 INITIATIVE: ECON. IMPLICATIONS FOR THE UNITED STATES, (Apr. 12, 2019), https://www.crs.gov/Reports/IF10964?source=search&guid=404a7bd0aad54011bda40bb9f7d1880e&index=1. China's State Council is "the highest Chinese executive organ of state power."
[540] Production from the Dep't of Commerce (June 17, 2019).
[541] *Id.*

F. THE FEDERAL BUREAU OF INVESTIGATION

The FBI is a federal law enforcement agency that operates under the Department of Justice's jurisdiction. The FBI employs 35,000 people, including special agents, intelligence analysts, language specialists, scientists, and information technology specialists at its headquarters in Washington D.C. and 56 field offices.[542] The FBI has broad law enforcement responsibilities, including protecting and defending the United States against terrorist attacks, foreign intelligence threats and espionage, cyber-based attacks and high-technology crimes.[543] The FBI also informs the public and state and local law enforcement agencies of potential crimes and vulnerabilities to criminal organizations. Specifically, the FBI is charged with working with state and local law enforcement "to address crime problems common to federal/state/local agencies" and providing "timely and relevant criminal justice information and identification services concerning individuals, stolen property, criminal organizations and activities, crime statistics, and other law enforcement related data" to "FBI qualified law enforcement, criminal justice, civilian, academic, employment, licensing, and firearms sales organizations."[544]

The FBI has been slow to respond to threats posed by Chinese talent recruitment plans. Despite the Chinese government's public announcements in 2008 of its intent to recruit overseas researchers with access to cutting-edge research and absorb, assimilate, and re-innovate technologies, the FBI did not identify Chinese talent recruitment plans as a "threat vector" until 2015.[545] In a 2018 FBI document, the Bureau acknowledged that the U.S. government "was slow to recognize the threat of the Chinese Talent Plans, but that has changed in recent years."[546] The FBI also took nearly two years to make a coordinated dissemination of information identifying potential talent recruitment plan participants to federal grant-making agencies. This delay may have deprived those agencies and inspectors general additional opportunities to identify talent recruitment plan members who engaged in crimes, unethical grant practices, or unauthorized technology transfers. Finally, while the FBI is making progress towards creating a unified messaging strategy to U.S. research institutions, it still lacks a coordinated national outreach program to address these issues.

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[542] *Missions and Priorities,* FED. BUREAU OF INVESTIGATION, https://www.fbi.gov/about/mission.
[543] *Id.*
[544] *Organization, Mission and Functions Manual: Federal Bureau of Investigation,* DEP'T OF JUSTICE, (2014), https://www.justice.gov/jmd/organization-mission-and-functions-manual-federal-bureau-investigation.
[545] Fed. Bureau of Investigation production, 16 (Oct. 12, 2018).
[546] *Id.*

1. The FBI was Slow to Recognize the Threat

In 2008, the Chinese government announced its plan to recruit top overseas-researchers and to eventually bring their talents and expertise to China to benefit the government. Despite China's public declaration of its intentions, the FBI took nearly ten years to recognize that Chinese government talent programs posed a threat to the U.S. academic community and federal research grants. In 2015, the FBI "identified the Chinese Talent Plans as a known vector of the non-traditional threat."[547] It was not until mid-2018, however, that FBI headquarters in Washington, D.C. took control of the FBI's response to the threat.[548]

An early and significant FBI criminal investigation of a TTP member resulted in a guilty plea in December 2016. A team of FBI special agents in the Connecticut field office arrested Dr. Long Yu, a Chinese citizen and U.S. legal permanent resident, in November 2014 for attempting to take hundreds of gigabytes of export-controlled, proprietary information to China.[549] These materials included design information for the F-22 and JSF-35 military jet engines.[550] In court documents, Dr. Long confirmed he used his knowledge of U.S. technology to apply for multiple Chinese talent plans, and he did so while employed by a U.S. defense contractor.[551]

As part of his applications, Dr. Long corresponded with Chinese government researchers and described how he would use his future position to benefit Chinese government research.[552] Dr. Long described the ways he would leverage his knowledge of U.S. technologies and manufacturing processes to benefit China, saying, "These unique working experiences have provided me a great starting point to perform R&D and further spin off business in China. I believe my efforts will help China to mature its own aircraft engines."[553] In December 2016, Dr. Long pleaded guilty to conspiracy to commit economic espionage and attempted export of defense articles.[554] During the course of the Dr. Long investigation, FBI special agents who were working the case concluded that Dr. Long's illegal activity was not an isolated incident of a talent recruitment plan member's illegal behavior.

A 2018 FBI PowerPoint presentation titled, "Talent Plan Education Package Briefing," recognized that the U.S. "government has identified the Talent Plans as an avenue of illicit technology transfer."[555] That same presentation also stated that

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[547] *Id.*
[548] Fed. Bureau of Investigation briefing with the Subcommittee (Sept. 12, 2019).
[549] Documents on file with the Subcommittee (Oct. 12, 2018).
[550] *Id.*
[551] *Id.*
[552] *Id*
[553] *Id.*
[554] *Id.*
[555] Fed. Bureau of Investigation production, 16 (Oct. 12, 2018).

the "[t]he U.S. government was slow to recognize the threat of the Chinese Talent Plans, but that has changed in recent years."[556] The FBI's slow response to Chinese recruitment operations through the TTP and other talent recruitment plans provided the Chinese government the opportunity to recruit U.S.-based researchers and scientists. Though Chinese government statistics on the number of TTP members in China are sparse, a state-run media outlet lauded China for recruiting more than 6,000 TTP members by 2016, including 70 Nobel Prize laureates and academicians from the United States and Europe.[557] A U.S. media report showed a year later that the number of TTP members had further increased to over 7,000.[558]

2. The FBI Took Nearly Two Years to Disseminate Talent Recruitment Plan Information to Federal Grant-Making Agencies

The FBI received information concerning members of the TTP and other talent recruitment plans in 2016.[559] The FBI took nearly two years to coordinate a dissemination of that information to federal grant-making agencies.[560] [redacted] This

[556] *Id.*
[557] *National Talent Base Statistics Show Our Country Speeding Toward Becoming a 'Talent Country'*, XINHUA (Aug. 29, 2017), http://www.xinhuanet.com//politics/2017-08/29/c_1121565760.htm; Su Zhou, *Returnees finding big opportunities*, CHINA DAILY (Feb. 25, 2017), http://www.chinadaily.com.cn/china/2017-02/25/content_28345785.htm.
[558] Hepeng Jia, *China's plan to recruit talented researchers*, NATURE (Jan. 17, 2018), https://www.nature.com/articles/d41586-018-00538-z.
[559] Fed. Bureau of Investigation production (Oct. 4, 2019) (on file with the Subcommittee). The following information is redacted as the FBI classified it as "Law Enforcement Sensitive."
[560] *Id.*
[561] *Id.*
[562] *Id.*
[563] *Id.*
[564] *Id.*
[565] *Id.*

delay may have deprived the NIH, the Department of Energy, and the NSF and their respective inspectors general from effectively identifying talent recruitment plan members that engaged in illegal or unethical grant practices using taxpayer dollars and preventing any unauthorized technology transfers.

3. The FBI Disbanded its National Security Higher Education Advisory Board

The FBI disbanded its National Security Higher Education Advisory Board ("NSHEAB") designed to facilitate security cooperation with the U.S. higher education community in 2018.[566] The FBI created the NSHEAB in 2005 to better understand "the unique culture, traditions, and practices of higher education, including the culture of openness and academic freedom and the importance of international collaboration" and to serve as an "ongoing dialogue about national security issues between higher education institutions, the FBI, and other federal agencies."[567] The NSHEAB met quarterly from 2005 until 2014 and included approximately 20 representatives from leading institutes of higher learning and research.[568]

According to the FBI, because participation in the NSHEAB waned in 2014, the FBI ceased holding NSHEAB meetings, despite the growing threat of foreign talent plans such as the TTP.[569] After a four year hiatus, the FBI sent a letter in February 2018 to NSHEAB members informing them of the decision to disband the NSHEAB. The FBI told NSHEAB members that the FBI's Office of the Private Sector would reevaluate "mutually-beneficial academic engagement opportunities" and would potentially initiate "new advisory groups to partner with the FBI."[570]

The FBI's decision to disband its forum for discussing national security issues with the U.S. academic community came one week after FBI Director Wray's Senate Select Intelligence Committee testimony highlighted the Chinese threat to the U.S. academic community. During his February 13, 2018 testimony, Director Wray stated:

> [T]he use of nontraditional collectors, especially in the academic setting, whether it's professors, scientists, students, we see in almost every field office that the FBI has around the country. It's not just in major cities. It's in small ones as well. It's across basically every discipline. I think

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[566] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 27, 2019).
[567] Press Release, Fed. Bureau of Investigation, National Security Higher Education Advisory Board Confirms Seven New Members (Oct. 3, 2007), https://archives.fbi.gov/archives/news/pressrel/press-releases/national-security-higher-education-advisory-board-confirms-seven-new-members.
[568] Fed. Bureau of Investigation briefing with the Subcommittee (Oct. 4, 2019; 11:00 A.M.); Fed. Bureau of Investigation briefing with the Subcommittee (Oct. 4, 2019; 12:00 P.M.)
[569] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 27, 2019).
[570] *Id.*

> the level of naiveté on the part of the academic sector about this creates its own issues. They're exploiting the very open research and development environment that we have, which we all revere, but they're taking advantage of it.[571]

Shortly after the FBI dissolved the NSHEAB, ACE, the Association of American Universities, the Association of Public and Land-Grant Universities, and the Council on Government Relations publicly criticized the FBI's decision. In a joint statement submitted during an April 11, 2018 house hearing on foreign plots targeting America's research, ACE and the other associations noted that the disbandment came "at a time when the very types of discussions the Board enabled between the university community and federal security agencies could be especially valuable."[572]

The FBI has defended its decision to disband the NSHEAB, stating that it was "no longer the most practical medium for sharing threat information and engaging academia."[573] Instead, the FBI created the Office of Private Sector ("OPS") in 2014 as it recognized the need for more resources, coordination, and engagement with the private sector.[574] The OPS was supposed to reflect the FBI's desire to remain "ahead of the threat through leadership, agility, and integration."[575] The FBI now designates "at least one Private Sector Coordinator in every FBI field office focused on engagement with the private sector, to include academia."[576] The OPS also has full-time personnel, including a Supervisory Special Agent, a senior Management and Program Analyst, and administrative contractor support, who are "solely committed to academia outreach and coordination."[577] Notably, the FBI's OPS did not have a dedicated outreach team for U.S. universities until July 2019.[578] The OPS then began collaborating with the three largest academia associations—ACE, Association of American Universities,

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[571] *Worldwide Threats: Hearing Before the S. Select Comm. on Intelligence*, 115th Cong. (2018) (testimony of Christopher Wray, Director, Fed. Bureau of Investigation).
[572] Joint Statement of the American Council on Education, Association of American Universities, Association of Public and Land-grant Universities and the Council on Governmental Relations to the Subcommittees on Oversight and Research & Technology, Committee on Science, Space, and Technology, Hearing: *Scholars or Spies: Foreign Plots Targeting America's Research and Development* (Apr. 11, 2018), https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Science-Security/Higher-Ed-Assn-Statement-April-11-2018-House-SST-Cmte-Hearing.pdf
[573] *Id.*
[574] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 27, 2019).
[575] DARREN E. TROMBLAY, INFO. TECH. & INNOVATION FOUND., PROTECTING PARTNERS OR PRESERVING FIEFDOMS? HOW TO REFORM COUNTERINTELLIGENCE OUTREACH TO INDUSTRY, 10 (Oct. 2017), http://www2.itif.org/2017-counterintelligence-outreach-industry.pdf?_ga=2.214257303.1084333806.1572981056-1186362390.1572981056.
[576] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 27, 2019).
[577] *Id.*
[578] Fed. Bureau of Investigation briefing with the Subcommittee (Oct. 31, 2019).

and Association of Public and Land-Grant Universities—on issues of mutual concern.[579]

The FBI told the Subcommittee that OPS provides support to FBI field offices to hold regional academia conferences with universities and "hosts an annual Academia Summit at FBI Headquarters with university executives, science funding agencies (such as NIH and NSF), academia associations, and other government agencies in attendance."[580] To better understand the FBI's engagement with the higher education community, the Subcommittee requested on two occasions to attend the annual Academia Summit. The FBI declined the Subcommittee's requests, but offered to brief the Subcommittee after the summit.[581]

4. The FBI Continues to Lack a Coordinated National Outreach Program on the Threat from Talent Recruitment Plans

The FBI has delivered mixed messages to the U.S. higher education community concerning how to respond to threats posed by foreign talent recruitment plans. More than a dozen U.S. universities and higher education advocacy groups told the Subcommittee that the Bureau's outreach efforts were inconsistent and lacked specificity. The FBI is making progress towards a unified strategy, but still lacks a coordinated national outreach program to address these issues.

The Subcommittee met with more than a dozen U.S. universities and higher education advocacy groups to discuss research security as well as the Bureau's outreach efforts.[582] The responses varied, but in nearly all cases, the U.S. higher institutions expressed the need to have more specific information about the threat that Chinese talent recruitment plans pose.[583] This included specific requests for case examples or talent recruitment plan contracts that could provide more detail about the loss of intellectual capital and property or violations of federal grant terms and conditions.[584] University officials also described the FBI's outreach on

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[579] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 27, 2019).
[580] *Id.*
[581] Fed. Bureau of Investigation Email to the Subcommittee (Sept. 30, 2019).
[582] Briefing with the Subcommittee (Oct. 31, 2019); Briefing with the Subcommittee (Oct. 30, 2019); Briefing with the Subcommittee (Oct. 24, 2019); Briefing with the Subcommittee (Oct. 17, 2019); Briefing with the Subcommittee (Oct. 10, 2019); Briefing with the Subcommittee (Oct. 7, 2019); Briefing with the Subcommittee (Oct. 4, 2019; 11:00 A.M.); Briefing with the Subcommittee (Oct. 4, 2019; 12:00 P.M.); Briefing with the Subcommittee (Oct. 1, 2019); Briefing with the Subcommittee (Sept. 19, 2019); Briefing with the Subcommittee (July 17, 2019); Briefing with the Subcommittee (June 13, 2019); Briefing with the Subcommittee (May 18, 2019); Briefing with the Subcommittee (Apr. 24, 2019).
[583] *Id.*
[584] *Id.*

the threat that China poses as "haphazard" or a "mixed bag."[585] These criticisms were meant to be constructive as many U.S. universities officials also indicated that they maintained productive relationships with the local FBI field office.[586] This included coordinating with the FBI on threats such as campus security.[587]

University officials' criticism of FBI outreach on foreign talent recruitment plans is well-founded. For example, in one case, the FBI provided a university a list of suspected TTP members without explaining what next steps the university should take to protect itself.[588] At least one university president wrote in a public opinion piece that he interpreted the FBI's outreach as inappropriate direction to "spy" on "foreign-born students."[589] Several other universities felt compelled to issue public letters to their university communities to clarify that their communities remain "open to people from all over the world."[590]

Despite OPS forming a team specifically to explain risks to the U.S. higher education community earlier this year, the FBI continues to lack a coordinated national outreach program on these issues. Prior to 2019, special agents needing information before briefing or interacting with higher education institutions in their area of responsibility would contact FBI headquarters to receive briefing

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[585] Briefing with the Subcommittee (Oct. 30, 2019); Briefing with the Subcommittee (Oct. 4, 2019; 11:00 A.M.); Briefing with the Subcommittee (Oct. 31, 2019); Briefing with the Subcommittee (Oct. 7, 2019); Briefing with the Subcommittee (June 13, 2019).
[586] Briefing with the Subcommittee (Oct. 7, 2019); Briefing with the Subcommittee (Oct. 4, 2019; 11:00 A.M.); Briefing with the Subcommittee (Oct. 4, 2019; 12:00 P.M.); Briefing with the Subcommittee (Oct. 1, 2019); Briefing with the Subcommittee (Sept. 19, 2019); Briefing with the Subcommittee (July 17, 2019); Briefing with the Subcommittee (June 13, 2019); Briefing with the Subcommittee (May 18, 2019); Briefing with the Subcommittee (Apr. 24, 2019).
[587] *Id.*
[588] Briefing with the Subcommittee (June 13, 2019).
[589] Lee C. Bollinger, *No, I Won't Start Spying on my Foreign-Born Students,* WASH. POST (Aug. 20, 2019), https://www.washingtonpost.com/opinions/no-i-wont-start-spying-on-my-foreign-born-students/2019/08/29/01c80e84-c9b2-11e9-a1fe-ca46e8d573c0_story.html.
[590] Carol Christ, *Campus & Community: Reaffirming our Support for Berkeley's International Community*, U.C. BERKELEY (Feb. 21, 2019), https://news.berkeley.edu/2019/02/21/reaffirming-our-support-for-berkeleys-international-community; Peter Salovey, *Office of the President: Yale's Steadfast Commitment to our International students and Scholars,* YALE U. (May 23, 2019), https://president.yale.edu/yale-s-steadfast-commitment-our-international-students-and-scholars. L. Rafael Reif, *Letter to the MIT community: Immigration is a Kind of Oxygen,* MIT NEWS (June 25, 2019), http://news.mit.edu/2019/letter-community-immigration-is-oxygen-0625#.XROlF2_3H7A.twitter; Patrick Gallagher, *Office of the Chancellor: In Support of Global Education*, U. OF PITT. (2019), https://www.chancellor.pitt.edu/spotlight/support-global-education; Farnam Jahanian, *Leadership: The Importance of Being an Open, Global and Secure Research University*, CARNEGIE MELLON U. (Aug. 15, 2019), https://www.cmu.edu/leadership/president/campus-comms/2019/2019-08-15.html; Ronald J. Daniels, Sunil Kumar & Paul B. Rothman, *Office of the President*: *Supporting our international scholars and students*, JOHNS HOPKINS U. (July 9, 2019), https://president.jhu.edu/meet-president-daniels/speeches-articles-and-media/supporting-our-international-scholars-and-students.

information or talking points on a case-by-case basis.[591] The FBI maintained presentation materials on the broader risks associated with Chinese economic espionage, but not specifically talent recruitment plans.[592] In January 2019, OPS created a publicly available document titled "China: The Risk to Academia" to increase the information sharing by FBI special agents meeting with higher education institutions.[593] OPS and FBI counterintelligence are currently working on a standard PowerPoint presentation concerning China's economic espionage efforts, including talent recruitment plans, to better coordinate messaging across its 56 field offices.[594]

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[591] Fed. Bureau of Investigation with the Subcommittee (Oct. 31, 2019).
[592] *Id.*
[593] *Id.*
[594] *Id.*

G. THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

The White House Office of Science and Technology Policy ("OSTP"), established in 1976 in the Executive Office of the President, advises "the President of scientific and technological considerations involved in areas of national concern" and serves "as a source of scientific, engineering, and technological analysis and judgement for the President with respect to major policy, plans, and programs of the Federal Government."[595] OSTP also facilitates and directs interagency science and technology efforts, policy coordination, and safety coordination.[596]

Currently, OSTP is in the midst of a policy review to take a coordinated approach to adopt best practices across the federal government to mitigate foreign exploitation of "the U.S. open innovation system."[597] This review is to develop a "longer-term strategy for balancing engagement and risk without stifling innovation."[598] The U.S. government's vast and varied array of grant-making agencies complicates this policy review. As of today, federal agencies are providing the academic community with varied messages on the appropriate response to foreign exploitation.

1. The National Science and Technology Council

OSTP's National Science and Technology Council ("NSTC") seeks to "coordinate the science and technology policy-making process."[599] NSTC is chaired by the President, and "upon his direction, the Assistant to the President for Science and Technology may convene meetings of the council."[600] Additionally, NSTC may utilize "established or ad hoc committees, task forces, or interagency groups."[601] The NSTC is comprised of "the Vice President, Cabinet Secretaries and Agency Heads with significant science and technology responsibilities, and other White House officials."[602] NSTC manages six primary committees: (1) Science and Technology (S&T) Enterprise; (2) Environment; (3) Homeland and National Security; (4) Science; (5) STEM Education; and (6) Technology.[603] In addition, NSTC operates two special committees: the Joint Committee on the Research

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[595] National Science and Technology Policy, Organization, and Priorities Act of 1976, Pub. L. No. 94-282, Title II, §§ 205–06, 90 Stat. 464 (1976) (codified as amended in scattered sections of 42 U.S.C.).
[596] *Office of Science and Technology Policy*, WHITE HOUSE, www.whitehouse.gov/ostp/.
[597] Off. of Sci. and Tech. Pol'y briefing with the Subcommittee (July 29, 2019).
[598] *Id.*
[599] Exec. Order No. 12,881, 58 Fed. Reg. 62,491 (Nov. 26, 1993).
[600] *Id.*
[601] *Id.*
[602] *Office of Science and Technology Policy: NSTC*, WHITE HOUSE, https://www.whitehouse.gov/ostp/nstc/.
[603] *Id.*

Environment and the Select Committee on Artificial Intelligence.[604] Each committee oversees various subcommittees and working groups.[605]

2. Joint Committee on the Research Environment

In May 2019, NSTC launched the Joint Committee on the Research Environment ("JCORE") to "coordinate interagency work related to improving the safety, integrity, and productivity of research settings."[606] JCORE is co-chaired by representatives from OSTP, the NSF, the NIH, the Department of Energy, and the National Institute of Standards and Technology.[607] JCORE aims to take an integrative approach to improve "the collective safety, integrity, productivity, and security of [the] nation's multi-sector research environment."[608] To further these efforts, JCORE maintains four subcommittees in the following areas: (1) Coordinating Administrative Requirements for Research; (2) Rigor & Integrity; (3) Research Security; and (4) Safe and Inclusive Research Environments.[609] Each subcommittee is comprised of approximately two dozen leaders across numerous federal science, foreign affairs, and security agencies.[610]

First, the Subcommittee on Coordinating Administrative Requirements for Research ("CARR") works to fulfill statutory requirements and the needs of the research community.[611] CARR's aim is to create significant reductions in administrative work and costs in the research community[612] and is working to simplify grant application requirements.[613] CARR also has planned initiatives to consult with the research community when developing next steps and share Research Business Model efforts with the research community.[614]

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[604] *Id.*
[605] *Id.*
[606] *Id.*
[607] *Id.*
[608] NAT'L SCI. & TECH. COUNCIL, JOINT COMMITTEE ON THE RES. ENV'T, SUMMARY OF THE 2019 WHITE HOUSE SUMMIT OF THE JOINT COMMITTEE ON THE RESEARCH ENVIRONMENT (JCORE) (2019), https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Science-Security/Summary-of-JCORE-Summit-November-2019.pdf.
[609] *See Office of Science and Technology Policy: NSTC*, WHITE HOUSE, https://www.whitehouse.gov/ostp/nstc/.
[610] Letter from Kelvin Droegemeier, Director, Exec. Off. of the President, Off. of Sci. and Tech. Pol'y, to the United States Res. Community (Sept. 16, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/09/OSTP-letter-to-the-US-research-community-september-2019.pdf.
[611] Off. of Sci. and Tech. Pol'y briefing with the Subcommittee (July 29, 2019).
[612] WHITE HOUSE: OFF. OF SCI. AND TECH. POL'Y, UPDATE FROM THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL JOINT COMMITTEE ON RESEARCH ENVIRONMENTS (July 9, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/07/Update-from-the-NSTC-Joint-Committee-on-Research-Environments-July-2019.pdf.
[613] Off. of Sci. and Tech. Pol'y briefing with the Subcommittee (July 29, 2019).
[614] WHITE HOUSE: OFF. OF SCI. AND TECH. POL'Y, UPDATE FROM THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL JOINT COMMITTEE ON RESEARCH ENVIRONMENTS, 3 (July 9, 2019),

Second, the Subcommittee on Rigor and Integrity of Research ("Rigor and Integrity") "seeks to address concerns over institutional incentives and systemic practices that undermine rigor and integrity."[615] Rigor and Integrity has identified areas across federal agencies to promote baseline policies and hopes to work with stakeholders in the research community to disseminate the recommendations and best practices.[616] Rigor and Integrity will identify policies, practices, and incentives that do not reward rigor, and create best practices and trainings to address the issues.[617] Rigor and Integrity hopes to maximize federally funded Research and Development investments.[618]

Third, the Subcommittee on Research Security ("Research Security") aims to "protect America's researchers from undue foreign influence without compromising our values or our ability to maintain the openness and integrity of our innovation ecosystem."[619] In other words, Research Security seeks to balance the need for open research environments while at the same time protecting national assets. During a recent congressional hearing, the director of OSTP noted the benefit of collaborative and open research but emphasized the risks faced in the absence of protocols.[620] Additionally, he stressed that the subcommittee's goal is to generate best practices that do not place cumbersome burdens on institutions, but rather establish effective and efficient standards.[621]

Research Security also collaborates with private and public partners on four key areas:

- Coordinating outreach and engagement with research partners to help understand and demonstrate the challenges;
- Establishing and coordinating disclosure requirements for participation in the federally funded research enterprise;
- Developing best practices for academic research institutions; and

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https://www.whitehouse.gov/wp-content/uploads/2019/07/Update-from-the-NSTC-Joint-Committee-on-Research-Environments-July-2019.pdf.

[615] *Id.*

[616] *Id.* at 3.

[617] Off. of Sci. and Tech. Pol'y briefing with the Subcommittee (July 29, 2019).

[618] *Id.*

[619] WHITE HOUSE: OFF. OF SCI. AND TECH. POL'Y, UPDATE FROM THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL JOINT COMMITTEE ON RESEARCH ENVIRONMENTS, 3 (July 9, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/07/Update-from-the-NSTC-Joint-Committee-on-Research-Environments-July-2019.pdf.

[620] *Budget and Oversight: Hearing on White House Office of Science and Technology Policy Before the Subcomm. on House Subcomm. on Commerce, Justice, Sci., and Related Agencies of the H. Comm. On Appropriations*, 116th Cong. (July 24, 2019) (testimony of Kelvin Droegemeier, Director, White House Office of Science and Technology Policy).

[621] *Id.*

- Developing methods for identification, assessment, and management of risk.[622]

Research Security expects to provide best practices to funding agencies and academia on topics like conflicts of interest, vetting responsibilities, and enforcement mechanisms.[623] Additionally, Research Security is working with federal grant-making agencies to standardize grant terms, conditions, forms, and language—a process OSTP plans to complete by early 2020.[624]

Fourth, the Subcommittee on Safe and Inclusive Research Environments ("Safe and Inclusive") "is the primary coordinating body for Federal agencies to share practices, challenges, and activities to combat harassment of all types in the research environment."[625] Safe and Inclusive will focus on polices which help to recruit and retain diverse researchers.[626]

3. Inconsistent Federal Grant Policies and Outreach Efforts Complicate OSTP's Ability to Respond to Foreign Talent Recruitment Plans

While JCORE's goal is to make federal grant proposals as harmonized and standardized as possible, federal grant-making agencies' policies and processes currently differ in several key ways.[627] These differences complicate the grant process for applicants, stifle U.S. law enforcement's ability to investigate grant crimes, and frustrate the federal government's ability comprehensively understand grant spending.

One key problem is different disclosure requirements concerning foreign support across the government. For example, current NSF conflict of interest and conflict of commitment reporting does not require investigators to disclose in-kind support or any activities outside a principal investigator's institutional

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[622] Letter from Kelvin Droegemeier, Director, Exec. Off. of the President, Off. of Sci. and Tech. Pol'y, to the United States Res. Community (Sept. 16, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/09/OSTP-letter-to-the-US-research-community-september-2019.pdf.
[623] *Id.*
[624] *Id.*
[625] WHITE HOUSE: OFF. OF SCI. AND TECH. POL'Y, UPDATE FROM THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL JOINT COMMITTEE ON RESEARCH ENVIRONMENTS, 3 (July 9, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/07/Update-from-the-NSTC-Joint-Committee-on-Research-Environments-July-2019.pdf.
[626] *Id.*
[627] *See Budget and Oversight: Hearing on White House Office of Science and Technology Policy Before the Subcomm. on House Subcomm. on Commerce, Justice, Sci., and Related Agencies of the H. Comm. On Appropriations*, 116th Cong. (July 24, 2019) (testimony of Kelvin Droegemeier, Director, White House Office of Science and Technology Policy).

appointment.[628] On the other hand, NIH "requires reporting of all sources of research support, financial interests, and affiliations."[629]

Another policy difference concerns the permissibility of participation in foreign talent recruitment programs. The new Energy policy restricts participation in talent recruitment programs by all Energy employees and Energy contractor employees.[630] NSF's policy makes it clear that NSF personnel detailed to NSF cannot participate in foreign government talent recruitment programs, but the policy does not extend to principal investigators.[631] And NIH does not have a policy specifically concerning foreign government talent recruitment programs at all.[632]

U.S. university officials told the Subcommittee that they have received letters from federal grant-making agencies detailing new obligations regarding talent recruitment plans, but the agencies all have their own approach, and there is a lack of coordination.[633] One U.S. higher education organization told the Subcommittee "the messaging from federal agencies that foreign talent programs are a concern is consistent, but federal agency efforts are dissimilar."[634] Other university officials told the Subcommittee that their institution "is not sure what to do with the information on Chinese foreign talent programs provided" by the FBI.[635] Another U.S. school told the Subcommittee that there is concern in the academic community "that an entire group [Chinese-Americans and Chinese students and faculty] is being painted with a broad brush" and is "under attack."[636]

OSTP acknowledged there has not been a clear message on university administrative responsibilities, noting that JCORE plans to coordinate outreach and engagement with federal agencies, academic research institutions, companies, non-governmental organizations, researchers, and students.[637] JCORE also will focus on best practices to combat harassment of all types in the research

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[628] *See* NAT'L SCI. FOUND., NSF-20-1, PROPOSED CHANGES TO THE PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE, II-23 (May 29, 2019).
[629] HHS IG REPORT: FCOIS (Sept. 2019).
[630] *See* U.S. DEP'T OF ENERGY, DOE O 486.1, FOREIGN GOV'T TALENT RECRUITMENT PROGRAMS (June. 7, 2019), https://www.directives.doe.gov/directives-documents/400-series/0486-1-order/@@images/file.
[631] *See* NAT'L SCI. FOUND., PERSONNEL POLICY ON FOREIGN GOVERNMENT TALENT RECRUITMENT PROGRAMS (July 11, 2019), https://www.nsf.gov/bfa/dias/policy/researchprotection/PersonnelPolicyForeignGovTalentRecruitment%20Programs07_11_2019.pdf.
[632] Nat'l Inst. of Health briefing with the Subcommittee (Oct. 3, 2019).
[633] Briefing with the Subcommittee (Oct. 7, 2019); Briefing with the Subcommittee (Oct. 4, 2019; 11:00 A.M.); Briefing with the Subcommittee (Oct. 4, 2019; 12:00 P.M.); Briefing with the Subcommittee (Oct. 1, 2019); Briefing with the Subcommittee (Sept. 19, 2019); Briefing with the Subcommittee (Sept. 17, 2019); Briefing with the Subcommittee (July 17, 2019); Briefing with the Subcommittee (June 13, 2019); Briefing with the Subcommittee (May 18, 2019); Briefing with the Subcommittee (Apr. 24, 2019).
[634] Briefing with the Subcommittee (Sept. 19, 2019).
[635] Briefing with the Subcommittee (Sept. 17, 2019).
[636] Briefing with the Subcommittee (Sept. 19, 2019).
[637] Off. of Sci. and Tech. Pol'y briefing with the Subcommittee (July 29, 2019).

environment and support recruiting and retaining diverse researchers.[638] During the next few months, OSTP announced it will be "holding meetings at academic institutions across the Nation to converse with researchers and students on matters of research security and other topics within JCORE."[639]

[638] *Id.*

[639] Letter from Kelvin Droegemeier, Director, Exec. Off. of the President, Off. of Sci. and Tech. Pol'y, to the United States Res. Community (Sept. 16, 2019), https://www.whitehouse.gov/wp-content/uploads/2019/09/OSTP-letter-to-the-US-research-community-september-2019.pdf.