

Enhancing the Security and Integrity of America's Research Enterprise

The White House Office of Science and Technology Policy

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Key takeaways

- The integrity of the research enterprise rests upon core principles and values.
- Principled international collaboration and foreign contributions are critical to the success of the U.S. research enterprise.
- Some individuals and foreign governments violate core principles of integrity and pose risks to research security.
- Hidden diversions of intellectual property weaken the U.S. innovation base and threaten our security and economic competitiveness.
- The U.S. Government is taking deliberate steps to address risks to research security and integrity while maintaining an open and collaborative enterprise.



INTEGRITY OF THE RESEARCH
ENTERPRISE RESTS UPON CORE
PRINCIPLES AND VALUES



Integrity of the research enterprise rests upon core principles and values

- **Openness and transparency** enable productive collaboration and help ensure appropriate disclosure of potential conflicts of interest and commitment.
- **Accountability and honesty** help acknowledge errors and correct behaviors that can hamper progress.
- **Impartiality and objectivity** protect against improper influence and distortion of scientific knowledge.
- **Respect** helps create an environment where all can be heard and contribute.
- **Freedom of inquiry** allows individual curiosity to guide scientific discovery.
- **Reciprocity** ensures scientists and institutions exchange materials, knowledge, data, access to facilities and natural sites, and training in a way that benefits collaborating partners proportionally.
- **Merit-based competition** helps ensure a level playing field where the best ideas and innovations can advance.

The principles and values that underpin the integrity of the research enterprise comport with American values.



Individuals, institutions, and governments share responsibility for integrity in the research enterprise

Principles of integrity for responsible individuals and institutions:

Openness and Transparency

Accountability

Impartiality and Objectivity

Honesty

Respect

Principles of integrity for responsible governments, reflected in U.S. government policy:

Openness and Transparency

Accountability

Freedom of inquiry

Reciprocity

Merit-Based Competition

Behaviors that violate these shared principles jeopardize the integrity of the research enterprise.

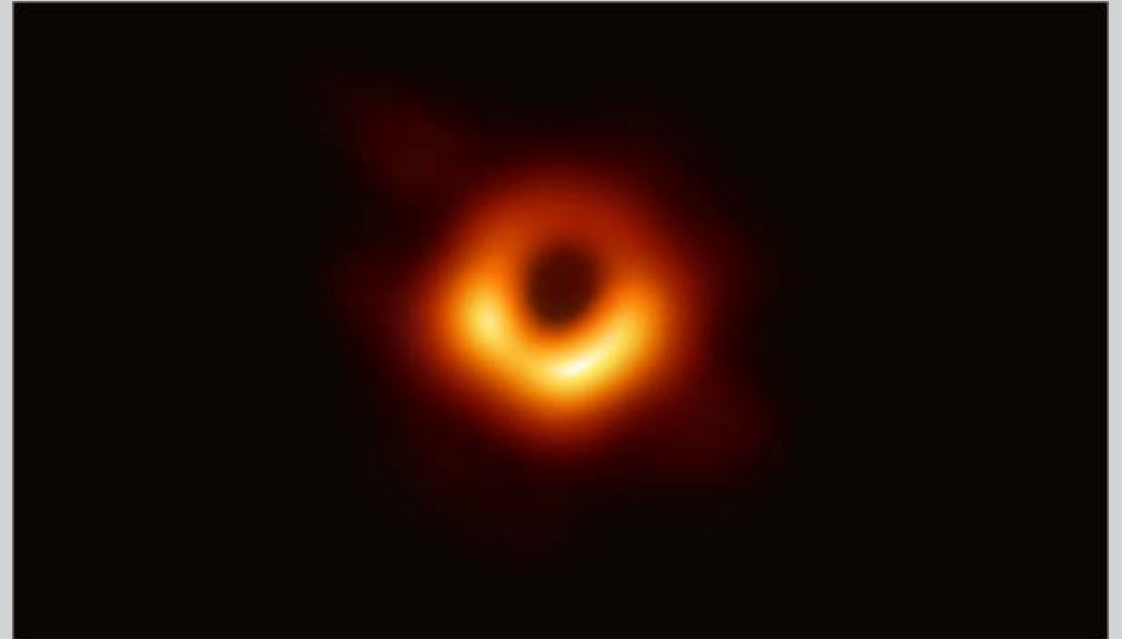


PRINCIPLED INTERNATIONAL
COLLABORATION IS CRITICAL TO SUCCESS



International science is frontier science

- Enables cutting-edge research that no nation can achieve alone
- Strengthens scientific and diplomatic relations
- Leverages resources, including funding, expertise, and facilities
- Trains a robust S&T workforce capable of solving global problems
- International students and scholars contribute significantly to the U.S. research enterprise



In April 2019, a global collaboration of scientists at 60 institutions operating in 20 countries and regions captured the first ever image of a black hole.

Photo credit: NSF, The Event Horizon Telescope Collaboration. (<https://eventhorizontelescope.org/>)

Elizabeth E. Lyons, E. William Colglazier, Caroline S. Wagner, Katy Börner, David M. Dooley, C. D. Mote Jr., and Mihail C. Roco, "How Collaborating in International Science Helps America" *Science & Diplomacy*, Vol. 5, No. 2 (June 2016).



RISKS TO RESEARCH SECURITY AND INTEGRITY



Some individuals and foreign governments violate core principles of integrity and pose risks to the research enterprise

Risks to the Integrity of the Research Enterprise

- Violations of responsible and ethical conduct of research
- Actions that undermine peer review and grant award processes

Risk to National Security

- Hidden diversions of research and/or resources that threaten U.S. leadership in emerging science and technology

Risk to Economic Security

- Hidden diversions of research and/or resources that weaken the innovation base and threaten economic competitiveness



Transparency and full disclosure are needed to properly assess risks.

For the purposes of this presentation:

A **conflict of interest** is a situation in which an individual, or the individual's spouse or dependent children, has a financial interest or financial relationship that could directly and significantly affect the design, conduct, reporting, or funding of research.

A **conflict of commitment** is a situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities. Many institutional policies define conflicts of commitment as conflicting commitments of time and effort, including obligations to dedicate time in excess of institutional or funding agency policies or commitments. Other types of conflicting obligations, including obligations to improperly share information with, or withhold information from, an employer or funding agency, can also threaten research security and integrity, and are an element of a broader concept of conflicts of commitment.



Examples of behaviors that increase risk and can harm the research enterprise

Irresponsible Conduct that Violates Funding Agency and Institutional Policies:

- Failures to disclose:
 - Financial conflicts of interest
 - Conflicts of commitment
 - External employment arrangements
 - Financial support that overlaps with U.S. funding
 - Shadow laboratories or other parallel research activities
- Diversion of intellectual property
- Peer review violations

Examples of Behaviors that May Violate Laws:

- Theft or diversion of materials and intellectual capital
- Grant Fraud

Potential Impacts:

- **Distorted decisions** about appropriate use of taxpayer funds
- **Hidden transfers** of information, know-how, data, and time
- **Diversion of proprietary information** and pre-publication data to foreign entities
- **Loss of Federal research funding**, or need to replace key personnel
- **Damage to the reputation** of research institutions and researchers
- **Reputational, career, and financial detriment** to individuals
- **Loss of taxpayer and public trust** in the research enterprise



Case study 1: Undisclosed conflicts of interest and commitment

Former chief of eye genetics at the Shiley Eye Institute at University of California San Diego Health:

- Received \$10 million in NIH grants during 11 years at UCSD
- Founded U.S. pharmaceutical R&D company Calcyte Therapeutics
- Undisclosed founder and primary shareholder of a publicly traded Chinese biotech company that specialized in the same work he performed at UCSD
- Multiple undisclosed subsidiaries and additional companies in the U.S., China, and the Cayman Islands
- Undisclosed member of a foreign government sponsored talent recruitment program.

Unreported Conflict of Interest

Unreported Conflict of Interest

Unreported Conflict of Commitment

Impacts:

- **Distorts decisions** about appropriate use of taxpayer funds
- **Hidden transfers** of information, know-how, data, person-time

Researcher resigned from U.S. institution.



Case study 2: Leadership failures to disclose conflicts of interest and commitment

Six scientists at the Moffitt Cancer Center, including the President and CEO and the Center Director, resigned due to violations of conflict of interest rules through their work with China.

- Did not report personal payments or foreign bank accounts totaling hundreds of thousands of dollars in research subsidies and annual salaries.
- Undisclosed members of a foreign government sponsored talent recruitment program.

Unreported Conflict of Interest

Unreported Conflict of Commitment

Impacts:

- **Distorts decisions** about appropriate use of taxpayer funds
- **Hidden transfers** of information, know-how, data, person-time

*Researchers resigned from U.S. institution.
The Center returned more than \$1 million in state money.*

Sources: <https://www.sciencemag.org/news/2020/01/moffitt-cancer-center-details-links-fired-scientists-chinese-talent-programs>
https://www.tampabay.com/news/health/2020/02/07/moffitt-returns-1-million-to-state-money-was-linked-to-scientist-with-china-ties/?clavis&utm_expid=.rZxRJI0T86fmAabR1Jv8w.1



Case study 3: Distortion of the peer review process

Researcher served as a designated peer reviewer for funding agency grants.

- Undisclosed participant in a foreign-government sponsored Talent Recruitment Program
- Diverted proprietary information: Emailed grant applications to scientists in China and to some U.S.-based persons
 - Researcher instructed one recipient of the information to “**keep it to yourself**”
 - Stated in another note, “**Here is the bone and meet [sic] you need.**”
 - Emailed a grant application to a Chinese academic institution offering: “**Some methods you may learn from this proposal. Keep this confidential.**”

Unreported Conflict of Commitment

Violation of Peer Review Process

Impacts:

- **Loss of taxpayer and public trust** in the research enterprise
- **Distorts decisions** about appropriate use of taxpayer funds
- **Diversion of proprietary information** and pre-publication data to foreign entities

*Researcher elected to resign from MD Anderson.
Case as reported by the Cancer Letter, April 26, 2019*



Case study 4: Cyber theft of data

Nine hackers working for the Mabna Institute, an Iranian government-sponsored entity, were indicted in 2018 for allegedly hacking into at least 144 U.S. universities and 176 universities in 21 foreign countries.

- Hackers allegedly stole 31.5 terabytes – about 15 billion pages – of academic data. Collectively, the victim universities spent an estimated \$3.4 billion to acquire the data.
- Hackers waged a phishing campaign that successfully compromised the accounts of some 8,000 accounts to steal research and other academic data, such as journals, theses, dissertations and electronic books.

**Theft or
diversion of
materials and
intellectual
capital**

Impacts:

- **Diversion of proprietary information** and pre-publication data to foreign entities

Charged by DOJ on March 23, 2018 for conspiracy to commit computer intrusions, conspiracy to commit wire fraud, unauthorized access to a computer, wire fraud, and aggravated identity theft. Defendant(s) are presumed innocent until proven guilty.



Case study 5: Criminal grant fraud

Researcher found guilty of conspiring to commit federal grant fraud, making false statements, and obstruction by falsification

- Founded a U.S. company and applied for DOE and NSF grants to fund his U.S. company to conduct research between 2014-2016; at least some research had already been completed in China, including by researcher's own "Satellite Lab"
- Signed undisclosed five-year employment agreement with Chinese University in 2014 to serve as Director of Research Institute

**Grant Fraud
"Shadow Lab"**

**Unreported
Conflict of
Commitment**

Impacts:

- **Distorts decisions** about appropriate use of taxpayer funds

*Researcher was found guilty on February 21, 2019.
Case # 7:17-cr-00073 (Western District of Virginia)*



RISKS ASSOCIATED WITH FOREIGN GOVERNMENT SPONSORED TALENT RECRUITMENT PROGRAMS



Some government-sponsored talent recruitment programs are problematic

A **foreign government sponsored talent recruitment program** is an effort directly or indirectly organized, managed, or funded by a foreign government to recruit science and technology professionals or students (regardless of citizenship or national origin).

- Many countries sponsor talent recruitment programs for legitimate purposes of attracting researchers in targeted fields
- Many programs utilize legitimate means of attracting talent, including offering research fellowships and grants to incentivize researchers to physically relocate
- However, some programs encourage or direct unethical and criminal behaviors
- Contracts for participation in some programs, including some sponsored by the Chinese government, include language that creates conflicts of commitment and/or conflicts of interest for researchers
 - Requirements to attribute awards, patents, and projects to the foreign institution, even if conducted under U.S. funding
 - Requirements to recruit or train other talent recruitment plan members, circumventing merit-based processes
 - Requirements to replicate or transfer U.S.-funded work in another country

Transparency and full disclosure are essential to properly assess risks.



Example talent recruitment contract: Undisclosed employment

中山大学高层次人才聘任合同 EMPLOYMENT CONTRACT FOR HIGH-LEVEL TALENTS

聘任方: [REDACTED]
Employer (Foreign institution [REDACTED])
工作院系: [REDACTED]
Department (Foreign institution [REDACTED])
受聘方: [REDACTED]
Employee (U.S. researcher [REDACTED])

第一条 聘期

I. Term of Employment

甲方聘请丙方为全职教授，并安排丙方在乙方工作。

(Foreign institution) is pleased to offer (U.S.-funded researcher) an appointment as a Full-Time Professor or (Foreign institution) and will delegate (U.S.-funded researcher) to work at (Foreign institution)

丙方自签约之日起将全职在甲方工作；丙方每年在甲方工作时间不少于9个月。

(U.S.-funded researcher) shall work full time for (Foreign institution) since the date of signing:
(U.S.-funded researcher) shall work at (Foreign institution) least nine (9) months annually.

The employment will commence on [REDACTED] and terminate on [REDACTED] 2020.

- U.S.-funded researcher working full time at a U.S. institution
- Undisclosed employment in another country for 9 months out of the year



Example talent recruitment contract: Directed output

① (Foreign institution) shall provide (U.S.-funded researcher) with a basic start-up research fund with a cumulative amount of RMB 8,000,000. The aforementioned basic start-up research fund shall be used within five (5) year, with the fund for hardware construction being used within three (3) years. The start-up fund shall mainly cover the following expenditures for (U.S.-funded researcher) and his team , such as lab construction, equipments purchase, scientific research, academic exchanges, and salary for research assistants (A minimum of

Within 3 years of project implementation (i.e. during interim review)

Patent output: [REDACTED]; and 2-3 domestic patents will be applied.

- U.S.-funded researcher is party to an undisclosed contract with a foreign institution
- U.S. researcher is obligated to file 2-3 foreign patents within 3 years.
- The nondisclosure of this contract does not give the university or the Federal funding agency knowledge of its patent rights.
- In some cases U.S.- funded researchers have secured foreign patents based at least in part on their U.S.-funded work.



Example talent recruitment contract: Other support

5. International cooperation and exchange

(1) Actively invite foreign outstanding young scholars to the school to participate in academic exchange activities, amplify (U.S.-funded researcher) opportunities to attract foreign talent, enhance (Foreign institution) teaching resource strengths.

(2) Serve an important bridging role between (Foreign institution) and the National Oceanic and Atmospheric Administration (NOAA).

2. Provide good work conditions for Party B.

(1) (Foreign institution) supports (U.S.-funded researcher) in forming a research team with 4-5 instructors as the backbone. This team, when introducing members meeting the conditions for selection under the Ocean University of China's "Peak Building Talent Program" or "Young Talents Program" may apply for

- U.S. Government employee signed an undisclosed talent program contract with a Foreign institution.
- Contract raises concerns of preferential treatment to certain potential students
- Undisclosed commitment of the U.S. institution to a foreign institution
- Researcher received undisclosed support from foreign research team



Example talent recruitment contract: Attribution and liabilities

5. During the appointment period, the teaching and research achievements obtained by (U.S.-funded researcher) while working for (Foreign institution) are all considered outcomes of the work assignment. (U.S.-funded researcher)'s published research papers, authored works,

and reported awards, patents and research projects and expenses must all be credited to both (U.S.-funded researcher) and (Foreign institution) when it is necessary to simultaneously report the author and the author's affiliation, Party A must be listed as the first affiliation).

2) If (U.S.-funded researcher) within the appointment period due to special circumstances submits his resignation, he must submit his notice to (Foreign institution) three months in advance. With the agreement of (Foreign institution) after application and approval from the Central Committee Organization Department, (U.S.-funded researcher) may resign.

(U.S.-funded researcher) may be liable for breach of contract depending on the particular circumstances.

These conditions are problematic for the U.S. Government and the Research Institution.

This contract cedes credit from the work conducted by a federally funded researcher and employee of a U.S. institution to a foreign institution.

These conditions may be problematic for the researcher- both the foreign institution *and* foreign government need to approve the application for termination of the contract. Penalty for breach of contract is not clearly defined.



Example talent recruitment contract: Intellectual property

(7) Intellectual Property Rights

Since the Institute is primarily subsidized by the Chinese government, the intellectual property rights of scientific research results belong to the Chinese scientific research unit that completes this project (you do not report intellectual property rights to [U.S.] University). If there is any commercial value in the scientific research, the Chinese scientific research unit and the scientific researcher shall own at least 75% of its value. If [U.S.] University wishes to share in the scientific results, [U.S.] University will not share in more than 25% of the commercial value.

Problematic for the Researcher, Research Institution, and U.S. Government:

- U.S.-funded researcher is party to an undisclosed contract with a foreign government
- Foreign government dictates that any IP the U.S.-funded researcher develops **should not be reported** to the U.S. institution
- Foreign government dictates the portion of IP owned by the foreign institution



Example talent recruitment contract: Intellectual property

3. Responsible for patent applications and technology industry transformations for the research institute's *in vitro* synthetic biology results, and achieve transformation and transfer of 2-3 science and technology achievements in 3-4 years.

Problematic for the Research Institution, and U.S. Government:

- U.S.-funded researcher is party to an undisclosed contract with a foreign government
- Researcher is contracted to **transfer** 2-3 science and technology achievements to the foreign institution in 3-4 years.

Contract language from Case # 7:17-cr-00073 (Western District of Virginia)



Example talent recruitment contract: Objectives

Chinese Academy of Sciences

Employment Contract of "Recruiting Overseas Professionals"



Employer (Party A):



Employee (Party B):



2014

Article 1 Position and Term of Employment

(Foreign institution) employs (U.S.-funded Researcher) a professor in "Thousand Talents Program" for a period of five years. The employment period is from [redacted] 2019 (U.S.-funded Researcher) shall work full time at (Foreign institution) premise as a professor effective from the commencement date of this contract.

2. Job Objectives during the Employment Period:

A. Scientific Research Objectives:

a. The laboratory in the United States will be gradually moved back to China to rebuild, and the international cutting-edge translational medicine will continue to be carried out.

- U.S.-funded researcher is party to an undisclosed contract with a foreign government
- Foreign institution dictates that the U.S.-based laboratory be moved to China; U.S. institution unaware of this commitment

Example talent recruitment contract: Problematic for researcher and institution

(4) U.S.-funded Researcher cannot disclose or transfer Foreign institution technical achievements or technical information

Imposed secrecy

(6) U.S.-funded Researcher cannot unilaterally terminate the employment contract should one of the following situations occur:

1. During employment with national major scientific research project;
2. Has access to key technology and information of major scientific achievements and in the confidentiality time period;

Stringent restrictions on termination of Contract – the U.S. researcher cannot unilaterally terminate the contract.



How widespread are behaviors that threaten research security and integrity?

- Data are incomplete but suggest widespread and systemic activity across geographic location and research discipline
- Incidents of concern are not unique to any one background, ethnicity, or nationality
- Other countries have identified similar behaviors in their research enterprises, and we are engaging with them to reach common awareness and share best practices

Inquiries from the National Institutes of Health are currently the most public. As of [June 2020](#):

- Sent notices to over 87 academic and research institutions
- Identified concerns regarding more than 189 scientists
- Nearly all in pre-clinical research, across many fields of biomedicine, all across the United States

The National Science Foundation's inspector general has reported a 20% increase in caseload in the last year

Many cases of concern have involved individuals with undisclosed participation in foreign government sponsored talent recruitment programs



Criminal prosecutions provide an important but incomplete measure of research security risk

In many instances, institutions have taken administrative action to address inappropriate behaviors.

Moffitt Cancer Center CEO, Center Director Resign after Compliance Review
December 18, 2019

Emory Researchers Removed After Failing to Disclose Chinese Funding
Home / News & Opinion

MD Anderson ousts 3 scientists over concerns about Chinese conflicts of interest
Todd Ackerman | April 23, 2019 | Updated: April 20, 2019 11:14 a.m.

Prosecutions are consequential, but are not a substitute for an effective internal compliance program.

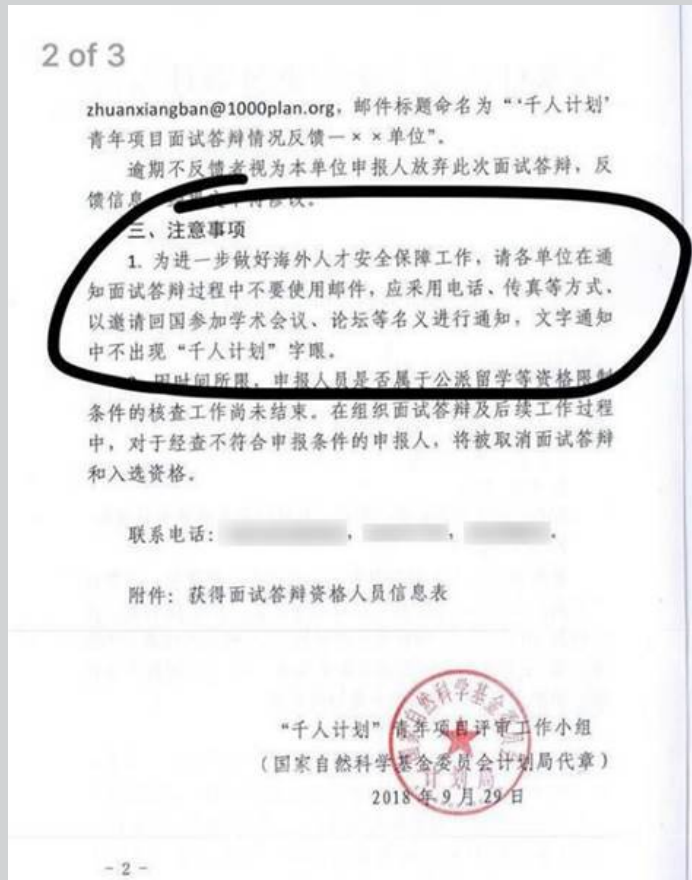


Timeline of Case # 7:17-cr-00073 (Western District of Virginia)

Comprehensive risk assessment and risk mitigation require a range of measures and response mechanisms.



Some government sponsored talent programs are adapting in response to growing awareness of the risks they pose



Translated from a 2018 local talents program contract, sponsored by the Chinese National Natural Science Fund Commission:

III: Items to Pay Attention To

In order to further do a better job in ensuring the safety/security of overseas talents, **[we] ask the organizations not use e-mails in sending out notifications for interview/defense.** Instead, they should use telephone calls or faxes in giving notifications in the name of inviting [the candidates] to come back to China to attend academic conferences and forums, **the words “1000 Persons Plan” shall not appear in the written notifications.**



U.S. GOVERNMENT ACTION

Balancing Openness with Security



U.S. government coordination to address key areas that impact the American research enterprise

On May 6, 2019 The White House Office of Science and Technology Policy established the **Joint Committee on the Research Environment (JCORE)** through the National Science Technology Council to address four critical issues related to the research enterprise.

Four subcommittees focus efforts on:

1. **Research Security:** Balancing openness with strengthening the security of our research enterprise
2. **Reducing Research Administrative Workload:** Reducing the administrative burdens that impede critical scientific research while ensuring we have appropriate accountability and oversight
3. **Rigor and Integrity in Research:** Fostering a research enterprise that upholds freedom of inquiry, reciprocity, and promotes positive incentives that underscore sound research practices
4. **Safe and Inclusive Research Environments:** Ensuring that the research environment is an environment that is merit-based, safe, inclusive, equitable, and welcoming to all



Strengthening the security of the U.S. research enterprise

The JCORE Research Security Subcommittee aims to protect America's research enterprise without compromising our values or our ability to maintain the innovation ecosystem that has underpinned our leadership in science and technology.

The Subcommittee is comprised of over 20 science and security Federal agencies, and co-chaired by White House Office of Science and Technology Policy, the National Institutes of Health, National Science Foundation, and the Department of Energy.

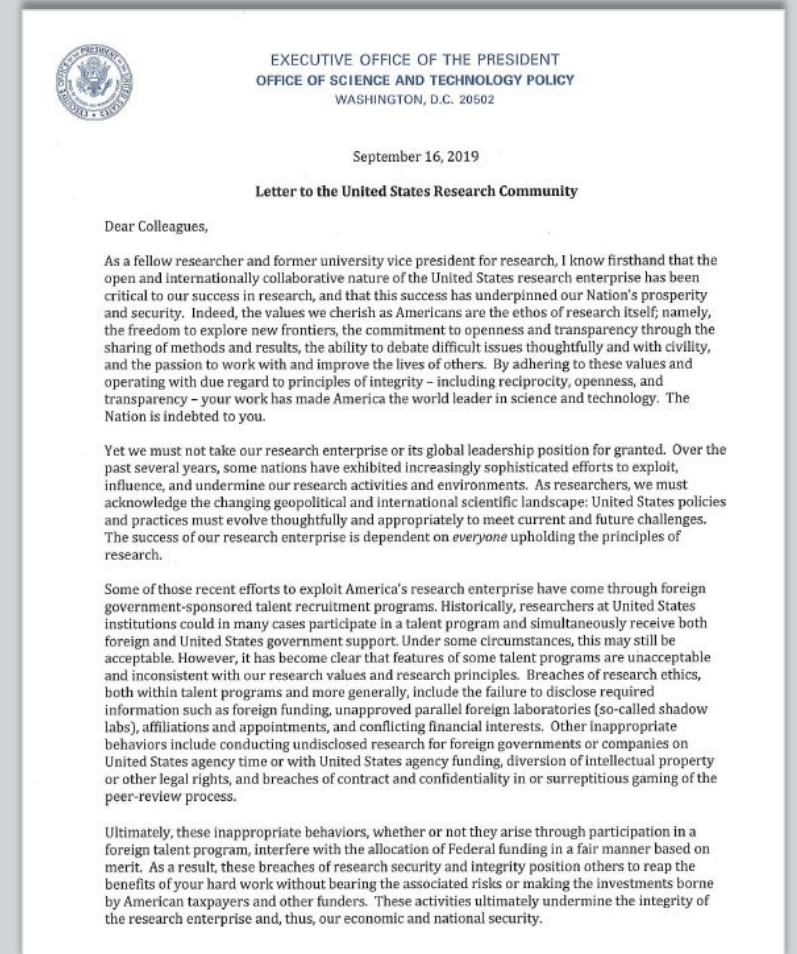
Research Security Subcommittee Focus Areas:

1. Appropriate and effective risk management
2. Consistent, coordinated, and effective outreach to and engagement with academic and research institutions
3. Coordinated guidance for Federal agencies
4. Recommendations for academic and research institutions



JCORE research security subcommittee actions

- Developing guidance for Federal departments and agencies
- Developing best practices for universities and other research institutions
- Letter to the United States Research Community
- Developing education and outreach materials that highlight examples of risks to research
- Engagement with Congress
- Coordinating with the National Academies of Sciences, Engineering, and Medicine on the Science and Security Roundtable as directed by the 2019 National Defense Authorization Act
- Individual agencies are also taking policy actions in line with their mission



[Letter to the United States Research Community](#)



Engagement and outreach

[White House Summit](#) on November 5th, 2019

- Convened more than 150 people from industry, academia, and the Federal government
- Provided and collected insights on the work of Joint Committee on the Research Environment (JCORE)

[Request for Information](#) on the American Research Environment on November 26, 2019, inviting the research community to provide input on all four JCORE focus areas

Extensive interagency outreach to hundreds of institutions, faculty, and students across the country.

Deep engagement with associations and societies, and with international partners.



White House National JCORE Summit 5 Nov 2019



Additional Administration Action Highlights

- Presidential [proclamation](#) to block certain graduate level and above Chinese nationals associated with entities in China that implement or support China's Military-Civil Fusion strategy from using F and J visas to enter the United States.
- The National Institutes of Health issued a [Statement](#), sent letters to grantee institutions requesting information about undisclosed foreign ties, and since 2018 has identified concerns regarding more than [189 scientists](#).
- The National Science Foundation issued a [Dear Colleague letter](#), made policy changes to mitigate risks through changes to [proposal submission requirements](#), and is acting on the recommendations of a [study](#) by the independent JASON group on research security. The JASON study identifies the threat of foreign influence as a complex issue that 'can be addressed within the framework of research integrity'.
- The Department of Energy issued a [directive](#) prohibiting participation by DOE laboratory personnel in talent recruitment programs sponsored by certain foreign governments of risk and established an S&T risk matrix to help protect identified emerging research and technology areas.



Additional Administration Action Highlights

- The Department of State is engaging with partners to raise awareness of the risks of foreign interference on research integrity and security.
- As part of its [China Initiative](#), the Department of Justice developed an enforcement strategy that combines outreach and enforcement to address threats posed by non-traditional collectors, including in academia. Recent criminal prosecutions alleging fraud and false statements by academics have highlighted concerning patterns of behavior, many of which involve Chinese talent plans.
- The Federal Bureau of Investigation's [Office of the Private Sector](#) partnered with academic associations, hosted national level Academia Summits, and strengthened engagement with private industry and academia throughout the FBI's 56 field offices.
- The Office of the Director of National Intelligence and the National Counterintelligence and Security Center strengthened partnerships with academia to raise awareness [and provide context to better understand and recognize foreign influence activities](#).



Additional Administration Action Highlights

- The Department of Agriculture issued guidance on the inclusion of U.S. bilateral Science and Technology Agreements in USDA S&T agreements with foreign governments to ensure consistent application of provisions, such as intellectual property rights and benefit sharing. USDA is conducting enhanced training and awareness for its workforce on promoting and protecting American research and development.
- The Department of Defense established a Research Protection Initiative to establish consistent standards for the reporting of conflicts, detect incidents of problematic behavior, and [work with academic institutions](#) to limit undue foreign influence in research awards.
- The Department of Education has established new information collection [requirements](#) and systems to improve the transparency of foreign funding of institutions of higher education, opened ten civil compliance investigations of U.S. universities for failing to disclose their financial relationship with foreign sources, and identified previously undisclosed foreign funding totaling approximately \$6.5 billion and over \$1 billion in funding for unknown objectives from anonymous sources in China, Russia, Qatar, and Saudi Arabia.



For further information

- White House Joint Committee on the Research Environment: JCORE@ostp.eop.gov
- Email academia@fbi.gov or contact your local [FBI field office](#)
- Contact your Federal funding agency



