

Semiannual Report to Congress

October 1, 2021 – March 31, 2022



National Science Foundation
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From the Inspector General

I am pleased to present our semiannual report, which summarizes our work and accomplishments during the first half of fiscal year 2022. During these extraordinary times, our professional and dedicated staff remain focused on work that improves NSF's ability to achieve its mission and protects taxpayers.

In this reporting period, our work led to more than \$2.6 million in potential savings to taxpayers, including nearly \$1.8 million in investigative recoveries and \$877,000 in questioned costs. Just as importantly, our oversight promotes effectiveness, efficiency, and integrity in NSF programs and grants. For example, this semiannual period, we reported on NSF's vetting of Antarctic Program contractors; NSF's information security program and financial statement audits; whether remote merit review panels save money and increase diversity; and that a major research institution was not complying with the Graduate Research Fellowship Program's requirement to exempt fellows from tuition and fees. We also issued a capstone report highlighting promising practices for NSF award management to help grant recipients strengthen their award management practices and improve stewardship of federal funds.

We continued to address internal and external threats to the integrity of NSF-funded research by investigating wrongdoing involving organizations and individuals that receive awards from NSF. Notably, during this semiannual period, a non-profit research corporation and its principals agreed to pay nearly \$2.5 million to settle *False Claims Act* allegations related to grants from three federal agencies, including \$1.8 million in restitution to NSF. In another case, a university agreed to pay more than \$800,000 to settle *False Claims Act* allegations related to falsified documentation submitted to NSF. We also published a report on our overarching review of NSF plagiarism cases, which summarizes common reasons for plagiarism and includes plagiarism prevention strategies for educational institutions.

We appreciate the support of NSF management and staff from across the Foundation. Our partnership with NSF, the National Science Board, and Congress is a critical component to fulfilling our mission. We also look forward to continuing our work with the Council of the Inspectors General on Integrity and Efficiency on important government-wide issues.

Allison C. Arner



Audits and Reviews

The Office of Audits reviews NSF programs and operations to ensure that administrative, programmatic, and financial aspects of NSF operations are conducted effectively, efficiently, and economically. We also audit grants, contracts, and cooperative agreements funded by NSF. By providing independent and objective assessments of NSF's program and financial performance, we help NSF improve its business policies and practices to better support its mission.

Audits and Reviews of NSF Programs and Operations

FY 2021 Financial Statement Audit Results in 24th Unmodified Opinion and No Material Weaknesses or Significant Deficiencies in Internal Controls

NSF is required to prepare annual financial statements, which must be audited by an independent entity. Kearney & Company, P.C. (Kearney), under a contract with NSF OIG, audited NSF's FY 2021 and 2020 comparative financial statements. It issued an unmodified opinion on the financial statements and identified no instances of noncompliance or other matters that are required to be reported under *Generally Accepted Government Auditing Standards*. Additionally, Kearney's tests disclosed no instances in which financial management systems did not substantially comply with the *Federal Financial Management Improvement Act of 1996*. This marks the twenty-fourth consecutive year NSF has received a clean opinion on its financial statements.

Audit of NSF's Information Security Program for FY 2021 Determined the Program Was Effective

NSF depends on computerized information systems to process, maintain, and report essential information. The *Federal Information Security Modernization Act of 2014* (FISMA, Pub. L. No. 113-283) requires an annual independent evaluation of NSF's Information Security Program and practices, as well as an assessment of its compliance with FISMA requirements. Under a contract with NSF OIG, Kearney performed the FY 2021 FISMA audit and rated NSF's Information Security Program as effective according to the *Inspector General FISMA Reporting Metrics* maturity model criteria. For the FY 2021 audit, the auditors issued one new and four modified repeat findings in the report with associated recommendations for NSF to address weaknesses in information technology security controls. NSF subsequently provided a corrective action plan, and all five new recommendations have been resolved. Three recommendations from FY 2019 remain open, and all FY 2020 FISMA recommendations have been closed. We will evaluate the effectiveness of NSF's corrective actions as part of the FY 2022 FISMA audit.

NSF Has Not Vetted All United States Antarctic Program Contractors in Accordance with NSF Requirements

During previous FISMA audits, Kearney reported that NSF did not always complete required contractor vetting before onboarding and authorizing "privileged" United States Antarctic Program (USAP) network access for users responsible for the maintenance, operation, monitoring, or management of IT systems and USAP information. All new NSF



employees, contractors, and temporary appointees must complete NSF's security vetting process, which aligns with government-wide standards. NSF's vetting process includes searches at law enforcement entities, courts, employers, educational institutions, creditors, and other record repositories, as well as a Federal Bureau of Investigation fingerprint check. During this period, we found that the Office of Polar Programs did not submit all Antarctic Support Contract contractors to NSF for vetting and adjudication as required, and instead relied on the less rigorous, contractor-led processes for most USAP contractors, including "privileged" USAP network users.

We issued a routine activity memorandum, in which we recommended that NSF review and update its contractor vetting procedures to reflect a risk-based approach and ensure USAP contractors are vetted in accordance with those procedures. NSF concurred and stated that implementation of the OIG's recommendations aligns with NSF's longstanding priority of advancing safe and secure execution of USAP's mission-critical responsibilities.

Data Quality Improves from FY 2019, Rated as "Higher" for Compliance with the DATA Act

The *Digital Accountability and Transparency Act of 2014* (DATA Act) requires federal agencies to report financial and spending information to the public through USA Spending.gov using government-wide data standards. Under a contract with NSF OIG, Kearney audited NSF's fourth quarter FY 2020 financial and award spending data to assess its accuracy, completeness, timeliness, and quality. Kearney also assessed NSF's implementation and use of the government-wide financial data standards and evaluated NSF's corrective actions in response to previous¹ recommendations.

Overall, NSF achieved a data quality rating of "Higher." Specifically, Kearney concluded that NSF took steps to implement and use the government-wide data standards and that NSF implemented corrective actions to close all four previous recommendations included in the FY 2019 DATA Act audit; however, improvements are still needed to verify compliance across all data elements. Kearney identified completeness, accuracy, and timeliness errors in 11.5 percent of data elements tested. The discrepancies resulted from NSF's interpretation of DATA Act reporting guidance, which differed from Kearney's interpretation. During the final phase of the audit, NSF developed planned enhancements to resolve the discrepancies. Kearney made one recommendation for NSF to implement the planned enhancements. NSF subsequently provided a corrective action plan and documents supporting implementation of the planned enhancements, and the recommendation has been resolved and closed.

NSF Is Considering Ways to Improve Merit Review Cost and Demographic Data to Inform Future Decisions

We reviewed whether merit review panels convened to evaluate proposals that are held remotely are less expensive and provide more diversity and inclusion opportunities than those held in person.

¹ March 2020 Semiannual Report, p. 2



NSF spent approximately \$13.5 million less on merit review panelists' travel and compensation from April 2020 to March 2021, after stopping in-person panels due to the pandemic, than it spent during the same period the prior year (April 2019 to March 2020). In addition, according to NSF, using remote panels supports NSF's efforts to broaden participation by increasing participation opportunities for individuals with young children, individuals with disabilities, and others who cannot travel. However, due to the low rate of panelists' responses to requests for demographic information, NSF cannot easily assess the impact remote panels have on increasing panel diversity. We made three recommendations to better inform NSF's decisions on future in-person and remote merit review panels. NSF agreed with our recommendations.

MIT Did Not Comply with NSF Requirement to Waive Tuition for Graduate Research Fellowship Recipients

We found the Massachusetts Institute of Technology (MIT) was not complying with Graduate Research Fellowship Program (GRFP) award terms and conditions requiring institutions to exempt fellows from paying tuition and fees. Specifically, institutions receive a cost of education allowance for each fellow actively completing full-time research or coursework and must exempt these fellows from paying tuition and fees normally charged to graduate students of similar academic standing. MIT applied NSF's cost of education allowance toward tuition, but it did not cover all tuition costs or waive the balance. Instead, MIT required fellows to supplement the tuition shortfall through either a research assistantship, teaching assistantship, or another fellowship.

We made one recommendation aimed at ensuring MIT complies with GRFP award terms and conditions related to waiving tuition and fees. NSF agreed that MIT's policy is not compliant with current GRFP terms and conditions, but recognized that MIT believed its policy was consistent with NSF guidance. Although our recommendation addressed policies and practices at MIT, NSF updated its GRFP policy for all institutions and reminded them of their obligations under GRFP awards.

Audits of NSF Award Recipients

Report Highlights Promising Practices for NSF Award Management

Over the past 3 years, an independent public accounting firm conducted 18 performance audits of NSF award recipients on our behalf. During these engagements, the firm observed, identified, and cataloged strengths and opportunities for improvement within each recipient's award management environment. We issued a capstone report based on this body of work to communicate the most common audit findings, suggestions for how to improve compliance in those areas, and promising award management practices implemented by audited institutions. The report is intended to help members of the recipient community identify means to strengthen award management practices and improve the overall stewardship of federal funds across the NSF award recipient population.

The most common audit findings related to unallowable expenses, inappropriately applied indirect costs, inadequately supported expenses, inappropriately allocated expenses, and non-compliance with policies and procedures. The report includes suggestions and



promising practices to improve the stewardship of federal funds, such as: continually monitoring and verifying the allowability of high-risk expenses; strengthening controls over applying indirect cost rates; ensuring recipients create and maintain sufficient, appropriate documentation; documenting and justifying reasonable allocation methodologies; and regularly reviewing and updating grant management policies and procedures. Strengthening controls in these areas could help recipients improve compliance in areas that often result in audit findings.

Audits of Award Recipients Resulted in Nearly \$877,000 in Questioned Costs

OIG contractors completed audits of two NSF award recipients that expended more than \$76 million of NSF funds and more than \$7.8 million in cost sharing during the respective audit periods. The audits assessed the allowability, allocability, and reasonableness of costs charged to NSF and resulted in nearly \$877,000 of questioned costs. The findings included unallowable costs, inadequately supported costs, and inappropriately allocated costs. The auditors recommended that the award recipients strengthen controls over the areas that led to the questioned costs and that NSF recover the questioned costs. Additionally, during our audit of Established Program to Stimulate Competitive Research (EPSCoR) awards at the University of Rhode Island, we alerted NSF of inadequately monitored and inappropriately reported cost sharing.

Reports of Award Recipients this Semiannual Period

Report No.	Award Recipient	Questioned Costs
22-1-001	University of Rhode Island EPSCoR Awards	\$627,748
22-1-002	University of Texas at Dallas	\$249,210
Total		\$876,958

Source: NSF OIG

Reviews of Single Audits

*Uniform Guidance*² requires colleges, universities, and non-profit organizations that expend \$750,000 or more a year in federal awards to obtain an annual independent financial audit, referred to as a "single audit." NSF relies on the results of single audit reports to plan its oversight efforts, including site visits and other post-award monitoring. We conduct desk reviews on all single audit reporting packages for which NSF is the cognizant or oversight agency.³ During a desk review, we examine the audit reporting package, which includes financial statements, federal award expenditures, and auditors' reports, but not the underlying auditors' audit documentation, to determine whether it meets *Uniform Guidance*, *Generally Accepted Government Auditing Standards* (GAGAS), and American Institute of Certified Public Accountants (AICPA) audit standards.

During this period, we conducted desk reviews of 24 single audit reporting packages. The audits were conducted by 18 different independent public accounting firms and covered nearly \$72 million in total federal expenditures, including more than \$34 million in NSF

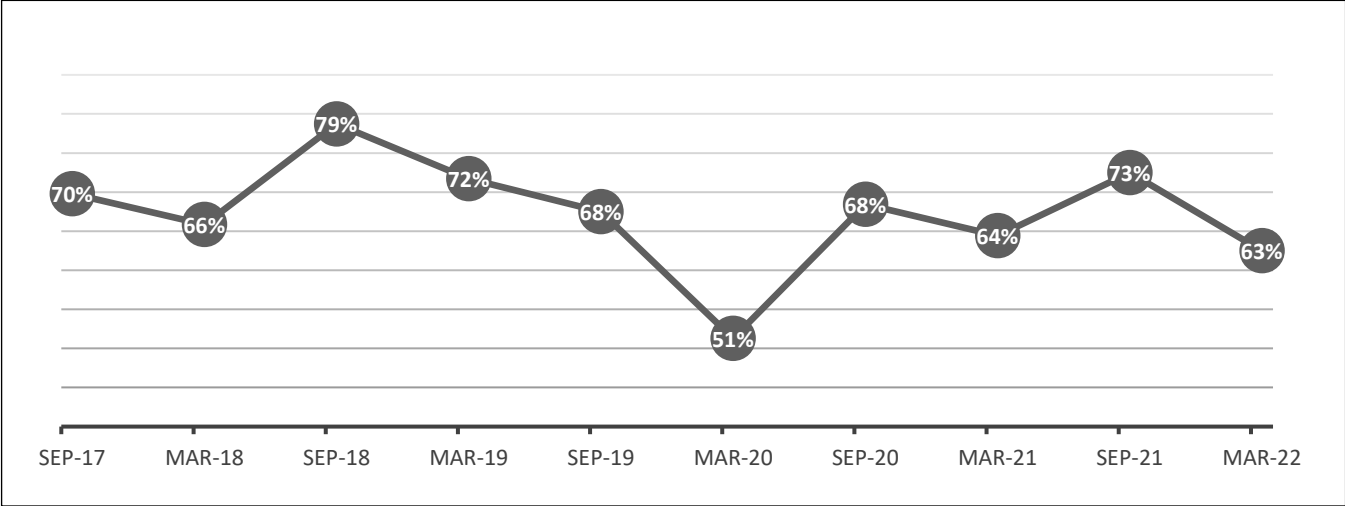
² 2 CFR Pt. 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*

³ Generally defined as an awardee's predominant federal funding agency.



direct expenditures. As shown in Figure 1, 15 audit reporting packages (63 percent) fully met federal reporting requirements.

Figure 1. Percentage of Single Audits That Met Federal Reporting Requirements



Source: NSF OIG Semiannual Reports

We identified deficiencies in nine audit reporting packages, including the incorrect identification of the source of funds; reporting packages submitted after required deadlines; audit report findings without the required elements; corrective action plans missing required information; inaccurate identification of prior audit findings; and inaccurate identification of subrecipient expenditures and the source of funds on the data collection form.

For errors that potentially impacted the reliability of the audit reporting packages, we contacted the auditors and awardees for explanations of each of the potential errors. The auditors and awardees provided adequate explanations or additional information to show compliance with federal reporting requirements. For all reviews, we issued a memorandum to the auditor and awardee informing them of the results of our review and the actions needed to improve the quality and reliability of future audits. We also provided a copy of the memorandum to the awardee’s other federal funding agencies for their use in monitoring and oversight.

Audit Resolution

We work closely with NSF to resolve recommendations resulting from our findings to improve operations and internal controls, recover questioned costs, and put funds to better use. We have different processes for resolving recommendations pertaining to NSF programs and operations and those pertaining to external organizations, such as universities.

To resolve recommendations pertaining to NSF programs and operations, NSF submits a corrective action plan to our office with proposed actions and milestone dates. We review the plan and work with NSF to ensure the proposed corrective actions are timely and responsive to the report’s recommendations. When we accept the corrective action plan,



the recommendations are resolved. Once NSF provides us evidence that it has implemented the corrective action and we confirm the work is done, we close the recommendation.

Our audit reports pertaining to external organizations generally contain recommendations to improve internal controls and/or recover questioned costs claimed by the award recipients. In such cases, NSF formally issues our report to the auditee and reviews the auditee's response to the report's recommendations. The auditee has the opportunity to discuss concerns with NSF, and if necessary, NSF may also discuss those concerns with us. NSF then provides us with a draft management decision record, which details its reasons for sustaining or not sustaining recommendations and questioned costs. If we agree with NSF's management decision, the recommendations are resolved. If we disagree with NSF's decision, the concerns may be referred to the Designated Audit Follow-up Official for a final determination and resolution. NSF notifies our office when it confirms that the auditee has completed recommended internal control corrective actions and repaid questioned costs. The recommendations are considered resolved when OIG concurs with NSF's management decision and closed once NSF notifies the OIG that the institution has completed all the corrective actions.

NSB Office Completes Actions to Improve Compliance with the *Government in the Sunshine Act*

By law, our office conducts an audit every 3 years of the National Science Board's (NSB) actions to achieve compliance with the *Government in the Sunshine Act* and to ensure public access to the NSB's deliberations. We closed the recommendation from our 2021 [*Audit of the National Science Board's Compliance with the Government in the Sunshine Act from 2018-2020*](#). The NSB Office updated its process to ensure it retains a presiding officer's statement for closed plenary executive NSB meetings.

NSF Completes Actions to Improve Accountability for Its Vehicle Fleet and Recipient-titled Vehicles

We closed the final recommendations from our 2020 audit [*NSF Could Improve Accountability for Its Vehicle Fleet and Recipient-titled Vehicles at Major Facilities*](#). NSF completed a Vehicle Allocation Methodology (VAM) Study and Optimal Fleet Profile to determine the appropriate number and size of motor vehicles needed to fulfill its mission. As part of the VAM, NSF conducted a utilization survey to determine whether vehicles met utilization criteria. Additionally, NSF developed a standard operating procedure establishing responsibility within NSF for conducting future VAM studies, compiling the results, and determining utilization criteria for the agency's fleet.

NSF Strengthens Oversight of Government-Owned Equipment

We closed the final recommendation from our 2020 [*Audit of NSF's Monitoring of Government-Owned Equipment Purchased on NSF Awards*](#). NSF developed a new system to track, review, and monitor inventory reports and disposition requests. NSF also developed new standard operating guidance, strengthened award terms and conditions, and created award system special attention flags to identify equipment or property.



NSF Sustains \$338,337 of Questioned Costs

NSF and OIG resolved five audits of award recipients this semiannual period. NSF sustained 100 percent of the questioned costs in the following three audits:

- \$5,969 in questioned costs that Temple University claimed for purchases near award expiration (\$4,524) and unreasonable travel costs (\$1,445). In response to the audit, Temple strengthened its procedures for charges near the end of an award and its control over travel costs.
- \$28,606 of questioned costs that the University of Alaska Fairbanks claimed on unallowable travel, rental, and fees (\$2,938), and costs claimed that were due to unreturned credits (\$14,964) and inappropriately applied indirect costs (\$10,704). In response to the audit, Alaska Fairbanks said that it had repaid the credits and updated its billing procedures. It also added a code in its financial system and augmented review processes to help ensure that indirect costs are not applied to categories where they are not allowed, and instituted new documentation controls. In addition, Alaska Fairbanks agreed to increase training on drawdowns, items that cannot be purchased with NSF funds or need a waiver, and travel costs that are allowable under federal regulations and University policy.
- \$31,341 of questioned costs that the State University of New York at Stony Brook (Stony Brook) drew down from NSF inappropriately (\$20,530), travel advances it did not return when the travel was canceled (\$6,913), and expenses it charged to an award that did not benefit from them (\$3,898). In response to the audit, Stony Brook repaid the drawdowns, reimbursed NSF for the travel expenses, and credited the award that had been incorrectly charged with costs. In addition, Stony Brook revised its policies to ensure that drawdowns comply with federal and NSF regulations, agreed to strengthen its controls over travel advances, revised its policy on cost transfers, and agreed to transition away from using blended indirect cost rates in lieu of negotiated on-campus and off-campus rates. NSF also required Stony Brook to ensure that awards are not charged indirect costs exceeding the rate(s) in effect at the time of the award.

Alaska Fairbanks and Stony Brook were part of the 10 audits that we issued on universities' use of administrative flexibilities provided by the Office of Management and Budget in response to the COVID-19 pandemic. The auditors did not find that either university inappropriately used the administrative flexibilities.

NSF sustained \$257,004 (97 percent) of costs questioned in the audit of the University of Pennsylvania for unsupported expenses (\$145,023), inappropriate application of indirect costs (\$56,475), unallowable expenses (\$46,149), costs inappropriately charged (not allocable) to NSF awards (\$8,853), and incorrect application of fringe benefits (\$504). In response to the audit, the University of Pennsylvania revised its policies and procedures to address the causes of the questioned costs. NSF did not sustain \$8,953 of costs questioned related to unsupported costs (\$4,742) and unallowable expenses (\$4,211).



Finally, NSF sustained \$15,417 (36 percent) of the costs questioned in the audit of the University of Utah for unallowable participant support expenses (\$24), indirect costs inappropriately applied to capital equipment (\$13,147), and unreasonable expenses near award expiration (\$2,246). During audit resolution, NSF found that Utah's policies for participant support, application of indirect costs, purchases near the end of an award, and petty cash were generally adequate, and that Utah had distributed new guidance to ensure costs were charged to correct accounts. Based on its review and final determination, NSF did not sustain \$26,740 of costs questioned related to unsupported stipend expenses (\$21,262) and unreasonable expenses near award expiration (\$5,478).

Investigations

The Office of Investigations is dedicated to promoting effectiveness and efficiency in NSF programs and operations. We investigate wrongdoing involving organizations or individuals that receive awards from, conduct business with, or work for NSF. We assess the seriousness of misconduct and recommend proportionate action.

Program Integrity Investigations

We investigate allegations concerning misuse of NSF funds, false statements in documents submitted to NSF, and employee misconduct. When we identify a violation of a criminal or civil statute, we refer the matter to the U.S. Department of Justice (DOJ) for criminal prosecution or civil action; if the case is accepted, we work with DOJ attorneys to support any resulting litigation. When appropriate, we also refer matters to NSF for administrative action, such as award termination and government-wide suspension or debarment. The following are brief descriptions of case outcomes during this semiannual period:

University Returned More Than \$200,000 for Improper Expenditures

A university returned more than \$200,000 for improper expenditures on NSF awards. The university laboratory billed federal awards more than the actual costs for recharge center reimbursements for lab analyses and processing fees. At our request, the university completed an internal review and agreed to reimburse NSF more than \$200,000 for the overcharges.

SBIR Company Paid More Than \$25,000 to Settle False Claims Allegations

As part of a civil settlement agreement, a Small Business Innovation Research (SBIR) company agreed to pay more than \$25,000 to resolve potential *False Claims Act* liability. The company failed to disclose an ongoing award from another federal agency in its NSF proposal. When the NSF program officer discovered the award, the company obscured details about the potential overlap with the proposed NSF research. The company also claimed two independent contractors were employees. Under an administrative agreement with NSF, the company agreed to implement a Corporate Responsibility Program.



Actions Resulting from Previously Reported Program Integrity Investigations

Research Corporation and its Principals Pay Nearly \$2.5 Million to Settle *False Claims Act* Allegations

We previously reported that more than \$1 million in NSF funds were put to better use as part of an investigation into allegations that a non-profit research corporation could not account for a significant amount of NSF funds and used federal funds to purchase a certificate of deposit.⁴ NSF suspended the research corporation, the president/chief executive officer, and the former chief financial officer government-wide.⁵ During this reporting period, the research corporation agreed to pay nearly \$2.5 million and the president/chief executive officer and former chief financial officer agreed to pay more than \$200,000 to settle the *False Claims Act* allegations. NSF's portion of the restitution was more than \$1.8 million. The research corporation and president/chief executive officer agreed to a government-wide voluntary exclusion for 2 years, while the former chief financial officer entered into an administrative agreement to not participate in U.S. government-funded research for 2 years. The president/chief executive officer and former chief financial officer both agreed to being prohibited from serving as NSF reviewers, advisors, or consultants. The president/chief executive officer also agreed to being prohibited from holding any position at NSF. We conducted this investigation with the Offices of Inspector General from the National Aeronautics and Space Administration and the Department of Commerce. DOJ's press release about this case can be found [here](#).

University Pays More Than \$800,000 to Settle *False Claims Act* Allegations

A university agreed to pay more than \$800,000 to settle *False Claims Act* allegations related to falsified documentation submitted to NSF. We determined that the principal investigator (PI) submitted annual reports containing misrepresentations about senior personnel's contributions on the award, when they performed no work. DOJ's press release about this case can be found [here](#).

Three Companies and an Individual Debarred For 3 Years

We previously reported that a husband and wife were each indicted for a scheme to defraud NSF of over \$1 million in SBIR/ Small Business Technology Transfer (STTR) funds to their company. The husband, wife, and company were subsequently charged with mail fraud, and the husband and company each pled guilty to wire fraud and were sentenced to 2 years' probation.⁶ The husband and company also agreed to 5-year voluntary exclusions. During this semiannual period, NSF agreed with our recommendation to debar the wife and the three other companies/entities controlled by the husband and/or wife for 3 years through the voluntary exclusion periods of the husband and company.

⁴ September 2020 Semiannual Report, p. 2

⁵ March 2021 Semiannual Report, p. 11

⁶ September 2018 Semiannual Report, p. 7; September 2019 Semiannual Report, p. 5; March 2020 Semiannual Report, p. 8; March 2021 Semiannual Report, p. 9



Former University PI Debarred for 2 Years

We previously reported that a university professor was charged with one felony count of embezzlement for directing NSF award funds to his wife's company; the matter was dismissed in state court and the university agreed to return more than \$130,000 to NSF.⁷ During this semiannual period, NSF agreed with our recommendation to debar the former professor and his wife's company for 2 years.

STTR Company Enters Administrative Agreement with NSF

We previously reported that an STTR company and its founder paid restitution to settle allegations related to the *False Claims Act* and that NSF suspended an award to the company.⁸ During this period, the company entered into an administrative agreement with NSF where the company agreed, amongst other items, to implement a Corporate Responsibility Program and maintain an in-house federal contracts manager.

Research Misconduct Investigations

Research misconduct damages the scientific enterprise, is a potential misuse of taxpayer dollars, and undermines the trust of citizens in government-funded research. It is imperative to the integrity of research that NSF-funded researchers carry out their projects with the highest ethical standards. Pursuing allegations of research misconduct — plagiarism, fabrication, and falsification — continues to be a focus of our investigative work. NSF takes research misconduct seriously, as do NSF's awardee institutions.

For each case described in this section, we recommended that NSF make a finding of research misconduct, issue a letter of reprimand, and require interactive responsible conduct of research (RCR) training, except where noted. Unless otherwise specified, NSF's decisions are pending.

Professor Plagiarized from Confidential Documents

In our September 2021 Semiannual Report, we reported on an ongoing investigation involving a professor who plagiarized when he copied supplementary documents from an NSF proposal he reviewed into his own proposal. Based on our recommendation, NSF suspended the professor from participating as a peer reviewer, advisor, or consultant until the conclusion of the investigation.⁹ During this semiannual period, in response to our inquiry, the professor acknowledged copying the material from the proposal he reviewed. He claimed he used the text as a template in a draft and he and his collaborators mistakenly incorporated the text into the final submission. The professor withdrew two proposals after receiving our inquiry letter. We reviewed all three proposals for additional plagiarism and found text copied from journal articles and an online example proposal. We referred the investigation to the university.

⁷ September 2019 Semiannual Report, p. 2; September 2021 Semiannual Report, p. 4

⁸ September 2017 Semiannual Report, p. 15; March 2021 Semiannual Report, p. 9

⁹ September 2021 Semiannual Report, p. 6



The university concluded the professor violated reviewer confidentiality and recklessly plagiarized. The university required the professor to submit a plagiarism report to the university's research integrity officer before every proposal or paper submission for 3 years. The university also required the professor to complete a three-part RCR training that included an in-person course.

We concurred with the university, but concluded the plagiarism was committed intentionally. Although the professor accepted responsibility and acknowledged he copied and pasted text from other documents into drafts of the proposals, he claimed his collaborators' actions resulted in the submission of plagiarized text to NSF. We found no evidence to corroborate this claim. We concluded the professor intentionally plagiarized text in three NSF proposals and violated the confidentiality of NSF's merit review process when he copied from an NSF proposal he reviewed. We recommended that NSF debar the professor for 2 years. We also recommended that for 5 years (concurrent with the debarment, and for 3 years thereafter), NSF require the professor to submit contemporaneous certifications that any proposals or reports he submits to NSF do not contain plagiarized, falsified, or fabricated material (certifications); submit contemporaneous assurances by a responsible official of his employer that any proposals or reports he submits to NSF do not contain plagiarized, falsified, or fabricated material (assurances); and prohibit the PI from participating as a peer reviewer, advisor, or consultant for NSF.

PI Accepted Responsibility for Plagiarism in Multiple Proposals

We investigated an allegation of verbatim plagiarism by a PI in a proposal submitted to NSF. The PI acknowledged copying the material we identified and took full responsibility. We referred the matter to the PI's university for investigation, which concluded the PI plagiarized, and the plagiarism was part of a pattern based on an examination of multiple proposals. The university required the PI to complete RCR training; consult with a writing consultant or training program; use plagiarism software on all proposals for 3 years; withdraw all pending proposals; and contact another federal agency about an awarded grant. The PI also received a letter of reprimand and was ineligible for salary merit increases for 2 years. As the PI had no RCR training, the university decided to institute tracking measures to ensure all PIs, graduate students, and postdoctoral fellows receive RCR training before submitting sponsored research grants.

We concluded the PI knowingly committed plagiarism in at least four NSF proposals and recommended that NSF require the PI provide certifications and assurances and prohibit the PI from participation as an NSF peer reviewer, advisor, or consultant for 2 years.

Co-PI Plagiarized Teaching Materials for an Award-funded Course

A co-PI on an NSF award copied, without attribution, online teaching materials and data sets into three online lectures he prepared for the award-funded course. Another course instructor recognized the copied material and noted the co-PI simply read transcripts of others' online lectures as his own. When colleagues confronted the co-PI, the co-PI accepted responsibility. The co-PI's university conducted an inquiry that concluded an investigation was warranted.



The university concluded the co-PI knowingly committed plagiarism and that the act was a significant departure from accepted practice. The university required the co-PI to complete RCR training, regularly meet with award personnel to discuss research accountability and mentorship, continue award-related work after completing the training and meetings, and have his award-related teaching monitored. The co-PI contested the university's findings, arguing that copied material in his lectures did not meet the definition of research, and that he acted with honest error.

We reviewed the extent of plagiarism and the co-PI's challenges to the university's finding. We found that the verbal and visual content in the co-PI's three lectures were almost entirely identical and/or significantly similar to others' online content, and the co-PI did not verbally or visually credit the content. We concluded that the co-PI's lectures constituted "research" under federal statutes and regulations, as they directly resulted from an awarded proposal. We also concluded that the co-PI's use of others' online materials was not honest error, but rather a conscious act. We recommended NSF, for 3 years, require certifications and assurances and prohibit the co-PI from participation as peer reviewer, advisor, or consultant for NSF.

NSF-Funded Graduate Student Self-Reports Data Fabrication and Falsification

More than 5 years after receiving his Ph.D., a former NSF-funded doctoral student self-reported to his Ph.D. advisors that he fabricated and falsified data in his dissertation and in eight publications. The former student also provided an email in which he self-reported falsifying data in an undergraduate, award-winning poster that he cited in his NSF graduate research fellowship application. On his own accord, the former student began pursuing retractions and reported the misconduct to his graduate university. The university conducted an inquiry that concluded an investigation was warranted. We referred the investigation to the university.

The university concluded that the former student knowingly and intentionally committed data fabrication and falsification, and that the act seriously deviated from the accepted practice of his research community. It also concluded that his actions impacted the research record but found no pattern of misconduct. The university retracted the dissertation, revoked the former student's Ph.D., and required retraction of any articles not yet retracted. The university also committed to continue promoting RCR and the integrity of research records for their current graduate students.

We concurred with the university assessments but concluded the former student acted intentionally and exhibited a pattern of falsification and fabrication in multiple documents and the poster. We recommended NSF, for 3 years, require certifications and assurances; prohibit the former student from participation as peer reviewer, advisor, or consultant for NSF; and require a data management plan with each submitted NSF proposal.

Postdoctoral Researcher Plagiarized Images and Falsified Data

A university notified us it had conducted an inquiry into alleged research misconduct against a former postdoctoral researcher whose research was funded by an NSF award. The university found that the postdoctoral researcher committed research misconduct by falsifying and/or fabricating data in an internal research report. The falsified and/or



fabricated data were subsequently incorporated into an NSF annual report and incorporated into a manuscript that acknowledged NSF support. The university notified NSF and the postdoctoral researcher's current employer.

We concurred with the university that the postdoctoral researcher committed research misconduct. Specifically, we determined that the postdoctoral researcher intentionally plagiarized images and subsequently falsified data by portraying them as original work. We recommended NSF debar the postdoctoral researcher for 1 year, and, for 4 years (concurrent with the debarment plus 3 years afterwards), require certifications and assurances and prohibit the student from participation as a peer reviewer, advisor, or consultant for NSF.

NSF Management Actions on Previously Reported Research Misconduct Investigations

NSF adjudicated five research misconduct investigations reported in previous semiannual reports. Except where noted, each case resulted in NSF making a finding of research misconduct, issuing a letter of reprimand, and requiring interactive RCR training. NSF also took additional significant actions in response to our recommendations, as summarized below:

- In the case of a former student who fabricated research data and then fabricated evidence to support the fabricated data, NSF proposed several administrative actions including debarment.¹⁰ The student, through his attorney, appealed NSF's actions. NSF affirmed its decision and imposed all the actions.
- In the case of a PI who plagiarized material into two declined NSF proposals,¹¹ NSF prohibited the PI from participating as a peer reviewer, advisor, or consultant for NSF for 1 year, and required certifications and assurances for 1 year.
- In the case of a PI who believed a certain amount of plagiarism was acceptable,¹² NSF prohibited the PI from participating as a reviewer, advisor, or consultant for NSF for 3 years, and required certifications and assurances for 3 years.
- In the case of the PI who claimed verbatim text need not be demarcated in SBIR or other business proposals, NSF concurred with our recommendations and prohibited the PI from participating as a reviewer, advisor, or consultant for NSF for 2 years. In addition, NSF required certifications and assurances for 2 years. The PI's appeal of NSF's decision is pending.
- In the case of a graduate student who falsified data in a publication and a genetic sequence database,¹³ NSF prohibited the graduate student from participating as a reviewer, advisor, or consultant for NSF for 3 years. Also, for 3 years, NSF required certifications and assurances, and a data management plan and mentoring plan with

¹⁰ March 2021 Semiannual Report, pp. 12-13

¹¹ September 2021 Semiannual Report, p. 5

¹² September 2021 Semiannual Report, p. 5

¹³ September 2021 Semiannual Report, p. 6



annual certifications. Additionally, NSF required compliance with the requirements imposed by the university, including correction of the research record by retracting the publication; although the retraction was blocked by the graduate student's professor, the journal editors issued an editorial expression of concern.

Proactive Reviews

We occasionally conduct proactive reviews of common findings and investigative issues.

Observations from NSF Plagiarism Investigations and Strategies to Prevent Plagiarism

We conducted a proactive review to provide insight into plagiarism related to NSF-funded research and to offer plagiarism prevention strategies to educational institutions. We published our findings and suggested strategies on our website in a report titled [*Observations from NSF Plagiarism Investigations and Strategies to Prevent Plagiarism*](#).

For our review, we selected 134 plagiarism cases involving 137 researchers against whom NSF made findings of research misconduct. We found that these researchers often were employed in junior academic positions, recent degree recipients, educated in non-U.S. institutions, and/or committed plagiarism in multiple NSF proposals. The most common reasons these researchers gave for their plagiarism suggested they:

- did not know what constitutes appropriate citation;
- thought they used appropriate citation when they did not;
- did not understand what kinds of text require citation;
- considered appropriate citation less important in certain document sections; and
- recklessly incorporated sources into drafts; and/or rushed through document preparation.

Based on our analysis and experience investigating plagiarism allegations, we suggested institutions consider implementing the following strategies in the areas of institutional culture, training, support, and document submission: foster cultures of research integrity; publicize institutional research misconduct policies; establish targeted faculty and student training; emphasize the consequences of plagiarism; provide better support to proposal writers, especially those who are inexperienced or have been previously unsuccessful; make plagiarism detection software freely available; and consider more substantive pre-submission review for proposals.

Peer Review

Federal audit organizations performing work under Government Auditing Standards must have an external peer review by reviewers independent of the organization every 3 years. The reviews are conducted in accordance with guidelines established by the Council of the Inspectors General on Integrity and Efficiency and focus on the audit organization's quality control system. A quality control system includes the office's organizational structure as well as policies and procedures that facilitate compliance with Generally Accepted Government Auditing Standards. On external peer reviews, audit organizations



can receive a rating of pass, pass with deficiencies, or fail. The Office of Audits received a rating of pass in March 2021 for the year ending September 30, 2020. A copy of the final peer review report is posted on our [website](#).

The Office of Investigations received a rating of pass in December 2017. The scheduled peer review for the Office of Investigations has been delayed due to the pandemic and is expected to begin in spring 2023.



Statistical Tables

Audit Data

Table 1. Audit Reports Issued with Recommendations for Better Use of Funds

		Dollar Value
A.	For which no management decision has been made by the commencement of the reporting period	\$0
B.	Recommendations that were issued during the reporting period	\$0
C.	Adjustments related to prior recommendations	\$0
Subtotal of A+B+C		\$0
D.	For which a management decision was made during the reporting period	\$0
	i. Dollar value of management decisions that were consistent with OIG recommendations	\$0
	ii. Dollar value of recommendations that were not agreed to by management	\$0
E.	For which no management decision had been made by the end of the reporting period	\$0
F.	For which no management decision was made within 6 months of issuance	\$0

Table 2. Audit Reports Issued with Questioned Costs¹⁴

		Number of Reports	Questioned Costs	Unsupported Costs
A.	Reports with questioned costs from prior reporting periods for which no management decision has been made by the beginning of this reporting period	30	\$7,593,502	\$1,849,324
B.	Reports with questioned costs that were issued during this reporting period	2	\$ 876,958	\$ 45,779
C.	Adjustment related to prior recommendations	0	\$0	\$0
Subtotal of A+B+C		32	\$8,470,460	\$1,895,103
D.	For which a management decision was made during the reporting period	5	\$374,030	\$206,545

¹⁴ Unsupported costs are a subset of questioned costs and are shown separately as required by the *Inspector General Act*. These costs were not supported by adequate documentation at the time of the audit.



	i. Dollar value of costs disallowed (sustained) by NSF management ¹⁵		\$338,337	N/A
	ii. Dollar value of costs not disallowed (sustained) by NSF management.		\$35,693	N/A
E.	For which no management decision had been made by the end of the reporting period	27	\$8,096,430	\$1,688,558
F.	For which no management decision was made within 6 months of issuance	25	\$7,219,472	\$1,642,779

Table 3. Reports Issued (by OIG and Independent Public Accounting Firms)

Report No./ Date Issued	Title	Questioned Costs	Un-supported Costs	Better Use of Funds	No. of Recs.
22-1-001 10/15/21	Performance Audit of Incurred Costs - University of Rhode Island EPSCoR Awards	\$627,748	\$45,779	\$0	21
22-1-002 12/9/21	Performance Audit of Incurred Costs- University of Texas at Dallas	\$249,210	\$0	\$0	24
22-2-001 11/4/21	Fiscal Year 2021 Implementation of the Digital Accountability and Transparency Act of 2014 Performance Audit	\$0	\$0	\$0	1
22-2-002 11/12/21	Audit of the National Science Foundation's Fiscal Years 2021 and 2020 Financial Statements	\$0	\$0	\$0	0
22-2-003 11/17/21	Performance Audit of the National Science Foundation's Information Security Program for FY 2021	\$0	\$0	\$0	5
22-6-001 2/24/22	The Massachusetts Institute of Technology's Noncompliance with Certain Graduate Research Fellowship Program Terms and Conditions	\$0	\$0	\$0	1
22-6-002 1/21/22	Promising Practices for NSF Award Management	\$0	\$0	\$0	0
22-6-003 1/20/22	Remote Versus In-Person Merit Review Panels	\$0	\$0	\$0	3

¹⁵ Disallowed or sustained costs are charges made to NSF awards that the auditors questioned and NSF management agreed should not have been charged to the government. If there are extenuating circumstances, NSF management may decide to recover a different amount than the amount sustained.



22-6-004 3/18/22	NSF Vetting of United States Antarctic Program Contractors	\$0	\$0	\$0	2
N/A 11/30/21	Government Charge Card Letter to the Office of Management and Budget	\$0	\$0	\$0	0
Total	10 Reports	\$876,958	\$45,779	\$0	57

Table 4. Reports Issued before October 1, 2021 with Unimplemented Recommendations as of March 31, 2022 (Summary Table)

Year	Number of Reports with Unimplemented Recommendations	Number of Unimplemented Recommendations	Dollar Value of Aggregate Potential Cost Savings ¹⁶
2017	1	1	N/A
2019	8	95	\$1,671,311
2020	9	181	\$1,924,655
2021	19	227	\$3,676,233
Total	37	504	\$7,272,199

Table 5. Reports Issued before October 1, 2021, for Which No Management Decision Has Been Made by March 31, 2022, Including the Aggregate Potential Cost Savings of Those Recommendations (Detailed Table)¹⁷

Report No./ Date Issued	Topic/Type of Audit	No. of Recs without Mgmt. Decision	Why Mgmt. Decision Has Not Been Made	Desired Timetable for Mgmt. Decision	Aggregate Potential Cost Savings
19-1-010 5/2/19	University of Maryland College Park Incurred Cost Audit	19	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$357,108
19-1-011 4/30/19	University of Delaware Incurred Cost Audit	12	Review of draft management decision in process.	4/30/22	\$426,667

¹⁶ Aggregate potential savings are "questioned costs" if the recommendations have not been resolved, and "sustained costs" if the recommendations have been resolved (agreed to by NSF and OIG).

¹⁷ This table shows only recommendations that have not yet been resolved. Table 4 includes both unresolved and resolved recommendations that have not yet been implemented.



19-1-016 8/8/19	Ohio State University Incurred Cost Audit	22	Additional information from awardee needed to finalize management decisions.	6/30/22	\$502,587
19-1-017 9/13/19	Oregon State University Incurred Cost Audit	24	Draft management decisions require review and edits.	6/30/22	\$369,532
20-1-001 1/10/20	University of Colorado Boulder Incurred Cost Audit	15	Resolution re-assigned due to departure of previously assigned staff.	6/30/22	\$79,831
20-1-004 7/13/20	University of North Carolina at Chapel Hill Incurred Cost Audit	43	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$744,671
20-1-005 7/23/20	University of Houston Incurred Cost Audit	30	Resolution delayed by diminished capacity and transition of staff.	6/30/22	\$133,305
20-1-007 8/11/20	Yale University Incurred Cost Audit	36	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$251,973
20-1-008 8/31/20	Duke University Incurred Cost Audit	48	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$708,906



21-1-001 1/7/21	University of Kansas Research Center, Inc. Incurred Cost Audit of EPSCoR Awards	11	Additional information from awardee needed to finalize management decisions.	6/30/22	\$1,550,054
21-1-002 12/17/20	Texas A&M University Incurred Cost Audit	24	Resolution re-assigned due to departure of previously assigned staff.	6/30/22	\$137,558
21-1-003 1/13/21	University of Wyoming Incurred Cost Audit of EPSCoR Awards	15	Draft management decision concurrence on 4/1/2022.	4/30/22	\$256,351
21-1-004 1/15/21	University of Florida Incurred Cost Audit	17	Draft management decisions require additional edit and review before finalizing.	4/30/22	\$640,723
21-1-007 4/30/21	Clemson University Incurred Cost Audit	35	Resolution re-assigned due to departure of previously assigned staff.	6/30/22	\$276,440
21-1-008 5/13/21	Emory University Incurred Cost Audit	8	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$89,884
21-1-009 5/13/21	University of New Mexico Audit of the Implementation of COVID-19 Flexibilities	9	Draft management decisions require additional edit and review before finalizing.	4/30/22	\$20,965



21-1-011 5/19/21	Florida International University Audit of the Implementation of COVID-19 Flexibilities	9	Resolution delayed by diminished capacity and transition of staff.	6/30/22	\$22,144
21-1-013 5/25/21	University of Wisconsin Madison Audit of the Implementation of COVID-19 Flexibilities	8	Draft management decisions in process.	4/30/22	\$48,998
21-1-014 5/26/2021	California Institute of Technology Audit of the Implementation of COVID-19 Flexibilities	11	Draft management decisions require additional edit and review before finalizing.	4/30/22	\$50,721
21-1-015 5/27/21	University of Central Florida Audit of the Implementation of COVID-19 Flexibilities	7	Draft management decisions require additional edit and review before finalizing.	4/30/22	\$294
21-1-016 6/29/21	University of South Carolina Columbia Incurred Cost Audit	8	Additional information from awardee needed to finalize management decisions.	6/30/22	\$140,360
21-1-017 7/20/21	Tennessee State University Incurred Cost Audit	13	Additional information from awardee needed to finalize management decisions.	6/30/22	\$155,432



21-1-018 8/2/21	University of Michigan Ann Arbor Audit of the Implementation of COVID-19 Flexibilities	3	Draft management decisions require additional edit and review before finalizing.	5/30/22	\$11,499
21-1-019 8/30/21	University of Pittsburgh Incurred Cost Audit	12	Draft management decisions require additional edit and review before finalizing.	6/30/22	\$106,659
21-1-020 9/29/21	University of California, San Francisco Incurred Cost Audit	20	Additional information from awardee needed to finalize management decisions.	6/30/22	\$136,810
Total	25 reports	459			\$7,219,472



Investigations Data

Table 6. Investigative Case Activities¹⁸

Referrals to DOJ Criminal Prosecutors (individuals and entities counted separately for all referrals)	4
Referrals to Criminal State/Local Authorities	0
Indictments/Criminal Information	0
Arrests	0
Criminal Convictions/Pleas	0
Referrals to DOJ Civil Prosecutors	3
Referrals to Civil State/Local Authorities	0
Civil Settlements/Judgements/Compliance Plans	5
Investigative Reports Issued to NSF Management for Action	9
Research Misconduct Findings Issued by NSF	5
Government-wide Suspensions/Debarments/Voluntary Exclusions	9
Administrative Actions taken by NSF (Includes sanctions related to findings of research misconduct, suspension/termination of awards or employee misconduct)	40
Total Investigative Recoveries (includes funds returned to NSF, restitution, fees, proceeds from civil settlements and funds put to better use)	\$1,787,056
Substantiated Whistleblower Retaliation	0
Substantiated Agency Interference	0

Table 7. Investigative Case Statistics¹⁹

	Preliminaries	Investigations
Cases Active at Beginning of Period	1	114
Cases Opened this Period	6	25
Cases Closed this Period	6	27
Cases Active at End of Period	1	112

¹⁸ For "Investigative Reports Issued to NSF Management for Action" we count only investigative reports issued to NSF that include recommendations for administrative action (e.g. findings of research misconduct, imposition of government-wide suspension or debarment, or suspension/terminations of awards). We count recommendations for each individual and entity separately.

¹⁹ Research misconduct statistics are reported on our [website](#).



About the National Science Foundation

NSF is an independent federal agency created by Congress in 1950 “[t]o promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes” (Pub. L. No. 81-507). NSF leadership has two major components: a director who provides oversight of NSF staff and management responsible for program creation and administration, merit review, planning, budget, and day-to-day operations; and a 24-member National Science Board to establish the overall policies of the Foundation.

With a budget of approximately \$8.8 billion (FY 2022), NSF is the funding source for about 25 percent of all federally supported basic research conducted by America’s colleges and universities. Each year, NSF supports an average of about 200,000 scientists, engineers, educators, and students at universities, laboratories, and field sites throughout the United States and the world.

About the NSF Office of Inspector General

The NSF Office of Inspector General promotes effectiveness, efficiency, and economy in administering the Foundation’s programs; detects and prevents fraud, waste, abuse, and whistleblower reprisal within NSF or by individuals who receive NSF funding; and identifies and helps to resolve cases of research misconduct. NSF OIG was established in 1989, in compliance with the *Inspector General Act of 1978*, as amended. Because the Inspector General reports directly to the NSB and Congress, the Office is organizationally independent from the Foundation.

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