

# Semiannual Report to Congress

October 1, 2019 – March 31, 2020



National Science Foundation  
Office of Inspector General  
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## **About the National Science Foundation**

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 oversees 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 (NSB) to establish the overall policies of the Foundation.

With a budget of approximately \$8.3 billion (FY 2020), NSF is the funding source for approximately 24 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 (OIG) 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.

### **Credit:**

Front cover photograph: Pamela L. Van Dort

# Table of Contents

From the Inspector General .....	1
<b>Audits and Reviews .....</b>	<b>2</b>
Audits and Reviews of NSF Programs and Operations .....	2
Audits of NSF Award Recipients .....	3
Reviews of Single Audits.....	4
Audit Resolution .....	5
<b>Investigations.....</b>	<b>6</b>
Program Integrity Investigations .....	6
Actions Resulting from Previously Reported Program Integrity Investigations .....	8
Research Misconduct Investigations.....	9
Actions by NSF Management on Previously Reported Research Misconduct Investigations .	13
Administrative Investigations.....	14
Actions by NSF Management on Previously Reported Administrative Investigations .....	14
<b>Statistical Tables .....</b>	<b>15</b>
Audit Data.....	15
Investigations Data.....	18
Research Misconduct (RM) Statistics FY 2011 – FY 2020 .....	19



# 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 2020.

In this report, we focus on our impact on the Foundation. Inspired by our findings and recommendations, NSF has enhanced its efforts to promote scientific progress; advance national health, prosperity, and welfare; and secure the national defense. Our work continues to reflect our commitment to helping NSF carefully steward taxpayer dollars. Just as importantly, our oversight promotes effectiveness, efficiency, and integrity in NSF programs and grants. For example, this semiannual period, we reported on the Evaluation and Assessment Capability Section's use and oversight of contracts; NSF's information security program; and audits of two NSF award recipients that expended nearly \$280 million in NSF funds.

We also continue 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 professor and his wife pled guilty to the criminal felony offense of wire fraud for their involvement in a scheme to defraud NSF of more than \$1 million in Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) funds. As a result of our investigation, NSF suspended Government-wide the husband and wife, the SBIR/STTR company, and three other entities. Final sentencing in the criminal case is set for July 2020.

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 issues that cut across the Government in the years to come.

*Allison C. Arnes*

# Audits and Reviews

The Office of Audits is responsible for reviewing 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 the Foundation. 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 2019 FINANCIAL STATEMENT AUDIT RESULTS IN 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 OIG, audited NSF's FY 2019 and 2018 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*. This marks the twenty-second consecutive year NSF has received a clean opinion on its financial statements.

### [AUDIT OF NSF'S EVALUATION AND ASSESSMENT CAPABILITY SECTION'S USE AND OVERSIGHT OF CONTRACTS](#)

NSF's Evaluation and Assessment Capability (EAC) Section assists directorates and program offices commissioning external evaluations of programs and investments. It also conducts its own evaluations of NSF programs and helps oversee evaluation contracts. We conducted this audit to determine whether NSF follows Federal and NSF contracting policies and procedures for its evaluation contracts and uses EAC's contracted evaluations for policy decision-making and planning. We found that EAC generally followed Federal and NSF contracting policies and procedures for the contracts in our audit sample, but it could improve the planning of its contracted evaluations. For example, NSF may have opportunities to use strategic sourcing and firm-fixed-price contracts for its evaluation contracts. Further, although some EAC evaluations resulted in positive change, NSF has not always used evaluation results to inform decision-making and strategic planning nor ensured the results were publicly disseminated. At the time of our audit, NSF did not have an agency-wide evaluation plan to help focus evaluation resources on high priority issues, but it designated a senior official responsible for the plan's development, as required by the *Foundations for Evidence-Based Policymaking Act of 2018*. NSF agreed with our four recommendations to enhance EAC's policies and procedures for evaluations and NSF's evidence-based planning and policymaking.

### [SPENDING DATA FOR THE DATA ACT DID NOT MEET QUALITY REQUIREMENTS](#)

The *Digital Accountability and Transparency Act of 2014* (DATA Act) requires Federal agencies to report financial and spending information to the public through USAspending.gov in accordance with Government-wide data standards. Under a contract

with NSF OIG, Kearney audited NSF's first quarter FY 2019 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. Although NSF took steps to implement and use the Government-wide financial data standards, Kearney identified errors in approximately 58 percent of transactions tested. Most discrepancies resulted from NSF's interpretation of DATA Act reporting guidance, which differed from Kearney and OIG's interpretation. Kearney made four recommendations aimed at improving internal control and business processes to ensure that NSF provides reliable spending data in USAspending.gov. NSF partially concurred with the recommendations and agreed to collaborate with OIG and Kearney to seek resolution.

#### AUDIT OF NSF'S INFORMATION SECURITY PROGRAM FOR FY 2019 DETERMINED THE PROGRAM WAS NOT EFFECTIVE

NSF depends on computerized information systems to process, maintain, and report essential information. The *Federal Information Security Modernization Act of 2014* (FISMA) 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 2019 FISMA audit and rated NSF's Information Security Program as not effective according to the Office of Management and Budget's (OMB) maturity model criteria. Although NSF implemented corrective actions to address findings reported in the FY 2018 FISMA report, additional enhancements are needed to address shortfalls in IT security controls. Kearney issued seven findings with a total of 23 recommendations to improve NSF's Information Security Program in areas such as general risk, configuration, and vulnerability management; authentication and identification; and incident response. NSF subsequently provided a corrective action plan, and all 23 recommendations have been resolved. We will evaluate the effectiveness of NSF's corrective actions as part of the FY 2020 FISMA audit.

#### ANNUAL REPORT TO OMB ON NSF'S PROGRESS IN IMPLEMENTING AUDIT RECOMMENDATIONS RELATED TO GOVERNMENT CHARGE CARDS

The *Government Charge Card Abuse Prevention Act of 2012* and OMB Memorandum 13-21 require OIGs to report to OMB the agency's progress in implementing audit recommendations related to Government charge cards. We reported that, as of September 30, 2019, there were no outstanding audit recommendations for charge cards for NSF. We issued our last purchase card audit report in January 2014 and our last travel card audit report in August 2015. NSF's FY 2019 purchase card and travel card activity were both less than the audit threshold of \$10 million.

## Audits of NSF Award Recipients

OIG contractors completed audits of two NSF award recipients that expended nearly \$280 million of NSF funds during the respective audit periods. The audits assessed the allowability, allocability, and reasonableness of costs charged to NSF and resulted in nearly \$155,000 of questioned costs. The findings included questioned travel, participant support costs, and other expressly unallowable costs; purchases near or after the end date of the award; and inappropriately allocated costs. The auditors recommended that NSF recover the questioned costs from the University of Colorado Boulder (\$79,831) and

the University of Connecticut (\$75,139). The auditors also recommended that the award recipients strengthen controls over the areas that led to the questioned costs.

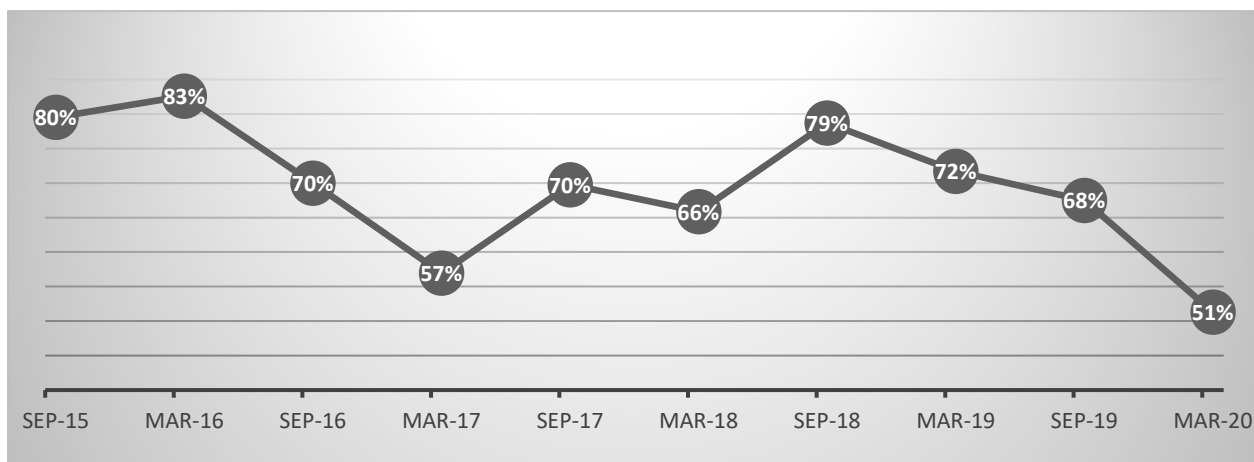
## Reviews of Single Audits

### QUALITY OF SINGLE AUDITS DECREASED SIGNIFICANTLY

*Uniform Guidance*<sup>1</sup> 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 oversight agency. 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*, and American Institute of Certified Public Accountants (AICPA) audit standards.

During this period, we conducted desk reviews of 39 single audit reporting packages. The audits were conducted by 34 different independent public accounting firms and covered \$291 million in total Federal expenditures, including \$157 million in NSF direct expenditures. As shown in Figure 1, only 20 audit reporting packages (51 percent) fully met Federal reporting requirements, which represents a significant decrease in quality from the previous two semiannual periods.

FIGURE 1. PERCENTAGE OF SINGLE AUDITS THAT MET FEDERAL REPORTING REQUIREMENTS



Source: NSF OIG Semiannual Reports

Deficiencies included reports that lacked information to identify awards received from or passed through to other non-Federal entities; inaccurate or missing report language; reporting packages submitted after required deadlines; and audit reports that did not

<sup>1</sup> 2 CFR Pt. 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*

accurately identify the major programs being tested. 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. In most cases, the auditors and awardees provided adequate explanations or additional information to demonstrate compliance with Federal reporting requirements. However, in five instances, we rejected the audit reporting packages due to the significance of the deficiencies. We issued a letter to each 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 copies of the letters to each awardee's other Federal funding agencies for their use in monitoring and oversight. In the five instances where we rejected the audits, we referred the auditors to the AICPA Professional Ethics Division and Peer Review Program for additional review.

#### OIG QUALITY CONTROL REVIEW FINDS UNACCEPTABLE SINGLE AUDIT

Quality Control Reviews (QCR) consist of on-site reviews of auditor documentation in support of Single Audits. QCRs are an important tool for determining whether single audits meet Government auditing and reporting requirements and for helping to improve future audit quality. Firms can receive a QCR rating of Pass, Pass with Deficiencies, or Fail.

During this period, we issued one report on our QCR of a single audit for a small NSF awardee. We rated the single audit conducted on the Center for Severe Weather Research, Inc. for the year ended December 31, 2017, as Fail. The audit documentation contained several quality deficiencies that rendered the audit unreliable for use by the Center's Federal funding agencies and pass-through entities. Due to the nature of the quality deficiencies, we did not issue any recommendations, but instead referred the auditors to the AICPA and the Colorado State Board of Accountancy.

## Audit Resolution

#### NSF UPDATES PHARMACY TRACKING SYSTEM FOR USAP STATION CLINICS

NSF's Antarctic Support Contractor implemented a modern pharmacy tracking system for the medical clinics of all three United States Antarctic Program (USAP) research stations. This allowed us to close the final open recommendation from our 2015 [\*Audit of Health and Safety in the U.S. Antarctic Program\*](#) report, which identified ways NSF could improve health and safety in the USAP. NSF previously developed a process for reporting and reviewing code of conduct violations, updated the manual for medical clinics, conducted a law enforcement site visit, considered the viability of implementing a breathalyzer requirement for all USAP participants, and procured new breathalyzers.

#### NSF COMPLETES ACTIONS TO IMPROVE ITS RECORDS MANAGEMENT

We closed all recommendations from our 2017 audit report [\*NSF's Relocation to its Headquarters Location — Records Management\*](#). NSF issued an updated records management policy; completed scanning and digitizing certain paper records and made them available electronically; updated its records management training to comply with U.S. National Archives and Records Administration requirements; required employees to complete initial records management training within 60 days of employment and refresher training annually; and completed an agency-wide records inventory and updated records



schedules.

## NSF STRENGTHENED ITS POLICIES, PROCEDURES, AND PROCESSES FOR IDENTITY AND ACCESS MANAGEMENT AND DATA PROTECTION AND PRIVACY

Our December 2018 [audit of NSF's Information Security Program for FY 2018](#) included five recommendations to improve IT security. NSF implemented formal policies, procedures, and processes to improve identity and access management, as well as data protection and privacy. As of November 2019, all recommendations associated with this audit report were closed.

## RESOLUTION OF REPORTS OF NSF AWARD RECIPIENTS

Four previous audits of award recipients were resolved this period. In addition to sustaining questioned costs, NSF generally required the award recipients to implement recommended actions to strengthen applicable internal controls.

### REPORTS OF AWARD RECIPIENTS RESOLVED THIS SEMIANNUAL PERIOD

Report No.	Issue Date	Award Recipient	Questioned Costs	Sustained Questioned Costs
16-1-004	2/11/2016	<a href="#">University of Washington*</a>	\$2,003,109	\$75,463
19-1-006	4/5/2019	<a href="#">University of Minnesota</a>	\$73,260	\$73,260
19-1-007	4/15/2019	<a href="#">Arizona State University</a>	\$1,178,488	\$1,146,351
19-1-012	4/29/2019	<a href="#">University of Texas at Austin</a>	\$283,613	\$283,613
<b>Total</b>			<b>\$3,538,470</b>	<b>\$1,578,687</b>

Source: NSF OIG

\*NSF did not sustain a \$1.8 million finding that represented 91 percent of the total questioned costs. The finding related to senior staff salaries exceeding limits established by NSF policy. NSF's interpretation of the policy differed from ours at the time the report was issued. The interpretational difference has since been resolved through amendments to NSF's *Proposal & Award Policies & Procedures Guide*, and these costs would no longer be questioned today.

## 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. We work in partnership with agencies and award recipients to resolve issues when possible.

### Program Integrity Investigations

As part of our mission, 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 our investigations to the U.S. Department of Justice (DOJ) for criminal prosecution or civil action. When appropriate, we also refer

matters to NSF for administrative action, such as award termination and Government-wide suspension or debarment.

#### PROFESSOR PAID \$40,000 IN RESTITUTION AS PART OF PLEA AGREEMENT

A tenured full professor pleaded guilty to providing materially false statements in furtherance of a scheme to defraud NSF. The professor was the recipient of an Industry University Cooperative Research Centers grant. To be eligible for the grant, the professor was responsible for recruiting industry partners into the program and obtaining annual financial contributions from these partners for their membership. Instead, the professor submitted materially false certifications to NSF, certifying the membership and payment of organizations that were not industry partners. As part of the guilty plea, the professor paid a lump sum of \$40,000 in restitution. Sentencing is scheduled in May 2020.

#### UNIVERSITY PAID MORE THAN \$180,000 TO RESOLVE FALSE CLAIMS LIABILITY

A university self-disclosed to DOJ that a department chair misused his university purchase card for personal purchases, including purchases at gentlemen's clubs, which were charged to various Federal grants. During its review of 10 years of purchases made by the department chair, the university also identified purchases charged to Federal grants that lacked proper documentation. The department chair resigned from his position and the university implemented changes to improve its purchase card approval process. To resolve liability under the *False Claims Act*, the university entered into a civil settlement with DOJ and agreed to pay more than \$180,000 in restitution, of which nearly \$7,000 was returned to NSF. Another Federal agency debarred the department chair Government-wide for 6 months.

#### FAILURE TO DISCLOSE FOREIGN AFFILIATIONS AND CONFLICTS OF INTEREST RESULTED IN AWARD TERMINATION

A professor submitted multiple grant proposals to NSF but did not disclose his foreign affiliations and funding as required. He also did not disclose the foreign affiliations and funding in annual disclosures to NSF while serving as an Intergovernmental Personnel Act rotator. As a program director, he recommended actions on an award even though he had a conflict of interest. Additionally, he endorsed another applicant's proposal during the same timeframe the applicant submitted a recommendation for the professor's membership in a professional society. The professor later met with United States congressional officials on behalf of the same professional society. NSF terminated the Intergovernmental Personnel Act award, resulting in more than \$130,000 in funds put to better use.<sup>2</sup>

#### UNIVERSITY RETURNED MORE THAN \$25,000 TO NSF

We investigated an allegation that grant funds were inappropriately being drawn down after the expiration of an award made to a university. We determined that the award's principal investigator (PI) requested multiple no-cost extensions that the NSF Program

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<sup>2</sup> As used here, "funds put to better use" is consistent with the definition in 5 USC app. 3 § (f)(4)(B) (pertaining to more efficient use of funds through de-obligation, which frees them up for other uses).

Director denied. Following the second denial, the PI made several improper salary, supply, and travel charges to the award. As a result of our investigation, the university agreed to take corrective action and refund more than \$25,000 to NSF.

#### NSF CONCLUDED GRADUATE STUDENT WAS NOT SUBJECT TO A PROHIBITED REPRISAL

A graduate student alleged that his former research advisor threatened his degree plans and subsequently removed him from his position in the former research advisor's lab in retaliation for the graduate student's disclosure of workplace harassment, age-based discrimination, and racial discrimination by members of the lab. Additionally, the graduate student alleged that in further retaliation for his disclosure, his research contribution was not accurately acknowledged in a manuscript that was ultimately published.

We investigated this matter under the whistleblower protection provisions of 41 U.S.C. § 4712. We confirmed the graduate student made a protected disclosure to his former research advisor and within a month of the disclosure the graduate student left the lab run by his research advisor. The primary witnesses provided conflicting accounts of the voluntariness of the departure. We also confirmed that 22 months after the disclosure, the former research advisor changed the graduate student's order in the list of authors in a manuscript from second to third author due to additional contributions made by another individual. The primary witnesses provided conflicting accounts of the contributions of the graduate student, the justification for the change in authorship, and the graduate student's awareness of and acquiescence in the authorship changes. We submitted a report of our findings to NSF management, the university, and the graduate student. NSF reviewed the report and concluded that the former research advisor did not subject the graduate student to a prohibited reprisal because the evidence established the researcher would have taken the actions regardless of any protected disclosures, and there is no nexus between the protected disclosures and the authorship change due to a 22 month gap.

## Actions Resulting from Previously Reported Program Integrity Investigations

#### HUSBAND AND SBIR/STTR COMPANY PLED GUILTY IN WIRE FRAUD SCHEME

We previously reported<sup>3</sup> that a husband and wife were indicted on one count of wire fraud and one count of mail fraud and a company was indicted for one count of mail fraud for a scheme to defraud NSF of more than \$1 million in Small Business Innovation Research/ Small Business Technology Transfer (SBIR/STTR) funds made to the company. Based on our recommendation, NSF suspended Government-wide the husband and wife, the SBIR/STTR company, and three other companies/entities associated with them. During this reporting period, the husband and the SBIR/STTR company each pled guilty, on the eve of the trial, to one count of wire fraud each for the same scheme. The DOJ's press release regarding this case can be found [here](#). As part of their plea agreements, the husband and the company agreed to Government-wide voluntary exclusions for 5 years. Sentencing is scheduled for July 2020.

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<sup>3</sup> September 2018 Semiannual Report (SAR), p. 7; September 2019 SAR, p. 5

## PI SENTENCED FOR WIRE FRAUD

We previously reported<sup>4</sup> the felony guilty plea of a PI, who held positions at a university and an SBIR company, for electronically submitting a false certification to NSF. During this period, the PI was sentenced to 8 months of home confinement. The DOJ's press release regarding this case can be found [here](#).

## TWO COMPANIES AND RELATED COMPANY PRINCIPALS DEBARRED FOR 5 YEARS

We previously reported<sup>5</sup> the arrest of three company principals involved in a multi-company fraud scheme that resulted in a corporate guilty plea to a felony and related debarment recommendation regarding one company, felony guilty pleas entered by husband and wife company principals, and the sentencing of the husband and wife company principals. During this semiannual period, NSF debarred the husband and wife company principals along with two related companies for 5 years.

## NSF FOUND NO RETALIATION FOR WHISTLEBLOWING AGAINST EMPLOYEE OF NSF AWARDEE

We previously reported<sup>6</sup> submitting an investigative report to NSF concerning an allegation that an NSF awardee terminated an employee for reporting errors in the calculation of the awardee's indirect cost rate applied to all Federal awards. NSF reviewed our report and found that no prohibited retaliation occurred. NSF concluded the employee failed to make a protected disclosure, failed to make a disclosure to qualifying individual, and that the university would have taken the actions regardless of any protected disclosures.

## 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 take appropriate actions against the individuals. Unless otherwise specified, NSF's decisions are pending.

## FORMER ASSOCIATE PROFESSOR FALSIFIED DATA IN TWO PUBLICATIONS

A university concluded that a former associate professor and a former research faculty member committed multiple acts of research misconduct in two publications that acknowledged funding support from an awarded NSF proposal. The two publications were retracted by the journal in which they appeared. The university investigation committee

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<sup>4</sup> September 2018 SAR, pp. 9-10; September 2019 SAR, p. 5

<sup>5</sup> March 2016 SAR, p. 20; March 2018 SAR, p. 10; September 2018 SAR, p. 11; March 2019 SAR, p. 10

<sup>6</sup> September 2019 SAR, p. 4

determined that the former associate professor and research faculty member engaged in acts of fabrication and falsification that were intentional, knowing, and not the product of carelessness or error. The university did not impose disciplinary action because both individuals had already departed the university.

We agreed with the university's findings that research misconduct occurred. However, it was not clear who was responsible for each of the specific acts of research misconduct for each of the figures delineated in the retraction notices for the two publications. Therefore, we conducted our own analysis of the figures. Based on our analysis, we concluded that the former associate professor committed research misconduct by intentionally falsifying data in the two publications and that his actions were a significant departure from accepted practices in the research community. Accordingly, we recommended that NSF:

- Make a finding of research misconduct;
- Issue a letter of reprimand;
- Debar the former associate professor for 3 years;
- Require completion of a responsible conduct of research training program;
- Require the former associate professor to submit certifications and assurances, and a detailed data management plan with annual certifications for 6 years; and
- Bar the former associate professor from participating as an NSF peer reviewer, advisor, or consultant for 6 years.

We concluded that the evidence against the former research faculty member was insufficient to recommend a research misconduct finding.

#### NSF GRADUATE RESEARCH FELLOW FALSIFIED DATA

A university investigation concluded that an NSF graduate research fellow committed data falsification. The fellow told his advisor and a graduate student that he had conducted an experiment on a specific day under well-defined experimental conditions. A review of the data indicated the data files were labeled with the wrong experimental conditions and were created 3 days before the fellow supposedly did the experiment. When confronted, the fellow admitted he had not done an experiment on the day claimed but said it was the first time he had falsified data. However, further review of the fellow's data files uncovered multiple instances where he took data from experiments he had conducted and represented it as the results of experiments from different dates and different conditions.

During the university investigation, the fellow confessed to all the instances of data falsification. The university also compared the various data files and determined that the same data was used to represent multiple experiments. In some instances, graphs were manipulated to make the data appear as if it had been taken under different experimental conditions. His advisor called the fellow's actions "a major setback" for his research group and further stated that the group had to repeat every experiment the fellow performed. Ultimately, the university found the fellow committed research misconduct by falsifying data, withdrew him from the university without a degree, and banned him from seeking readmittance.

We concurred with the university that the fellow falsified data on multiple occasions and recommended that NSF:

- Make a finding of research misconduct;
- Debar the fellow for 1 year;
- Require the fellow to submit certifications and assurances with each document submitted to NSF for 4 years; and
- Bar the fellow from serving as an NSF peer reviewer, advisor, or consultant for 4 years.

#### PI PLAGIARIZED IN FOUR PROPOSALS

We determined that a PI committed plagiarism when he copied text from multiple sources into his NSF proposal. In response to our inquiry, the PI claimed the inclusion of the copied text was unintentional and implied that an unacknowledged student was responsible for the copied text. We referred the investigation to the university, and it conducted an extensive review of the PI's proposals and publications and found several instances of plagiarism. The university also concluded that no students were involved as suggested by the PI. The university made a finding of research misconduct against the PI and barred him from submitting proposals for 2 years.

We conducted an in-depth plagiarism analysis of three additional proposals identified by the university as containing plagiarism. In two of those proposals, nearly all the "Broader Impacts" section had been copied verbatim from an awarded NSF proposal. Based on the evidence, we recommended that NSF:

- Make a finding of research misconduct;
- Issue a letter of reprimand;
- Require completion of interactive responsible conduct of research training;
- Debar the PI for 1 year; and
- For 4 years (for 3 years after the debarment ends):
  - Require certifications and assurances,
  - Bar the PI from NSF participation as peer reviewer, advisor, or consultant.

#### PI COMMITTED PLAGIARISIM IN AN NSF PROPOSAL

A university investigation concluded that a PI and co-PI committed plagiarism when they copied text, tables, and a figure into their NSF proposal. The university investigation resulted from our initial inquiry, which identified text copied from seven sources. The university investigation found plagiarism from two additional sources. The PI and co-PI stated that they had marked the copied text in the original draft with the intention of later going back and paraphrasing. However, the university had access to the original versions of the proposal and found no evidence of any such marking. The university made research misconduct findings for both the PI and co-PI.

We concurred with the university's findings for the PI, but we determined that the amount of plagiarism contributed by the co-PI did not warrant a finding of research misconduct. Instead, the co-PI was sent a warning letter. We recommended that NSF take the following actions for the PI:

- Make a finding of research misconduct;

- Issue a letter of reprimand;
- Require completion of interactive responsible conduct of research training;
- Require certifications and assurances for 1 year; and
- Bar the PI from NSF participation as peer reviewer, advisor, or consultant for 1 year.

#### PI PLAGIARIZED IN TWO NSF PROPOSALS

We determined that a PI committed plagiarism when he copied text into one NSF proposal and a figure into a second NSF proposal. The PI explained to us that he copied a figure from an online advertisement to display how he would present the data from his proposed research. We subsequently reviewed a second proposal the PI submitted and found it contained plagiarized text. Based on our referral, the university convened a committee that concluded the PI did not commit research misconduct, but required him to complete training on appropriate citation, ethics, and proposal preparation.

We did not accept the university's report and conducted our own investigation. The amount of plagiarism within the second proposal was consistent with research misconduct findings previously made by NSF. Regarding the copied figure, the cognizant NSF program officer found the PI's actions disconcerting. He believed the PI's actions were misleading and at a minimum the PI should have made it clear that the figure did not represent real data. We concluded that the PI knowingly committed plagiarism and that the act was a significant departure from accepted practices. We recommended that NSF:

- Make a finding of research misconduct;
- Issue a letter of reprimand;
- Require completion of interactive responsible conduct of research training;
- Require certifications for 1 year; and
- Bar the PI from participation as an NSF peer reviewer, advisor, or consultant for 1 year.

#### PI COMMITTED PLAGIARISM IN TWO UNFUNDED PROPOSALS

We determined that a PI committed plagiarism in two NSF proposals. Based on our inquiry, which identified plagiarism in the first proposal, we asked the institution if it would accept our referral. The institution declined because the PI left the institution earlier that year. Therefore, we conducted our own investigation.

Our review of a second proposal identified additional copied text. During our investigation, the PI expressed a limited understanding of plagiarism and proper attribution. However, a review of his publication history indicated he published about 20 journal articles and more than 40 articles in conference proceedings. Our review of the scientific association's plagiarism policies where the PI frequently published indicated that the PI's actions were inconsistent with the expectations of that scientific community. Based on the evidence, we recommended that NSF:

- Make a finding of research misconduct;
- Issue a letter of reprimand;
- Require completion of interactive responsible conduct of research training; and

- Require certifications for any proposals or reports submitted to NSF for 1 year.

## PI ACCEPTS RESPONSIBILITY FOR PLAGIARISM IN TWO CAREER PROPOSALS

A university investigation determined that a PI plagiarized large amounts of text from multiple sources into two NSF Faculty Early Career Development Program (CAREER) grants. According to the university investigation committee, “the haphazard way in which [the PI] collated her notes represented a clear risk, recognizable to a reasonable person, of misattribution (at best) and verbatim plagiarism (at worst).” The committee concluded that the PI recklessly committed plagiarism, and that the act was a significant departure from accepted practice of the PI’s research community. The university required the PI to complete online plagiarism training and work with a senior department member to ensure future grant applications contain no plagiarism. Additionally, the university planned to develop training for new full-time faculty about avoiding plagiarism in grants. We accepted the university’s report in lieu of conducting our own investigation and recommended that NSF:

- Make a finding of research misconduct;
- Issue a letter of reprimand;
- Require compliance with university-imposed sanctions and requirements;
- Require completion of interactive responsible conduct of research training; and
- Require certifications for 1 year.

## Actions by NSF Management on Previously Reported Research Misconduct Investigations

Based on our recommendations, NSF adjudicated two 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 responsible conduct of research training. NSF also took additional significant actions in response to our recommendations, as summarized below:

- In the case of a PI who plagiarized text into an NSF proposal from two awarded NSF proposals that he received in confidence from a colleague,<sup>7</sup> NSF required the PI to certify compliance with university-imposed requirements and provide certifications and assurances for 4 years. NSF also barred the PI from participating as an NSF peer reviewer, advisor, or consultant for 4 years. NSF did not accept our recommendation to debar the PI for 1 year.
- In the case of a post-doctoral researcher who fabricated data in multiple publications sponsored by NSF,<sup>8</sup> the agency chose to take no action due to the extended period of time between the dates the researcher committed the acts and the date NSF received our report.

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<sup>7</sup> September 2019 SAR, p. 7

<sup>8</sup> September 2019 SAR, p. 8



## Administrative Investigations

Our office investigates a wide variety of allegations that are not pursued as criminal or civil matters or do not meet the strict definition of research misconduct. These cases, which are resolved administratively, include (but are not limited to) misallocation of grant funds, violations of human and animal subjects' regulations, violations of peer review confidentiality, conflicts of interest, and employee misconduct.

### HUMAN SUBJECTS AND BIOSPECIMEN RESEARCH CONCERNS LED TO RETURN OF MORE THAN \$350,000

A PI's research was suspended after her university's Institutional Review Board determined there was serious, continuing noncompliance with regulations governing research with human subjects. The PI's noncompliance included conducting human subjects research without proper informed consent and the improper collection of human and animal biospecimens from a foreign country. The university decided to destroy the affected research data and biospecimens. The university also reviewed the costs associated with the collection and analysis of the destroyed samples, identifying more than \$300,000 for one closed NSF award and more than \$50,000 for one active NSF award. The university returned these funds to NSF. During its review of another closed NSF award to the PI, the university identified almost \$20,000 in other unallowable costs, which it also returned to NSF. The investigation into the PI's misconduct is ongoing.

## Actions by NSF Management on Previously Reported Administrative Investigations

### NSF IMPOSED ADDITIONAL OVERSIGHT ON PI'S GRANTS

We previously reported on the case of a PI who appeared to have spent five NSF awards in chronological order.<sup>9</sup> NSF agreed with our recommendation to impose additional oversight of this PI's grants.

### NSF-FUNDED POSTDOCTORAL RESEARCHER SABOTAGED GRADUATE STUDENT'S RESEARCH

As previously reported,<sup>10</sup> our investigation concluded an NSF-funded post-doctoral fellow (Postdoc) added toxic material to a graduate student's experiment that he knew would destroy the graduate student's experiment. Our conclusion was based on evidence including video surveillance footage and the Postdoc's admission. The Postdoc's actions did not meet NSF's definition of research misconduct because no data were affected; however, we concluded that the Postdoc's actions were so serious and compelling that they affected his present responsibility and recommended NSF debar him. During this period, NSF adjudicated our recommendation and took no action, concluding that the record before the agency did not meet the preponderance of the evidence standard.

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<sup>9</sup> September 2019 SAR, p. 11

<sup>10</sup> September 2019 SAR, p. 10

# 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 Costs**

		Number of Reports	Questioned Costs	Unsupported Costs <sup>11</sup>
A.	For which no management decision has been made by the commencement of the reporting period	11	\$5,521,004	\$583,453
B.	That were issued during the reporting period	2	\$154,970	\$2,545
C.	Adjustment related to prior recommendations	0	\$0	\$0
Subtotal of A+B+C		13	\$5,675,974	\$585,998
D.	For which a management decision was made during the reporting period	4	\$3,538,470	\$113,939
	i. Dollar value of disallowed costs		\$1,578,687	N/A
	ii. Dollar value of costs not disallowed		\$1,959,783	N/A
E.	For which no management decision had been made by the end of the reporting period	9	\$2,137,504	\$472,059
F.	For which no management decision was made within 6 months of issuance	7	\$1,982,534	\$469,514

<sup>11</sup> Unsupported costs are a subset of questioned costs.

**Table 3. Reports Issued (by OIG and independent public accounting firms)**

<b>Report Number / Date Issued</b>	<b>Title</b>	<b>Questioned Costs</b>	<b>Un-supported Costs</b>	<b>Better Use of Funds</b>	<b>No. of Recs.</b>
20-1-001/ 1/10/20	<i>Performance Audit of Incurred Costs - University of Colorado Boulder</i>	\$79,831	\$2,545	\$0	15
20-1-002/ 3/23/20	<i>Performance Audit of Incurred Costs - University of Connecticut</i>	\$75,139	\$0	\$0	23
20-2-001/ 11/14/19	<i>Audit of the National Science Foundation's Fiscal Years 2019 and 2018 Financial Statements</i>	\$0	\$0	\$0	0
20-2-002/ 11/22/19	<i>Performance Audit of the National Science Foundation's Information Security Program for FY 2019</i>	\$0	\$0	\$0	23
20-2-003/ 11/8/19	<i>Fiscal Year 2019 Implementation of the Digital Accountability and Transparency Act of 2014 Performance Audit</i>	\$0	\$0	\$0	4
20-2-005/ 5/23/20	<i>Audit of NSF's Evaluation and Assessment Capability Section's Use and Oversight of Contracts</i>	\$0	\$0	\$0	4
Unnumbered 1/8/20	<i>Government Charge Card Letter to OMB</i>	\$0	\$0	\$0	0
<b>Total</b>	<b>7 reports</b>	<b>\$154,970</b>	<b>\$2,545</b>	<b>\$0</b>	<b>69</b>

**Table 4. Reports Issued before October 1, 2019<sup>12</sup> with Unimplemented Recommendations as of March 31, 2020 (Summary Table)**

Year	Number of Reports with Unimplemented Recommendations	Number of Unimplemented Recommendations	Dollar Value of Aggregate Potential Cost Savings <sup>13</sup>
2017	1	1	N/A
2018	1	2	N/A
2019	13	173	\$3,485,758
<b>Total</b>	<b>15</b>	<b>176</b>	<b>\$3,485,758</b>

**Table 5. Reports Issued before October 1, 2019, for Which No Management Decision Has Been Made by March 31, 2020, Including the Aggregate Potential Cost Savings of Those Recommendations (Detailed Table)<sup>14</sup>**

Report Number/ 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
19-1-008/ 4/17/19	University of Utah Incurred Cost Audit	12	Resolution delayed due to the need for additional awardee response.	6/30/20	\$42,157
19-1-010/ 5/2/19	University of Maryland College Park Incurred Cost Audit	19	Resolution delayed to allow for completion of a priority indirect cost rate negotiation.	6/30/20	\$357,108
19-1-011/ 4/30/19	University of Delaware Incurred Cost Audit	12	Draft management decisions require NSF review before the decisions are finalized.	6/30/20	\$426,667
19-1-013/ 5/1/19	University of Pennsylvania Incurred Cost Audit	18	Resolution delayed due to University's delay in responding, a result of employee turnover.	9/30/20	\$265,957

<sup>12</sup> NSF has commented on all reports within 60 days of receipt.

<sup>13</sup> Aggregate potential savings are "questioned costs" if the recommendations have not been resolved, and "sustained costs" if the recommendations have been resolved.

<sup>14</sup> This table shows only recommendations that are unimplemented because they are unresolved, either because NSF has not provided corrective action plans, or NSF and OIG have not agreed on the adequacy of the proposed corrective actions. Table 4 includes additional reports/recommendations because it includes the reports with unresolved recommendations shown in Table 5, plus reports with resolved recommendations that have not yet been implemented.

19-1-014/ 6/3/19	University of Cincinnati Incurred Cost Audit	4	Resolution impacts NSF's policies and requires internal coordination.	9/30/20	\$18,526
19-1-016/ 8/8/19	Ohio State University Incurred Cost Audit	22	Resolution delayed to allow for completion of a priority indirect cost rate negotiation.	9/30/20	\$502,587
19-1-017/ 9/13/19	Oregon State Incurred Cost Audit	24	Draft management decisions require NSF review before the decisions are finalized.	6/30/19	\$369,532
<b>Total</b>	<b>7 reports</b>	<b>111</b>			<b>\$1,982,534</b>

## Investigations Data

**Table 6. Investigative Case Activities**

Referrals <sup>15</sup> to DOJ Criminal Prosecutors	9
Referrals to Criminal State/Local Authorities	0
Indictments/Criminal Information	2
Arrests	0
Criminal Convictions/Pleas	3
Referrals to DOJ Civil Prosecutors	7
Referrals to Civil State/Local Authorities	0
Civil Settlements/Judgements/Compliance Plans	2
Investigative Reports Issued to NSF Management for Action <sup>16</sup>	18
Research Misconduct Findings Issued by NSF	1
Government-wide Suspensions/Debarments	7
Administrative Actions taken by NSF <sup>17</sup>	13
Total Investigative Recoveries <sup>18</sup>	\$677,522
Substantiated Whistleblower Retaliation	0
Substantiated Agency Interference	0

<sup>15</sup> We count referrals of individuals and entities separately.

<sup>16</sup> 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.

<sup>17</sup> This includes sanctions related to findings of research misconduct, suspension/termination of awards or employee misconduct.

<sup>18</sup> This includes funds returned to NSF, restitution, fees, and funds put to better use.

**Table 7. Investigative Case Statistics**

	Preliminaries	Investigations
Cases Active at Beginning of Period	1	155
Cases Opened this Period	6	45
Cases Closed this Period	6	55
Cases Active at End of Period	1	145

## Research Misconduct (RM) Statistics FY 2011 – FY 2020

**Table 8. Allegations**

FY	RM Allegations Received (Including allegations made against both funded and declined NSF proposals.)			
	Plagiarism	Fabrication	Falsification	Total <sup>19</sup>
2011	85	17	15	117
2012	96	9	8	113
2013	84	10	12	106
2014	38	7	5	50
2015	67	12	12	91
2016	36	9	12	57
2017	38	1	7	46
2018	40	5	4	49
2019	30	4	4	38
1 <sup>st</sup> half 2020	10	1	0	11
<b>Totals</b>	524	75	79	678

**Table 9. Investigations**

FY	RM Allegations Investigated (Including case activity defined as "Inquiry" in the RM regulation.)			
	Plagiarism	Fabrication	Falsification	Total <sup>20</sup>
2011	58	15	8	81
2012	80	7	5	92
2013	80	8	11	99
2014	36	7	5	48
2015	67	12	12	91
2016	25	5	10	40

<sup>19</sup> Trends cannot be identified across the reporting period (FY 2011-2020) because we used different methods of capturing allegation data in three periods: 1) FY 2011-2012; 2) FY 2013-2015 with new Statutory Law Enforcement authority; and 3) FY 2016-to date, with a new investigative case management system. Periodically, we also conducted proactive assessments looking for plagiarism, which inflated the number of plagiarism allegations in some years. We conducted the last proactive assessment in 2013, but allegations resulting from it were still being identified in 2014.

<sup>20</sup> A small number of allegations involving RM result in criminal or civil investigations; we have not included those allegations in this report.

2017	27	1	5	33
2018	35	4	3	42
2019	19	4	2	25
1 <sup>st</sup> half 2020	7	0	1	8
<b>Totals</b>	434	63	62	559

Note: Tables 8 and 9 only provide information about allegations that come to our office's attention and those we investigate. Thus, they may not reflect the total universe of research misconduct related to NSF proposals or awards. Some of the figures in the tables may differ from previous semiannual reports due to additional allegations being identified during an investigation.

**Table 10. Investigative Outcomes<sup>21</sup>**

FY <sup>22</sup>	Total RM Findings				Included Debarment <sup>23</sup>
	Plagiarism	Fabrication/ Falsification	Multi <sup>24</sup>	Total	
2011	14	3	0	17	5
2012	18	0	0	18	2
2013	13	3	0	16	6
2014	19	7	0	26	7
2015	10	2	0	12	6
2016	12	5	0	17	4
2017	5	8	0	13	4
2018	7	6	1	14	7
2019	2	4	0	6	3
1 <sup>st</sup> half 2020	1	0	0	1	1
<b>Totals</b>	101	38	1	140	45

<sup>21</sup> The outcomes reported in this table cannot be linked to the allegations and investigations by fiscal year, due to the varying amount of time it takes to investigate and adjudicate allegations of RM.

<sup>22</sup> These data reflect RM findings by NSF in the fiscal year of the finding.

<sup>23</sup> NSF's debarment actions typically lag its RM findings because debarment is a multi-step process with a separate response period.

<sup>24</sup> "Multi" indicates that an allegation of plagiarism and either fabrication or falsification was substantiated in our investigation. NSF makes a single finding of RM, even if we refer multiple allegations to them.

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