U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND SCIENCE EDUCATION

HEARING CHARTER

National Science Foundation Reauthorization: Part I

Tuesday, March 20, 2007
10:30 a.m. - 12:30 p.m.
2318 Rayburn House Office Building

1. Purpose

On Tuesday, March 20, 2007, the Subcommittee on Research and Science Education of the House Committee on Science and Technology will hold a hearing to receive testimony from the Director of the National Science Foundation (NSF) and the Chair of the National Science Board (NSB) regarding pending legislation to reauthorize core activities, amend administrative laws and set new policy directions for NSF.

2. Witnesses

Dr. Arden L. Bement, Jr., Director of the National Science Foundation.

Dr. Steven C. Beering, Chairman of the National Science Board.

3. Overarching Questions

- What are the budget, administrative and policy issues that should be addressed through a 2007 NSF reauthorization bill?
- What is the appropriate balance between funding for interdisciplinary and disciplinary research? What are the best mechanisms for soliciting and funding interdisciplinary proposals? Is NSF doing a sufficient job of publicizing opportunities for funding in interdisciplinary research?
- The average success rate across the directorates is significantly lower for new investigators than for investigators previously funded by NSF. What can NSF do to narrow that gap? In particular, what funding mechanisms make the most sense without undermining the merit-review process, and what additional steps can NSF take to nurture young investigators?
- NSF, unlike the mission agencies, is a mainly proposal-driven agency. However, there are significant issues of concern to our nation – competitiveness, security, energy – that can be addressed, at least in part, through technology enabled by

solutions or answers to known scientific challenges and questions. What is the appropriate role for NSF in such research motivated by national needs? In fostering industry/university partnerships? Is this a valid application of criterion 2 of NSF's merit review process?

4. Brief Overview

- NSF currently has a budget of $5.9 billion and is the funding source for approximately 20 percent of all federally supported basic research conducted by America's colleges and universities. In many fields such as mathematics, computer science and the social sciences, NSF is the major source of federal backing.
- NSF also has a mission to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared STEM workforce and a well-informed citizenry.
- NSF is a proposal-driven (bottom-up) agency that operates almost exclusively by competitive merit-review. Reviewers are asked to evaluate proposals based on two criteria: What is the intellectual merit of the proposed activity; and what are the broader impacts of the proposed activity?
- Breakthroughs in science and technology that will have a near to mid-term impact on society are increasingly requiring interdisciplinary teams of scientists and engineers willing and able to cross their traditional disciplinary boundaries. NSF has begun to react to the pressure from the community to re-evaluate its role in interdisciplinary research and education, but has not yet articulated a coherent path forward.
- New investigators have a 17 percent funding success rate, compared to a 28 percent success rate for prior investigators and an overall rate of 23 percent. The CAREER grant program was established explicitly to help find and fund outstanding young investigators, but CAREER awards differ from standard NSF awards in size, duration and evaluation criteria.
- The National Science Board recently eliminated cost-sharing for NSF awards, but certain award types are particularly suitable for industry or university cost-sharing. In addition, there are examples of industries eager to partner with universities to help fund the science to keep U.S. companies competitive and/or to solve particular technological challenges. The current policy appears to present an obstacle to NSF leveraging private dollars to conduct research in areas of national need.

5. Background

The National Science Foundation was established by Congress in 1950. The agency's mission is unique among the federal government's scientific research agencies in that it is to support science and engineering across all disciplines. NSF currently funds research and education activities at more than 2,000 universities, colleges, K-12 schools,

businesses, and other research institutions throughout the United States. Virtually all of this support is provided through competitive, peer-reviewed grants and cooperative agreements. Although NSF's research and development (R&D) budget accounts for only about three percent of all federally funded R&D, the role of NSF in promoting fundamental research is vital to the nation's scientific enterprise, as NSF provides approximately 20 percent of the federal support for basic research conducted at academic institutions. In many fields such as mathematics, computer science and the social sciences, NSF is the major source of federal backing.

The Foundation is administrated by a Director, who is appointed by the President and confirmed by the Senate and is responsible for the overall operations of the agency. The Foundation is overseen by the National Science Board, a body of 24 eminent scientists who are appointed by the President (with confirmation by the Senate) to serve six-year terms. Terms may be renewed but no member of the Board can serve more than 12 consecutive years. The role of the Board, as set forth in the "National Science Foundation Act of 1950," is to establish the policies of the Foundation, provide oversight of its programs and activities, and approve its strategic directions and budgets.

NSF Budget by Functional Activities - The NSF budget can be divided into four general categories:

- Research project support funded through the Research and Related Activities (R&RA) account, which supports cutting-edge research;

- Facilities, funded through the Major Research Equipment and Facilities Construction (MREFC) account, which supports large, multi-user research facilities;

- Education and training, funded through the Education and Human Resources (EHR) account, which supports math and science education programs at the K-12, undergraduate, graduate, and postdoctoral levels, including programs to broaden participation in math and science; and

- Administration, which supports Agency Operations and Award Management (AOAM) and the Office of the Inspector General (IG) at NSF.

NSF is funded at $5.92 billion in fiscal year (FY) 2007, and the FY 2008 request is for $6.43 billion. Of that, $5.13 billion would be available for R&RA and $750 million for EHR. Under the President's *American Competitiveness Initiative* (ACI), funding for NSF, in particular for the research budget, would double in ten years (beginning with the FY 2007 budget) – a 7 percent increase per year. (A detailed overview of the FY 2008 NSF budget request is attached.)

6. Budget Issues

Major Research Instrumentation

Major Research Instrumentation (MRI) is a funding line within R&RA to provide for the acquisition and development of mid-size instruments, ranging from $100,000 to $2.0

million. Presumably in response to a recent National Academy of Sciences (NAS) report[1] on this topic, NSF proposed raising the cap to $4.0 million in the FY 2008 request. The Committee is considering raising the cap even further to $20 million to better capture the full range of mid-size instruments required to advance scientific knowledge. Specifically, the NAS panel recommended that "NSF should expand its MRI program so that it includes Advanced Research Instrumentation and Facilities whose capital costs are greater than $2 million but that are not appropriate for NSF's Major Research Equipment and Facilities Construction (MREFC) account, which handles facilities that cost hundreds of millions of dollars." Typically the threshold for MREFC projects is 10 percent of the proposing directorate's budget, but most projects total much more. Given that the smallest research directorate has a budget of $200 million, a $4 million cap may be insufficient to meet this recommendation.

Funding pre-construction activities for major facilities

The MREFC budget funds the construction of large research facilities, such as telescopes and research ships. Congressional Appropriators required that funding for all pre-construction activities, including detailed design and costing work, come from the sponsoring research division rather than being available, at least in part, from the MREFC budget. All maintenance and operation (M&O) costs are also the responsibility of the sponsoring division. Unfortunately, because of the perennial trade-off between research and facilities, there is a long history of research divisions cutting corners on the pre-construction work, thereby underestimating or failing to minimize construction costs and/or M&O costs. It is not just a matter of inefficient use of resources -- the scope of the science enabled by the facilities is sometimes scaled back in the face of escalating costs. The Committee is considering directing the Board to evaluate the appropriateness and trade-offs of the current policy for funding of pre-construction activities and report to Congress on their findings.

Education

While the President's ACI proposes to double research budgets, the education budget at NSF is seeing much smaller increases. By NSF's own accounting, overall funding for K-12 programs in the FY 2008 request falls by 9 percent from the FY 2007 CR level. The Math and Science Partnerships (MSP) Program, and the Noyce Teacher Scholarship program, both of which address needs in K-12 education, would be level funded. The Course, Curriculum and Laboratory Improvement program, which is the core program in the Division of Undergraduate Education, is slowly decreasing in funding. (On the other hand, the STEM talent expansion program – a program to recruit undergraduates to STEM fields - would increase by 12-17 percent, depending on how NSF ends up distributing its FY 2007 EHR budget.) Such cuts or modest increases in funding are coming at a time when one report after another decries the state of K-12 STEM education, and U.S. industry is starting to raise concerns about the appropriateness of old

[1] *Advanced Research Instrumentation and Facilities*, Committee on Advanced Research Instrumentation, National Academies Press, 2005.

paradigms in undergraduate education to major new developments in scientific understanding and practice.

7. Policies for Research Funding

Interdisciplinary research

"Training individuals who are conversant in ideas and languages of other fields is central to the continued march of scientific progress in the 21st century."[2] NSF, like all federal research agencies, is already funding interdisciplinary research. There are several cross-directorate and in some cases multi-agency programs, including: Cyber-enabled Discovery and Research (a new program for FY 2008), Cyberinfrastructure, Networking and Information Technology R&D (NITRD), and the National Nanotechnology Initiative (NNI), to name a few. The majority of NSF-funded Centers are also staffed by multidisciplinary teams of scientists, engineers and educators. In addition, individual directorates have their own interdisciplinary and multidisciplinary coordinating activities. For example, the Mathematical and Physical Sciences Directorate has a separate Office of Multidisciplinary Activities, which facilitates, coordinates and co-funds multidisciplinary and interdisciplinary activities between divisions, but does not directly manage any grants.

There is no standard definition for the term "interdisciplinary research." Furthermore, there is no standard delineation between interdisciplinary, multidisciplinary and cross-disciplinary. In 2004, the NAS Committee on Science, Engineering and Public Policy issued a report on *Facilitating Interdisciplinary Research*. After reviewing the wide range of definitions in use, the NAS report panel settled on the following: "Interdisciplinary research is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice." The panel distinguished between multidisciplinary and interdisciplinary as follows: Multidisciplinary teams join together to work on common problems, but may split apart unchanged when the work is done, while interdisciplinary teams may end up forging a new research field or discipline.

The issue of facilitating interdisciplinary research and pushing the frontiers of 21st Century science without compromising the potential for advances in disciplinary research or educating a generation of scientists and engineers without depth of knowledge in any single field is a complex and controversial one. Nevertheless, it is an issue at the forefront of the scientific enterprise and one that NSF and the rest of the scientific enterprise is struggling with.

Outside of the standing cross-directorate programs listed previously, most of the directorates process unsolicited interdisciplinary proposals from the bottom-up. This is a

[2] Robert Day, CEO of the Keck Foundation

largely ad hoc process by which individual program officers receive proposals that they identify as interdisciplinary, decide to approach the program officer(s) in the appropriate division(s) relevant to the proposal, and work as a team to manage the review process, including putting together a review panel compromised of experts from all of the relevant fields. In some cases, instead of co-equal proposal managers, there may be a "principal" program officer with the others serving as advisors. There is no standard policy for handling interdisciplinary proposals across NSF. Whether or not it makes sense to institute a Foundation-wide policy rather than leaving the details to the heads of the directorates, NSF should be more clear in general about how they will balance interdisciplinary and disciplinary research moving forward, and they need to make clear to the scientific community how unsolicited interdisciplinary proposals are handled.

Young investigators

In the National Science Board's 2005 report on the NSF merit review process, they found that new investigators have a 17 percent funding success rate, compared to a 28 percent success rate for prior investigators and an overall rate of 23 percent. The Board identified the new versus prior investigator gap to be the "major gap" in success rates, while other demographic subgroups – in particular, women and minorities – were right at or even above the Foundation average.

The CAREER grant program was established explicitly to help find and fund outstanding young investigators, but CAREER awards differ from standard NSF awards in size, duration and evaluation criteria. In particular, there is an emphasis on the integration of research and education, which is not a required evaluation criterion for standard NSF research grants. The minimum CAREER award size is $400,000 for a 5-year period. NSF-wide, the average annualized award amount for research grants in FY 2005 was $143,600, and the average duration is 3 years (range: 1-5 years).

Small Grants for Exploratory Research (SGER) awards were established in 1990 for small-scale grants awarded at the discretion of the program officers and without formal external review. NSF made 387 SGER awards in FY 2005 for a total of $27 million, and with an average size of $70,000. SGER awards are made, among other things, for preliminary work on untested ideas, and ventures into emerging research and potentially transformative ideas. Providing new investigators with seed money to make their proposals more competitive, for example with SGER funds, is one possible mechanism to help narrow the gap in success rates. Program officers may also be encouraged to take an active role in mentoring new investigators through the proposal and review process.

High-risk research

There is another potential benefit to NSF taking a more active role in supporting new investigators. Young investigators, on average, are more likely to take risks in their research than more established researchers. They don't yet have a base from which to build incrementally, they don't yet have a large cadre of graduate students, post-docs and

other lab personnel to support, and perhaps they are more willing and able by nature to think outside the box and take risks.

The National Science Board has called for a Foundation-wide transformative research initiative. The Board defines transformative research as "research driven by ideas that stand a reasonable chance of radically challenging our understanding of an important existing scientific or engineering concept or leading to the creation of a new paradigm or field of science or engineering. Such research is also characterized by its challenge to current understanding or its pathway to new frontiers." It is not clear what such an initiative would look like or how it would be carried out, but there is general agreement in the community that merit review panels are conservative by nature and that more effort needs to be made to fund high-risk research. Putting more effort into supporting young investigators is just one approach to addressing this need.

Research for national needs and industry partnerships

NSF, unlike the mission agencies, is a mainly proposal-driven agency. Some solicitations are narrowly defined by agency officials to address research needs they have identified, in particular in the context of government-wide initiatives such as NITRD and NNI, but the majority of directorate solicitations are broad in nature. The program officers rely on the scientific community itself to identify the most pressing or interesting research questions – hence the term "proposal-driven."

The mission-driven agencies, on the other hand, solicit mostly proposals that address specific challenges and questions identified by agency officials to address national needs. In the case of the Department of Energy (DOE), for example, agency officials work with industry to identify research priorities based on industry's and the government's outlook for energy demand and energy technology development, taking into account such factors as environmental and health impacts as well as geopolitics and security. Recently, the Office of Science at DOE began to formalize this process through a series of workshops with the full range of stakeholders to identify basic research needs for solar, hydrogen, nuclear, etc. In short, the mission and goals are narrowly identified from the top and the basic research needs are subsequently identified by the scientist community within those constraints.

NITRD, NNI and other such government-wide initiatives also focus on significant issues of concern to our nation – competitiveness, security, energy – that can be addressed, at least in part, through technology enabled by solutions or answers to known scientific challenges and questions. While NSF participates in and often leads these big initiatives, the Foundation rarely engages industry in identifying or supporting its own internal research priorities. There are some notable exceptions- the Engineering Research Centers, for example. And there are cases in which industry has stepped in uninvited and offered to supplement specific research grants because those forward-thinking industry leaders understand the importance of basic research to their own competitiveness.

Reporting of research results

The NSF Inspector General conducted a survey regarding NSF constituent interest in reporting of research results. The various constituent groups were overwhelmingly interested in NSF posting publication citations and brief summaries of research results on their public website, as other federal research agencies already do. The Committee would like to see the Director take the necessary steps to make this happen.

Cost-sharing

The Board recently decided to abolish cost-sharing for NSF research grants. They did so for two main reasons: to prevent NSF program officers from effectively forcing cost-sharing on universities by reducing funding amounts for successful grants but not reducing the scope of work; and to address the Inspector General's concern that NSF was not doing an adequate job of tracking whether proposed cost sharing actually materialized. However, this new policy raises concerns for some specific types of NSF programs, such as Engineering Research Centers (ERC's), which have always had substantial industry cost-sharing and the MRI program, for which university cost-sharing is not inappropriate. The Committee is considering: 1) exempting MRI explicitly; and 2) tasking the Board to examine the impacts of its ruling more broadly, in particular the impacts on programs that involve industry partnerships. (See discussion of industry partnerships above.)

8. Administrative Issues

Oversight role of the National Science Board

The National Science Foundation Act of 1950 created a Director to carry out the formulation of programs in conformance with the policies of the Foundation, and a National Science Board to establish the policies of the Foundation. While the role of the Board is considered by most to be both a policymaking and an oversight role, the word "oversight" never appears in statute. This lack of precision in existing statute has at times resulted in unproductive tension between the Board and the Director. The Committee is considering legislative language to more explicitly delineate the respective roles of the Director and the Board.

Board role in setting priorities for major research facilities

When proposals are submitted for major research facilities (i.e. facilities large enough to make it into the MREFC budget), the National Science Board, in the current process, is consulted after the conceptual design stage but gives its formal approval for the project only after the detailed design is complete. At that point the project may become an explicit part of the NSF's budget. As an oversight body, the Board should be involved in setting priorities for major facilities at an earlier stage in the process because of the long-term budget consequences, not just for construction costs but also for maintenance and operations costs.

APPENDIX

OVERVIEW OF FY 2008 NATIONAL SCIENCE FOUNDATION BUDGET

The National Science Foundation (NSF) is the primary source of federal funding for non-medical basic research conducted at colleges and universities and serves as a catalyst for science, technology, engineering, and mathematics (STEM) education reform at all levels. NSF is one of the research agencies that the President, in his 2006 State of the Union Address, proposed to double over ten years as part of the *American Competitive Initiative* (ACI). The FY 2007 budget request, which called for a $439 million (7.9 percent) increase over the FY 2006 budget, was the first to reflect the ACI. The FY 2008 request maintains that general trend with a $409 million (6.8 percent) increase over the FY 2007 request, although the increases are not distributed evenly.

The FY 2007 CR would fund NSF at $5,916 million, a $335 million (6.0 percent) increase from FY 2006, but a $105 million (1.7 percent) decrease from last year's request. Specifically, the CR appropriates $4,666 million for the Research and Related Activities (R&RA) account, and remains silent on the rest of the NSF accounts, signaling a continuation of FY 2006 funding levels for those accounts[3]. The FY 2008 request of $6,429 million is $848 million (15.2 percent) greater than FY 2006 spending and $513 million (8.7 percent) greater than FY 2007 spending under the CR.

Research and Related Activities (R&RA)

Scientific research programs and research facilities (which comprise the R&RA account) receive a $367 million (7.7 percent) increase from FY 2007. The increases for scientific research are spread fairly evenly among all fields NSF supports. The largest percentage increases are for the math and physical sciences, computer sciences, and engineering directorates. The two directorates that receive percentage increases below the total R&RA increase are the (non-medical) biological sciences and the social, behavioral and economic sciences.

NSF's contribution to the multi-agency National Nanotechnology Initiative increases by $17 million (4.5 percent), including $3 million more in support of research on the environmental, health and safety (EHS) aspects of nanotechnology. In particular, support is requested for a new, multidisciplinary center to conduct EHS research and provide the science needed to inform the development of regulations.

[3] In the FY 2008 NSF budget presentation, the Experimental Program to Stimulate Competitive Research (EPSCoR) is moved from the Education account to the R&RA account. This change is reflected in the comparisons and budget table for the prior years. The FY 2007 CR provided funding for the components of R&RA included in the FY 2007 NSF request, which did not include EPSCoR. The amount shown here for R&RA under the FY 2007 CR has been increased by the EPSCoR funding for FY 2006 ($98.7 million) and the amount under Education and Human Resources (EHR) has been similarly reduced.

The FY 2008 budget also requests support for two new research initiatives, including $52 million for an NSF-wide program (known as CDI) to develop the computational tools and knowledge necessary to handle data-rich, highly complex systems and phenomena, such as the flow of information over the internet, or major storms, and $17 million for a multi-agency program for understanding ocean dynamics, forecasting ocean events, and managing ocean resources. The CDI funding, in combination with the $47 million in increased funding for cyberinfrastructure, provide the $90 million (10 percent) increase in the NSF contribution to the coordinated, interagency research initiative in information technology (known as NITRD).

The award cap for the funding of mid-size research instrumentation under the Major Research Instrumentation (MRI) program is raised from $2.0 to $4.0 million, in response to a 2005 recommendation by the National Academy of Sciences. The total funding level for the MRI program is increased by $26 million (29.5 percent) to $114 million.

Since FY 2006, under a Memorandum of Agreement, NSF has been responsible for reimbursing the U.S. Coast Guard for the costs of the icebreakers that support scientific research in the polar regions. The FY 2007 CR explicitly requires NSF to continue honoring this agreement. The request for FY 2008 is $57 million, the same as it was for FY 2007. NSF also purchases back-up icebreaking services on the open market at a cost of approximately $8 million per year.

Major Research Equipment and Facilities Construction (MREFC)

The MREFC activity funds the construction of large research facilities, such as telescopes and research ships. Funding for the operation and management of these major user facilities is included in the R&RA budget.

The FY 2008 request provides an increase of $54 million (28.2 percent) for MREFC, which will allow for continuation of support for six construction projects and one new start. The new project, which is funded at $33 million in the first year, will provide for an upgrade to increase the sensitivity of an earth-based observatory for the study of gravitational waves.

Three new projects proposed under last year's request are currently on hold due to funding uncertainties. Under the CR funding levels, NSF would be able to proceed on schedule with the two smaller projects (the National Ecological Observatory Network and Ocean Observatories Initiative), but would have only $6 million of the $56 million requested for the Alaska Region Research Vessel (ARRV). [report due March 15- might have approval by then]

Education and Human Resources (EHR)

EHR funds most of NSF's activities that support K-12 STEM education and the majority of activities that support undergraduate STEM education. EHR also funds most of NSF's graduate fellowship and traineeship programs.

The FY 2008 EHR budget request is $751 million, a $34 million (4.8 percent) increase from the FY 2007 request and a $53 million (7.5 percent) increase from the FY 2007 CR level (FY 2006 appropriation level). Most of this proposed funding increase goes to increases in graduate research fellowships (+ $11.2 million) and in activities to broaden participation in STEM fields (+ $28.6 million). NSF has also launched a concerted effort to evaluate program effectiveness across EHR, and in particular, for its STEM education programs and projects.

For K-12 education programs, the budget request is a good news/bad news story. After proposing in the past two budgets to eliminate the Math and Science Partnership (MSP), this year's request would provide level funding at the FY 2007 request of $46 million, which is still $17 million less than FY 2006 spending.[4] Since there have been very few new starts during the past two years, the requested funding level will provide $30 million for new starts in FY 2008. However, overall funding for K-12 programs in the FY 2008 request falls by 9 percent from the FY 2007 CR level.

Agency Operations and Award Management

This NSF account, previously called Salaries and Expenses, funds the internal operations of NSF. The FY 2008 request provides an increase of $39 million (15.7 percent) above the FY 2007 CR.

NSF is facing the challenge of expanding its workforce to accommodate the demands created by the growing research budgets. H. J. Res. 20 would delay many planned new-hires in addition to planned upgrades of the electronic system used to receive and process grant applications. Most of the $39 million increase for agency operations and award management in the FY 2008 budget request are slated for these two needs.

[4] It remains unclear how FY 2007 actual spending for MSP will be affected by the CR, since the FY 2007 request, in this case, was much lower than FY 2006 spending. However, it is likely that NSF will be guided by their FY 2007 request in making this decision.

National Science Foundation
FY 2008 Budget Request (dollars in millions)
(Source: Agency Budget Justification)

NSF Program Activity	FY06 Current Plan	FY07 Request	FY07 House-passed CR	FY08 Request	Change FY07 House CR to FY08	
					Amount	Percent
R&RA	**4431**	**4766**	**4765**	**5132**	**367.0**	**7.7%**
BIO	581	608	608	633	25.2	4.1%
CISE	496	527	527	574	47.3	9.0%
ENG	585	629	629	683	54.8	8.7%
GEO	704	745	745	792	47.2	6.3%
MPS	1087	1150	1150	1253	102.7	8.9%
SBE	201	214	214	222	8.2	3.9%
OCI	127	182	182	200	17.6	9.6%
OISE	43	41	41	45	4.4	10.8%
OPP	391	438	438	465	26.8	6.1%
Logistical Support	*67*	*68*	*68*	*68*	0	0%
Icebreakers	*60*	*57*	*57*	*57*	0	0%
IA	233	231	231	263	32.0	13.9%
USARC	1.2	1.5	1.5	1.5	0.0	2.8%
EHR	**698**	**716**	**698**	**751**	**52.6**	**7.5%**
MREFC	**191**	**240**	**191**	**245**	**53.9**	**28.2%**
AOAM	**247**	**282**	**247**	**286**	**38.8**	**15.7%**
OIG	**11.4**	**11.9**	**11.4**	**12.4**	**1.0**	**8.7%**
NSB	**3.95**	**3.91**	**3.95**	**4.03**	**0.1**	**2.0%**
Total	**5581**	**6020**	**5916**	**6429**	**513.4**	**8.7%**

Acronyms:
R&RA = Research and Related Activities
EHR = Education and Human Resources
MREFC = Major Research Equipment and Facilities Construction
AOAM = Agency Operations and Award Management (Previously Salary and Expenses)
OIG = Office of the Inspector General
NSB = National Science Board
BIO = Biological Sciences
CISE = Computer and Information Science and Engineering
ENG = Engineering
GEO = Geosciences
MPS = Mathematical and Physical Sciences
SBE = Social, Behavioral, and Economic Sciences
OCI = Office of Cyberinfrastructure
OISE = Office of International Science and Engineering
OPP = Office of Polar Programs
IA = Integrative Activities
USARC = U.S. Arctic Research Commission