



FAS RESEARCH DEVELOPMENT 2023 NSF CAREER AWARD GUIDANCE FOR FACULTY

The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research. The CAREER competition is open to scholars in all of the fields supported by NSF.

Deadline: July 26, 2023

NSF will have one submission deadline for all CAREER proposals, regardless of Directorate.

NOTE: Applications must be submitted to Harvard's Office for Sponsored Programs for internal review and approval by July 19, 2023.

Award Information

- 5 year duration
- **\$400,000 MINIMUM (including indirect costs)**, except for applications to the Office of Polar Programs (OPP), Directorate for Engineering (ENG), and Directorate for Biological Sciences (BIO), which have a **minimum of \$500,000**
- **No maximum award size** – funding should be requested in accordance with the scope of your project. When determining the size of your request, review prior awards made by the Program(s) considering your application and discuss your planned request with your Program Officer(s) (see [NSF Organization List](#) and [Division CAREER contacts](#)).
- There may be discipline-specific guidelines. For example, proposals to the Directorate for Computer and Information Science and Engineering are expected to request one month of PI salary per year, one graduate student per year, and two trips per year; this can vary depending on individual circumstances, e.g., if the PI already has salary support.

Eligibility

- **Applicants must hold at least a 50% tenure-track (or tenure-track-equivalent) position as an Assistant Professor as of the annual deadline. Associate Professors, with or without tenure, are not eligible for the CAREER program.**
- You must hold a doctoral degree in a field supported by NSF and be engaged in research in an area of science, engineering, or education supported by NSF.
- CAREER eligibility is not limited by time from degree or years in a tenure-track appointment.
- There are no citizenship restrictions.
- You may only receive one CAREER award.
- You may participate in three CAREER competitions; you may submit one proposal per competition.
- You are eligible to apply even if you have previously received other types of NSF or federal funding.
- You may not submit a proposal for a project that is substantially the same as another currently under review by NSF.
- You may not submit a proposal that was previously declined by NSF and has not been revised to take into account the major comments from the prior review.



First Steps

- 1) Carefully review the [program solicitation](#) and [FAQs](#).
- 2) Discuss your ideas with your Department Chair, academic mentors, and peers that have been successful in obtaining awards from NSF. For a list of NSF CAREER Award winners at Harvard, contact FAS Research Development at research_development@fas.harvard.edu.
- 3) Determine which program area(s) at NSF is/are most appropriate to review your proposal (i.e. Molecular and Cellular Biosciences, Earth Sciences) and identify a Program Officer in those area(s). Increasingly, CAREER proposals are co-reviewed by more than one program within a Division or a Directorate, or across Directorates/Offices. For a list of NSF's program areas, see <http://www.nsf.gov/staff/orglist.jsp>.
- 4) Also identify the appropriate contact for the CAREER program in those Division(s), listed at: <http://www.nsf.gov/crssprgm/career/contacts.jsp>.
- 5) If your project has an international component, identify the appropriate country representative(s) in the [Office of International Science and Engineering](#).
- 6) Send an email to the contacts you have identified, including a brief description of your proposed project and a request for feedback. Below are several questions you may want to ask:
 - Is the project a good fit for the program?
 - What are the expectations for the scope of research and education plans in this particular program area?
 - What is the typical award size in this program?
 - What type of review process does this program undertake (i.e. panel or ad hoc reviews)?

Developing the CAREER Education Plan

NSF's CAREER program requires that you include an education plan in addition to your plans for research and broader impacts. The research and education plans can be described separately within the Project Description, or you may present them together in an integrated narrative. Remember that reviewers who are subject experts in your field will be mostly familiar with your research component. Some programs may also send your proposal for review to education experts in your field, and for that reason, you should make sure that your education component is substantive and well-grounded in the literature. Education activities should be consistent with research and best practices in curriculum, pedagogy, and evaluation. Education plans must cite relevant publications, and local curricula and state education standards to be addressed, if applicable (e.g. for work with K-12 classes).

While NSF expects your education plan to be distinctive, innovative, and beyond what is expected from a typical Assistant Professor in your field, it should also be doable and not require so much time that other professional activities are compromised. In addition, it is important to choose activities that really matter to you, and that fit well with your Department's mission and priorities.

Proposed education activities may be in a broad range of areas and may be directed to any level: K-12 students, undergraduates, graduate students, and/or the general public, but should be related to the proposed research and consistent with the career goals of the PI.

Some examples are:

- designing innovative courses or curricula;
- supporting teacher preparation and enhancement;
- contributing to museum exhibits or programs;
- conducting outreach and mentoring activities to enhance scientific literacy or involve students from groups that have been traditionally underrepresented in science;
- researching students' learning and conceptual development in the discipline;
- incorporating research activities into undergraduate courses;
- teaching a graduate seminar on the topic of the research;



- engaging the broader public with your research;
- creating cyberinfrastructure that facilitates involvement of the broad citizenry in the scientific enterprise;
- providing mentored international research experiences for U.S. students;
- linking education activities to industrial, international, or cross-disciplinary work;
- implementing innovative methods for evaluation and assessment;
- designing new or adapting and implementing effective educational materials and practices, and plans for disseminating them;
- build on, or otherwise meaningfully participate in, existing NSF-supported activities or other educational projects ongoing on campus; and
- using new or existing tools to broadly disseminate your research and education activities.

A competitive proposal will include plans for assessing or evaluating your educational activities, tools, or materials. You are encouraged to make connections with appropriate education experts, and to include the necessary letters of collaboration in your application. NSF recommends that applicants leverage existing NSF-supported activities or other educational projects on campus. **For assistance identifying resources and programs at Harvard that you can leverage, contact FAS Research Development at research_development@fas.harvard.edu. See the appendix to this document for examples of Harvard programs with which CAREER applicants commonly collaborate. Please note the recommended deadlines listed in the table below if you plan to request this type of assistance.**

Broader Impacts

The Project Description in your CAREER proposal must include a separate section entitled “Broader Impacts.” While your discussion of broader impacts will likely refer to the education and outreach activities outlined in your education plan, you will also want to include information in this section about how your research advances scientific knowledge and contributes to the achievement of societally relevant outcomes, such as: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the U.S.; use of science and technology to inform public policy; and enhanced infrastructure for research and education.

Application Components – Please see [NSF’s Proposal & Award Policies & Procedures Guide \(PAPPG\)](#) for detailed information about each of these sections.

- ✓ Cover Sheet (completed by administrator)
- ✓ Project Summary (1 page limit divided into Overview, Intellectual Merit, Broader Impacts)
- ✓ Project Description (15 pages, including Broader Impacts and Results from Prior NSF Support sections)
- ✓ References Cited (no page limit)
- ✓ Budget and Budget Justification (5 pages)
- ✓ PI Biosketch (3 pages, provided through use of an [NSF-approved format](#))
- ✓ Current and Pending Support (provided through use of an [NSF-approved format](#) for each individual designated as senior personnel)
- ✓ Facilities, Equipment and Other Resources (no page limit)
- ✓ Departmental Letter from Chair committing institutional support for the professional development and mentoring of the PI, supporting the proposed activities and confirming that they fit well with the department/organization’s mission, and certifying that the PI is eligible to apply (2 pages)
- ✓ Letters of Collaboration, NOT letters of support or recommendation (1 page each, should use NSF’s single-sentence format)
- ✓ Plans for Data Management and Sharing of the Products of Research (2 pages)
- ✓ Post-doctoral Researcher Mentoring Plan, if applicable (1 page)



HARVARD

Faculty of Arts and Sciences

RESEARCH DEVELOPMENT SERVICES

- ✓ PECASE Eligibility Statement (if applicable, in NSF's single-sentence format)
- ✓ Collaborators and Other Affiliations Information (in NSF [Excel template](#))
- ✓ List of Suggested Reviewers or Reviewers Not to Include (optional)

**Research Support Services Provided for Faculty by FAS Research Development**

Application Component	Research Support Service We Provide
<i>Pre-application Planning</i>	<ul style="list-style-type: none">▪ Assistance with determining the appropriate directorate(s)/program(s) for your proposal▪ Provide samples of successful Harvard proposals
<i>Project Narrative</i>	<ul style="list-style-type: none">▪ Introduction to Harvard program(s) to support your education plan and related assessment/evaluation activities (draft proposal ideally provided at least one month in advance of NSF deadline)▪ Recommendations on how to leverage existing resources for your Broader Impacts plan▪ "Responsiveness Review" to ensure your narrative addresses NSF's evaluation/review criteria▪ General grantsmanship advice and strategy▪ Resubmission advice/strategies for drafting a competitive resubmission if you were declined in a previous round
<i>Departmental Letter</i>	<ul style="list-style-type: none">▪ Template available
<i>Letters of Collaboration</i>	<ul style="list-style-type: none">▪ Template available
<i>Data Management Plan</i>	<ul style="list-style-type: none">▪ Template available
<i>Postdoctoral Mentoring Plan</i>	<ul style="list-style-type: none">▪ Template available

For assistance, please contact FAS Research Development at research_development@fas.harvard.edu.



Appendix A

The Derek Bok Center for Teaching and Learning

Mission: By supporting experimentation, innovation, and evidence-based practices, the [Derek Bok Center for Teaching and Learning](#) seeks to create transformational learning experiences for faculty, graduate students, and undergraduates in Harvard's Faculty of Arts and Sciences and John A. Paulson School of Engineering and Applied Sciences.

Requested Timeline: In order to provide the most effective support, the Bok Center requests that CAREER applicants initiate discussions at least one month prior to the grant deadline.

Fee for Services: No

Contact:

Tamara Brenner, Executive Director
tamara_brenner@harvard.edu

Potential activities by which the Bok Center can support faculty applying for NSF CAREER proposals:

- Brainstorming educational activities to include in your CAREER proposal.
- Helping faculty design new courses or revise existing courses to engage students with scientific inquiry and incorporate evidence-based teaching practices. Example activities might include:
 - developing active learning exercises to transform the classroom;
 - creating exercises or case studies in which students investigate original data;
 - developing multimedia materials that allow faculty to share their research with students;
 - designing alternative assignments that allow students to explore concepts and data in ways other than traditional problem sets or essays; and
 - implementing a blended learning approach that combines out-of-class assignments and videos with in-class activities.
- Identifying appropriate references to cite in your Education Plan.
- Providing referrals to other campus groups that support educational programming for local K-12 students.



Appendix B

Harvard Museums of Science and Culture

Mission: The mission of the [Harvard Museums of Science & Culture \(HMSC\)](#) is to foster curiosity and a spirit of discovery in visitors of all ages, enhancing public understanding of and appreciation for the natural world, science, and human cultures. HMSC works in concert with Harvard faculty, museum curators, and students, as well as with members of the extended Harvard community, to provide interdisciplinary exhibitions, events and lectures, and educational programs for students, teachers, and the general public. HMSC draws primarily upon the extensive collections of the member museums and the research of their faculty and curators to present exhibitions and programming at the Harvard Museum of Natural History, Harvard Museum of the Ancient Near East, Peabody Museum of Archaeology and Ethnology, and the Collection of Historical Scientific Instruments.

Requested Timeline: HMSC requests faculty begin to reach out at least a month before the grant deadline to discuss options for educational activities and broader impacts.

Fee for Services: None for HMSC staff. Exhibit and programming projects have moderate to substantial material costs.

Contact:

Elizabeth Solinga, Executive Director, HMSC
esolinga@hmsc.harvard.edu

HMSC staff will partner with faculty members to generate a custom educational and broader impacts plan for their NSF CAREER proposal among mutual fields of interest that enhance public and/or K-12 understanding of their research field. Exhibits and programming will be hosted and guided by HMSC staff in collaboration with faculty and members of their lab.

Potential activities by which HMSC can support faculty applying for NSF CAREER proposals:

- Developing curricula, materials, and trainings for K-12 students and educators. This can include:
 - Professional development learning opportunities for K-12 teachers hosted by HMSC
 - Museum classes or gallery materials that align with Next Generation Science Standards
- Creating museum-based public outreach and community engagement components including:
 - Exhibits and gallery activities
 - Public lectures and symposia
 - Family events and programming
- Support in creating and delivering programs in the Harvard learning eco-system and within other community-settings, including but not limited to:
 - Workshops for graduate students, post docs, and scientists to develop science communication and education skills
 - Internships for underrepresented students
 - Events and interactive experiences for families and youth
- Helping to draft appropriate narrative text and budget information for the proposal.



Appendix C

Harvard Ed Portal

Mission: The [Harvard Ed Portal](#), located in Harvard's Allston Campus, serves as a gateway for the Allston-Brighton community to explore and access Harvard. In partnership with local non-profit organizations, HEP offers educational programming for residents of all ages and interests. The [Public School Partnerships](#) team (PSP) works with both Boston and Cambridge Public Schools to offer collaborative, responsive, and sustainable programming in support of district and school goals, and student-, teacher-, and administrator-identified needs.

Requested Timeline: We ask that faculty contact us as with as much lead time as possible to discuss possible ways to engage with our programs and community audiences. [Please fill out this form](#) to request a meeting.

Fee for Services: None for consultation and planning. Some initiatives will require financial support for materials.

Contact: Susan L. Johnson, Assistant Director,
Socially Engaged Learning
susan_l_johnson@harvard.edu

HEP and PSP staff work with faculty, graduate students, and departments seeking opportunities to make positive impacts on science education, science communication, career trajectories, and ultimately, the quality of life for students and families in Cambridge and Boston. We develop programs in response to needs articulated by our communities and neighboring schools.

Potential activities by which the Ed Portal can support faculty applying for NSF CAREER proposals:

Community showcase for families and 1st-8th grade children - Try your hand at communicating a concept by engaging families and children in a hands-on activity engaging as part of our informal, family-friendly open house.

“Project Teach” and “STEAM” campus visit days for Boston and Cambridge Middle Schools - Help middle school students learn what it means to go to college by offering a 45-minutes hands-on activity or demo-rich class on campus.

High School STEM “Pizza Talks” - visit one of our partner BPS high schools in Allston-Brighton and talk to students over pizza about your career, the research you do, and why you love it.

School-Day Laboratory Internships

- Provide a laboratory internship (April/May-June) for a senior attending a BPS high school in Allston-Brighton.
- Provide a lab internship to a Cambridge high school student as part of OEB's Emerging Scientists program (Jan/Feb-May).

After School Class and Summer Lab Internship - an impactful STEM career program for motivated, underserved teens attending BPS high schools in Allston-Brighton.

- In partnership with the Department of Chemistry and Chemical Biology (CCB), we offer a Thursday afternoon science class led by CCB graduate students followed by paid summer lab internships at CCB.
- We are looking for departments to partner with us as we expand this important STEM career pathways program for area teens.

After School Lab Internship

- Science Research Mentoring Program in partnership with Center for Astrophysics, Cambridge STEAM Initiative, and Cambridge Rindge & Latin School (year long).