

Submitting Proposals to the National Science Foundation (NSF)

Christina Leigh Docteur, Director, Office of Proposal Support Services

Chetna Chianese, Associate Director, Office of Proposal Support Services



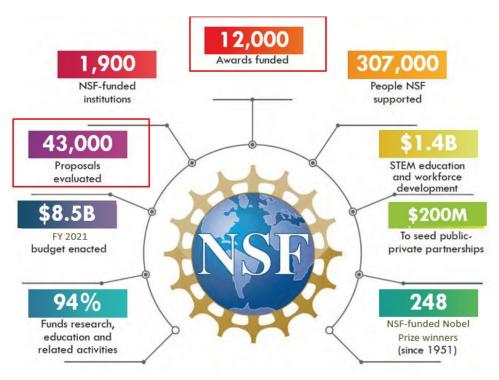
What is the National Science Foundation?





The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..." NSF is vital because we support basic research and people to create knowledge that transforms the future ... With an annual budget of \$8.5 billion (FY 2021), we are the funding source for approximately 27 percent of the total federal budget for basic research conducted at U.S. colleges and universities. NSF At a Glance.

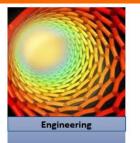
NSF by the Numbers

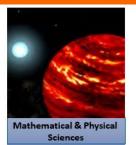


^{*} Except where indicated, numbers shown are based on FY 2020 activities, the last full year of data.

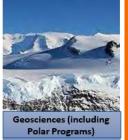


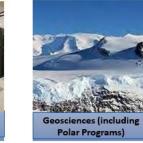






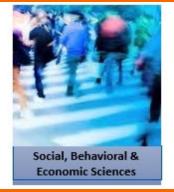














NSF Research Areas

Funding theme example: NSF National Nanotechnology Initiative (NNI)

Programs: Directorate for Mathematical and Physical Sciences (MPS)

This is a list of all the programs within the Directorate for Mathematical and Physical Sciences (MPS).

Key: C Crosscutting | N NSF-wide

Mathematical and Physical Sciences (MPS)

- Astronomical Sciences (AST)
- · Chemistry (CHE)
- Materials Research (DMR)
- Mathematical Sciences (DMS)
- · Physics (PHY)
- Office of Multidisciplinary Activities (OMA)

Division of Physics (PHY)

- ▼ Division of Physics: Investigator-Initiated Research Projects (PHY)
 - · Atomic, Molecular and Optical Physics Experiment
 - · Atomic, Molecular and Optical Physics Theory
 - Elementary Particle Physics Experiment (EPP)
 - · Elementary Particle Physics Theory
 - Gravitational Physics Experiments and Data Analysis
 - Gravitational Physics Theory
 - · Integrative Activities in Physics
 - · LIGO Research Support
 - · Nuclear Physics Experiment
 - · Nuclear Physics Theory
 - · Particle Astrophysics Experiment
 - Particle Astrophysics and Cosmology Theory
 - Physics at the Information Frontier (PIF)
 - Physics of Living Systems (PoLS)
 - Plasma Physics
 - Quantum Information Science

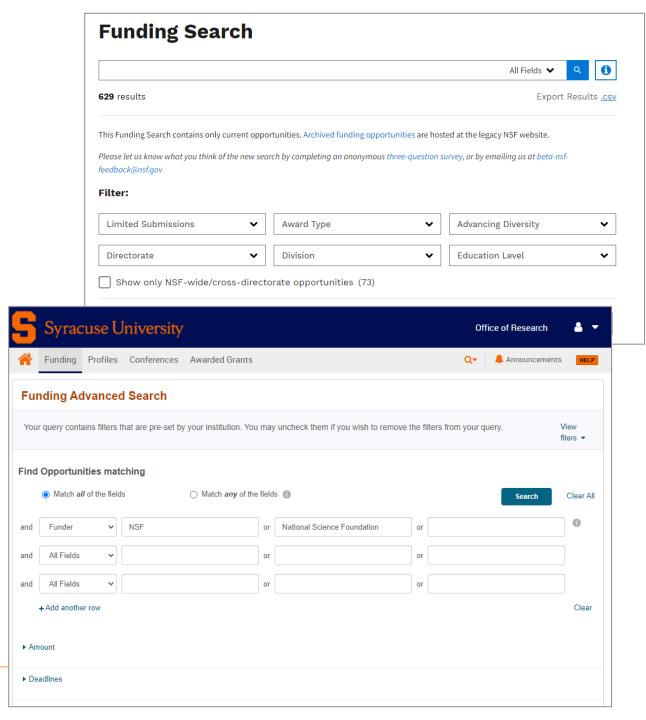
Types of Projects

- Faculty-initiated research projects
- Regional and national centers
- Graduate research fellowships
- Major equipment acquisition
- K-12 teacher training
- Small business innovation research
- Promoting underrepresented populations in STEM
- Conferences
- Major interdisciplinary initiatives
- International & multi-country partnership activities

- NSF also funds supplements for exiting awards!
 - Research Experiences for Undergraduates (REU)
 - Research Experience for Teachers (RET)
 - Veterans research
 - Diverse workforce
 - Persons with disabilities STEM engagement and access
 - <u>Career-life balance</u> (GRFP, Postdocs)
 - Non-academic research internships for graduate students

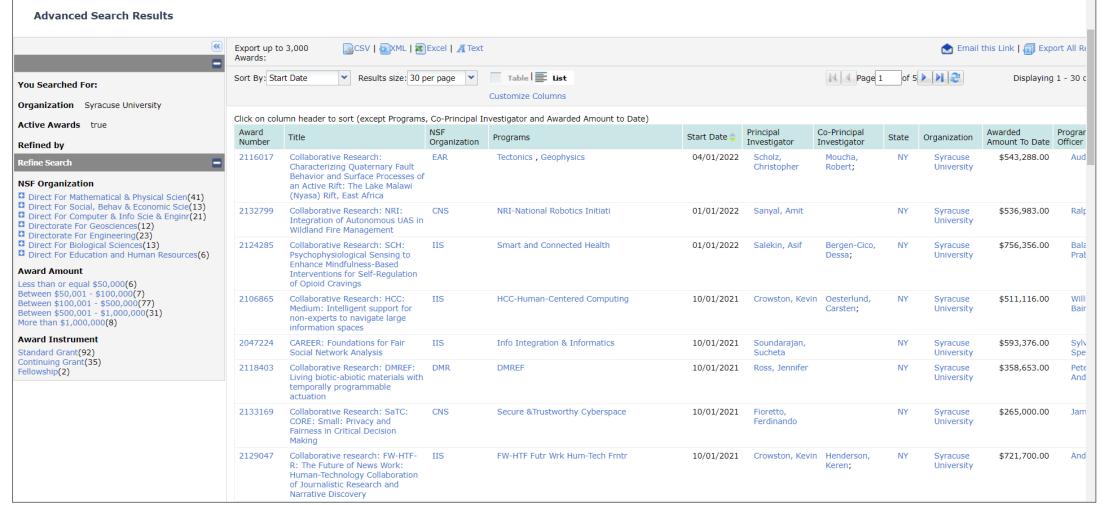
How to Find NSF Funding Opportunities 101 (02, 03...)

- Subscribe to <u>National Science Foundation</u> <u>Updates!</u>
 - Choose your subscription topics
 - Change your topics at any time
 - Program announcements & solicitations no less than 90 days before target date/ deadline
 - Watch for Dear Colleague Letters in areas of interest
- Try <u>NSF Funding Search</u>
- 3. Check out Pivot
- 4. Research awards by topic, or by your peers



NSF Award Search

- Search by organization to find all Syracuse University awards.
- You can filter by directorate, division, amount, and general type of grant.
- NSF Award Search





Find Previous Awards in a Program

- Navigate to any program page (including NSF-wide, cross-directorate programs
- Click "Browse projects funded by this program" under "Awards made through this program"
- 3. Download your results in a spreadsheet to scan all abstracts and relevant PI info!



← Search for more funding opportunities

Program Contacts

Krastan B. Blagoev

kblagoev@nsf.gov (703) 292-4666 MPS/PHY

Additional Program Resources

Recently Funded Awards and Abstracts

Map of Recent Awards from this Program

News Associated with this Program

Awards Made Through This Program

Browse projects funded by this program

Research Previous Awards

- Each award made contains valuable info!
 - Award start and projected end dates
 - Award amount
 - Program manager name and contact info
 - Principal Investigator (PI) and Co-Principal Investigator (Co-PI) names and contact info
 - NSF Program(s) funding the award
 - Detailed abstract
 - Resulting publications associated with award



Award Abstract # 1808474 Nonequilibrium Dynamics and Thermodynamics of the Cell Cycle

NSF Org:	CHE Division Of Chemistry
Awardee:	RESEARCH FOUNDATION FOR THE STATE UNIVERSITY OF NEW YORK, THE
Initial Amendment Date:	July 24, 2018
Latest Amendment Date:	July 24, 2018
Award Number:	1808474
Award Instrument:	Standard Grant
Program Manager:	Pui Ho puiho@nsf.gov (703)292-0000 CHE Division Of Chemistry MPS Direct For Mathematical & Physical Scien
Start Date:	September 1, 2018
End Date:	August 31, 2023 (Estimated)
Total Intended Award Amount:	\$499,964.00
Total Awarded Amount to Date:	\$499,964.00
Funds Obligated to Date:	FY 2018 = \$499,964.00
History of Investigator:	Jin Wang (Principal Investigator) jin.wang.1@stonybrook.edu (631)632-1185
	SUNY at Stony Brook WEST 5510 FRK MEL LIB

ABSTRACT

Jin Wang of Stony Brook University is supported by the Chemistry of Life Processes Program in the Division of Chemistry to develop integrated theoretical and computational methods for exploring the cell cycle of eukaryotic organisms, using budding yeast as a model system. The Physics of Living Systems Program in the Division of Physics, the Cellular Polynamics and Function Cluster in the Division of Molecular and Cellular Biosciences, and the Systems and Synthetic Biology Cluster in the Division of Molecular and Cellular Biosciences also contribute to this award. The cell cycle is critical to the replication and division of a cell. It governs cellular proliferation and development—the basis of life. This project is utilizing a unique combination of approaches to understand the origin and driving forces of the cell cycle. Key genes and regulators of the cell cycle process, critical to guaranteeing normal cellular function, are identified through computational analysis, for comparison with experimental data. Professor Wang's work may lead to a new understanding of the biological functions of the cell, with implications for the maintenance of normal cell function, critical to human health and prevention of disease. A new teaching module, based on research from the project, is integrated into the departmental systems biology course. The interdisciplinary nature of the research is providing opportunities for training students from different backgrounds in a mutual learning, collaborative environment, preparing them to tackle problems at the nexus of these fields.

PUBLICATIONS PRODUCED AS A RESULT OF THIS RESEARCH

Note: When clicking on a Digital Object Identifier (DOI) number, you will be taken to an external site maintained by the publisher. Some full text articles may not yet be available without a charge during the embargo (administrative interval).

Some links on this page may take you to non-federal websites. Their policies may differ from this site.

Chu, Xiakun and Wang, Jin "Erratum: "Conformational state switching and pathways of chromosome dynamics in cell cycle" [Appl. Phys. Rev. 7, 031403 (2020)]" Applied Physics Reviews, v.8, 2021 https://doi.org/10.1063/5.0061190 Citation Details

Shin, Gyubaek and Wang, Jin "Correction: The role of energy cost on accuracy, sensitivity, specificity, speed and adaptation of T cell foreign and self recognition" *Physical Chemistry Chemical Physics*, v.23, 2021 https://doi.org/10.1039/d1cp90136b Citation Details



Eligibility information and limits on PI/institution submission

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

Preliminary proposals and invited full proposals may only be submitted by domestic (United States) institutions of higher education that are located in the United States, its territories or possessions, and have doctoral degree-granting research and education programs in any area of research supported by NSF. The lead institution is expected to develop partnerships or arrangements with other universities, colleges, or other institutions, such as national laboratories, research museums, private sector research laboratories, state and local government laboratories, and international organizations as appropriate to enable the Center to attain its strategic goals.

Who May Serve as PI:

The PI must be a full-time faculty member at an institution of higher education and have an established record of leading research teams.

Limit on Number of Proposals per Organization: 3

A single organization may submit a maximum of three preliminary proposals as the lead institution. Full proposals are to be submitted only when invited by NSF. There is no limit on the number of proposals in which an organization participates as a partner institution. The STC program will not support more than one Center from any one lead institution in this competition.

Limit on Number of Proposals per PI or co-PI: 1

A PI or co-PI on one proposal in this competition may not be a participant in another STC proposal under review in the same competition. If a proposal is declined at any stage of the review process, a PI or co-PI on the declined proposal may then participate in another STC proposal. This eligibility constraint will be strictly enforced. In the event that an individual exceeds this limit, proposals will be accepted based on the earliest date and time of proposal submission (i.e., the first compliant proposal received will be accepted and the others will be returned without review).

What else to Look for in a Program Announcement or Solicitation

TARGET DATES

Talk to the Program Office if you think you might miss the date

DEADLINE DATES

Proposals will not be accepted after this date and time (5 p.m. submitter's local time)

SUBMISSION WINDOWS

Proposals will not be accepted after this date and time (5 p.m. submitter's local time)

F. When to Submit Proposals

Proposers should allow adequate time for processing of proposals (see Chapter I.H for further information). Many NSF programs accept proposals at any time. Other programs, however, establish due dates for submission of proposals. The following types of due dates are utilized by NSF:

- Target dates: dates after which proposals will still be accepted, although they
 may miss a particular panel or committee meeting.
- Deadline dates: dates after which proposals will not be accepted or will be returned without review by NSF. The deadline date will be waived only in extenuating circumstances. Such a deviation only may be authorized in accordance with <u>Chapter II.A.</u>

II. PROGRAM DESCRIPTION

A. Objectives of the STC Program are to:

- Support potentially groundbreaking investigations at the interfaces of disciplines or highly innovative approaches within disciplines;
- Support research and education of the highest quality, in a center-based environment, where the whole is greater than the sum of its parts;
- Exploit opportunities in science, education, engineering and/or technology where the complexity of the research agenda requires the advantages of scope, scale, flexibility, duration, equipment, and facilities that a Center can provide;
- Support the creation of new scientific paradigms, establishment of new scientific disciplines, and development of transformative technologies;
- Foster science and engineering in service to society;
- Engage and develop the Nation's intellectual talent, including groups underrepresented in the sciences, mathematics and engineering, in the conduct of research and education activities:
- Increase the participation of minority-serving institutions in center-scale science and engineering research;
- Promote organizational connections and linkages within and between campuses, K-12 educational institutions, and the world beyond (e.g., state, local, Federal agencies, national labs, industry, international collaborations), capitalizing upon cyberinfrastructure and modern communication technologies to facilitate these linkages;
- Focus on integrative learning and discovery and the preparation of U.S. students for a broad set of career paths; and
- Support research collaborations that energize the Nation's economic competitiveness, sustain its global leadership in science and engineering, expand
 the geography of innovation, and improve the quality of life for everyone.

B. Characteristics of Science and Technology Centers

The lead institution accepts overall management and budgetary responsibility for the proposed Center and is responsible for oversight of subawards to partner institutions. The partners comprising an STC share a common research vision and work on developing sustainable collaborations while jointly pursuing highly innovative research pathways to address deep scientific questions or pressing societal needs. They capitalize on the latest scientific and technological developments to seek ways to develop groundbreaking, sometimes risky approaches, to address what seem to be intractable problems. They work towards developing and maintaining a flexible and agile research plan to accommodate change as the research proceeds, new challenges and opportunities arise, and the global landscape of science evolves.

And ... What else to Look for in a Program Announcement or Solicitation

Preliminary Proposal Contents

Program

description

The preliminary proposal must consist of the following elements:

- (1) Cover Sheet. For planning purposes, September 1, 2023 should be shown as the start date. The proposed Center Director must be shown as the Principal Investigator.
- (2) Project Summary. (1 page maximum) Provide a description of the proposed STC, addressing separately the intellectual merit and broader impacts of the Center. The summary should be informative to those working in the same or related field(s), and understandable to a broad audience within the scientific domain.

At the end of the Overview section of the Project Summary, indicate up to three NSF divisions that are the most relevant for your center research activities. They should be listed in order of priority, i.e., the first listed should be the most relevant. Also include up to three keywords that pertain to your research topics, again listed in order of priority.

- (3) Table of Contents. A Table of Contents is automatically generated for the proposal by the FastLane system. The proposer cannot edit this form.
- (4) Project Description (12 pages maximum). Results from Prior NSF Support should not be included. Links to URLs may not be used. Include the following sections:
- 4a. Center Rationale Articulate your vision for the proposed Center that clearly outlines the grand challenge(s) being addressed, the breakthroughs being sought, the potential impacts, and intended legacies of the center. Explain the unique opportunities that an integrated STC will provide and describe what will be achieved in the center mode that could not be achieved with other NSF funding mechanisms including other NSF centers programs. Address the timeliness of the proposed center (why is this the right time for the center and why is this an important area for a research investment at this time).
- 4b. Center Plan Provide an overview of your research plan, in the context of national and global landscapes of relevant scientific fields, with sufficient detail to allow the assessment of the scientific merit and to justify the necessity for the center mode of operation. Delineate what you anticipate will be the major

Proposal Preparation Instructions

HINT: If they number and name the required sections, so should you!!

Where to Start at SU

- For **new faculty**, start with your department chair or a mentor to understand the procedures for your unit
 - Who to work with and how varies by school or college and even by department/institute
 - Some units have specialized research support
- Contact your Research Administrator (RA) in the Office of Sponsored Programs (OSP)
 - All submissions MUST go through OSP Notify ~2 wks before submission, or as soon as you decide to apply!
 - Complete entire application at least 1 wk before due & provide to OSP 3 business days before the deadline.
 - The more time and contact you give them, the more they can help!
- For graduate students:
 - Graduate Research Fellowship Program (GRFP) applicants look for training sponsored by the <u>Center for Scholarship</u> and Fellowship Advising, and work with your OSP RA.
 - Doctoral Dissertation Research Improvement (DDRIs) applicants, work with your advisor (PI) and OSP RA.
- For ALL (except GRFP)! <u>Internal Routing and Review Form</u>
 - Must be signed by PI, department chair, associate dean (some exceptions), and sent to OSP.
 - If there is cost share, in-kind support, other special circumstances this must be to OSP before submission.

Who is Sponsored Programs?

Sponsoredprograms.syr.edu



Stuart Taub Director



Lisa Kaley-Heyn Associate Director

Research Administrators



Amy Deppa



Amy Graves



Caroline McMullin



Ross Gullo



Jennifer Ho Manion



Heather DiBlasi Subaward Administrator

Research Administrator Assignments:

Email: ospoff@syr.edu Call: 315-443-2807

Stop by: 211 Lyman Hall

Single Copy Documents & Required Sections of Research Proposal

- Single copy documents are for "NSF Use Only" and are not provided to reviewers
 - Authorization to deviate from proposal preparation requirements
 - List of suggested reviewers to include or not to include
 - Proprietary or privileged information
 - Proposal certifications
 - Information about collaborators and other affiliations

- Proposals that do not contain these required sections may not be accepted by electronic submission system (FastLane or Research.gov)
 - Cover Sheet Many parts prefilled
 - Project Summary
 - Project Description
 - References Cited
 - Biographical Sketch(es) (<u>check OSP Guidance</u>)
 - Budget (use <u>OSP Budget Template</u>)
 - Budget Justification (use OSP <u>Sample Budget Justification</u>)
 - Current and Pending Support(s) (<u>check OSP Guidance</u>)
 - Facilities, Equipment and Other Resources
 - Data Management Plan (<u>OSP Template</u> or <u>DMPTool</u>) sessions)
 - Postdoctoral Mentoring Plan, if applicable (OSP Template)

Proposal & Award Policies and Procedures Guide (PAPPG)



- When in Doubt ... Check the <u>Proposal & Award</u> <u>Policies and Procedures Guide (PAPPG)</u>
 - List of acronyms used
 - Definition of terms
 - Proposal preparation instructions by <u>section of</u> <u>proposal</u>, including *formatting requirements*.
 - Submission instructions (but OSP is key!)
 - Proposal processing and review description
 - Award administration information
 - Allowability of costs
 - Subject index!

Project Summary (Required)

- Text boxes must contain an Overview and Statements on Intellectual Merit and Broader Impacts.
- Proposals that do not separately address the Overview and both Merit Review criteria in text boxes will not be accepted by FastLane or Research.gov.
- Project summaries with special characters must be uploaded as a PDF document.

Project Description (Required)

- Proposers should address what they
 want to do, why they want to do it,
 how they plan to do it, how they will
 know if they succeed, and what
 benefits could accrue if the project is
 successful.
- A separate section within the narrative must include a discussion of the broader impacts of the proposed activities.

References Cited (Required)

 Reference information is required, and proposers must follow accepted scholarly practices in providing citations for source materials.

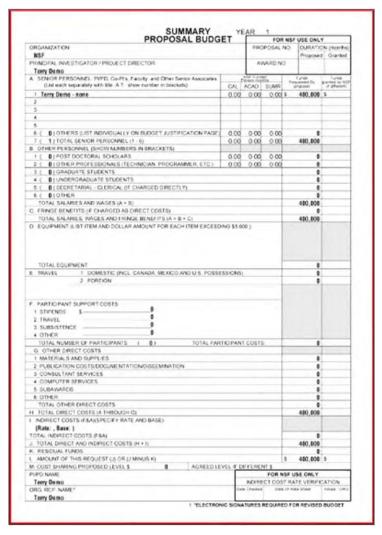
Biographical Sketches (Required)

- Biographical sketches are required for all senior project personnel and must not exceed three pages in length, per individual.
- The Biographical Sketch is used to assess how well qualified the individual, team, or organization is to conduct the proposed activities.
- An NSF-approved format must be used for all senior project personnel.

Text from the Proposal & Award
Policies & Procedures Guide (PAPPG)

Budget (Required)

- Each proposal must contain a budget for each year of support requested. The budget justification should be no more than five pages for all years of the project combined.
- Proposals containing subawards must include a separate budget justification of no more than five pages for each subaward.





Text from the FastLane

Facilities, Equipment, and Other Resources (Required)

- Used to assess adequacy of the organizational resources available to perform the effort proposed.
- Describe applicable Lab, Computer or other available facilities, equipment resources & support services (administrative, lab support, other supporting personnel.

Facilities, Equipment, and Other Resources

Instructions: Upload an aggregated description of the internal and external resources (both physical and personnel) that the organization and its collaborators will provide to the project, should it be funded. Describe only those resources that are directly applicable. The description should be narrative in nature and must not include any quantifiable financial information. If there are no Facilities, Equipment, or Other Resources identified, a statement to that effect should be indicated in this section and uploaded into FastLane. See PAPPG II.C.2.i for more information.

Upload File

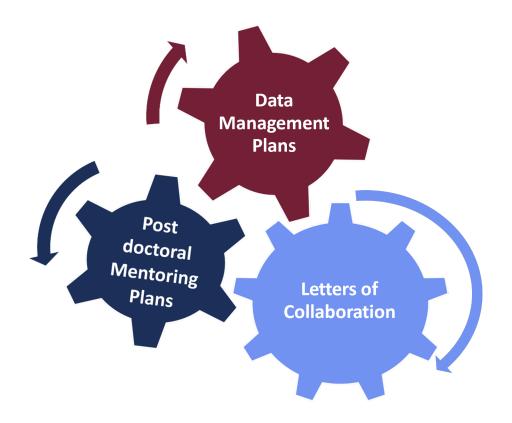
Current and Pending Support (Required)

- This section of the proposal calls for information on all current and pending support for ongoing projects and proposals.
- NSF uses the information to assess the capacity of the individual to carry out the research as proposed as well as to help assess any potential overlap/duplication.
- C & P must be provided through use of an NSF-approved format (remember to <u>check OSP</u> <u>Guidance</u>)



Special Information and Supplementary Documentation

This section is used for the required data management plan, postdoctoral mentoring plan and other pertinent supplementary information, such as letters of collaboration; more information can be found in the PAPPG, Chapter II.C.2.j.





Data Management Plan Requirements



- All proposals are required to include, as a supplementary doc, a Data Management Plan of up to two pages.
- Plan should describe how the proposal will conform to NSF policy on dissemination and sharing of research results.
- A valid Data Management Plan may include only the statement that no detailed plan is needed, as long as a clear justification is provided.
- Plan will be reviewed as part of the Intellectual Merit and/or Broader Impacts of the proposal.



NSIF)

Address these Fundamental Questions

What are you trying to accomplish? What will be the outcomes?

Goals

Why do you believe that you have a good idea? Why is the problem important? How does your idea tie into previous efforts? Why is your approach promising?

Rationale

How will you manage the project to ensure success? How will you know if you succeed?

Evaluation

How will others find out about your work? How will you interest / excite them?

Dissemination





Writing the 1-Page Project Summary

1st descriptive paragraph

What will you do?

Why is it important?

What has already been done?

How are you going to do it and how is your approach special (innovative, creative)?

2nd paragraph

Intellectual Merit (technical, scientific contributions)

3rd paragraph

Broader Impacts (benefit to society)



Merit Review Criteria

When evaluating NSF proposals, reviewers should consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits would accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers are asked to evaluate all proposals against two criteria:

- Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts**: The Broader Impacts criterion encompasses the potential to **benefit society** and contribute to the achievement of specific, desired societal outcomes.



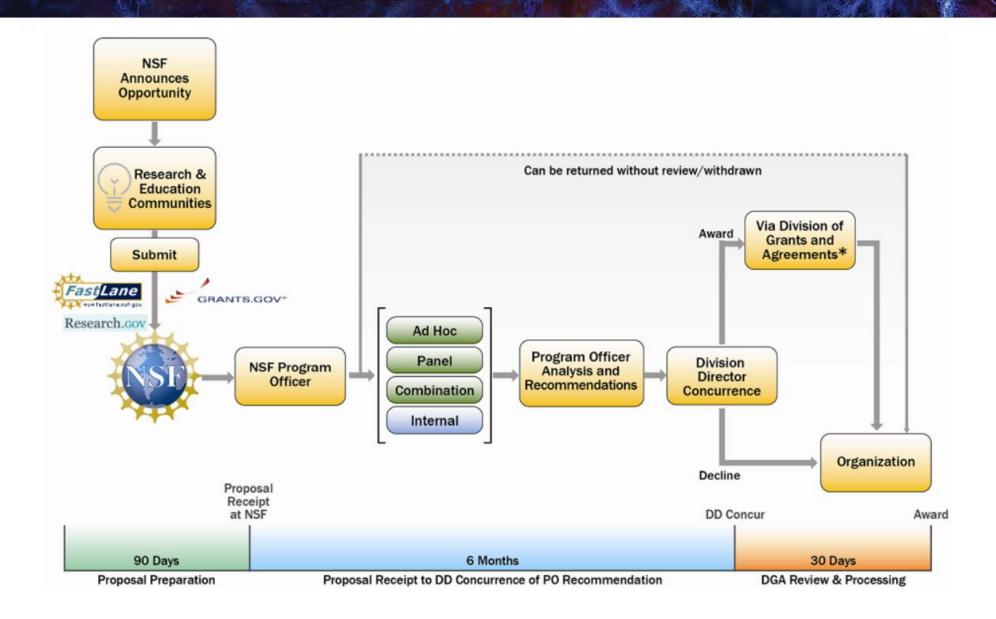
Five Review Elements

The following elements should be considered in the review for both criteria:

- What is the potential for the proposed activity to:
 - advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - benefit society or advance desired societal outcomes (Broader Impacts)?
- To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
- Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
- How well qualified is the individual, team, or institution to conduct the proposed activities?
- Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?



NSF Proposal & Award Process Timeline





Proposals Not Accepted or Returned Without Review

If it does not contain all of the required sections, as described in PAPPG Chapter II.C.2.

- Per the PAPPG Project Summary Requirement:
 - Must include an overview and separate statements on Intellectual Merit and Broader Impacts.
- Per the PAPPG Project Description Requirement:
 - Must contain, as a separate section within the narrative, a section labeled "Broader Impacts."
 - Must include results from prior NSF support with an end date in the past five years.
- Per the PAPPG Data Management Plan Requirement:
 - Must be included as a supplementary document.
- Postdoctoral Researcher Mentoring Requirement (if applicable):
 - Proposals that include postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals.



Other Reasons for Return of Proposals Without Review

- Inappropriate for funding by the National Science Foundation.
- Submitted with insufficient lead time before the activity is scheduled to begin.
- Full proposal that was submitted by a proposer that has received a "not invited" response to the submission of a preliminary proposal.
- Duplicate of, or substantially similar to, a proposal already under consideration by NSF from the same submitter.
- Does not meet NSF proposal preparation requirements, such as page limitations, formatting instructions, and electronic submission, as specified in the PAPPG or program solicitation.
- Not responsive to the PAPPG or program announcement/solicitation.
- Does not meet an announced proposal deadline date (and time, where specified).
- Was previously reviewed and declined and has not been substantially revised.
- Duplicates another proposal that was already awarded.



Other NSF Resources and Future Office of Research Events

• NSF Virtual Grants Conference. All slides are posted and recordings are available on YouTube!!

- Office of Research Proposal Support Services <u>Trainings and Presentations</u>. All slides and recordings of prior sessions are posted.
- Future Events
 - Using PIVOT to Identify Funding Opportunities: A Learning Lab at the Newhouse School, November 12
 - Building Strong Proposal Budgets, November 17
 - Working with the Office of Sponsored Accounting Best Practices and Updates, December 1



Thank you!

Christina Leigh Docteur, cdocteur@syr.edu

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