Funding Focus

Spotlight on the NSF Major Research Instrumentation (MRI) Program

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NSF Virtual Grants Conference (November 2020): go to **nsfpolicyoutreach.com**

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Session Overview

- NSF MRI: What is it?
- Proposal structure/contents
- Avoiding pitfalls, becoming competitive
- Project/Proposal development strategies
- Questions

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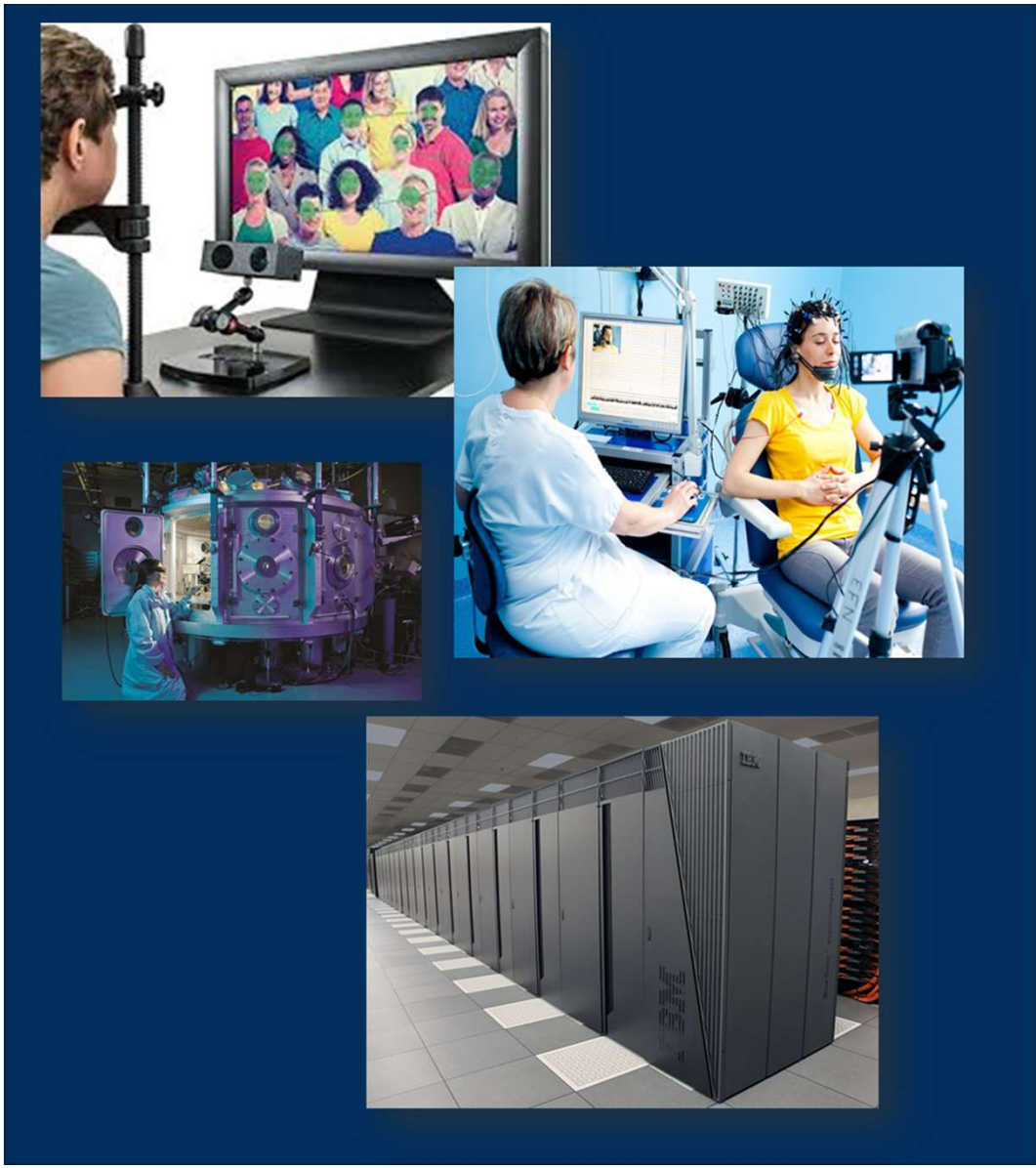
What is the NSF MRI program?

- Funding to support shared-user research equipment
- Acquisition or development
- Annual competition
- Limited submission



Acquisition

Up to 3 years in project duration

Development

Up to 5 years in project duration

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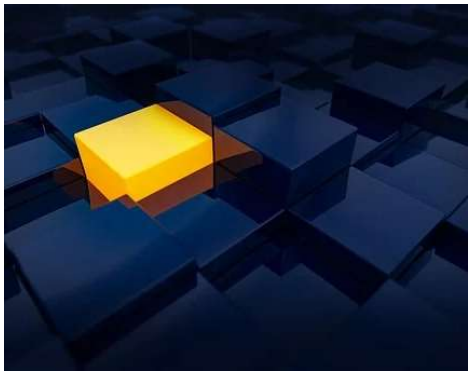
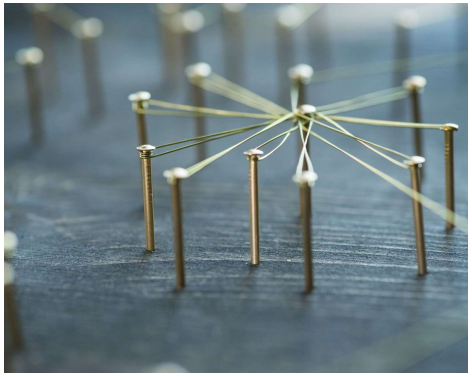
Single instrument? Multiple pieces?



Single instrument: Allowable



Multiple instruments/pieces: It depends

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MRI funds will NOT support

- Construction, renovation or modernization of spaces
- Large, specialized experimental facilities
- General purpose and supporting equipment
- Sustaining infrastructure and/or building systems
- General-purpose platforms or environment
- Instrumentation used primarily for education courses

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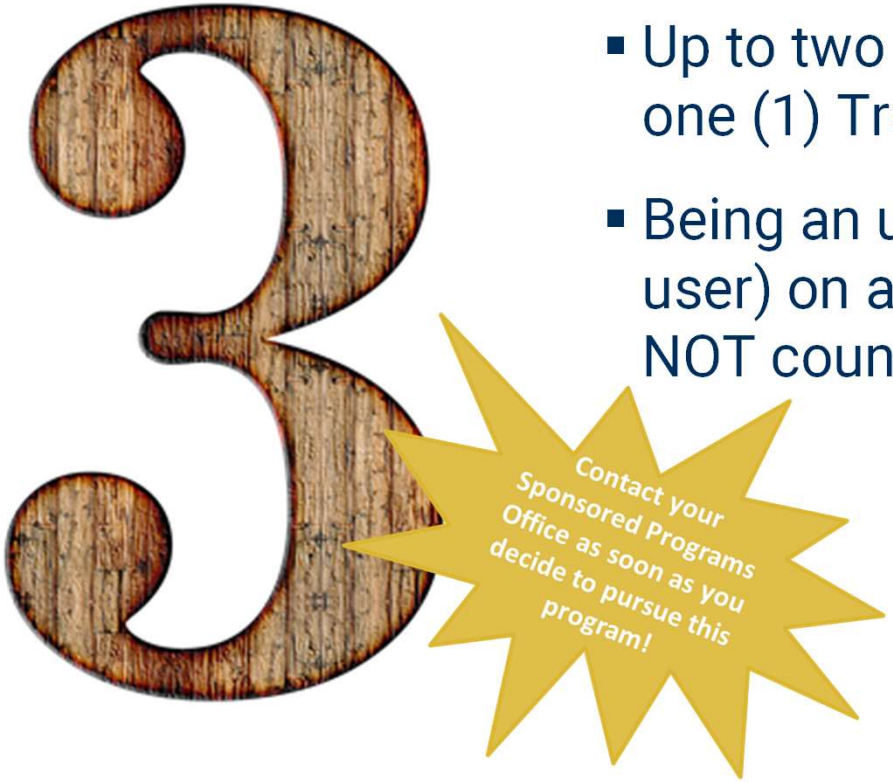
NSF MRI Program Tracks

Track 1: $100,000* to an upper limit of $1 million

Track 2: $1 million to an upper limit of $4 million

*Non-Ph.D.-granting institutions may submit requests for equipment under Track 1 that cost less than $100,000.

MRI proposal limits per institution



- Up to two (2) Track 1 proposals, and up to one (1) Track 2 proposal
- Being an unfunded collaborator (proposed user) on another institution's proposal DOES NOT count as part of the 3-proposal limit.

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2015 MRI Award Snapshot

By Institution Type

	Ph.D.	non-Ph.D.	Non-degree	MSI
# reviewed	504 (149 DEV)	292 (27 DEV)	26 (8 DEV)	107 (20 DEV)
$ Requested	$390.46 M	$125.26 M	$17.17 M	$61.08 M
Mean request	$774.72 K	$428.96 K	$660.27 K	$570.81 M
Median request	$588.95 K	$338.44 K	$481.33 K	$505.11 K
# awards	107 (28 DEV)	54 (4 DEV)	6 (3 DEV)	21 (6 DEV)
NSF $ awarded	$74.10 M	$16.38 M	$4.05 M	$12.32 M
MRI $ awarded	$55.03 M	$15.66 M	$3.49 M	$9.66 M
Success rate	21.23%	18.49%	23.07%	19.6%
Mean award	$692.55 K	$303.39 K	$675.63 K	$586.82 K
Median award	$492.29 K	$264.76 K	$522.42 K	$394.10 K

Funding rate by NSF Directorate

Biological Sciences: 13%
Computer & Information Sci/Eng: 28%
Engineering: 13%
Geoscience: 24%
Math/Physical Science: 24%
Social, Behavioral, Econ Science: 39%

OFFICE OF INTEGRATIVE ACTIVITIES

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Recent MRI awards in WI

MRI: Acquisition of a Novel Assistive Robot Arm for Collaborative Research in Assistive and Rehabilitation Robotics at a Predominantly Undergraduate Institution
Principal Investigator: Wei Shi; Co-Principal Investigator: Cheng Liu, Paul Schwartz, Catherine Anderson, John Lui; University of Wisconsin-Stout; Start Date:10/01/2015; Award Amount:$39,339.00

MRI: Acquisition of a Nuclear Magnetic Resonance Spectrometer
Principal Investigator: Brant Kedrowski; Co-Principal Investigator: Sheri Lense, William Wacholtz; University of Wisconsin-Oshkosh; Start Date:09/01/2016; Award Amount:$355,244.00; Relevance:96.0;

MRI: Acquisition of Si(Li) Detectors and Two BGO Compton Suppression Shields for the Development of the La Crosse fIREBAll
Principal Investigator: Shelly Lesher; Co-Principal Investigator: Ani Aprahamian, Wanpeng Tan; University of Wisconsin-La Crosse; Start Date:08/15/2019; Award Amount:$396,747.00

MRI: Acquisition of a High Performance Computing Cluster to Enhance the Undergraduate Discovery Experience
Principal Investigator: Sudeep Bhattacharyay; Co-Principal Investigator: Ying Ma; University of Wisconsin-Eau Claire; Start Date:10/01/2019; Award Amount:$350,000.00

MRI: Acquisition of Single Crystal X-ray Diffractometer to Support Undergraduate Research in Chemistry
Principal Investigator: Deidra Gerlach; Co-Principal Investigator: Jason Halfen; University of Wisconsin-Eau Claire; Start Date:08/01/2020; Award Amount:$102,485.00

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Proposal guidance

Major Research Instrumentation Program: (MRI)
Instrument Acquisition or Development

PROGRAM SOLICITATION
NSF 18-513

REPLACES DOCUMENT(S):
NSF 15-504

National Science Foundation
Office of Integrative Activities
Directorate for Biological Sciences
Directorate for Computer & Information Science & Engineering
Directorate for Education & Human Resources
Directorate for Engineering
Directorate for Geosciences
Directorate for Mathematical & Physical Sciences
Directorate for Social, Behavioral & Economic Sciences

Submission Window Date(s) (due by 5 p.m. submitter's local time):

January 29, 2018 - February 05, 2018
January 01, 2019 - January 22, 2019
January 1 - January 19, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

The number of MRI proposal submissions allowed per institution continues to be a maximum of three, but is now based on the dollar value of the amount requested from NSF; no more than two submissions are permitted in a newly-defined Track 1 (Track 1 proposals are those requesting from NSF $100,000[1] to less than $1 million) and no more than one submission is permitted in a newly defined Track 2 (Track 2 proposals are those requesting from NSF $1 million up to and including $4 million). Proposal submissions within the two tracks may be either for acquisition or development of a research instrument. NSF strongly values MRI proposals that seek to develop next-generation research instruments that open new frontiers of research. As a result the MRI program seeks to support development proposals in numbers (i.e., up to 1/3 of awards) consistent with recent competitions, depending on the numbers and quality of the proposals.

Emphasis has been provided to indicate that the MRI Program seeks broad representation by PIs in its award portfolio, including women, underrepresented minorities and persons with disabilities. Since diversity may be greater among early-career researchers, the MRI program also encourages proposals with early-career PIs and proposals that benefit early-career researchers.

MRI proposal submission will only be accepted within the specified submission window. It is NSF's policy that the end date of a submission window converts to, and is subject to, the same policies as a deadline date.

Information regarding collaborators and other affiliations must be separately provided as a *Single Copy Document* for each individual identified as Senior Personnel, consistent with the NSF Proposal and Award Policies and Procedures Guide (PAPPG).

Statements have been added to emphasize that an MRI research instrument need not be physically located in a conventional laboratory setting, nor does an instrument need to be physical at all. MRI continues to support distributed/networked instruments and cyberinstrumentation that is not appropriate for support through other NSF programs.

[1]Track 1 proposals requesting funds from NSF less than $100,000 will be accepted only from: a) eligible performing organizations requesting instrumentation supporting research in the disciplines of mathematics or social, behavioral and economic sciences; or b) non-Ph.D.-granting institutions of higher education requesting instrumentation supporting research in any NSF-supported disciplines.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 18-1), which is effective for proposals submitted, or due, on or after January 29, 2018.

- Use both the Request for Proposals (RFP) and the PAPPG for proposal development
- Contrary to NSF 18-513, use **PAPPG 20-1**
- The RFP contains a helpful checklist. Keep it handy!

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The application

- Project Summary
- Project Description
- References
- Budget and justification
- Biosketches
- Current/pending support
- Facilities, equipment, and other resources
- Data management plan
- Collaborators and other affiliations
- Special information and supplementary documents

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Project summary and description documents

Project summary

- One-page limit
- Contains three sections: overview, intellectual merit, broader impacts

Project description

- 15-page limit
- Contents guidance very specific to the RFP, down to the headers, and provides section length suggestions
  - Information about the proposal
  - Research activities to be enabled
  - Description of the research instrument and needs
  - Broader impacts
  - Management plan

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Budget and justification

- Non-Ph.D.-granting institutions: no cost share
- At least 70% of the requested funds must be found on the equipment line of the budget.
- MRI RFP outlines eligible and ineligible costs
- Budget justification:
  - 5-page limit
  - Requires itemized table of costs per year
  - Costs must be well-justified, reflect the scale/complexity of the proposed effort, and explain the calculation process

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Other relevant MRI proposal elements

Special information and supplementary documents

- Letter of classification of eligible institution
- Letter of commitment from the institution pledging to continue equipment operations and maintenance
- Equipment quote from vendor
- Letters from collaborators acknowledging use of the equipment

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First hurdle: Avoid Return wo/ Review!*

- Activities that fall outside the scope of either the MRI program or NSF overall;
- Any proposals submitted beyond the institution's limit;
- Non-compliant budgets;
- Missing section, "Results from Prior MRI Support";
- Missing REQUIRED supplemental documents; and
- Management Plan is absent
- **USE THE RFP CHECKLIST TO HELP AVOID THESE ERRORS!**

*List adapted from an NSF-provided presentation

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Second hurdle: Avoid basic project weaknesses!*

- Lack of institutional commitment to the project;
- Weak management plan;
- Lack of shared-use need for the requested equipment;
- Requested equipment is already reasonably accessible;
- The budget is miss-matched to the scope of work; and
- Failure to address research training potential, especially among underrepresented groups.

*List adapted from an NSF-provided presentation

Becoming competitive*

- Effectively address NSF Merit Review criteria: Intellectual Merit and Broader Impacts
- Compelling research/research training drives the request, not simply the purchase…enthusiastically describe the research work!
- How will you meaningfully contribute to the discipline, and across disciplines, in research and research training?
- MRI funding is meant to build institutional capacity; connect your proposed effort to the mission of the department/college/institution.
- The equipment: ask for what you need; no more, no less. Make sure any requested "bells and whistles" are needed.
- Strong plan for instrument use and maintenance, including a strategic use-and-downtime schedule

*Compiled from an NSF presentation, web-located awardee anecdotal information.

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Proposal strategy: start early!

- Annual competition. **Next submission window: January 1-19, 2021**
- Use this time to do your homework/research
- Discuss your project with a program officer
- Start early and retrieve required input from others on the team!
- Submit early! Errors caught ahead of the deadline can be fixed!

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Proposal strategy: research!

- Research the instrumentation
- Other research users
- Housing/maintenance
- Previous MRI awardees/instruments
- Successful proposal models
- To which NSF division/directorate should I send our proposal?

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Presentation takeaways

- Purpose: instrumentation advancing research, and enhancing research training for students
- Multi-user, shared use equipment
- Limited submission opportunity
- The novel, transformative research described in the proposal drives the instrumentation request
- Inclusion of a strong plan for use and maintenance
- Demonstrate meaningful institutional commitment to maintaining the requested equipment
- Connect with a program officer!

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MRI information resources

- Link to the Request for Proposals: https://www.nsf.gov/pubs/2018/nsf18513/nsf18513.htm
- Link to the Program's Frequently Asked Questions: https://www.nsf.gov/pubs/2015/nsf15012/nsf15012.jsp
- Recent Awards List: https://www.nsf.gov/awardsearch/advancedSearchResult?ProgEleCode=1189&BooleanElement=ANY&BooleanRef=ANY&ActiveAwards=true&#results
- Link to the Proposal & Award Policies & Procedures Guide: https://www.nsf.gov/publications/pub summ.jsp?ods key=pappg

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Questions?

Webinar topics Fall 2020

- ~~Tools for Finding Funding: PIVOT/Grants Resource Center, **October 1**~~
- ~~Finding Funding: Spotlight on the National Science Foundation Major Research Instrumentation (MRI) Program, **October 7**~~
- Common Grant Writing Pitfalls, **November 5**
- Budget Building Fundamentals, **November 11**
- Finding Funding: Spotlight Freshwater Collaborative of Wisconsin, **December 3**

Webinar topics Spring 2021

- Grants and Fellowships in the Humanities and Social Sciences, **February 4**
- Finding Funding: Spotlight the USDA, National Institute of Food and Agriculture (NIFA), **February 10**
- Analyzing RFPs for Sponsor Hot Buttons, **March 4**
- Collaborative Grantseeking: Accumulating Precious "Wins" & Avoiding Painful "Losses," **March 10**
- REJECTED!—Time to Reconsider or to Revise and Resubmit?, **April 1**
- Finding Funding: Spotlight National Endowment for the Humanities (NEH) Summer Stipends, **April 7**

NATIONAL ENDOWMENT FOR THE Humanities

USDA

United States Department of Agriculture
National Institute of Food and Agriculture

REJECTED?

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