

# National Science Foundation MAJOR RESEARCH INSTRUMENTATION (MRI)

## *The MRI Program*

NSF Day  
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**<http://www.nsf.gov/od/oia/programs/mri>**

A vertical graphic with a dark blue background and a glowing circuit board pattern at the bottom. It features the NSF logo and the text 'National Science Foundation Major Research Instrumentation (MRI)'. A list of goals is presented on the left, with a large blue arrow pointing to the right. On the right side, there are several small inset images: a large telescope, a human brain scan, a scientist in a lab, a person working at a computer, a yellow aircraft, a red aircraft, and a colorful abstract visualization.

**National Science Foundation  
Major Research Instrumentation (MRI)**

**GOALS:**

- Catalyzing new knowledge and discoveries.
- Empowering the Nation's scientists and engineers.
- Providing state-of-the-art research instrumentation.
- Enabling research-intensive teaching environments.
- Building capacity for a diverse workforce.
- Developing next generation instrumentation.
- Promoting academic private sector partnerships.

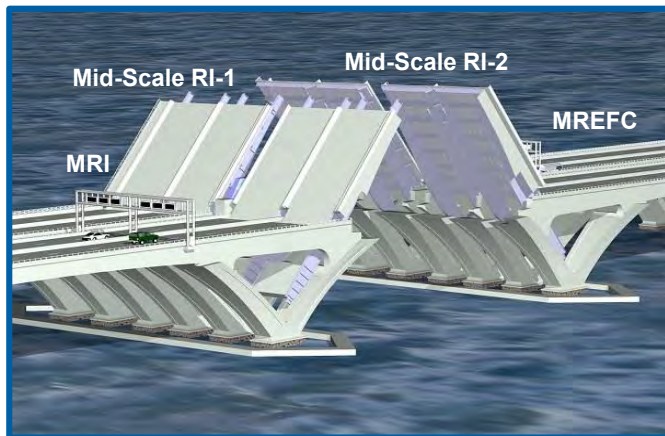
[www.nsf.gov/od/oia/programs/mri](http://www.nsf.gov/od/oia/programs/mri)

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NSF 19-013 October 15, 2018

## Dear Colleague Letter: Mid-Scale Research Infrastructure (Mid-scale RI) Opportunities



- Mid-scale RI is an NSF Big Idea to address the growing needs for RI to advance research.
- NSF-wide program will support projects in the MRI – MREFC gap (~\$6 to \$70 million range).
- RI is broadly defined, from disciplinary instrumentation to mid-scale facilities, upgrades, cyberinfrastructure, and others.

- NSF anticipates **two solicitations this fall**, pending the availability of funds: one for projects between ~\$6 M and ~\$20 M and one for ~\$20 - \$70 million.
- Requirements: Strong scientific merit & responsive to identified community need; technical and management readiness; and plan for training and workforce diversity.

Stay tuned...

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[https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf19013](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf19013)



***The Solicitation for the  
FY 2018 and FY 2019  
MRI Competitions  
(NSF 18-513) has Some  
Significant Changes wrt  
Previous Years***



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# ***Submission Window***

***A designated period of time during which proposals will only be accepted for review by NSF. 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.***





***Submission window for FY 2018  
MRI proposals was  
January 29 – February 05, 2018  
PAPPG 18-1 applied***

***FY 2019 window:  
January 01 –  
January 22, 2019  
PAPPG 18-1 (?)***



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# Major Research Instrumentation

FY 2018 and FY 2019 Solicitation

## *Selected Implementation*

### *1. Submission Criteria*

*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 NSF request.***

- *No more than two submissions are permitted in a newly-defined Track 1 (proposals requesting from NSF \$100,000<sup>[1]</sup> to less than \$1 million)*
- *No more than one submission is permitted in a newly defined Track 2 (proposals 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 seeks to support development proposals in numbers (i.e., 20-25% of awards) consistent with past competitions, depending on the numbers and quality of the proposals).*

[1] Track 1 proposals may request less than \$100,000 only from non-Ph.D.-granting institutions of higher education, or for the disciplines of mathematics or social, behavioral and economic sciences from any institution.



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# MRI: Classification of Organizations

- **Ph.D. granting institutions of higher education** are accredited colleges and universities that have awarded more than 20 Ph.D.s or D.Sci.s in all NSF-supported fields during the combined previous two academic years. Additionally, any organization that awards Ph.D. or D.Sci. in NSF-supported fields is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are post-Bachelor's degrees. → **Cost sharing at 30% of total project cost required.**
- **Non-Ph.D. granting institutions of higher education** are accredited colleges and universities (including two-year community colleges) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.
- **Non-degree granting organizations** are those that do not award Associate's degrees, Bachelor's degrees, Master's degrees, and/or Ph.D.s or D.Sci.s. Non-degree-granting organizations also include institutions of higher education that award all of their degrees outside of NSF-supported fields. → **Cost sharing at 30% of total project cost required.**



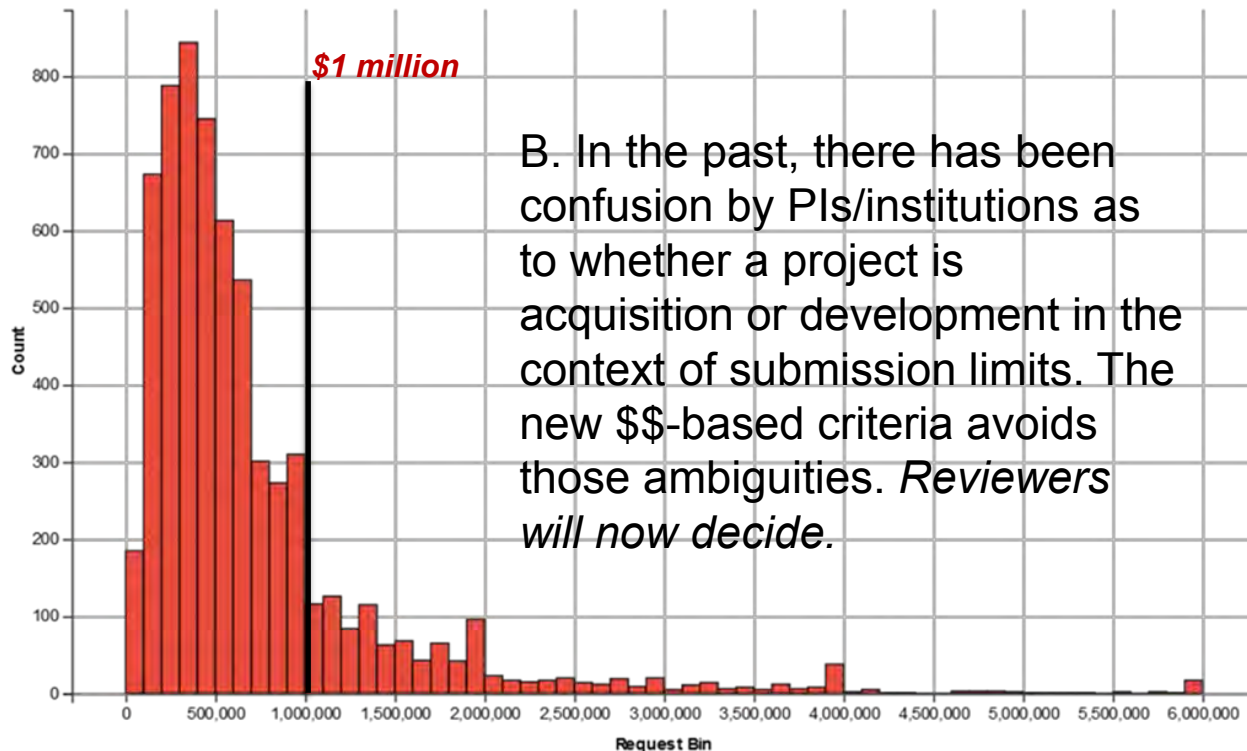
<http://www.nsf.gov/od/oia/programs/mri/>

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# Major Research Instrumentation

## Why these new submission criteria?

- A. Submission limits based on \$-value of request is a “clean” way to limit submissions:
- 85% of proposals requested under \$1M for 2010-2015
  - 90% of proposals requested under \$1.3M for 2010-2015



# Proposal Submissions by \$ requested, FY 2010-FY2015

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# *Instrument Development*

- *NSF seeks to support MRI awards that develop next-generation research instruments that open new frontiers of research.*
- *Up to 1/3 of the MRI awards are expected to support instrument development in either track.*
- *Within their submission limit, organizations are encouraged to submit proposals for innovative development projects. See solicitation guidance.*



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# Major Research Instrumentation

FY 2018 and FY 2019 Solicitation

## *Significant Changes*

### **2. Women/Underrepresented Minority PI Representation**

- Emphasis in the solicitation has been provided indicating that the “*MRI Program seeks broad representation by PIs in its award portfolio, including **women, underrepresented minorities and persons with disabilities**. Since demographic diversity may be greater among early-career researchers, the MRI program also encourages proposals with **early-career PIs.**” (Also part of the MRI-specific Review Criteria.)*



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# Major Research Instrumentation

FY 2018 and FY 2019 Solicitation:

## ***Clarification on Supported Cyber Instruments:***

- 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.*



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# *MRI Part II*

## *The Review Process*



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# Major Research Instrumentation Strategic Goals

Supports the **acquisition** or **development** of a *major research instrument* that is, in general, too costly or not appropriate for support through other NSF programs. The instrument is expected to be operational for regular research use by the end of the award period.

- Supports the **acquisition** of a shared, major, state-of-the-art instrument, thereby improving access to, and increased use of, a modern research instrument by scientists, engineers and students;

**OR**

- Supports the **development** of the next generation of major instrumentation, resulting in a new type of instrument that is more widely used, and/or opens up new areas of research and research training;

**AND**

- Enables academic departments, disciplinary & cross-disciplinary units, and multi-organization collaborations to integrate research with **research training**.



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# The MRI Program Will *Not* Support:

- **Construction, renovation or modernization of rooms, buildings or research facilities** (instruments must be able to decouple from their host environment);
- **Large, specialized experimental facilities** (constructed with significant amounts of common building material using standard building techniques);
- **General purpose and supporting equipment** (e.g., general purpose computers/laboratory equipment, fume hoods, cryogen storage systems);
- **Sustaining infrastructure and/or building systems** (e.g., electrical, plumbing, HVAC, toxic waste disposal, telecommunications);
- **General purpose platforms or environments** (e.g., fixed, non-fixed structures, manned vehicles);
- **Instrumentation used primarily for science and engineering education courses or for medical/clinical/pharmaceutical research.**



# MRI-Eligible Expenses

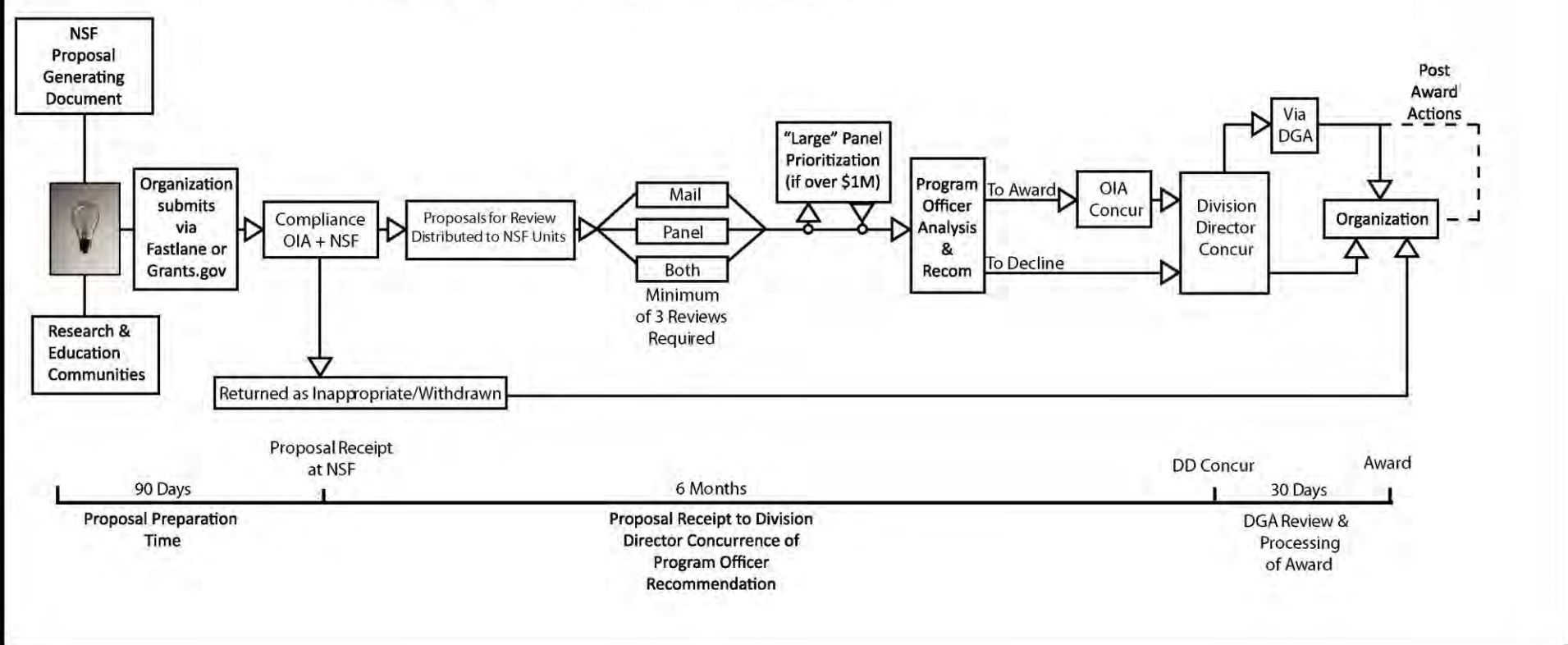
***MRI does not  
support requests  
for multiple  
instruments to outfit  
labs/facilities***



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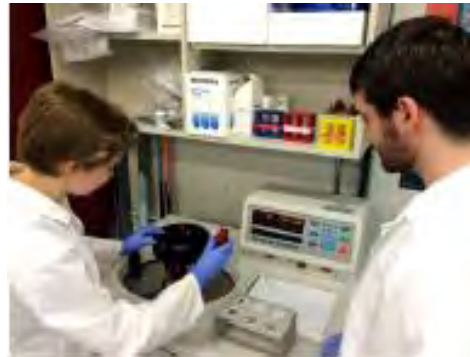
# MRI Merit Review

MRI Proposal & Award Process and Timeline



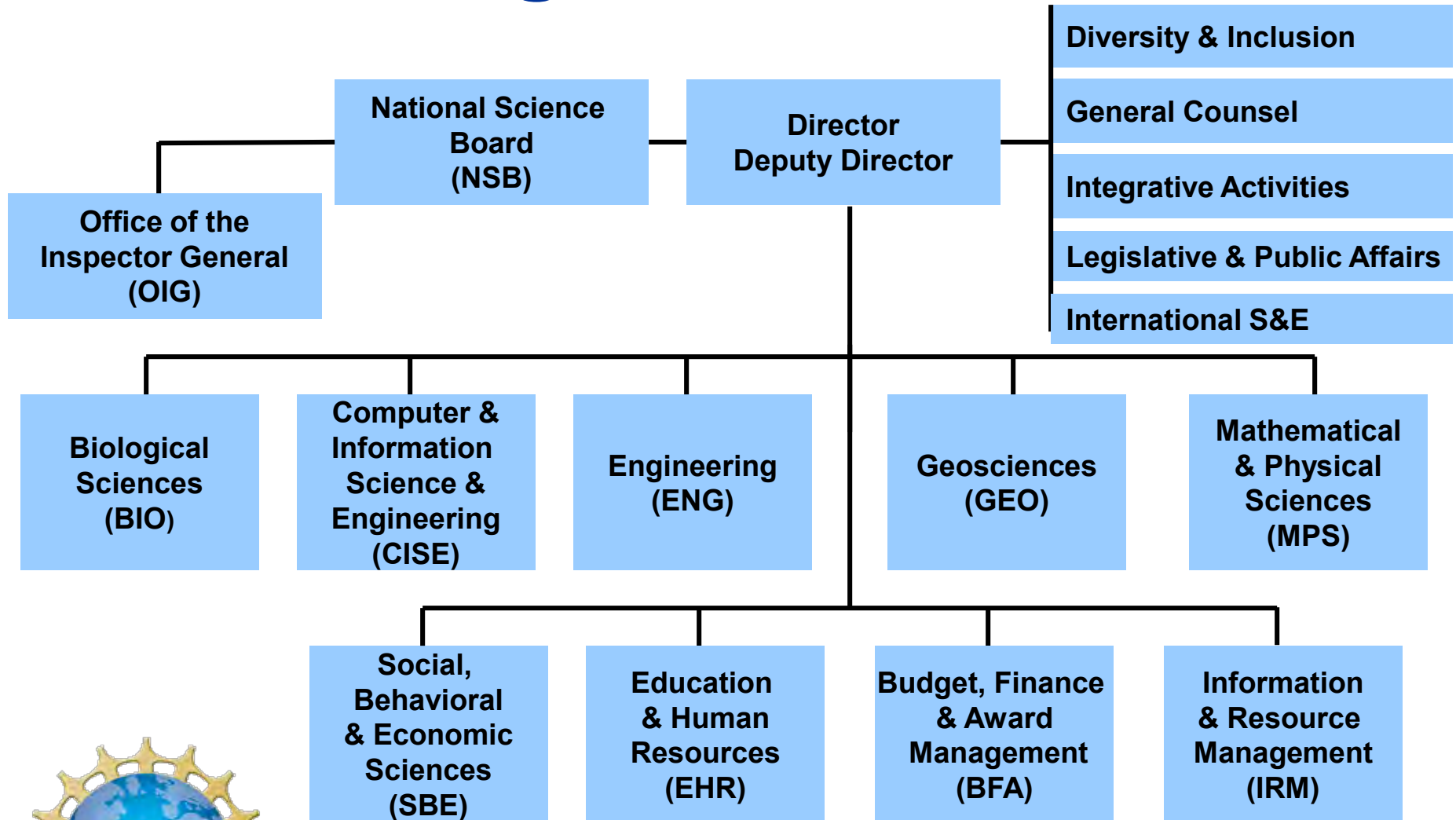
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# ***MRI Part III: Proposal “Best” Practices***



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# Finding a Home at NSF



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# *Understand NSF Before Considering a Proposal!*

- Know the NSF Website ([www.nsf.gov](http://www.nsf.gov))
- Search Recent Awards ([www.nsf.gov/awardsearch](http://www.nsf.gov/awardsearch))
- Identify appropriate funding opportunities ([www.nsf.gov/funding](http://www.nsf.gov/funding))
- Talk to Program Officers in Divisions where you fit
- Know the “Proposal and Award Policies and Procedures Guide” ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=papp](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp))
- Know program purpose, goals, and requirements
- Serve as a panelist!
- Talk to successful PIs
- Know NSF’s role compared to other Federal agencies



# MRI Proposals

*So what makes an MRI proposal competitive?*

*Note the term “competitive”, rather than “successful”!*

*Due (in part) to budget limitations, 20-25% of submitted proposals are funded*

***Good proposals may not get funded***



# MRI Proposals

*Think like a reviewer*

- *What “story” would you want to hear? **Science drives the request!***
- *If you wonder if reviewers will have a concern, almost certainly they will!*
- *MRI, like other grants programs, is a competition – what makes your proposal stand out?*



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# MRI Proposals

## *So what makes an MRI proposal competitive?*

### Build your case on its merits

What is the intellectual merit of the proposed activity?

What are the broader impacts of the proposed activity?

- Describe (enthusiastically) compelling research / research training activities to be undertaken with the instrument. *Buy/Build it and they will come is not a good reason...*
- Demonstrate how your activities will make meaningful contributions within and across disciplines in both research and research training. *We are the ones best able/positioned to do this work!*
  - Establishing a *need* is usually not enough. *What makes you unique?*
- Match your proposed effort to the mission of your institution and describe it in that context. *MRI awards build institutional capacity...*



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# MRI Proposals

## *Some Additional Thoughts...*

- Demonstrate appropriate leadership and commitment to bring the project to completion. *Being a good research scientist is one thing, being a good manager is quite another...*
- How would the project enable the integration of research and education? *MRI is a Research and Research Training program.*
- How would the project enable integrating diversity into NSF programs, projects, and activities? *Saying it will is not enough!*
- Ask for what you need, no more no less. *Bells and whistles are nice, but..*
- Avoiding pitfalls (*i.e.*, “Don’t Do This”) will not guarantee a competitive proposal. *So your proposal is technically flawless but is it compelling?*

*There is a vast range of possible approaches, strategies, and designs for your proposal.*



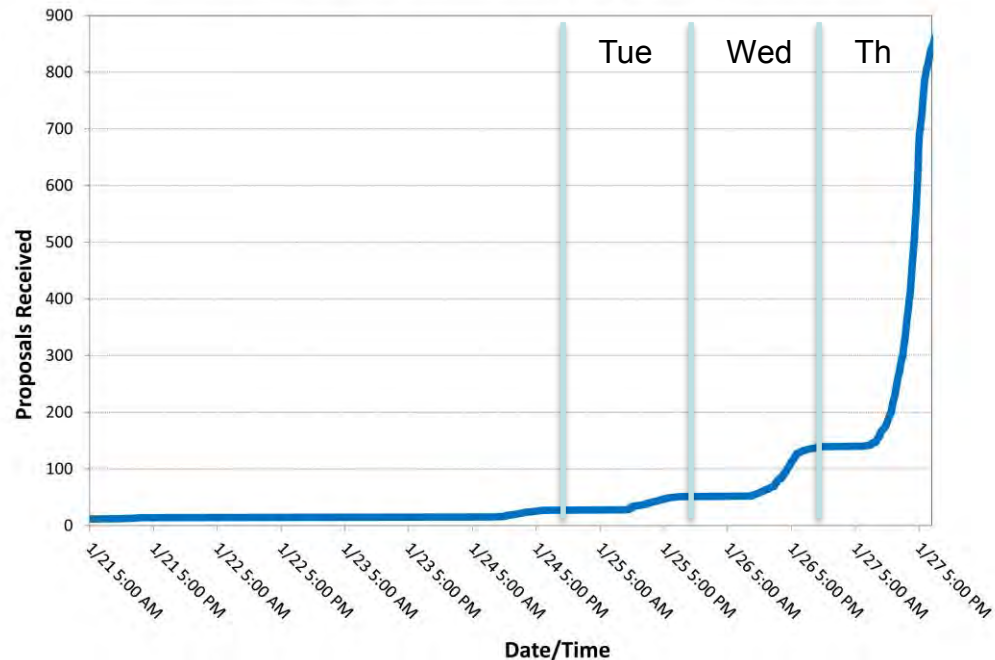


# Important Takeaway

***Submit early and check that what was received at NSF is what you intended to submit!***

***You can always revise and resubmit proposals prior to the deadline, but not afterwards!***

**FY2011 MRI Proposal Deadline: 01/27/2011, 5 PM Local Time**



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# *Thank You!*



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