

# National Science Foundation Major Research Instrumentation (MRI)

## Program Summary / 2010 Competition Overview Webcast

March 15, 2010

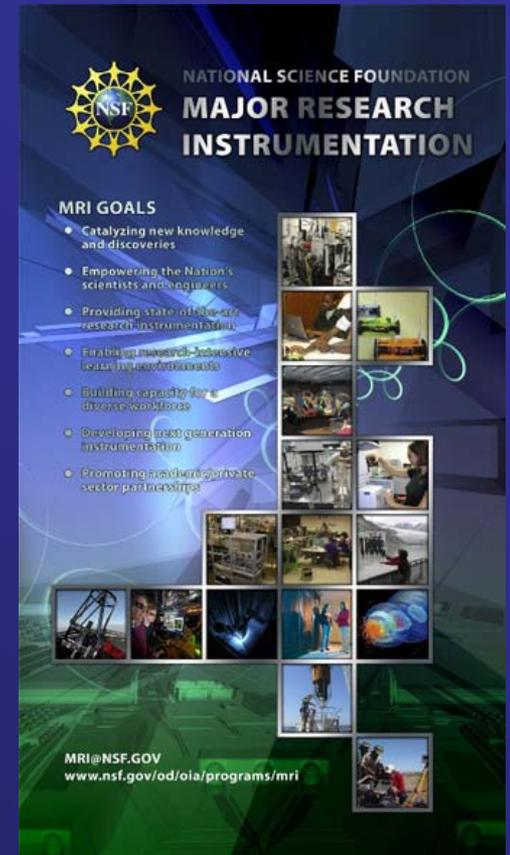
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<http://www.nsf.gov/od/oia/>



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**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 learning environments
- Building capacity for a diverse workforce
- Developing next generation instrumentation
- Promoting divisions/private sector partnerships

MRI@NSF.GOV  
[www.nsf.gov/od/oia/programs/mri](http://www.nsf.gov/od/oia/programs/mri)

The poster features a grid of small images showing various research instruments and laboratory settings, set against a background of blue and green abstract patterns.

# NSF Overview

Located in Arlington, VA

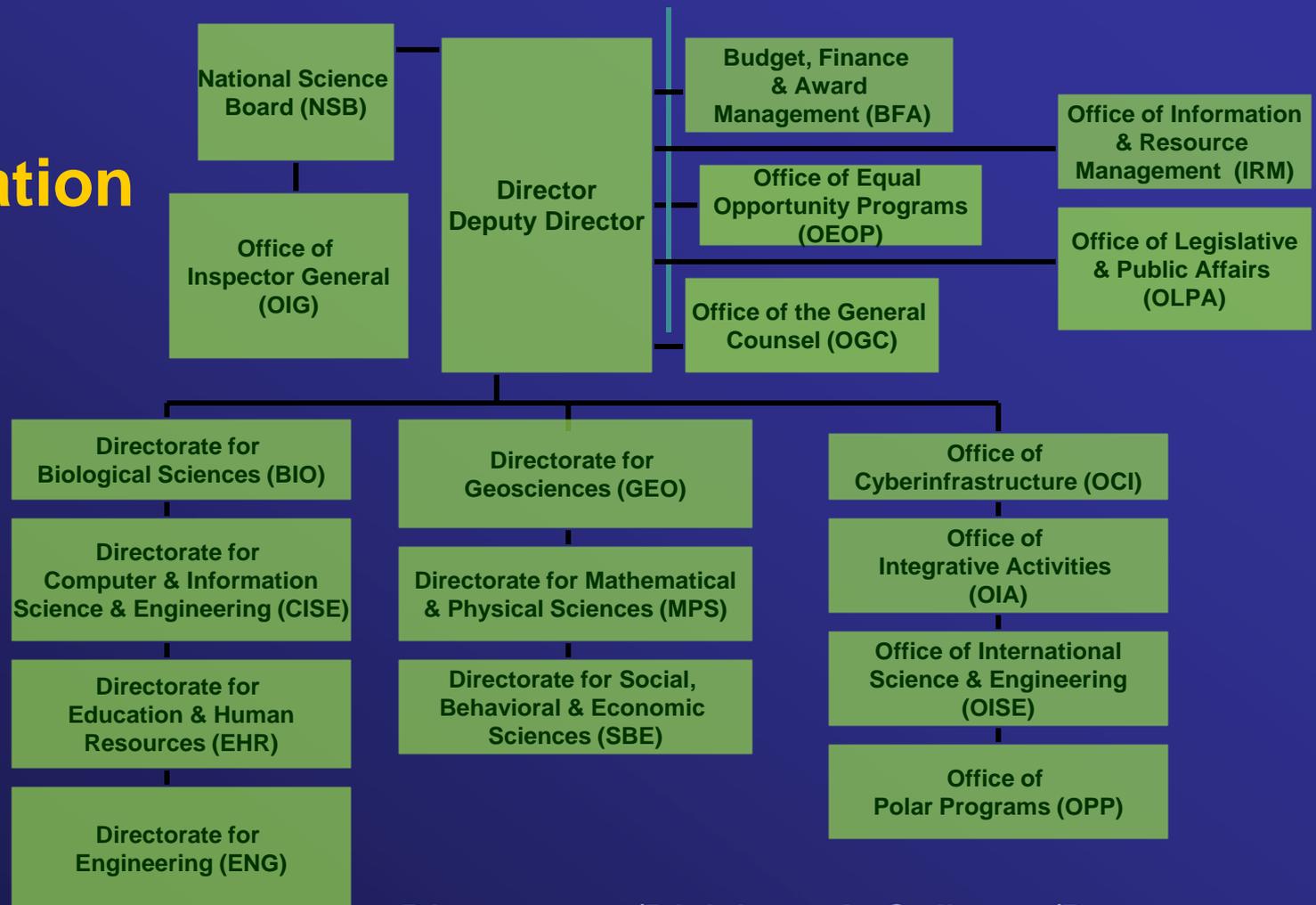


Located at <http://www.nsf.gov/>



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# NSF Organization



Directorates/Divisions → Colleges/Departments



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# NSF Overview

## Strategic Plan FY 2006-2011



**VISION:** Advancing discovery, innovation, and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering.

### GOALS:

**Discovery:** Advancing frontiers of knowledge

**Learning:** S&E workforce and scientific literacy

**Research Infrastructure:** Advanced instrumentation and facilities

**Stewardship:** Supporting excellence in S&E research and education



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# NSF Overview

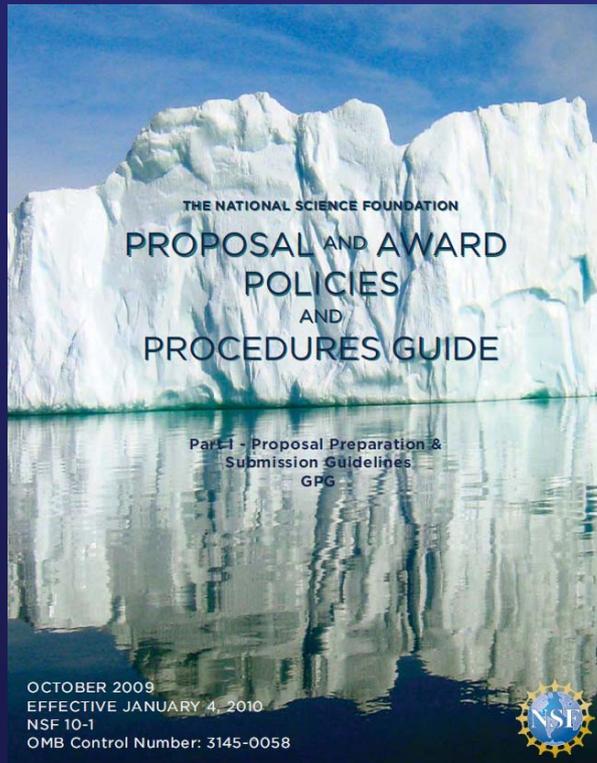
- **Fulfills mission chiefly by issuing limited-term (3-5 year) grants**
- **Primarily community driven – “bottom up”**
- **Currently funds about 11,000 new awards per year, out of ~40,000 submitted**
- **Fund research proposals deemed most meritorious during the review process**
- **Merit-review by panels and mail reviews**



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# FastLane Submitted Proposals

## *The Grant Proposal Guide (GPG)*



Proposal & Award Policies & Procedures Guide (PAPPG) describes the proposal and award process

- **Part 1 - Grant Proposal Guide (GPG)** provides guidance for preparation and submission of NSF proposals
- Part 2 – Guidance on managing and monitoring awards

**Note:** A revised version of the PAPPG, NSF 10-1, was issued on October 1, 2009. Proposals responding to a funding opportunity with a due date on or after January 4, 2010 must now comply with the guidelines in NSF 10-1.

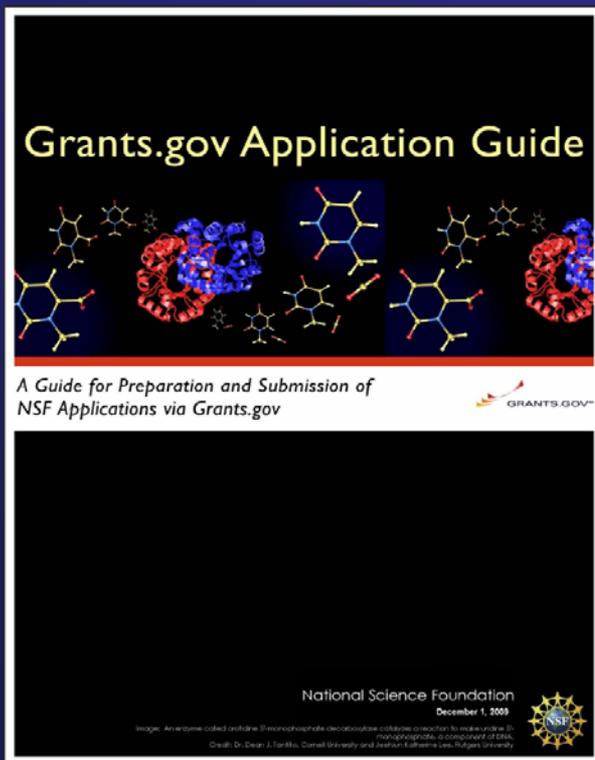
[http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=papp](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp)



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# Grants.gov Option

## Grants.gov Application Guide



The NSF Grants.gov Application Guide describes the preparation of proposals via Grants.gov.

Simultaneously submitted collaborative applications must be submitted via FastLane because Grants.gov does not currently support this type of submission.

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



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# NSF Funding Opportunities

- **Program Description**

Published only on the NSF website.

Proposals must follow GPG / Grants.gov instructions.

- **Program Announcement**

Published NSF document describing the program.

Proposals must follow GPG / Grants.gov instructions.

- **Program Solicitation**

Published document with additional restrictions and/or requirements.

Proposals must follow both the solicitation and the GPG / Grants.gov instructions (solicitation guidance takes precedence)

- **Dear Colleague Letter**

Notifications of opportunities or special competitions for supplements to existing NSF awards.



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# *The Major Research Instrumentation (MRI) Program<sup>1</sup>*

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

<sup>1</sup>The MRI program is coordinated by the Office of Integrative Activities (OIA) in collaboration with Directorates and Offices across NSF.



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# MRI: Overall Goals

- Supporting the **acquisition** of major state-of-the-art instrumentation, thereby improving access to, and increased use of, modern research and research training instrumentation shared by the Nation's scientists, engineers, and graduate and undergraduate students;
- Fostering the **development** of the next generation of major instrumentation, resulting in new instruments that are more widely used, and/or open up new areas of research and research training;
- Enabling academic departments, disciplinary and cross-disciplinary units, and multi-organization collaborations to **integrate research with education**;
- Supporting the acquisition and development of research instrumentation that makes use of, advances, and/or expands the Nation's **cyberinfrastructure** and **high performance computing capability**;
- Promoting substantive and meaningful **partnerships for instrument development** between the academic and private sectors



# The MRI Program Does 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.**
- **Multiple pieces of equipment** that serve to outfit a laboratory.



# MRI Proposals: The Basics

- **Submission limit:**

- 3 per organization: *If three proposals are submitted, at least one of the proposals must be for instrument development.*

- **Cost-sharing** at the level of 30% of the ***total project cost*** is required for Ph.D.-granting institutions and non-degree-granting organizations.

- Cost-sharing is not required for non-Ph.D. granting institutions***

- At the time of submission, PI's are asked to identify an NSF division(s) to review proposal – NSF reserves the right to place proposals in appropriate divisions for review (***OIA should not be selected***)

- Restrictions on organization submission eligibility (see solicitation NSF 10-529)



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# MRI: Eligible Organizations

- **Ph.D. granting institutions of higher education:** 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 has awarded a Ph.D. or D.Sci. in NSF-supported fields during the combined previous two academic years is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are Ph.D.s or D.Sci.s.
- **Non-Ph.D. granting institutions of higher education:** 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:** Organizations 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.



# MRI: Submission Eligibility

- 1. Institutions of Higher Education:** Ph.D.-granting and non-Ph.D.-granting
- 2. Not-for-profit, non-degree-granting domestic U.S. organizations:** e.g., independent museums, science centers, observatories, research labs...
- 3. a. Legally incorporated, not-for-profit consortia:** including two or more submission eligible organizations as 1) and 2) above.  
**b. Organizations in 1) and 2) above may submit proposals on behalf of other consortia:** 3(b) proposals must identify PI/co-PIs from at least two submission-eligible organizations.
- 4. Commercial U.S. Organizations:** may serve as private sector partners but may not submit proposals as a lead organization.

- Note: Proposals for acquisition / development of instruments to be located at a facility of another Federal agency or one of their FFRDCs must be submitted by an MRI-eligible organization as described in item 3b above.
- Note: The MRI program will not accept proposals that augment the scope of an NSF MREFC project currently receiving funding through the MREFC account



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# MRI: Cost Sharing

- Required at the level of 30% of the **total project cost** for Ph.D.-granting institutions of higher education and for non-degree-granting organizations.
- Non-Ph.D.-granting institutions of higher education are exempt.
- Is an eligibility requirement, not part of the review process.
- Must come from eligible MRI expenses.
- Applies to portions of the budget that go to non-exempt organizations, including through subawards.
- Must appear on the budget page (FastLane: Line M, Grants.gov: Total non-Federal funds) of the submitting organization and documented in supplementary letter.



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# MRI Program Solicitation

## NSF 10-529

- Proposal Submission Deadline: April 21, 2010 (5 p.m. local time)
- Proposals considered for **Instrument Acquisition** (3 years) or **Instrument Development** (5 years)
- Number of Anticipated awards based on anticipated FY10 budget of **\$90 million**<sup>1</sup>: ~150 awards
- Up to \$40 million reserved for \$1-4 million awards<sup>1,2</sup>
- Anticipated award size: **\$100,000 to \$4 million** for either acquisition or development proposals (no minimum for proposals from non-Ph.D. granting institutions or proposals for fields of mathematical and social, behavioral and economic sciences)

<sup>1</sup>Subject to availability of funds <sup>2</sup>Subject to proposal quality



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# MRI Program Solicitation

## NSF 10-529

### *Significant Changes (w.r.t. NSF 09-502)*

- Intellectual Merit and Broader Impacts must be in separate paragraphs in Project Summary
- Clarifications provided for organization type and organization eligibility
- Clarification provided on subawards in terms of submission limits and cost sharing
- Clarification provided on appropriate requests for more than one instrument
- Clarification provided on cost-sharing requirements
- The option to use Grants.gov is provided



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***Submitting  
Competitive  
Proposals to the MRI  
Program***



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# MRI-FY08<sup>1</sup>

Major Research Instrumentation – FY08

**2008 Award  
Snapshot - Overall**

**Number Reviewed: 810**

**Dollars Requested : \$515.8 million**

**Number of Awards: 224 (39 DEV, 185 ACQ)**

**MRI Amount Awarded: \$93.2 million**

**NSF Amount Awarded: \$101.0 million**

**Overall Success Rate: 27.7%**

**Mean Award: \$451,000**

**Median Award: \$330,000**

**Number of Institutions that Participated: 449**

**Number of Institutions Awarded: 184**

<sup>1</sup>Last MRI competition not affected by one-time funding from the American Recovery and Reinvestment Act



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# MRI-FY08<sup>1</sup>

Major Research Instrumentation – FY08

## 2008 Award Snapshot – By Institution Type

	Ph.D.	non-Ph.D.	Non-degree	MSI
# reviewed	472	304	34	74
Mean request	\$765 K	\$430 K	\$704 K	\$555 K
Median request	\$568 K	\$323 K	\$559 K	\$397 K
# awards	129	84	11	24
NSF \$ awarded	\$73.7 M	\$22.4 M	\$4.8 M	\$9.8 M
MRI \$ awarded	\$67.8 M	\$21.2 M	\$3.9 M	\$9.3 M
Success rate	27.3%	27.6%	32.4%	32.0%
Mean award	\$571 K	\$267 K	\$440 K	\$407 K
Median award	\$465 K	\$211 K	\$474 K	\$309 K



<sup>1</sup>Last MRI competition not affected by one-time funding from the American Recovery and Reinvestment Act

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# MRI-FY08<sup>1</sup>

Major Research Instrumentation – FY08

**2008 Award  
Snapshot – EPSCoR**

**Number of Proposals Reviewed: 181**

**Dollars Requested : \$116.5 M**

**Number of EPSCoR-eligible Awards: 50**

**Amount Awarded to EPSCoR-eligible Awards: \$20.2 M**

**EPSCoR Amount Awarded to MRI Awards: \$2.0 M**

**EPSCoR-eligible Success Rate: 27.6%**

**Eligible proposals co-funded by EPSCoR: 17**

**Mean award: \$404,000**

**Median award: \$295,000**



<sup>1</sup>Last MRI competition not affected by one-time funding from the American Recovery and Reinvestment Act

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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 MRI Program Officers in Divisions/Offices where you fit
- Know the Grant Proposal Guide / Grants.gov Application Guide
- Know program purpose, goals, and requirements
- Serve as a panelist!
- Talk to successful PIs
- Know NSF's role compared to other Federal agencies



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# MRI Proposals

*What makes an MRI proposal competitive?*

***Avoid pitfalls that may preclude a proposal from reviewing well or being reviewed at all!***

Proposals must comply with the MRI solicitation / GPG or they are subject to Return Without Review!



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# MRI Proposals

*What makes an MRI proposal fail before it is reviewed?*

- Avoid reasons for Return without Review as listed on *page 14* of the current MRI solicitation (NSF 10-529)
- Utilize the checklist on *page 13* of the current MRI solicitation (NSF 09-529).
- Submit your proposal early, and check the *submitted* version for errors. *You can correct errors prior to the April 21 5 p.m. deadline.*
- NSF must receive your proposal before the deadline!



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# MRI Proposals

## *What makes an MRI proposal fail during the review?*

- Proposals that do not demonstrate adequate institutional commitment.
- Proposals that do not adequately demonstrate how and by whom the instrument will be utilized, operated and maintained – i.e., proposals without a strong management plan.
- Proposals that do not demonstrate shared-use within the institution, and/or among institutions.
- Proposals that request instrumentation that is reasonably accessible.
- Proposals that do not match the budget to the scope of the project.
- Proposals that do not describe research training, particularly among groups underrepresented in science and engineering.

**These proposals will be *not* review well!**



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# MRI Proposals

## *But what can make an MRI proposal actually competitive?*

- Simply avoiding the known pitfalls (i.e “Don’t Do This”) will not guarantee a competitive proposal.
- The opposite of “Don’t Do This” is a vast range of possible approaches, strategies, and designs for your proposal.
- NSF program officers can’t tell PIs how to construct a competitive proposal – the PI has to make their own decisions on how to craft their proposal.



# MRI Proposals

## *But what can make an MRI proposal actually competitive?*

- Describe (enthusiastically) compelling research / research training activities to be undertaken – more of the same and/or keeping up may be adequate but not compelling.
- Demonstrate how your activities will make meaningful contributions within and across disciplines in both research and research training.
- Match the budget / requested resources to the scope of the project. Research / training needs should drive the request and budget for the instrument.
- Justify the need for personnel and clearly define the role of each member of the team. Demonstrate appropriate leadership and commitment to bring the project to completion.
- Match your activities to the mission of your institution and describe it in that context.
- Address the review criteria listed on pages 15-16 of the current MRI solicitation.



*Thank You!*



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