

National Science Foundation

Major Research Instrumentation (MRI)

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



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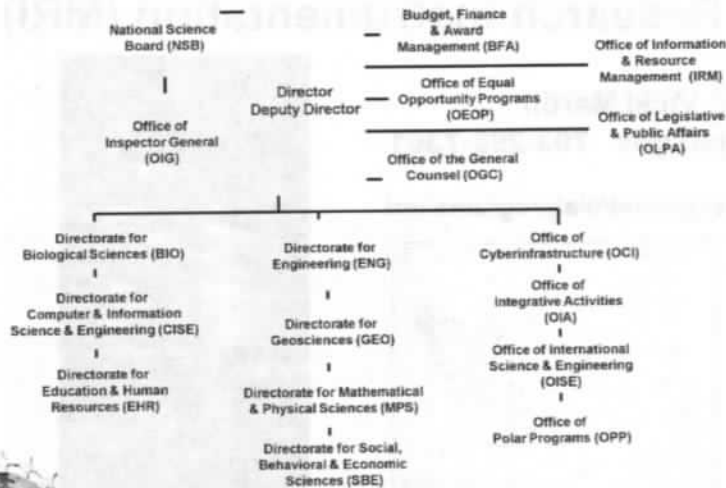
NSF Overview

Physically located in Arlington, VA
Virtually located at <http://www.nsf.gov/>

- An independent Federal agency
- Created by Congress in 1950 with a mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."
- Annual budget of about \$7 billion
- Funding source for ~20% of all Federally supported basic research in America's colleges & universities.
 - Most support provided through limited-term (3-5 year) grants, mostly to individual PIs
 - NSF supports ~11,000 new awards per year, out of ~45,000 submitted
 - Merit-review (panels and ad hoc) system used



Finding a Home at NSF



Directorates/Divisions → Colleges/Departments

Proposal Submission

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

NSF 11-1: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp

Grants.gov Application Guide



Describes the preparation of proposals via Grants.gov

Simultaneously submitted linked collaborative proposals must be submitted via FastLane

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide



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Major Research Instrumentation (MRI)

Strategic Goals: Proposals Should Address Them!

⊗ Supporting the **acquisition** of major state-of-the-art instrumentation, thereby improving access to, and increased use of, modern instrumentation shared by the Nation's scientists, engineers, and graduate and undergraduate students;

OR

⊗ 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;

AND

⊗ Enabling academic departments, disciplinary and cross-disciplinary units, and multi-organization collaborations to create well-equipped research environments that **integrate research with education**;



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Programs

Major Research Instrumentation (MRI)

Additional Goals:

⊗ Supporting the acquisition and development of research instrumentation that makes use of, advances, and/or expands the Nation's cyber-infrastructure and/or high performance capability:

- ❖ Support development of computational and data-intensive science and engineering programs, or
- ❖ Provide pathways to regional and national infrastructure.

⊗ Promoting substantive and meaningful partnerships for instrument development between the academic and private sectors:

- ❖ Create innovative ideas or products with wide scientific or commercial impact.



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Major Research Instrumentation (MRI)

Acquisition versus Development

• Acquisition:

- ❖ Little/no modification from existing vendors/sources
- ❖ May involve assembly of readily available components
- ❖ Rapid implementation
- ❖ Limited personnel, limited risk

• Development:

- ❖ Capabilities not otherwise available – accuracy, reliability, resolving power, throughput, sample capacity, flexibility...
- ❖ Design, construction, testing → longer timescales, higher risk (mitigation)
- ❖ Often require more personnel
- ❖ Does not include standard upgrades, simple assembly, porting of application software, development of technologies, products or techniques



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

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.



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MRI Proposals – The Basics

- **Restrictions on organization submission eligibility** - see solicitation
- **Submission limit¹**- Three (3) per organization: *If three proposals are submitted, at least one of the proposals must be for instrument development.*
- **Request size from NSF** - \$100,000-\$4 million from all eligible organizations; < \$100,000 exception for certain disciplines and from non-Ph.D.-granting institutions.
- **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.**
- **Merit Review** - 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 the appropriate division(s) for review.

¹Proposals that violate this limit are subject to return without review



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MRI: Organizations Eligible to Submit Proposals

1. **Institutions of higher education** acting on behalf of their faculty members, that are accredited in and have a campus in the United States, its territories or possessions.
2. **Not-for-profit, non-degree granting domestic U.S. organizations** that include (but are not limited to) independent museums and science centers, observatories, research laboratories, professional societies, and similar organizations that are directly associated with the Nation's research or educational activities. These organizations must have an independent, permanent administrative organization (e.g. an office of sponsored research) located in the United States, its territories or possessions, and have 501 (c)(3) tax status.
3. **Legally incorporated, not-for-profit consortia** including two or more submission eligible organizations as described in items (1) and (2) above. Such a consortium is one with an independent administrative structure (e.g. an office of sponsored research) located in the United States, its territories or possessions and 501 (c)(3) tax status.



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.
- **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.



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2011 MRI Award Snapshot - Overall

| |
|--|
| Number Reviewed: 859 (201 DEV, 658 ACQ) |
| Dollars Requested: \$576.4 million |
| Mean Dollars Requested: \$671,000 |
| Median Dollars Requested: \$477,000 |
| Number of Awards: 187 (45 DEV, 142 ACQ) |
| MRI Amount Awarded: \$88.1 million |
| NSF Amount Awarded: \$100.2 million |
| Overall Success Rate: 21.8% |
| Mean Award: \$536,000 |
| Median Award: \$433,000 |
| Number of Institutions that Participated: 462 |
| Number of Institutions Awarded: 169 |



2011 MRI Award Snapshot By Institution Type

| | Ph.D. | non-Ph.D. | Non-degree |
|----------------|---------------|---------------|--------------|
| # reviewed | 506 (30% DEV) | 312 (11% DEV) | 41 (29% DEV) |
| Mean request | \$784 K | \$453 K | \$934 K |
| Median request | \$590 K | \$341 K | \$761 K |
| # awards | 104 | 74 | 9 |
| NSF \$ awarded | \$70.5 M | \$24.5M | \$5.2 M |
| MRI \$ awarded | \$61.4 M | \$21.7 M | \$5.0 M |
| Success rate | 20.6% | 23.7% | 22.0% |
| Mean award | \$678 K | \$331 K | \$580 K |
| Median award | \$523K | \$312 K | \$472 K |



2011 MRI Award Snapshot - EPSCoR

| |
|--|
| Number of Proposals Reviewed: 199 |
| Dollars Requested : \$124.8 M |
| Number of EPSCoR-eligible Awards: 50 |
| EPSCoR-eligible Success Rate: 25.1% |
| Amount Awarded to EPSCoR-eligible Awards: \$25.8 M |
| Eligible proposals co-funded by EPSCoR: 18 |
| EPSCoR Awarded to EPSCoR-eligible Awards: \$3.9 M |
| Mean award: \$515,000 |
| Median award: \$390,000 |



1998 - 2011 MRI Award Snapshot¹

| FY | # Proposals | \$ Requested | # Awards | MRI Funding | Total NSF Funding ² |
|---------------------|------------------------------------|---|------------------------------------|--|--|
| 1998 | 479 | \$248.5 | 165 | \$49.5 | \$56.4 |
| 1999 | 472 | \$261.5 | 166 | \$49.5 | \$56.8 |
| 2000 | 475 | \$252.0 | 163 | \$49.5 | \$54.7 |
| 2001 | 741 | \$305.5 | 311 | \$74.6 | \$78.7 |
| 2002 | 691 | \$296.3 | 279 | \$75.7 | \$81.3 |
| 2003 | 757 | \$351.2 | 280 | \$83.2 | \$91.0 |
| 2004 | 838 | \$421.4 | 327 | \$109.1 | \$112.9 |
| 2005 | 784 | \$473.0 | 256 | \$88.8 | \$95.6 |
| 2006 | 769 | \$427.4 | 233 | \$88.2 | \$97.0 |
| 2007 | 774 | \$478.3 | 222 | \$89.7 | \$96.9 |
| 2008 | 810 | \$515.8 | 224 | \$93.2 | \$101.0 |
| 2009 ³ | 2,020 | \$1,715.9 | 651 | \$398.9 | \$405.6 |
| 2010 ^{4,5} | 939 ⁵ (41) ⁴ | \$626 ⁵ (\$6.3) ⁴ | 171 ⁵ (29) ⁴ | \$86.8 ⁵ (\$4.1) ⁴ | \$94.8 ⁵ (\$4.1) ⁴ |
| 2011 | 859 | \$404.3 | 187 | \$88.1 | \$100.2 |
| TOTAL: | 11,449 | \$6,783.4 | 3,664 | \$1,428.9 | \$1,527.0 |

¹includes only awards submitted directly to MRI program.

²includes MRI funds and contributions from Directorates and Offices.

³includes one-time appropriation under ARRA.

⁴includes 29 awards and \$4.1M awarded to MRI RAPID Proposals.

⁵includes \$1.4M in FY11 MRI Funds and \$300K in other FY11 NSF Funds.



MRI Program Solicitation NSF 11-503

- Proposals considered for **Instrument Acquisition** (3 years) or **Instrument Development** (5 years)
- Number of Anticipated Awards** based on anticipated FY12 budget of **\$90 million¹**:
 - ~150 awards overall¹
 - (up to \$35 million for \$1-4 million awards^{1,2})
- 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)

¹Subject to availability of funds ²Subject to proposal quality



MRI Program Solicitation NSF 11-503

Significant Changes

- Inclusion of voluntary committed cost sharing is prohibited.
- All proposals must describe **plans for data management** and sharing of products of research, or assert the absence of need for such plans.
- Guidance for proposals that locate instruments at an organization other than the submitting organization.
- Categorization of the requested instrument using codes provided.
- Organization commitment letter must list previous MRI awards to organization from the past five years.
- Requirement for "project outcomes report" available to public 90 days following the expiration of the award.

