



National Science Foundation Major Research Instrumentation Program Internal Review and Selection

Internal Competition Submission Deadline: 5:00pm on Tuesday, September 29

APPLICATION GUIDELINES

Purpose

The National Science Foundation's FY21 proposal submission window for the Major Research Instrumentation (MRI) grant program is January 1-January 19, 2021. Additional information regarding the program, including full proposal guidelines, may be found here:

https://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=5260&ods_key=nsf18513

The NSF MRI grant program allows only **three** proposal submissions per institution: two Track 1 proposals (with amounts between **\$100,000 and \$999,999**) and one Track 2 proposal (for **amounts from \$1 million to \$4 million**). Both tracks 1 and 2 can now be used for **either** instrument acquisition or development. For the past several competition cycles, UTC has had more than three faculty teams who wanted to pursue these grants. This year the ORSP will be coordinating an internal review and selection process.

How to Apply

You must submit an internal proposal via email to orsp@utc.edu no later than **Tuesday, September 29 at 5:00 PM**.

FULL APPLICATION:

The internal proposals for **both Track 1 and Track 2 proposals** should include:

1. MRI Internal Selection Competition Proposal Cover Page (Attachment B)
2. Project Summary (**4 pages**) that includes the following information in this sequence:
 - a) Name/description of the instrumentation to be acquired/developed, and justification of why it should be viewed as a priority for UTC;
 - b) Description of how this instrumentation proposal meets MRI program goals:
 - Improved institutional capabilities to conduct leading-edge research;
 - Research experiences for undergraduate students using leading-edge capabilities, and
 - Broadened participation in science and engineering research by women, underrepresented minorities, and persons with disabilities;
 - c) Description of the instrumentation's potential to advance knowledge and enable new research activities, including anticipated outcomes;
 - d) Description how the instrumentation will be shared, and address whether the instrumentation will be included in a new or existing UTC core facility;
 - e) Management plan with (1) sufficient infrastructure and technical expertise to allow effective usage of the instrument and (2) organizational commitment to operations and maintenance;
 - f) Estimated total cost of the project.
3. Biosketches of the Lead & Co-PIs in NSF's new format – 2-page maximum for each individual. You can access the template [here](#).
4. Current and Pending Support list for the Lead and Co-PIs in NSF's new format. You can access the template [here](#).

- Include all active, pending and planned extramural research grants.
 - Include funding agency, grant numbers, dates of duration, and total direct costs.
5. For Resubmissions only: If you have previously submitted an MRI proposal to NSF and wish to revise and resubmit that proposal, you must include a copy of the reviewers' comments (from Fastlane) and a 1-page description of your plan to address reviewers' comments to strengthen the proposal for resubmission.

Additional requirements for Development proposals (Regardless of Track) (1 page):

- a) Demonstrate the need for the proposed instrumentation;
- b) Discuss technical expertise for design and construction of instrument; and
- c) Include name(s) and anticipated contribution(s) of any private sector partners

Proposal Review and Selection

The review and selection process will take place under the auspices of the Office of the Vice Chancellor for Research. The VCR will engage an ad hoc review panel with appropriate expertise to make a recommendation for which proposals should move forward. The VCR makes the final decision regarding which MRI proposals will be submitted to NSF by UTC.

It is important to note that the review panel is fully aware that they are reviewing an abstract of a project, and not a fully developed proposal. Although the evaluation criteria from the full guidelines will be used to evaluate the abstract, it is understood that a thorough discussion of each criterion will not be possible given space restraints. Please use your best judgment when preparing your abstract and include the information that you feel will be most relevant and helpful to the panel when making their decision.

Applicants will be notified of the final decision no later than October 23, 2020.

NSF Major Research Instrumentation (MRI) Information Sheet Acquisition Proposals

Program Title: Major Research Instrumentation Program (MRI)

Program Website: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5260

A. Synopsis of Program

NSF's MRI program serves to increase access to shared scientific and engineering instruments for research and research training. This program provides an opportunity to acquire major instrumentation that supports the research and research training goals of the University and that may be used by other researchers regionally or nationally. This program especially seeks to improve the quality and expand the scope of research and research training in science and engineering, by providing shared instrumentation that fosters the integration of research and education in research-intensive learning environments.

MRI provides support to acquire critical research instrumentation without which advances in fundamental science and engineering research may not otherwise occur. MRI also provides support to develop next-generation research instruments that open new opportunities to advance the frontiers in science and engineering research. Additionally, an MRI award is expected to enhance research training of students who will become the next generation of instrument users, designers and builders. An MRI proposal may request up to \$4 million for either acquisition or development of a research instrument. Each performing organization may submit in revised "Tracks" as defined below, with no more than two submissions in Track 1 and no more than one submission in Track 2.

- **Track 1:** Track 1 MRI proposals are those that request funds from NSF greater than or equal to \$100,000 and less than \$1,000,000.
- **Track 2:** Track 2 MRI proposals are those that request funds from NSF greater than or equal to \$1,000,000 up to and including \$4,000,000.

B. MRI Program Goals

The goal of the Major Research Instrumentation (MRI) Program is to increase access to shared-use/multi-user instrumentation for scientific and engineering research and research training. MRI is intended to be a capacity-building program that builds research capabilities across diverse institution types (institutions of higher education and not-for-profit scientific/engineering research organizations)

MRI supports instrumentation across NSF's Directorates and Divisions. The Program focuses on multi-user/shared instrumentation that often supports research needs across disciplinary boundaries. The MRI Program is intended to provide flexibility to the research community to select the most appropriate NSF Division(s) to advance their shared-use instrumentation needs.

The MRI Program provides for state-of-the-art instruments through acquisition from vendors and development of next generation research instruments that advance the state-of-the-art in science and engineering research. For development proposals the Program seeks to leverage the strengths of private sector partners to build instrument development capacity at MRI submission-eligible organizations.

C. MRI Acquisition Program Scope

An MRI proposal may request support for the acquisition or development of a research instrument or components that when combined serve as an integrated research instrument. An MRI-supported instrument is intended to serve multiple users both in research and in the training of the next generation of instrument users and/or developers. 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 cyber instrumentation that is not appropriate for support through other NSF programs.

Instrument Acquisition

The science and engineering research enterprise relies on the availability of modern instrumentation, much of which can be acquired with little or no modification from existing sources. An MRI acquisition proposal is characterized by a purchase or upgrade of a generally available, yet sophisticated, instrument with little or no modification and risk. MRI does not support the lease/rental of a research instrument, but the purchase of a currently leased instrument at fair market value may be considered.

Instrument Development

A development proposal should demonstrate the need for a new or extensively upgraded instrument with new performance, enabling enhanced or potentially transformative research opportunities, open up new areas of research and research training and/or have potential as a commercial product. "Performance" may include, for example, accuracy, reliability, resolving power, throughput speed, sample capacity, flexibility of operation, breadth of application, user-friendliness, and/or new types of measurement or information gathering. MRI development efforts typically require longer timescales for completion than acquisition efforts, and involve design, construction, testing and commissioning such that the equipment cost may not represent the largest portion of the budget. A development proposal also tends to involve greater risk to complete, requiring a risk mitigation plan.

A development project should lead to a stable multi-user instrument at the end of the award period that will serve multiple researchers for an extended period of time. A development proposal with a commercial partner(s) must be substantive, meaningful and build capacity for instrument development within MRI submission-eligible organizations; a proposal that "outsources" the development to the commercial partner will be considered to be an acquisition proposal by the MRI program. A development proposal must describe the improved performance of the new instrument over existing options and the expected impact of this new instrument on the broader research community.

The MRI program will NOT support proposal requests for any of the following:

- *The MRI program does not consider the acquisition of components simply combined in a new system, the mere purchase of an upgrade, early-phase enabling technology development, or the development of devices, products or techniques/protocols to constitute instrument development.*
- *The purchase of a computer(s) and the subsequent porting of application-specific software also does not constitute instrument development.*
- *An instrument that augments an **NSF Major Research Equipment and Facilities Construction (MREFC)** project unless the project is receiving operations funding outside of the MREFC account. A list of such facilities can be found at <https://nsf.gov/bfa/lfo/>.*
- *Acquisition or development of an instrument involving another Federal agency or one of their **Federally Funded Research and Development Centers (FFRDCs)** must be submitted as a consortium proposal by an MRI submission-eligible organization*
- *Construction, renovation or modernization of rooms, buildings or research facilities - this category refers to the space where sponsored or unsponsored research activities (including research training) occur, whether "bricks-and-mortar", mobile, or virtual;*

- *Large, specialized experimental facilities that are constructed with significant amounts of common building material using standard building techniques. Instruments in general can be decoupled from the structure or environment that contains them;*
- *General purpose and supporting equipment - this category includes (but is not limited to) general purpose ancillary computers or laboratory instruments. Supporting equipment refers to basic, durable components of a research facility that are integral to its operation (e.g., fume hoods, elevators, laboratory casework, cryogen storage systems, general-purpose computational or data storage systems). It also includes supporting facilities such as vehicle charging stations;*
- *Sustaining infrastructure and/or building systems - this category includes (but is not limited to) the installation of or upgrades to infrastructure related to the supply of power, ventilation, water or research gases, routine multi-purpose computer networks, standard safety features, and other general purpose systems (e.g., toxic waste removal systems and telecommunications equipment);*
- *General purpose platforms or environment - this category may include (but is not limited to) general purpose fixed or non-fixed structures as well as manned or unmanned vehicles whose role is to host or transport an instrument, which is not an integral part of the research instrument and/or which can be re-purposed for nonscientific uses; and*
- *Instrumentation used primarily for science and engineering education courses.*

D. Eligible Fields of Science and Engineering

Proposals for instrumentation will be considered for the fields of science, engineering, mathematics, or education research typically supported by NSF programs. Although the MRI program will not support instrumentation to be used in medical education (such as medical school courses), instrumentation for bioengineering research with diagnosis- or treatment-related goals that applies engineering principles to problems in biology and medicine, while also advancing engineering knowledge, is eligible. Instrumentation for research in bioinformatics and biocomputing, or for bioengineering research to aid persons with disabilities also is eligible.

ATTACHMENT B: Proposal Cover Page



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Cover Page

Principal Investigator:

Co-PIs and Collaborating Personnel:

Working Title of Project:

Type of Proposal:

Track 1

Track 2

Is this a Development Proposal?

Yes

No

Equipment to be Purchased:

Departments Benefited:

Abstract / Summary (100 word limit):