

Instrumentation: Federal Grants and Programs for the Life Sciences



FASEB

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Introduction:

To conduct cutting-edge research, investigators require access to advanced scientific equipment. Federal research agencies sponsor many different types of grants and programs to support the purchase and maintenance of critical instrumentation that is beyond the budget of a typical research grant. Many of these grant mechanisms focus on multi-user configurations – from shared equipment to user and core facilities. This approach can extend the value of research funding and broaden access to the resource. Other agency programs support the development and increased availability of new technologies, leading to expanded future research opportunities. This document provides a brief overview of programs available to support and/or increase investigator access to advanced instrumentation.

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Shared Instrumentation Grants (part 1)

These grant programs aim to support equipment that will be used by multiple investigators, building the research capability and capacity of awarded sites.

	National Institutes of Health (NIH)		US Dept. of Veterans Affairs (VA)	
Grant/Program <i>(click on name to visit the website)</i>	Shared Instrumentation Grants (SIG)	High-End Instrumentation (HEI)	Shared Equipment Evaluation Program (ShEEP)	Laboratory Animal Major Equipment (LAMb)
FY 2015 funding data	Awards: 91 Funding: \$40 million List of recent awards	Awards: 19 Funding: \$26 million List of recent awards	Awards: 20	Awards: 9
Equipment price range	\$50,000 to \$600,000	\$600,000 to \$2.0 million	\$75,000 to \$600,000, with a cap of \$1 million among all applications per VA research station	
Eligibility	Institution: Domestic public or non-profit Application: No restrictions Users: A major user group of at least three NIH-funded should accounts for at least 35% of expected use; NIH awardees should be given priority access and comprise at least 75% of projected use		Institution: VA research stations (intramural only) Applicant: VA investigators Users: None	
Bundling of equipment	Not allowed		Not allowed	
Cost sharing	Not required		Not required	
Support for service contracts	No		No	
Other requirements/information	Recipient institutions must annually submit a table documenting the status and use of all SIG and HEI-funded instruments installed within the last five years		ShEEP awards are intended to build research station capacity and capability	LAMb awards aim to update animal facilities to maintain compliance

Shared Instrumentation Grants (part 2)

	Dept. of Defense (DOD)	National Science Foundation (NSF)	
Grant/Program <i>(click on name to visit the website)</i>	<u>Defense University Research Instrumentation Program (DURIP)</u>	<u>Major Research Instrumentation Program (MRI): Acquisition (Track 1)</u>	<u>Improvements in Facilities, Comm., and Equipment at Bio. Field Stations and Marine Laboratories (FSML)</u>
FY 2015 funding data	Awards: 225 Funding: \$68 million <u>List of recent awards</u>	Anticipated awards: 160 Anticipated funding: \$75 million <i>(totals reflect both tracks)</i> <u>List of recent awards</u>	Anticipated awards: 20 to 25 Anticipated funding: \$4.2 million <u>List of recent awards</u>
Equipment price range	\$50,000 to \$1.5 million	\$100,000 to \$4 million <i>(lower amounts allowed for select disciplines and institutions)</i>	None specified, but support for vessels is generally limited to \$150,000
Eligibility	Institution: Domestic higher education with degree granting programs in science, mathematics and/or engineering Applicant: No restrictions Users: None	Institution: Domestic higher education, non-profit, and select incorporated, not-for-profit consortia Applicant: No restrictions Users: None	Institution: Domestic higher education and select not-for-profit organizations Applicant: No restrictions Users: None
Bundling of equipment	Permitted if all items of equipment comprise a "system"	Permitted if all items are necessary to assemble the instrument and are well-integrated	Permitted, but applications should focus on major, shared-use items
Cost sharing	Not required	Precisely 30 percent cost-sharing is required, except for non-PhD-granting institutions of higher education	Prohibited
Support for service contracts	No	Yes, budgets may include installation, maintenance, and technical support costs	No
Other requirements/information	Applicants must select one funding agency (Army Research Office, Office of Naval Research, and Air Force Office of Scientific Research) or submit separately to each The instrumentation requested must support research in technical areas of interest to the DoD	Institutions are limited to three MRI proposals per application cycle, of which no more than two can be Track 1 (Acquisition) Applicant institutions must submit a letter listing the status of all MRI-funded instruments obtained within the last five years	This program is limited to off-campus research and training facilities Only one application per facility can be submitted per application cycle

Instrumentation Development Programs

A key element to providing access to cutting-edge instrumentation is support for its development. Federal programs span the full range of the development process, from early technological advancement to bringing prototypes to the market.

	National Institutes of Health (NIH)	National Science Foundation (NSF)		Multiple Agencies
Grant/Program <i>(click on name to visit the website)</i>	Biomedical Technology Research Resource (BTRR) Program	Major Research Instrumentation Program (MRI): Development (Track 2)	Instrument Development for Biological Research (IDBR) <i>(program placed on hiatus for 2016)</i>	Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)
FY 2015 funding data	Awards: 53 Funding: \$78 million <i>(all active awards)</i> List of recent awards	<i>See MRI Track 1 on page 3</i> <i>(the majority of MRI awards are Track 1)</i>	Anticipated awards: 12 to 17 Anticipated funding: \$4 million List of recent awards	Awards: ~5,500 Funding: ~\$2 billion List of recent awards
Eligibility	Institution: Domestic institutions, non-profit, and for-profit organizations	Institution: Domestic higher education, non-profit, and select incorporated, not-for-profit consortia	Institution: Domestic higher education, non-profit, and select incorporated, not-for-profit consortia	Institution: For-profit businesses with no more than 500 employees
Cost sharing	Not required	Precisely 30 percent cost-sharing is required, except for non-Ph.D.-granting institutions of higher education	Prohibited	Generally allowed, but select funding agencies may prohibit it
Other requirements/information	In addition to developing technologies and instrumentation, BTRRs must also provide access to the resources/technology, train outside investigators, and disseminate resulting technology	Institutions are limited to three MRI proposals per application cycle	Applicants must select one of two tracks: "Innovation" (developing novel instruments) or "Bridging" (making prototypes or high end equipment broadly available) Many categories health/ medical-instrumentation development are not supported	For STTR awards, at least 40 percent of the supported work must be performed at the small business and at least 30 percent at the partnering research institution

Instrumentation Awards for Underrepresented Institutions

Federal agencies sponsor a variety of programs to build research capacity at underrepresented institutions and in regions that have historically had limited success obtaining research grants. A subset of these programs, described below, focus solely on providing instrumentation.

	US Dept. of Agriculture (USDA)	Dept. of Defense (DOD)
Grant/Program <i>(click on name to visit the website)</i>	<u>Food and Agricultural Science Enhancement (FASE) Strengthening Awards</u> : Equipment Grants	<u>Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI)</u> : Equipment/Instrumentation Grants
Equipment price range	\$10,000 to \$250,000	\$50,000 to \$500,000
Eligibility	Institution: Select underrepresented institutions as determined by factors such as size, past funding levels, student demographics, and USDA EPSCoR eligibility	Institution: Domestic historically black colleges and universities and minority-serving institutions
Bundling of equipment	Not allowed	Permitted if all items of equipment comprise a "system"
Cost sharing	Yes, a non-federal match is required and the amount requested "shall not exceed 50 percent of the cost or \$50,000, whichever is less." A waiver may be available in select situations	Not required
Support for service contracts	No	No
Other requirements/information	There is no dedicated RFA for this program. Applicants should submit to the relevant topical RFA and indicate FASE eligibility	Institutions are limited to three applications per award cycle Applications must describe how the instrumentation will impact student participation in research

Second-hand Instrumentation Programs

These programs facilitate the transfer of no longer used research equipment to laboratories that need them.

- The [Laboratory Equipment Donation Program \(LEDP\)](#) makes available used Department of Energy equipment for research and teaching purposes at US institutions of higher education and other select types of research organization.
- The [Research Equipment Quick Use Initiative Program \(REQUIP\)](#) provides an established process to transfer instrumentation between VA research stations and includes a portal for investigators to list and request equipment.

User and Core Facilities

Agencies also provide access to advanced instrumentation through facilities, including equipment that can only be cost-effectively deployed at a regional or national level. These facilities typically specialize in specific techniques or technologies. They are frequently staffed by dedicated personnel, who facilitate use and often play an important role in further technological development.

- **Department of Energy (DOE) User Facilities:** DOE Office of Science operates [user facilities](#) around the country. The Biological and Environmental Research program supports three facilities: [Atmospheric Radiation Measurement Climate Research Facility \(ARM\)](#); [Environmental Molecular Sciences Laboratory \(EMSL\)](#); and [Joint Genome Institute \(JGI\)](#). Other DOE sites include synchrotron radiation facilities, which are frequently used for structural biology. Access is determined by merit review of the research proposal, and fees are waived for investigators engaging in non-proprietary research that they intend to publish.
- **National Science Foundation (NSF) Supported Facilities:** NSF provides funding for a variety of research [user facilities](#). Through the Major Research Equipment and Facilities Construction (MREFC) account, NSF also supports the creation of new facilities. The new BIO-associated program, [National Ecological Observatory Network \(NEON\)](#), will make its “assignable assets” available for research and education once it is fully operational.
- **Core Facilities:** The Association of Biomolecular Resource Facilities (ABRF) is developing a comprehensive database of core facilities around the world. Through the [ABRF Core MarketPlace](#), researchers search for core facilities based on the type of service, equipment available, location, and more.
- **Biomedical Technology Research Resource (BTRR) Centers:** The NIH-funded BTRR Centers are directed to provide access and technological assistance to the NIH-supported research community. The [BTRR portal](#) includes a list of BTRR Centers organized by research field/technology.
- **NIH Clinical Center:** The Center welcomes collaborative projects with the research community and, through these activities, provides access to a range of advanced [equipment and technologies](#).
- **Center for Inherited Disease Research (CIDR):** This NIH-supported center provides genetic research services. Access is granted through a non-monetary NIH award (X01).