

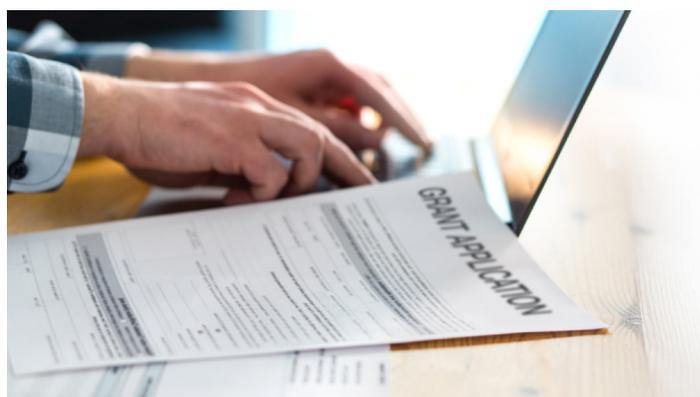
Writing an NIH S10 Shared Instrumentation Grant application: strategies for success

Introduction

Thermo Fisher Scientific is dedicated to helping you advance your research and science. That includes helping you develop your proposal and becoming your scientific partner for your grant or funding application. Additional resources are available at thermofisher.com/grantcentral.

A Grant Central webinar, presented by expert Christopher Dant, PhD of Medcom Consulting, provides strategies for writing a winning National Institute of Health (NIH) S10 Shared Instrumentation Grant application. The purpose of the S10 program is to advance discoveries for institutions and investigators performing NIH-supported research with the purchase or upgrade of a single specialized, commercially available instrument or an integrated system for shared use.

S10 Instrumentation Grants are sponsored and awarded by the NIH Division of Program Coordination, Planning and Strategic Initiatives Office of Research Infrastructure Programs (ORIP) and the National Institute of General Medical Sciences (NIGMS). ORIP supports infrastructure in research organizations and the NIGMS supports basic research in the areas of disease diagnosis, treatment, and prevention. It is important to note that the NIGMS is particularly interested in promoting participation in the Institutional Development Award (IDeA) program that is designed to enhance biomedical research activities in states that have had historically low levels of NIH funding.



NIH S10 Instrumentation Grant Program overview

There are three types of S10 Instrumentation Grants:

- The Basic Instrumentation Grant (BIG) is limited to institutions that have not received S10 instrumentation funding of \$250,001 or greater in any of the Federal fiscal years 2018–2021. The BIG program is also limited to awards of \$25,000 to \$250,000.
- The Shared Instrumentation Grant (SIG) provides between \$50,000 and \$600,000 per grant. When combined with institutional support, an SIG can enable the purchase of powerful equipment.
- The High-End Instrumentation (HEI) Grant Program is limited to instruments between \$600,001 and \$2 million. HEI Grants are awarded for instruments that will substantially propel transformative research and are the most difficult to win. Since HEI grants are more competitive, it might be more advantageous to submit an SIG application instead and show institutional support for the cost difference.

These applications have the same basic requirements and structure. Any individual(s) on an active NIH research grant or cooperative agreement with the skills, knowledge, and resources necessary to carry out the research can act as a Program Director(s)/Principal Investigator(s) [PD(s)/PI(s)] and work with their organization to develop an application. Everyone appearing on the grant must be associated with the applicant organization and registered on the [eRA Commons NIH website](#). Domestic public or private institutions of higher education, nonprofits such as hospitals, health professional schools, and research organizations can apply.

Shown in Figure 1, applications are reviewed over 8 months with an application due date usually between May 1 and June 1, Merit Review in September, Advisory Council Review in January, after which the awards are announced in February. More than one application can be submitted, provided each application is scientifically distinct. The NIH will not accept duplicate or highly overlapping applications.

Funding trends

Eight-month S10 review process

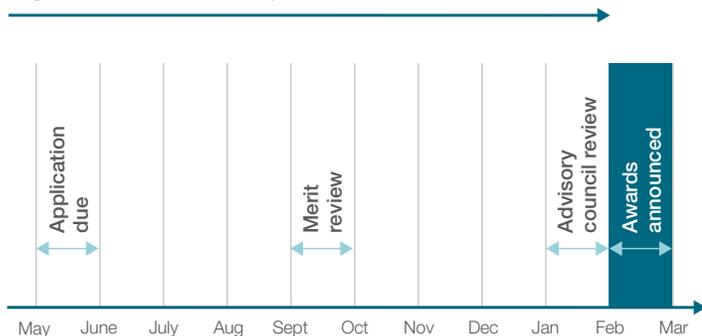


Figure 1. Timeline of S10 applications review process.

There is an approximately equal portion of S10 Instrumentation Grants awarded to NIH-funded research projects in each of the US' four geographical regions. In 2021, the ORIP intends to commit \$30 million for S10 instrumentation, a 45% decrease from 2012, making these grants increasingly competitive. The win success rate is about 18% to 20%.

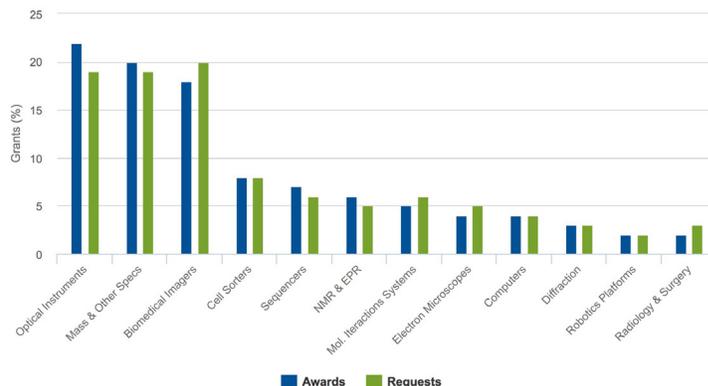


Figure 2. The S10 grant program supports a broad set of state-of-the-art technologies that are needed by NIH-funded investigators. Data source: <https://orip.nih.gov/construction-and-instruments/s10-instrumentation-programs>

Instrument eligibility

A wide range of instruments are requested and ultimately funded (Figure 2). Eligible instruments are:

- A single instrument purchase or upgrade within the cost parameters described
- An integrated instrument system when the components must be used together or will be dedicated for use together
- Standalone computers such as supercomputers dedicated to biomedical research
- Foreign or domestically sourced

The following will not be considered:

- Instruments for clinical trials, diagnostics, or clinical care
- New instrument development
- Multiple bundled instruments
- Software unless it's integrated with the instrument or necessary for generation of high-quality output
- Standalone workstations for data processing and duplicate software
- Administrative systems
- General purpose equipment and disposable devices
- Furniture and supplies
- Alterations or renovations needed to house the instrument

The NIH S10 Instrumentation Grant application contents and requirements

All the S10 Instrumentation Grant applications use the following format. There are page limits for sections 1-8 listed below. All tables, graphs, figures, diagrams, and charts must be included within the page limits.

1. Resubmission introduction if applicable. (3 pages)
2. Justification of need: Describes the substantial shared need among at least three major users who are performing NIH-funded research. Each major user must be from a different group carrying out different awarded research. Minor users who may have funding but not NIH grants, or that are new investigators without funding, can be included to highlight the potential impact of the grant beyond the major users. Because the major and minor users will have priority access to the instrument, no more than five to eight major users are listed. (9 pages)
3. Technical expertise: Identifies the PD/PI with the expertise to use the instrument. (3 pages)
4. Research projects: Describes how the instrument will enhance the major users, NIH-funded research and minor users' research. This section is often structured in subsections for each of the major and minor users' research projects. (<30 pages)
5. Summary tables: (6 pages)
 - Table 1 lists users, role (major or minor), project title, funding source with grant number, and percent use.
 - Table 2 lists users, expected usage, applications, and accessories/features needed. At least three major users should need the accessory/feature to warrant its inclusion in the application.
6. Administration (organizational and management plan): Describes the Technical and Advisory committee that will oversee use of the instrument and the core or other facility that will house it. For cost effectiveness, and optimal instrument sharing and collaboration, the instrument should be in a core facility whenever possible. (6 pages)

7. Institutional commitment: Demonstrates that the applying institution will support the instrument including renovations, staff, upkeep, training, and other infrastructure. (3 pages)
8. Overall benefit: Strongly conveys the broad benefit of the grant. (3 pages)
9. Letters of support describing institutional commitment, and if necessary, letter from a biosafety committee.
10. Project summary/abstract: Succinctly stating the problem/challenge, impact, and the hypothesis to be tested.
11. Project narrative: Explains why the instrument is necessary for the research and public health. (2 to 3 sentences)
12. Bibliography and references: Supports the research section.
13. Equipment: Describes the manufacturer and model, features and accessories, with an itemized quote from the vendor.

Planning and execution: how to make your proposal convincing and win the grant

- Start working on the proposal ideally 6–12 months in advance
- Read the grant program announcement because the details and requirements change yearly
- Understand how applications are scored
- Go to the NIH Shared and High-End Instrumentation Awards Table to view federally funded grant abstracts to see what has been successful (Figure 3) (<https://orip.nih.gov/construction-and-instruments/s10-instrumentation-programs/filterable-awards-table>)
- Recruit at least three NIH-funded PDs/Pis with a demonstrated need for the instrument to show a wide range of support
- Demo the requested instrument to allow the users to obtain preliminary data, or save time by asking the vendor for example datasets
- Identify the integrated core facility that will house the instrument

- Propose the PD/PI who will assume administrative and scientific oversight of the instrument
- Form the advisory committee that will oversee instrument use
- Consider application organization and aesthetics
 - Start with an outline
 - Use summary statements at the end of each section
 - Tables, timelines, and figures are useful in illustrating key points
 - Enlist a proofreader
- When in doubt, contact the <https://grants.nih.gov/>

Shared and High-End Instrumentation Awards Table

Year: <select> State: WI Instrument Type: <select>

▶ Advanced Filtering

Apply

Year	Grant Number	PI Name	Title	Instrument Type	Institution	State	Award (\$)
2020	S100D28498	Anna C. Sorace	Bruker BioSpec preclinical 9.4T MRI	Biomedical Imagers	Univ of Alabama at Birmingham	AL	\$600,665
2020	S100D28713	Alice F. Tarantal	miniEXPLORER-III for Total-Body PET Translational Imaging	Biomedical Imagers	Univ of California Davis	CA	\$1,903,259
2020	S100D26917	Arion X. Chatziaoannou	Small Animal Combined PET/CT System	Biomedical Imagers	Univ of California Los Angeles	CA	\$750,000
2020	S100D25077	Daniel B. Vigneron	Upgrade of an Obsolete 3.35T DNP Polarizer	Biomedical Imagers	Univ of California San Francisco	CA	\$1,717,144
2020	S100D27023	Natale J. Serkova	Multi-Modal Optical/ microCT System	Biomedical Imagers	Univ of Colorado Denver	CO	\$733,485

Figure 3. The NIH Shared and High-End Instrumentation Awards Table can be helpful in showing the projects that have received an S10 HEI Instrumentation Grant. Image from NIH website.

Conclusion

The NIH S10 Shared Instrumentation Grant Program is an ideal way for PDs/PIs to acquire new technology or upgrade instrumentation to advance their NIH-funded research. Clearly justifying the shared scientific need and detailing the infrastructure support for operation, training, and maintenance are key areas in writing a successful application.

Whether you are at the beginning of your grant-writing career or you are a renowned scientist with decades of grant-writing experience—writing and submitting a proposal for funding is demanding, time-consuming, and stressful. With a global team of more than 75,000 colleagues, Thermo Fisher Scientific offers tremendous knowledge and experience to support you along the way!

Find out more at thermofisher.com/grantcentral

About Christopher Dant, PhD



Dr. Christopher Dant, Medcom Consulting, has over 40 years' experience, first as a medical researcher and, second as a medical writer and writing consultant, in biopharmaceutical, government, and academic settings. He received

his MA and PhD in Genetics and Molecular Biology from Indiana University and University of Michigan, and was a post-doctoral scholar at University of Vermont. Dr. Dant served on the faculty at Dartmouth Medical School and Norris Cotton Cancer Center, and consults at the Stanford Medical School and the University of California at San Francisco.

Additional resources

Thermo Fisher Grant Central

<https://www.thermofisher.com/grantcentral>

Webinar: Writing the NIH Shared Instrumentation Grant (S10): Strategies for Success

<https://www.thermofisher.com/us/en/home/global/forms/industrial/writing-nih-shared-instrumentation-grant-s10-strategies-success.html>

White Paper: Winning the Shared Instrumentation (S10) Grant from the National Institutes of Health (NIH)

<https://www.thermofisher.com/us/en/home/global/forms/industrial/s10-nih-white-paper.html>

NIH S10 Instrumentation Programs Website

<https://orip.nih.gov/construction-and-instruments/s10-instrumentation-programs>

NIH Shared and High-End Instrumentation Awards Table

<https://orip.nih.gov/construction-and-instruments/s10-instrumentation-programs/filterable-awards-table>