

Shared Instrumentation: How to Win the S10 Grant

Introduction

If you are looking to fund expensive instrumentation that you will share with other Principal Investigators (PIs) and Program Directors (PDs), there are limited grant opportunities. The National Institutes of Health (NIH)'s S10 Program is a great option. This program is composed of the Basic Instrumentation Grant (BIG), the Shared Instrumentation Grant (SIG), and the High-End Instrumentation Grant (HEI).

S10 awards provide funds toward purchasing or updating expensive shared-use instrumentation that is not typically supported by other NIH funding mechanisms. Because of this focus, a S10 grant does not cover instrumentation that you could get funded through your research project, program project, or center grant programs. The S10 grants support the actual equipment only – they do not fund research activities to develop or improve instrumentation.

Across the BIG, SIG, and HEI programs, the S10 award is for a duration of one year only. You can request a single, commercially available instrument or integrated system that costs at least \$25,000. The maximum funding amount for the S10 is \$2,000,000. You can seek a S10 grant even if the instrumentation's cost exceeds the maximum amount – but you will not get more than \$2,000,000 from an S10 grant. See Table 1.

The NIH administers the S10 grant program through the Office of Research Infrastructure Programs (ORIP) in the Division of Program Coordination, Planning and Strategic Initiatives. Instrumentation is central to the ORIP's Strategic Plan, in which it seeks to accelerate biomedical research discovery by funding innovative instruments and equipment.

ORIP intends to allocate \$68 million for S10 grants in fiscal year (FY) 2022 (see table above), funding an estimate of 120 new awards. The NIH receives approximately 400 applications across the S10 program each year. With an average of 110 applications funded each year between 2013 and 2018, the overall success rate is approximately 27.5%. ORIP divides awards across technology types to best meet demand/needs. The most commonly requested types of instrumentation (more than 60% of applications) are biomedical imagers, optical microscopes, and mass spectrometers.

Table 1. NIH grants.

	BIG	SIG	HEI
Funding Minimum/Maximum	\$25,000 to \$250,000	\$50,000 to \$600,000	\$600,001 to \$2 million
Cost Sharing Requirement	None	None	None
Program Funding (FY2022)	\$3 million	\$35 million	\$30 million
Projected Awards	12 to 20	75	25
Award Project Period	1 year	1 year	1 year
Award Limit Per Organization	1 per year	None	None
Focus	Purchase or upgrade of a single expensive, specialized, commercially available instrumentation or integrated system to support a group of NIH-supported investigators; Major Users can include R03, R15, R21, SC1, SC2, or SC3 PIs	Purchase or upgrade of a single item of expensive, specialized, commercially available instrumentation or integrated system by a group of NIH-supported investigators; Major Users must be a PI/PD on a distinct active NIH research award (D, P, K, R, or U)	Purchase of a single major item of equipment for biomedical research use by a group of NIH-supported investigators; Major Users must be a PI/PD on a distinct active NIH research award (D, P, K, R, or U)
Types of Allowable Instrumentation (Examples)	– Cell sorters – Confocal microscopes – Ultramicrotomes – Gel imagers – Computer systems	– Electron and confocal microscopes – Protein and DNA sequencers, biosensors – Nuclear magnetic resonance systems – Mass spectrometers – Cell sorters – X-ray diffractometers – Biomedical imagers	– Structural and functional imaging systems – Macromolecular NMR spectrometers – High-resolution mass spectrometers – Cryoelectron microscopes – Supercomputers

ORIP divides awards proportionately to the number of requests within each technology type. So, technology that is the most-requested is also the most-funded.

Though certainly not impossible to obtain, the S10 grant award's parameters are strict and you will have to make your proposal convincing to get your application to the top of the pile. Reviewers will scrutinize S10 applications with a keen eye for detail – miss even one essential detail, and your proposal will be passed over.

To get your application through the review process, you must pass all the stringent eligibility requirements, and then craft a proposal that will impress reviewers and really stand out.

Eligibility: make sure you qualify to avoid automatic rejection

Unlike broad-based research grants from the NIH, the S10 has very strict eligibility requirements and exclusions. The funding mechanism will support only certain types of instrumentation and the requirements for how you use the equipment are rather specific.

Tip

Check to ensure that your instrumentation is allowed before you begin working on your S10 application.

Do not try S10 to support these types of instrumentation

The S10 grant supports select instrumentation, restricting eligible equipment to only expensive shared-use instrumentation. The equipment can be domestic- or foreign-made.

But, according to ORIP, you cannot use the S10 grant to support:

- New instrumentation development
- General purpose equipment
- Purely instructional equipment
- Instruments used for clinical (billable) care
- A single instrument with a base cost of less than \$25,000
- Multiple instruments bundled together to meet the \$25,000 minimum
- A series of complementary related instruments that share a common research focus
- An assortment of instruments to furnish a research facility
- Software – unless it's integral to the operation of a piece of equipment
- Institutional administrative management systems
- Clinical management systems
- Equipment for routine sustaining infrastructure, including standard computer networks, autoclaves, hoods, and equipment to upgrade animal facilities

So, what kinds of instruments will the S10 support? Supported instrumentation includes but are not limited to electron and confocal microscopes, protein and DNA sequencers, biosensors, nuclear magnetic resonance systems, mass spectrometers, flow cytometers, cell sorters, and optical instruments.

Note: The NIH has also had a focus on the “-omics,” such as proteomics and metabolomics.

If you are not sure whether your desired instrumentation is allowable under one of the S10 award types, your best bet is to contact a Program Officer (PO) to ask if the equipment is allowable (see Resources section).

Pay attention: If you are looking to fund a “stand alone” computer system, such as a supercomputer, computer cluster, or storage system, that system must be solely dedicated to a broad community of NIH-supported PIs’ research needs.

Share and share alike: who can use S10-funded equipment

When it comes to the proposed equipment’s users, the S10 grant program has a “the-more-the-merrier” attitude. However, you must ensure that you are targeting the right kind of users. In your proposal, you must identify investigators who will use the requested instrumentation in two categories: “Major Users” and “Minor Users.”

STRATEGY

Do not just go with the three-investigator minimum – make your proposal stronger by including at least eight to 10 NIH-supported users.

Major users: Your Major User group must contain no fewer than three PIs/PDs working on active NIH research grants.

The grant awards should be active throughout the S10 award period, but note that longer funding is better. Also, PIs with multiple NIH grants are particularly impressive in the eyes of reviewers.

Specifically, for the SIG and HEI, at least three Major Users must be on one of the NIH research grants shown in Table 2.

For the BIG award, which is geared toward institutions with lower levels of NIH or other extramural funding, the allowed Major Users also encompass R03, R15, R21, SC1, SC2, or SC3 PIs.

After you have met the three-investigator minimum, you can include other Major or Minor Users on other types of active NIH research grants, such as the P30, P41, P50, R03, and R21. Together, Major Users must require at least 25% (BIG) or 35% (SIG, HEI) of total instrument usage time and collective usage must reach 75% (called accessible user time, or AUT).

Table 2. Major User required grants.

Code	Title	Description
DP1	NIH Director’s Pioneer Award (NDPA)	To support individuals who have the potential to make extraordinary contributions to medical research. The NIH Director’s Pioneer Award is not renewable.
DP2	NIH Director’s New Innovator Awards	To support highly innovative research projects by new investigators in all areas of biomedical and behavioral research.
P01	Research Program Projects	For the support of a broadly based, multidisciplinary, often long-term research program that has a specific major objective or a basic theme. A program project generally involves the organized efforts of relatively large groups, members of which are conducting research projects designed to elucidate the various aspects or components of this objective. The grant can provide support for certain basic resources used by these groups in the program. A program project is directed toward a range of problems having a central research focus, in contrast to the usually narrower thrust of the traditional research project. Each project supported through this mechanism should contribute or be directly related to the common theme of the total research effort. These scientifically meritorious projects should demonstrate an essential element of unity and interdependence.
R01	Research Project	To support a discrete, specified, circumscribed project to be performed by the named investigator(s) in an area representing their specific interest and competencies.
R35	National Institutes of Health Outstanding Investigator	To provide long-term grant support to investigators whose research competence and productivity are distinctly superior and who are highly likely to continue to perform in an outstanding manner.
R37	Method to Extend Research in Time (MERIT) Award	To provide long-term grant support to investigators whose research competence and productivity are distinctly superior and who are highly likely to continue to perform in an outstanding manner. Investigators may not apply for a MERIT award. Program staff and/or members of the cognizant National Advisory Council/Board will identify candidates for the MERIT award during the course of review of competing research grant applications in accordance with regular PHS requirements.
U01	Research Project— Cooperative Agreements	To support a discrete, specified, circumscribed project to be performed by the named investigator(s) in an area representing their specific interest and competencies.

Major Users can be:

- Individual researchers;
- A group of investigators within the same department;
- Investigator groups from several departments at the applicant institution; and/or
- NIH extramural awardees from other nearby institutions.

Beware: Investigators on NIH training grants and contracts are not eligible.

Expert advice: Although NIH says you should have a minimum of three Major Users, you should really strive for eight to 10 users on the selected NIH research grants, advises Timothy Bushnell, PhD, the scientific and technical director of the flow cytometry core facility at the University of Rochester. The more PIs on NIH grants listed, the better.

Minor users: Basically, Minor Users are those researchers who do not fit the Major User definition, Bushnell states. They may have funding (e.g., other NIH grants, Department of Defense grants), but not the NIH research grants – or they may be new investigators who do not have funding.

In fact, including such early investigators is a boon to your S10 proposal. So, you are highlighting these supplemental users “to show that the use and impact of use is more than just your user base of eight to 10 major researchers, but a larger dynamic impact,” Bushnell notes.

REMEMBER: In terms of access to and usage of the instrumentation, be sure to promote preference to the Major Users, particularly those who are awardees of the select NIH research grants. The NIH research projects should account for at least 75% of AUT.

Is your organization/institution eligible?

Unlike the mandates for eligible users, organization eligibility requirements for the S10 are pretty broad-based. All public/state and private institutions of higher education are eligible to apply for the grant, as well as nonprofits with 501(c)(3) status. Non-U.S. entities or foreign institutions are not eligible, nor are any non-U.S. components of U.S. organizations.

Institutions are limited to submitting one BIG application per due date. But beyond that, the NIH does not limit the number of S10 applications that a single institution can submit each year. You do have to ensure that none of the requests are too similar. Most important, you cannot have concurrent applications for two of the same instrument at your institution without special permission. In some cases, if the same instrument is available at another institution in the same city, the need for supporting another such instrument in the same geographic area must be clear.

What to do when you have "special circumstances"

For many applicants, not all the S10 requirements will fit perfectly. But do not let this discourage you from taking a shot at the grant. Here are some tips for overcoming “special circumstances:”

- If you have no instrumentation or no expertise – demonstrate that you and other Major Users have taken courses through the manufacturer and third-parties on how to use the instrumentation. In addition, make sure you can show that you performed a demo of the equipment, preferably generating some preliminary data on one or more research projects related to your proposal. Finally, enlist experienced users of the equipment to serve on your advisory committee.
- If you have lots of instrumentation – Thoroughly describe why the other instrumentation is not accessible. For example, show how the existing instrumentation is at or slightly over its usage capacity (75% to 85%). Provide documentation of the usage with graphs and evidence from the researchers who are using this equipment.
- If you are asking for new instrumentation – Reviewers are often wary of funding brand-new instrumentation with little proven results or in-the-field testing. Again, you must demonstrate that you’ve demoed this equipment and generated preliminary data. You must also show that you’ve had thorough training on how to use the equipment effectively and for your specific purposes.

BEWARE

You must make a truly compelling argument if you are requesting similar equipment as other S10 applications within your institution.

Proposal: focus on key areas to make your application shine

As usual, you have some strict page limitations to follow for the S10 grant application. But you also have a wide range of information to include that is absolutely vital to winning the S10 grant award.

REMEMBER

The NIH enforces no overall page limitation for the Instrumentation Plan as a whole. Also, Letters of Support are not included in the page limits.

Follow the basic outline in Table 3 for your proposal formatting.

Table 3. Proposal formatting pointers.

Proposal Documents	What to Include	Page Limit
Project Information Attachments		
Introduction (Resubmissions Only)	Response to reviewer criticisms	1
Project Summary/Abstract	– Write for a scientifically or technically literate audience working in the same or related fields as yours. – Provide a succinct, accurate description of the requested instrument and an explanation of the need for the instrument. – How/why will it advance the research projects of the Users and the augment research capabilities at the applicant institution? – Describe the broad, long-term goals and how the instrument will help the User's reach the health-related goals of their projects and stimulate biomedical research at the applicant institution.	30 lines of text when following NIH guidelines for margins and font
Project Narrative	– Write in plain language that a general, lay audience can understand. – Describe the research's relevance to public health.	3 Sentences
Bibliography and References Cited	– For each Major User, list only those publications that demonstrate the user's expertise in using the requested instrumentation. – References for the Research Projects may appear here or at the end of the Research Projects Section.	Unlimited
Equipment	– Describe the requested equipment, including the manufacturer and model number. – Justify the model chosen by comparing its performance with other available instruments/models. – Justify any specific features and accessories. – Provide an itemized quote from a vendor.	Unlimited
Other Attachments		
Instrumentation Plan	– In a single file, outline your Instrumentation Plan. – Arrange the Plan in the order specified below with the appropriate section headings (italicized).	Unlimited
Justification of Need	– Name the instrument and compare it to others. – Provide rationale for the instrument options and software. – Provide rationale why you need that make and model. – Define and justify the hours of operation needed/expected for each user (aka Accessible User Time, AUT).	9
Technical Expertise	– Describe the technical expertise of individuals who will set up and run the instrument. – Specify who will ensure that the instrument is safely operated and appropriately maintained. – State who will train new users. – If the instrument requires complex sample preparation or consultation for experimental designs, describe the expert individual(s) who will serve in that capacity. – Address technical support for data collection, management, and analysis.	3
Research Projects:	– Describe the benefit to each User's research project (up to 4 pages each). – Conclude with subsection of 'Other Users and their Research Topics' (up to 4 pages) which describes benefits to Minor Users.	30
Summary Tables	– Start by restating AUT in annual hours. – Insert summary tables for: a) Research Projects of Major Users and b) Research Projects of Other Users. Include the User's name, grant number (for NIH awards list the grant numbers such as R01IC123456), brief title of the project, grant start and end dates, and estimated usage in annual hours.	6
Administration (Organizational/ Management Plan)	Describe your organizations management plan (e.g., operation, training, financing, maintenance, supplies, software, income, etc.).	6
Institutional Commitment	Describe the institutional infrastructure available to support the instrumentation.	3
Benefit	Explain how the instrument will impact NIH-funded research and contribute to the institution's long-range biomedical research goals.	3
Letters of Support	All LOS should be combined into a single file PDF. If your institution has had previous S10 support in the past five years, list those awards in a table within the Institutional Letter of Support.	Unlimited

As always with grant applications, you want to focus on the areas that reviewers will look at to assign your score and ultimately decide whether to fund your request. For the S10, here are the areas in your proposal that reviewers will scrutinize to score your application:

- Overall Impact/Benefit
- Justification of Need
- Technical Expertise
- Research Projects
- Administration
- Institutional Commitment

WARNING

Do not use an Appendix to get around the page limits of individual sections – they are not allowed and your application could be withdrawn.

Show enthusiasm for overall impact/benefit

Reviewers will want to see your enthusiasm – make sure this shines through in your application. For Overall Impact/Benefit, describe how the requested instrument will affect NIH-funded research (your Major and Minor Users’ research projects), as well as how it will contribute to your institution’s long-term biomedical research goals.

REMEMBER

If you do not show enthusiasm, reviewers will find your proposal boring—and possibly not worthy of funding.

To score high in this area, show the overall institutional benefit also in terms of staffing. For example, how will the new instrumentation help to recruit new investigators, train young scientists, and help to retain current investigators? For Overall Impact/Benefit, reviewers will want to learn how the instrument will:

- Impact NIH-funded research and
- Benefit the overall research community at your institution.

Be specific.

Most crucial part of your proposal: justify your need

Justification of Need is perhaps the scoring item that reviewers will weigh heaviest when evaluating whether to fund your application. In this section of your Instrumentation Plan, you need to describe the requested instrument (again) and provide a clear justification for why the instrument and requested accessories or components are necessary.

You can even put this into a table format for clarity – Table 4 shows an example.

Table 4. Example of a Justification of Need table.

PI	Project Title	NIH Grant(s) Impacted	Percent Use	Component/Accessory
Jennifer Sidwell	Understanding immune response in patients with conjunctivitis	R01 AI563 589	15%	Feature 1 Attribute 3
Melinda Jones	Hematopoietic interactions in B cell depleted patients with AML	R01 DK0587588 R01 AI123456	10%	Feature 2 Attribute 3 Attribute 4
Xavier Cortez	T cell subset response after immunization	R01 CA654321	10%	Feature 1 Feature 2 Attribute 3 Attribute 4
Wenjin Luo	Development of novel expression vectors	R01 HL987654 R01 DE547896	10%	Attribute 4

To be competitive, provide reviewers with a real-world view of the instrumentation situation at your institution. To do this include the following in your Justification of Need section:

- An inventory of similar instruments in your area. Include all similar instruments housed at your institution and at neighboring institutions, as well as those that are otherwise accessible. Then, explain why these instruments are not accessible or appropriate for your purposes. Get a letter supporting this position, Bushnell suggests.
- Specify the current usage of existing instruments. Define the capacity – including the hours, percent of use and downtime – for each existing instrument. Then, go on to provide a realistic estimate of usage for the requested instrument in very specific terms – not just defined in percentages of available time. Include:
 - hours of use
 - setup time
 - projected downtime

- Identify where the proposed instrument will be located. Give the exact location of the requested instrumentation, and make sure that the location is accessible for all Major and Minor Users. Remember: A location within the existing core facility is the strongest choice.

Above all, for Justification of Need, make sure you thoroughly and convincingly answer these questions:

- Is the equipment essential and appropriate?
To demonstrate this, detail how the requested special features and software will be used by at least three Major Users.
- Can you clearly and adequately justify the need for the instrument?

Tip

Be extremely specific in the usage time and where the instrumentation will be located.

Belabor your technical expertise

You can have lofty ideas for using a piece of equipment to assist in your research, but if nobody knows how to use that equipment, what good is it? Here, you must demonstrate that you and/or others at your institution have the technical expertise necessary to set up, run, and maintain the requested instrument.

REMEMBER

If you or any of the Major/Minor Users have successfully used the requested instrumentation in past research projects, say so in the Technical Expertise section.

Who will operate the instrument? Who will train new users? Who will ensure that users operate the instrument safely? Who will be in charge of maintaining the equipment? You must include all these details.

Another element in the Technical Expertise section is addressing biosafety concerns. If using the requested instrumentation will create any potential biohazard issues, you need to touch on the procedures you will implement and how you will carry them out.

For Technical Expertise, reviewers want answers to these questions:

- Does your institution have the technical expertise to make effective use of the requested instrument?
- How well-qualified are you, the other participating investigators, as well as any other assigned personnel to operate and maintain the instrument, conduct the projects, and evaluate the research results?
- How will you train new users?
- How will you implement biosafety procedures?

Connect the instrumentation to the research projects

In the Research Projects section, you are basically outlining the instrumentation's essential role in the Major and Minor Users' current or imminent research projects. For the Minor Users on active NIH research grants, you should include only a very brief summary of their research and the related need for the requested equipment. (Remember, you have only six pages total to cover all the minor users here.)

For your Major Users, however, you need to provide more detail. For each Major User, focus on describing how the instrument will impact their research projects. Be concise and provide sufficient technical detail – preliminary data where necessary – to support why the instrument is appropriate for each Major User's project and demonstrate that the Major Users will effectively use the equipment. You will also need to show why the specific instrumentation you are requesting is superior to other methods for providing benefits to Major Users' research projects.

If requesting a specific accessory, make sure you provide details on how this accessory is necessary for at least three of the Major User's Research Projects. Highlight in the Research Project sections where that accessory will be used. Remember to highlight what Major User is going to use any component you are requesting. If a Major User "requests an extra laser or specific device, show the users who are going to need that – highlight that Major User," says Bushnell.

Important: You must get project descriptions and detailed information about each User's NIH-funded research project and then review the materials. "Take some time to go through each of their programs," and study what each User has said about how the instrumentation and specific accessories or components meets their research needs, Bushnell stresses. "Highlight the need for the equipment and how this equipment will expand, speed up, broaden the horizons of research."

You have a set page upper limit for each Major User but not a lower limit. However, do not reduce the Research Project description for each Major User if you have a large group of Major Users (e.g., more than 10). Instead, arrange your Research Projects section to include a representative group of the Major Users and simply refer to the additional Major Users by creating a table or mentioning ‘we will have X additional Major Users.’

REMEMBER

Beware that the Major Users may not know what they need – your job is to carefully read what they are doing and ask questions about what they want to do.

- In what ways will research using the requested instrument advance the knowledge and understanding of the proposed projects? (And, point out how without the new instrumentation this advance could not be made.)
- How will the instrument enhance the research project of each Major User?

Reprieve: The NIH specifically instructs reviewers not to evaluate the scientific merit of the research project components on S10 grants because these have already undergone peer review.

Make a plan and show reviewers that you are prepared

Another key section reviewers will base their scoring is “Administration” – comparable to the Organizational/Management Plan section of the Instrumentation Plan. Here, you need to show that you are well prepared to manage and carry out the grant activities.

Who’s the Boss? The NIH makes things a little easier when you are selecting the head honcho for the S10 award. The S10 does not require that specifically an NIH grantee serve as the PI/PD who assumes administrative and scientific oversight responsibility for the instrumentation. However, the PI/PD must be affiliated with the applicant institution.

The PI/PD in charge is responsible for:

- Requesting any no-cost extensions of the project period (if needed)
- Submitting the Final Progress Report 90 days after the project period’s end
- Submitting annual equipment usage reports to the NIH for four years following the Final Progress Report

Another key for administration is the S10 grant program’s requirement to form an advisory committee. NIH recommends the committee have at least four members. The committee must include a “broadly-based” membership, including members with no interest in the instrumentation or conflicts of interest, so they can resolve disputes objectively.

While the PI/PD cannot be a voting member, they can be a member. The advisory committee is responsible for developing guidelines concerning instrumentation use such as:

- Time allocation and maximum utilization of the instrument
- Day-to-day management and safe operation of the instrument
- Limiting access to the instrument to users whose projects have received approval from institutional human subjects, animal welfare, or biosafety committees (if appropriate)
- Financial planning for the instrument’s long-term operation and maintenance during the post-award period
- Recommending to the NIH the relocation of the instrument within or outside the institution (if necessary)

List the names and titles of the advisory committee members in this section. Describe all the nuts-and- bolts of how you’ll use the requested instrumentation, including how you’ll allocate time among major and minor users, attract new users, and manage access to the instrument. Detail your plan for managing access to the instrument when users’ research projects involve human or animal subjects or infectious or biohazardous materials.

In addition, the PD/PI and Advisory Committee should convene meetings and prepare annual reports on the instrument status. The advisory committee should meet on a regular basis, such as once every quarter or twice each year, Bushnell says. Regular meetings will help the advisory committee ensure proper instrumentation maintenance and that reports can be generated and filed on time (e.g., annual reports on instrumentation status).

Best bet: “If it’s a new technology to your institution, creating external experts is a plus that is looked on very favorably,” Bushnell recommends. “So, if you know that you are going to buy a piece of equipment that very few people have experience with, it’s a very high-end piece of equipment that there’s not a lot of expertise in, bring in an outside expert.”

STRATEGY

If you are requesting newer technology, include external experts in your advisory committee.

Yet another item you must include in this section is your financial plan for operating and maintaining the instrumentation long-term. Explain how you’ll meet the costs of keeping the instrument in working order, as well as the service and support personnel costs related to the equipment. “You want to potentially have three- to five-year projections indicating a long-term commitment,” Bushnell says.

To nab a top score for the Administration criteria, make sure your proposal answers these questions:

- Is your plan for the management and maintenance of the requested instrument appropriate?
- Are the advisory committee members broadly based enough to oversee the use of the instrument for a wide range of biomedical investigators?
- How will you allocate research time among the projects?
- Are the sharing arrangements equitable?
- Do you have adequate policies to manage human subject, animal or biohazardous materials projects (if necessary)?

Demonstrate Institutional commitment to seal the deal

Institutional commitment is important in the S10 grant application, Bushnell notes. You need to show that your institution is willing to support the equipment that you are looking to purchase. You can demonstrate Institutional Commitment using a combination of methods.

First, show prior support of your core facility to demonstrate historical trends, Bushnell suggests. In addition, show that your institution is willing to dedicate and renovate (if needed) space for the equipment. If renovations are needed, include the plans for those renovations to show Institutional Commitment. Staffing support, service contracts, and letters from senior administration are also important.

Tip

If your institution has no such facility, point to other situations where the university has shown support.

Specify: Define the institutional costs to your organization for running and maintaining the equipment. “A specific report saying the institution will support the service contract for this instrument for the next five years gives a much firmer commitment, especially with new equipment,” Bushnell stresses. Get specific dollar amounts whenever possible.

For Institutional Commitment, reviewers will base their scoring upon:

- What evidence will you present of institutional commitment for continued support of the instrument’s utilization and maintenance?
- Do you have the appropriate documentation (letters from institutional officials)?

Note: Include Letters of Support in Other Attachments and upload them as a separate file. Your Letters of Support should include not only the letters from officials professing institutional commitment, but also letters from your biosafety committee if appropriate.

WARNING

Do not skimp on Letters of Support when you are trying to demonstrate adequate institutional commitment.

Other items important for reviewers

Reviewers will assess other items, although they may not carry as much weight as Overall Impact/Benefit, Justification of Need, Technical Expertise, Research Projects, and Administration and Institutional Commitment. Reviewers will evaluate if the below items are appropriate for the application:

- **Period of Support:** Is the requested period of support appropriate in relation to the proposed research?
- **Biohazards:** Are the proposed materials or procedures potentially hazardous to research personnel and/or the environment? If so, do you outline adequate protections?
- **Budget:** Is your proposed budget reasonable? (Budget evaluation will not affect your impact score).
- Response to reviewers if the application is a resubmission.

- Protection of human subjects, inclusion of women, minorities, and individuals across the lifespan, and vertebrate animals are generally not applicable, but if they are applicable, reviewers will consider if these areas are appropriately addressed.

Strategies to make or break your proposal

Aside from the basic eligibility requirements and proposal components that you need to wade through, you can use a few “secret weapons” in your application process. Certain strategies – and costly mistakes – can make or break your chance at S10 funding.

BEWARE

If you forget to include itemized vendor quotes, NIH will reject your proposal without even reviewing it.

Avoid these proposal-killing mistakes

These mistakes will trigger a rejection of your proposal, sometimes without any review at all. Avoid these pitfalls:

- **Not including itemized quote(s).** Not providing itemized vendor quote(s) is perhaps the biggest mistake you can make in your S10 application. Applications that do not include quotes will not be reviewed. The itemized quotes should accompany a detailed budget breakdown of the instrumentation and accessories, including tax and any import duties. You must scan the vendor quote and include it in a single attachment with the equipment description.
- **Copying vendor descriptions.** Describe the requested equipment specifically, and do not just copy the vendor descriptions – use your own words, Bushnell says. Include the manufacturer’s information, the model, and all the descriptive details of each component or accessory you are requesting. If you are too vague about the equipment you are requesting, reviewers will not push your application forward.
- **Neglecting biosafety.** You must identify and address any biohazards associated with using the requested instrumentation. You must also include a letter from your institution’s biosafety officer or committee, Bushnell explains.

- **Requesting not-so-necessary accessories.** Keep in mind that although some of your major and minor users might really lobby for certain components or accessories, that does not mean you must include them in your application. You need to make sure that any quoted instrument components are truly needed by at least half of the users. Requesting a myriad of non-essential accessories can turn off reviewers from your entire application.
- **Skimping on your Major Users.** Make your descriptions of major users “succulent,” Bushnell advises. Be sure to highlight Major Users’ expertise in using the requested instrument, as well as how the new instrument will enhance their research.
- **Executing a purchase order or agreement or making a down payment or other formal commitment for purchase before your Notice of Award.** If you do, this will automatically eliminate you from eligibility.

Follow expert tips to get the edge

Some tips that you’ll hear about the S10 are more obvious than others. And yet some strategies will not just ensure that your application will make it to a reviewer’s hands, but further ensure that your proposal will soar well above the others. Heed these tips to make your S10 proposal shine:

- **Justify all accessories.** You must not only describe any requested accessories or components, but also specify which investigators need each component, Bushnell stresses. Also, the NIH specifies that if you request an accessory, at least three Major Users must need the accessory.
- **Present a strong management plan.** Sound financial planning and solid technical expertise can help you to build a strong management plan, according to Bushnell. Having a thorough plan for training and recruiting new users is also essential. Reviewers need to see that you have thought ahead and planned well for maximizing usage of the requested instrumentation.
- **Include a data management plan.** If you want to really “wow” reviewers, include a Data Management Plan (not required) in your Organizational/Management Plan, Bushnell suggests. This will demonstrate to reviewers that you are really thinking ahead – and planning thoroughly.

STRATEGY

Get a leg up on your competition by including a Data Management Plan in your S10 proposal.

- Many instruments allowable for the S10 grant generate a tremendous amount of new data, Bushnell explains. “So a cohesive plan to manage the data is a positive aspect. It’s not required, but it shows that you’ve thought in full not only how you can get the instrument, but what are you going to do with the information that comes from it.” For example, will you archive the data? How will you ensure that investigators have access to the data?
- **Institutional commitment.** Reviewers and the NIH want to know that your institution is committed to supporting the instrument’s upkeep well beyond the award period. Institutional support is critical to S10 success, and your institution must be receptive and supportive of the new instrument, Bushnell says.
- **Tout training and outreach.** Remember that long-term support of the instrumentation requires new users, Bushnell notes. Getting the most out of a new instrument demands robust training. So, you must detail in your proposal how you will recruit new users and train existing ones, such as lecture series, online training and/or technical support/consultation.

Comparison: the NIH S10 awards and the NSF Instrumentation Grant

One other funding mechanism in the federal grant world that is comparable to the NIH S10 is the National Science Foundation (NSF)’s Major Research Instrumentation Program (MRI). One difference across the NIH’s three S10 awards (see Table 1 for details) and the NSF MRI grant is the NSF’s requirement for cost-sharing and its distribution of the award across multiple project years (see Table 5).

Table 5. Details of the NSF MRI grant.

MRI	
Funding Minimum/Maximum	\$100,000 to \$4 million
Cost Sharing Requirement	30% of total project cost
Program Funding (FY2021)	\$75 million
Projected Awards	150
Award Project Period	Acquisition: up to 3 years Development: up to 5 years
Award Limit per Organization	3
Focus	Acquisition OR development of shared major instrumentation to integrate research with education to enhance research training.
Types of Allowable Instrumentation (Examples)	– Microscopes – Spectrometers – 3D imaging systems – NMR spectrometers – Nano/Microfabrication – Testbeds – Genome sequencers – Telescopes/detectors – Remote/autonomous sensors – Sub-atomic particle detector/array – Particle image velocimetry – Wet lab instruments

Conclusion

The S10 grant may be difficult to get, but it is certainly worth your best efforts if you are looking to purchase expensive, shared instrumentation for your research. You need solid backing by your institution and a good pool of like-minded investigators. You also need to have all the ammo in your grant-writing arsenal to push all the right buttons with reviewers.

With a few tricks and strategies – and avoiding a few big pitfalls – the S10 grant award is well within your reach. The following are some resources to help you work through your application and post-award processes.

Resources

S10 Program announcements

BIG: <http://grants.nih.gov/grants/guide/pa-files/PAR-21-125.html>

HEI: <http://grants.nih.gov/grants/guide/pa-files/PAR-21-126.html>

SIG: <http://grants.nih.gov/grants/guide/pa-files/PAR-21-127.html>

Note: Program announcements are periodically updated. Please check the ORIP website for the most current announcements.

NIH Office of Research Infrastructure Programs (ORIP)

<https://orip.nih.gov/>

ORIPoutreach@mail.nih.gov

NIH S10 Contact Information

Email: SIG@mail.nih.gov
(for both SIG and BIG)

HEI@mail.nih.gov

Mailing address:

Division of Construction and Instruments (DCI)
Office of Research Infrastructure Programs (ORIP)
Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI)
The Office of the Director, NIH (OD)
6701 Democracy Boulevard
Bethesda, Maryland 20892-4874

Phone: 301-435-0772

S10 Grant Program frequently asked questions

<https://orip.nih.gov/construction-and-instruments/s10-instrumentation-programs/frequently-asked-questions-shared-and-high>

SF 424 research and related forms

<https://grants.nih.gov/grants/how-to-apply-application-guide.html>

<http://grants.nih.gov/grants/forms.htm>

NSF Major Research Instrumentation Grant Program (MRI)

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

NSF MRI Contact Information

Email: mri@nsf.gov

Phone: 703-292-8040

MRI Program Officer:

Dr. Randy Phelps

Phone: 703-292-5049

Office of Integrative Activities
Major Research Instrumentation Program
National Science Foundation, Room 935
4201 Wilson Boulevard
Arlington, VA 22230

www.agilent.com

For Research Use Only. Not for use in diagnostic procedures.

RA44432.6094791667

This information is subject to change without notice.

© Agilent Technologies, Inc. 2021
Printed in the USA, September 7, 2021
5994-3903EN