



A Guide to Winning a Shared Instrumentation Grant (SIG)

About the SIG Grant

The Shared Instrumentation Grant (SIG) Program provides funds for purchasing shared-use instrumentation not typically supported by other funding programs sponsored by the National Institutes of Health (NIH).



An analytical ultracentrifuge such as the Optima AUC qualifies for funding from the Shared Instrumentation Grant Program (SIG).

The NIH recently reassigned the SIG program to the Office of Research Infrastructure Programs (ORIP). In FY 2015, ORIP provided 91 SIG program awards—totaling more than \$40 million—to biomedical research institutions in 31 states.

This award is for one year, and no matching funds are required. SIG award dollars can be used to purchase a commercially available instrument that will be shared by multiple PIs/PDs—such as the Optima AUC from Beckman Coulter Life Sciences—or any other shared instrument/system that costs at least \$50,000. The SIG award maximum is \$600,000.

SIG grant application guidelines are stringent, so to succeed, your proposal must get to the top of the pile. Omit one piece of required information or fail to comply with any of the guidelines, and reviewers will not even read it.

This bulletin provides information and strategies you can use to get your application through the review process, and, hopefully, to win an SIG award for your institution

Strategies for Winning an SIG Grant

You'll find numerous online resources with the specific details you need to write your SIG funding application (see back page). This bulletin suggests some strategies for ensuring that your proposal does not end up in the reject pile. Of course there are no guarantees, but you might improve your odds of winning an SIG award if you follow these guidelines:

1. The more users the better for SIG-funded equipment.

In your proposal, you must identify two types of investigators who will share the Optima AUC: minor and major users. Minor users are additional users with active research grants. The major user group is most important, and must contain at least three PIs/PDs on NIH-funded grants. One of the PIs must be designated as the lead for your SIG funding proposal.

Major users can be:

- Individual researchers
- A group of investigators in the same department
- Investigator groups from several departments at your institution, and/or
- NIH extramural awardees from nearby institutions (i.e., close enough to make use of the Optima AUC)

To improve your odds, strive for eight to 10 major users rather than only three. Major users with multiple NIH grants* are particularly impressive to those who review SIG grant proposals.

*Principal Investigators on NIH grants supporting infrastructure, scientific meetings, training and other non-research activities are not eligible to be included as major users for an SIG award funding proposal.

2. Focus on key areas that can help your proposal stand out.

These are the sections that SIG award reviewers scrutinize closely when assigning scores that can make or break your funding request:

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

Subsequent questions cover each section in detail. The first way to help make your proposal stand out is to outline content according to ORIP/NIH formatting requirements (https://dpcpsi.nih.gov/orip/diic/shared_instrumentation for the most current guidelines). If you don't comply with instructions on fonts, margins and page limit, your proposal will immediately be discarded. To avoid that, follow this basic outline for your proposal formatting:

Proposal item	What to include	Line # SF424 (R&R) Forms	Limit
Cover			
Descriptive title	This must include the general term analytical ultracentrifuge.	11	200 chars
Estimated project funding	15a: Total Federal Funds Requested (i.e., cost of the Optima AUC and all required accessories/components, including rotors, cells, windows, torque stand and others)	15	N/A
Other project information			
Project summary/abstract	<ul style="list-style-type: none"> • Provide a concise, general description of the proposed research projects of your major users, but do not refer to the Optima AUC or your SIG funding proposal. • Describe the broad, long-term objectives and specific goals of the research, highlighting its importance to public health. • Write for a scientifically or technically literate audience working in the same/related fields as yours. 	7	30 lines of text
Project narrative	Describe the relevance of your research to public health, written in plain language that the general public could understand.	8	2 – 3 sentences
Bibliography and references cited	For each major user, list only publications that demonstrate their expertise in using an analytical ultracentrifuge or other equivalent biophysical characterization techniques.	9	N/A
Equipment	You can ask your Beckman Coulter representative to assist you with this section: <ul style="list-style-type: none"> • Describe the Optima AUC, including model #, and provide some basic information about Beckman Coulter Life Sciences. • Provide an itemized quote for the Optima AUC. • Justify the Optima AUC and indicate that Beckman Coulter Life Sciences is currently the sole provider of AUC technology. • Justify the research-based need(s) for specific features and accessories. Make sure to include all necessary optics, rotors, cells, torque stand and alignment tools. • Highlight the important advantages of AUC technology: in-solution, matrix-free, no dilutions required, relies on first principles of thermodynamics (no standards required). 	11	N/A
Other attachments	In one PDF, outline your Instrumentation Plan in the order specified, using appropriate section headings (see below).	12	See below



Other Attachments – Instrumentation Plan

Component	Page limit
Introduction	3 pages
Justification of need	9 pages total
Estimated project funding	N/A
Research projects	30 pages total 6 pages max per major user (3 pages max strongly recommended)
Summary table(s)	1-2 pages
Project narrative	6 pages total
Administration (organizational/management plan)	6 pages
Institutional commitment	3 pages
Overall benefit	3 pages

3. Clearly and convincingly justify your need.

This could be the item reviewers weigh most heavily when deciding whether to fund your application. That's why you must thoroughly and persuasively explain why the Optima AUC, and all requested accessories/components, are essential and appropriate for the research needs of your major users.

Consider providing details for each major user in table form, like these:

PI	Project title	NIH grant(s) affected	% Use of AUC
Andrew Reedus	Ensuring consistent quantitation of immunogenic oligomers in antibody preparations	R01 AI987654-01	20%
Norman Lincoln	Understanding the importance of protein aggregate analysis in the development of protein therapeutics	R15 AI123456-02	10%
Michael Yeun	Transforming s and D distributions of nanoparticles in solution into precise molecular weight, density and particle diameter distributions	R01 AI192837-01	15%
Steven Cudlitz	Understanding why a therapeutic antibody and its antigen form different complexes in serum than in phosphate-buffered saline	R03 AI918273-01	20%
Carol McBride	Determining the extent of detergent binding and aggregation of membrane proteins using sarcoplasmic reticulum Ca ²⁺ -ATPase	R01 AI102938-03	10%



Component/Accessories Needed:

This list is not comprehensive. For detailed information, visit info.beckmancoulter.com/OptimaAUC, or work with your Beckman representative to identify all the accessories/components you'll need.

Component	Part Number	Justification
Optima AUC ABS/INT	B86437	The Optima AUC combines absorbance and interference optical systems into one unit for the study of a wide variety of samples
An-50 Ti rotor	363782	8-hole analytical rotor for high-throughput purposes
An-60 Ti rotor	361964	4-hole analytical rotor for high-speed applications
Sapphire windows	392773	Applications with interference optics
Quartz windows	392772	Applications with absorbance optics
Aluminum 2-sector centerpiece	334623	High-speed sedimentation velocity applications
Charcoal 2-sector centerpiece	306493	Chemically compatible centerpiece for a wide array of sedimentation velocity applications
Charcoal 6-sector centerpiece	331376	Chemically compatible centerpiece for a wide array of sedimentation equilibrium applications
Torque stand	361318	For proper cell assembly and to eliminate cell leaks

In addition, this section must include:

- **An inventory of AUCs in your area.** If applicable, include all AUCs at your institution as well as neighboring institutions (if any). Then explain why they're inaccessible or inappropriate for your needs. If possible, include a Letter of Support from instrument managers explaining why they can't accommodate your research needs.
- **An assessment of the usage of existing AUCs.** If this applies to your proposal, define the capacity (e.g., hours, % of use and downtime) for each. Then provide a realistic estimate of usage of the Optima AUC by major users in specific terms – not solely as percentage of available time.
- **Information on where the Optima AUC will be located.** It's important to be extremely specific here. You should provide the exact location for the Optima AUC—ideally in a centralized core facility—and explain how it will be accessible for all major and minor users.



4. Compellingly connect the Optima AUC to your research projects.

Assertively describe its essential role in all current or imminent research projects undertaken by major users. Will these projects address important problems or critical barriers to progress in biomedical research? If the aims of these projects are achieved, will scientific knowledge, technical capability and/or clinical practice be improved? If so, tell reviewers that in explicit terms, and explain why the Optima AUC will be an important tool for achieving these aims. In some cases, this might be because no other types of instrumentation or techniques currently available can provide the type of information your major user(s) need.

Further, explain why it's superior to other available methods or instruments, and why major users also need the accessories you're requesting. Describe how these accessories/components will expand or expedite their important research. (Also see information on accessories in guideline #9.)

5. Tout your technical expertise.

Here you must demonstrate that users have the knowledge and experience necessary to set up, run and maintain the Optima AUC. Reviewers need your answers to these questions:

- Does your institution have the technical expertise to make effective use of the Optima AUC?
- How well-qualified are you, other participating investigators and other assigned personnel to operate and maintain it—and to evaluate the results it provides?
- How will you train new users?
- How will you implement biosafety procedures?

Beckman Coulter Life Sciences can assist you with this section in two important ways. First, by helping you create a training program at the Beckman Learning Center. The 2.5-day Optima AUC Customer Training Course is designed for those new to the AUC technique. It covers the basic theory, sample preparation, instrument set-up and an introduction to basic sample analyses using SEDFIT. The analyses will concentrate on velocity sedimentation. For more information, consult your Beckman Coulter representative or contact the course leader, Dean Clodfelter at dkclodfelter@Beckman.com.

Secondly, Beckman can provide documentation explaining how the Optima AUC log-in system permits access to the instrument only by trained users who are covered by the shared grant.

6. Prove how well you've planned for using the Optima AUC.

Before you even think about submitting your proposal, you must create an Advisory Committee that will meet quarterly or, at a minimum, semi-annually. In the Administration section of your proposal, list the names and titles of all committee members. Your list should reflect a diversity of roles and disciplines, and exclude anyone with a conflict of interest. Be sure to include at least one member who will in no way benefit from use of the Optima AUC.

If your institution has never used an AUC, invite an outside expert on AUC to serve on this committee. Your Beckman Coulter representative can be a good resource for identifying this expert.

Next, describe how the committee—together with the lead PI for your proposal—will oversee proper use and maintenance of the Optima AUC by creating and monitoring a plan for such things as:

- Allocating time among major/minor users
- Attracting and training new users
- Managing access to the Optima AUC when research involves infectious/biohazardous materials

Finally, provide a detailed financial plan for operating/maintaining the Optima AUC for the long term (i.e., projections for at least the next 3 - 5 years). Explain how you'll fund the costs of keeping it in working order, as well as any related service/support personnel costs. Beckman offers very attractive service warranty contracts which can be utilized in this section.

7. Demonstrate long-term institutional commitment.

It's particularly important to prove that your institution is willing to support the Optima AUC.

Consider showing prior support of your core research facility to demonstrate historical trends and/or explain how your institution is willing to dedicate resources to and space for the Optima AUC. Approved budget documents and letters from senior administrators can be useful here, as can a written commitment to staffing support and long-term service contracts. Your Beckman representative can provide you with a copy of an Optima AUC Service Contract that gives details about how the instrument will be maintained so as to maximize uptime and ensure consistent delivery of reliable results.

Other items reviewers consider

Though they typically don't carry as much weight, other topics can influence your proposal's success. These include:

- **Period of Support:** Is the requested period of support commensurate with the research proposed by your major users?
- **Biohazards:** Will any of the materials required for research pose a potential hazard to research staff and/or the environment? If so, have you adequately described how you will provide protection against hazardous exposure?
- **Budget:** Though the assessment of your budget won't directly affect your impact score, reviewers will consider whether or not it seems to be reasonable.

8. Convey enthusiasm when describing the Overall Impact/Benefit.

If you fail to express enthusiasm, reviewers are more likely to be unimpressed by your proposal and question its worthiness for funding. Reviewers want to see your enthusiasm reflected on each page of the application! So vividly describe how the Optima AUC will impact your crucial NIH-funded research, and how it will contribute to your institution's long-term biomedical research goals—as well as to the health and well-being of the general public.

9. Follow expert advice.

You won't be the first to apply for an SIG grant, so consider guidance inspired by those who have:

- **Capitalize on the professional reputations of your major users.** Be sure to highlight—using bold, engaging descriptions—the background and expertise of your major users, as well as how the Optima AUC will enhance their vital research. Help reviewers clearly recognize the potential for this grant to help your PIs take significant steps forward in improving public health.
- **Present a strong management plan.** Reviewers want to see that you've thought ahead and planned well for optimizing use of the Optima AUC. Back up your proven technical expertise with a prudent, long-term financial plan. You must also provide details about how you'll recruit new users and train existing ones (e.g., via online training and/or technical support/consultation). Don't hesitate to ask your Beckman Coulter representative for support in this area, or contact Dean Clodfelter at dkclodfelter@Beckman.com.
- **Thoroughly justify all accessories.** You must describe requested accessories or components and specify which investigators need each component. At least half of your users should have a justified need for each accessory. Ask your Beckman Coulter representative for information about bundling the accessories and components you need into the sales quote for an Optima AUC.
- **Don't gloss over institutional support.** Reviewers want to know that your institution is fully committed to supporting the Optima AUC well beyond the one-year SIG award period. (If possible, confirm that appropriate staff at your institution are prepared to sign a 3- to 5-year service contract for the Optima AUC, which is a clear indication of support.) Be sure all such indicators of support are clearly stated—and thoroughly substantiated—in your proposal.
- **By all means, sweat the small stuff.** This includes not only following all formatting guidelines, but also maintaining zero tolerance for typos, bad grammar, inconsistent terminology and poorly written content. If writing is not one of your strong suits, seek out someone who can help. Have multiple people read your final proposal (ideally more than once), including some who have no connection to it and have never read it before. Ask them to critique it honestly, and to point out errors and inconsistencies as well as entire sections of content that may be unclear or not easy to read. Above all, proofread and then proofread again.

For more information about applying for an SIG award to fund the purchase of an Optima AUC, consult your Beckman Coulter representative or confer with colleagues who have previously applied for SIG awards to fund other instrumentation. A list of additional online resources appears below.

ADDITIONAL RESOURCES

For more information on the Optima AUC, please visit <http://info.beckmancoulter.com/OptimaAUC>

SIG Program Announcement

http://dpcpsi.nih.gov/orip/diic/shared_instrumentation

SIG Grant Program Frequently Asked Questions

http://dpcpsi.nih.gov/orip/diic/shared_instru_faqs

How to Apply - Application Guide (SF 424/R&R forms)

<http://grants.nih.gov/grants/how-to-apply-application-guide.htm#inst>

NIH Office of Research Infrastructure Programs (ORIP)

<http://dpcpsi.nih.gov/orip/index.aspx>

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