

## Insider's Guide to Peer Review For Applicants



### NIH Center for Scientific Review

To help new and established applicants submit better applications, CSR asked six current and retired study section chairs to share their personal insights on what makes a good NIH grant application. They responded with great enthusiasm. We present some of their responses in their own words to preserve their spirit and impact. Applicants are encouraged to consider the additional tips and official application guidelines on the NIH Web site: [http://grants.nih.gov/grants/grant\\_tips.htm](http://grants.nih.gov/grants/grant_tips.htm).

**Propose something significant:** It is a real turn-off to read an application that is basically a re-hash of a previous project with a new tissue. The same goes for “me too” research. Identify an area of current controversy and importance within your field. Make it something that would interest more people than you and your coworkers. Will it be important to clinicians or other investigators? Are you dealing with key questions or controversies in the field?

**Good ideas don't always sell themselves:** Tell me why it's important up front in the background section, and I'll be ready to roll. Tell me what's known and what isn't known and how, after you complete your studies, you'll move the field forward or answer important questions. A lot of people really are unaware of how absolutely important it is to tell the reviewer from the beginning why it's worth doing. If you're seeking an incremental advance over what's known, it's essential to justify it.

**Make it exciting:** I love to see fresh, well-supported ideas that have a good hypothesis behind them that could really open up an area. And I find it both exciting and intellectually stimulating to encounter new approaches to major problems and research that could advance both clinical and basic science. Even if it's somewhat high risk, if it comes with a good hypothesis and you can test it, I'd find it very exciting.

**Probe for mechanisms and seek new models.** We need to know how something happens—not just what happens. With this knowledge we can affect outcomes and design something to prevent something from happening. If you don't know what's happening on the bench, you're not going to move to the bedside with any reproducible or knowledgeable treatment.



If you really want to know how to write a good application, serve on a study section.

Rozanne M. Sandri-Goldin  
University of California, Irvine

**Avoid proposing to "collect more data."** It might help you to set up the system, but if it is not critical to fundamental understanding do not dwell on it. Although some experiments might take a lot of time to perform, they will not necessarily qualify as specific aims.

**Be very clear** and very concise about what you want to do, why it's important, and what you expect to get out of it. Keeping it clear doesn't mean doing away with complexity. Just make sure your general sense and key questions come across very clearly **throughout** your proposal.

**Don't assume too much:** Not all reviewers will have the same in-depth, highly expert, knowledge you do. Avoid any unnecessary technical jargon, and write your application assuming it will be reviewed by intelligent scientists who have a breadth of knowledge around your area. So consider getting a researcher at your institution who isn't an expert in your field to read your application and tell you how well it flows.

**Be brief with stuff everyone knows:** Lots of people go too far describing routine laboratory methods, which just take up space and really distract reviewers. It gives the message that the applicant is not really as organized as they should be. New investigators, however, should make a little more effort to show that the techniques they proposed to use are within their capabilities.

**Aim each aim:** Spend time on the Expected Outcomes, Data Interpretation, Pitfalls, and Contingencies section for each aim. The “expected outcomes” section shows you’ve got a logical strategy. The section on Data Interpretation gives insight into your depth of understanding the problem. The Pitfalls section shows how familiar you are with the proposed techniques and methodologies. Finally, in discussing alternative strategies, you can give us confidence you are able to deal with the problems that arise when experiments don’t work as expected.

**Pull it together:** At the end of your methods section, have a succinct, one paragraph summary of what you intend to do, how you intend to do it and what it is going to tell you. Write it like a manuscript abstract. It is really helpful at the very end if I can get the take home message.

**Don’t jump too fast into writing your application,** particularly if you’re a new applicant. The most critical parts are the summary and specific aims sections. So write a one-page summary page with specific aims first and share it with someone who is experienced, has their own funding or—ideally—someone who has served on a study section. If you can’t wow them, start again and use the time you saved to come up with some fresh ideas.

**Don’t test the waters** to see how reviewers like your initial ideas or let them find the limitations for you. Find the limitations yourself and discuss them in the application.

**Don’t cram your application like a suitcase:** At every single meeting, I hear reviewers complain about small font, tiny margins, numbered references (because they require readers to constantly flip back to the reference section) and statements such as “See the reprint in the appendix for details.” I love to see spaces between paragraphs, spaces between sections, and figure legends I don’t need to bring up the PDF magnification to 200x to read.

**Proofread your application.** Better yet, have someone else proofread it!

**The key word for applicants is persistence.** Half the applications reviewed are not discussed. So don’t despair. You’re in good company. Go through your critiques with your investigators. If there’s a fatal flaw, stand back and then decide the best route to take next time. But usually the weaknesses are fixable. Fix them and re-submit.

#### NIH Tips for Applicants Video

<http://www.csr.nih.gov/video/video.asp>

#### Get More Grant Writing Tips from NIH

[http://grants.nih.gov/grants/grant\\_tips.htm](http://grants.nih.gov/grants/grant_tips.htm)

#### Learn More About the Peer Review Process

<http://cms.csr.nih.gov/>

	<p><b>In appreciation for their many contributions . . .</b></p> <p><b>Rozanne Sandri-Goldin, Ph.D.</b>, Chair, Dept. Microbiology &amp; Molecular Genetics, University of California—Irvine, Former Chair, Special Emphasis Panel F08 for NSRA Fellowships; and Former Chair, Experimental Virology Study Section</p> <p><b>Jonathan D. Kaunitz, M.D.</b>, Professor of Medicine, UCLA School of Medicine Current Chair, Clinical and Integrative Gastrointestinal Pathobiology Study Section</p> <p><b>Robb Krumlauf, Ph.D.</b>, Scientific Director, Stowers Institute for Medical Research Former Chair, Development - 2 Study Section</p> <p><b>Phoebe Leboy, Ph.D.</b>, Professor Emeritus, University of Pennsylvania Dental School Former Chair, Skeletal Biology Development and Disease</p> <p><b>Alice Clark, Ph.D.</b>, Vice Chancellor for Research and Sponsored Programs, The University of Mississippi Former Chair, Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section</p> <p><b>Greg Ashby, Ph.D.</b>, Professor, Psychology, UC Santa Barbara Former Chair, Cognition and Perception Study Section</p> <p>And Dr. Sandra Melnick Seitz, SRO, CSR Infectious Disease, Reproductive Health, Asthma, and Pulmonary Epidemiology Study Section.</p>
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