The NIH Peer Review Process

Denise Wiesch, Ph.D.
Scientific Review Officer

Epidemiology of Cancer (EPIC) Study Section
Cancer, Heart, and Sleep Epidemiology Panel A (CHSA) Study Section
Population Sciences and Epidemiology Integrated Review Group
Division of AIDS, Behavioral and Population Sciences
NIH seeks fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce the burdens of illness and disability.
NIH Extramural & Intramural Funding
Total FY 2014 Budget: $30.1 Billion
To see that NIH grant applications receive fair, independent, expert, and timely reviews – free from inappropriate influences – so NIH can fund the most promising research.
24 NIH Institutes and Centers Fund Grants

Center for Scientific Review

NIH Institutes and Centers:
- NINDS
- NIGMS
- NCRR
- NIA
- NIAAA
- NEI
- NIAMS
- NIMH
- NHLBI
- NHGRI
- NICHD
- NIDDK
- NIDA
- NINDS
- NIAID
- NIDCR
- NINR
- NCI
- NIEHS
- NIDCD
- NLM
- NCCAM
- FIC
- NIBIB
- NIDA
- NIDDK
- NCMHD
CSR Referral
Applications Are Assigned to:

• **Scientific Review Groups for review** based on:
  – Specific referral guidelines for each scientific review group

• **NIH Institutes or Centers for funding** based on:
  – Overall mission of the Institute or Center
  – Referral guidelines for each funding IC
  – Specific programmatic mandates and interests of the Institute or Center
CSR Peer Review – Fiscal Year 2014

- 86,000 applications receive
- CSR study sections review 75%
- 16,000 reviewers
- 237 Scientific Review Officers
- 1,500 review meetings
CSR
Divisions and Integrated Review Groups (IRGs)

Neuroscience, Development and Aging
- Brain Disorders & Clinical Neuroscience
- Molecular, Cellular & Developmental Neuroscience
- Integrative, Functional & Cognitive Neuroscience
- Emerging Technologies & Training in Neuroscience
- Biology of Development & Aging

AIDS, Behavioral and Population Sciences
- Biobehavioral & Behavioral Processes
- Risk, Prevention & Health Behavior
- Population Sciences & Epidemiology
- Healthcare Delivery & Methodologies
- AIDS & AIDS Related Research

Basic and Integrative Biological Sciences
- Biological Chemistry & Macromolecular Biophysics
- Bioengineering Sciences & Technologies
- Cell Biology
- Genes, Genomes & Genetics
- Oncology: Basic Translational
- Interdisciplinary Molecular Sciences & Training

Physiological and Pathological Sciences
- Endocrinology, Metabolism, Nutrition & Reproductive Sciences
- Immunology
- Infectious Diseases & Microbiology
- Digestive, Kidney & Urological Systems

Translational and Clinical Sciences
- Cardiovascular and Respiratory Sciences
- Surgical Sciences, Biomedical Imaging and Bioengineering
- Musculoskeletal, Oral & Skin Sciences
- Oncology: Translational Clinical
- Vascular and Hematology
New Merged CASE-EPIC Sister Panels

- New sister panels each review cancer, heart, and sleep epidemiology apps
- Scientifically equivalent expertise on each sister panel
- Expecting final approval for new sister panels soon
Help Get Your Application to the Right Study Section

• Look at CSR Integrated Review Group and Scientific Review Group (Study Section) guidelines to identify a home for your application [http://www.csr.nih.gov](http://www.csr.nih.gov)

• Submit a Cover Letter!
Sample Cover Letter

Please assign this application “Immunology of Kidney Transplant Rejection” to the following:

**Institutes/Centers**
- National Institute of Diabetes, Digestive and Kidney Diseases (primary)
- National Institute of Allergy and Infectious Diseases (dual)

**Scientific Review Group**
- Digestive, Kidney, and Urological Systems

Please do not assign this application to the following:

**Scientific Review Group**
- Immunology IRG

This study focuses on improving outcomes specifically for kidney transplant, not general immunological aspects.
Peer Review and Funding of NIH Grant Applications

National Institutes of Health

Center for Scientific Review
Assigns to NIH Institute and Peer Review Group

Study Section
Reviews for Scientific Merit

Institute
Evaluates for Relevance to Research Priorities

Advisory Council or Board
Recommends Action

Institute Director
Takes Final Action
Second Level of Review
NIH Institute/Center Council

First Level of Review
Scientific Review Group
(Study Section)
Overall Timeframe from Submission to Award

There are three main overlapping cycles per year

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receipt and Referral</td>
<td>Review</td>
<td>Council</td>
<td>Award</td>
<td>Receipt and Referral</td>
<td>Review</td>
<td>Council</td>
<td>Award</td>
<td>Receipt and Referral</td>
<td>Review</td>
<td>Council</td>
<td>Award</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NIH Center for Scientific Review
CSR Study Sections: The Meeting

- Each CSR standing Study Section has ~12-25 regular members plus temporary reviewers from the scientific community
- CSR standing study sections typically convene in face-to-face meetings
- About 60-100 applications are usually reviewed by each study section in 1-2 day meetings
How Reviewers Are Selected for Study Section Service

- Demonstrated scientific expertise/research support
- Doctoral degree or equivalent
- Mature judgment
- Work effectively in a group context
- Breadth of perspective
- Impartiality
- Representation of women and minority scientists
- Geographic distribution
Pre-Meeting Activities - Reviewers

• Reviewers receive applications and assignments 6-8 weeks prior to meeting
  – Identify conflicts of interest
  – Generally assigned between 8-12 applications
  – Write critiques prior to the meeting
• Post preliminary scores and critiques on secure meeting website
• Read written critiques of other reviewers a few days before the meeting
At the Meeting

- **Order of Review**
  - The average of the preliminary Overall Impact score from the assigned reviewers determines the review order
  - Discussions start with the application with the best average preliminary Overall Impact score

- **Clustering of Review**
  - New Investigator R01 applications are clustered
  - Other grant mechanisms may be clustered

- **Not Discussed Applications**
  - About half the applications will be discussed (best half)
  - Applications unanimously judged by the review committee to be in the lower half are not discussed
Scoring

9-point score scale is used to provide:
• Criterion Scores for each of the 5 core review criteria
• Overall Impact/Priority Score based on, but not an average of, the core criterion scores plus additional criteria

All applications receive scores:
• **Not discussed** applications will receive only initial criterion scores from the three assigned reviewers.
• **Discussed** applications also receive an averaged overall impact score from eligible (i.e., without conflicts of interest) panel members.
## 9-Point Scoring Scale

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>1</td>
<td>Exceptional</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>4</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Low Impact</td>
<td>7</td>
<td>Fair</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
</tr>
</tbody>
</table>
Review of Each Application

- Reviewers with conflicts leave room
- Assigned reviewers state preliminary scores
- Discussion of scientific and technical merit
  - Based on the 5 review criteria
  - Assigned reviewers first then open discussion to whole committee
- Discussion of Protection of Human Subjects and Inclusion criteria
- Assigned reviewers state final score – range of scores is set
- Every eligible member scores each application
- Budget and Administrative concerns
- Ideal time for each application - 15 to 20 minutes
Summary Statement

New Indicator for Early Stage Investigators

Program Officer

Impact/Priority Score 10-90 range

Percentile in whole numbers

New Indicator for Early Stage Investigators
View the Videos

- NIH Peer Review Revealed
- NIH Tips for Applicants

Know the Review Criteria!

• Review Criteria at a Glance

• Criteria are different for R01s, Fellowships, K awards

• Check Funding Opportunity Announcement (FOA) for specific criteria

• Scores are based on the reviewers’ evaluation of your response to the review criteria
Review Criteria

• Overall Impact
  – Assessment of the likelihood for the project to *exert a sustained, powerful influence on the research field(s) involved*

• Core Review Criteria
  – Significance
  – Investigator(s)
  – Innovation
  – Approach
  – Environment

  Review criteria each scored from 1-9

When Preparing an Application

- Read instructions
- Clearly state rationale and design of proposed investigation
- Provide sufficient detail so reviewers will know what you mean
- Refer to pertinent literature
- Include well-designed tables and figures
- Present an organized, lucid write-up
- Obtain pre-review from faculty at your institution

NIH Grant Writing Tips

http://grants.nih.gov/grants/grant_tips.htm
What Reviewers Look for in Applications

• Impact
• Exciting ideas
• Clarity
• Realistic aims and timelines -- Don’t be overly ambitious
• Brevity with things that everybody knows
• Noted limitations of the study
• A clean, well-written application
Get More Advice

Insider’s Guide to Peer Review for Applicants

To help new and established applicants submit better applications, CSR asked current and recent study section chairs to share their personal insights on producing a highly competitive NIH grant application. They responded with great enthusiasm.

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

Propose something significant: It’s a real turn-off to read an application that is basically a re-hash of a previous project with a new issue. 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 here, 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.

Advice from CSR Study Section Chairs

http://www.csr.nih.gov/applicantResources/Insider
Who at NIH Can Answer Your Questions?

Before You Submit Your Application
- A Program Officer at an NIH Institute or Center
- Scientific Review Officer

After You Submit
- Your Scientific Review Officer

After Your Review
- Your Assigned Program Officer
Separation of Funding and Review

Program Staff:
- Identify and promote research priorities
- Recommend projects for funding (based on score, budget, priorities)
- Manage portfolio of projects
- Work with applicants up to review and after review

Review Staff:
- Manage study section meetings to evaluate scientific and technical merit
- Provide a fair, thorough and competent review for each application
- Work with applicants before review
Key NIH Review and Grants Web Sites

NIH Center for Scientific Review
http://www.csr.nih.gov

NIH Office of Extramural Research
http://grants.nih.gov/