Peer Review Under the Microscope: From Best Practices to Current Challenges

Lucy Liaw PhD, FAHA
Maine Medical Center Research Institute
AHA Scientific Statement

Peer Review Practices for Evaluating Biomedical Research Grants

A Scientific Statement From the American Heart Association

Lucy Liaw, PhD, FAHA, Chair; Jane E. Freedman, MD, FAHA; Lance B. Becker, MD, FAHA; Nehal N. Mehta, MD, FAHA; Laura Liscum, PhD; on behalf of the Peer Review Subcommittee of the American Heart Association National Research Committee; Council on Cardiovascular and Stroke Nursing; Council on Cardiovascular Radiology and Intervention; Council on Cardiovascular Surgery and Anesthesia; Council on Clinical Cardiology; Council on Functional Genomics and Translational Biology; Council on Hypertension; Council on Quality of Care and Outcomes Research; and Stroke Council
• The Review Panel
• Panel Discussion of Application
• The Grant Itself
• Proposals for Improvement
• Case Study of American Heart Association and other similar foundation practices

Peer Review Subcommittee of the National Research Committee
American Heart Association Peer Review Oversight

Development and implementation of review procedures for center grants and new granting mechanisms

Program-Specific Review Committees

Peer Review Committees organized by scientific category and research type

application scores

Peer Review Subcommittee

AHA Research Committee

Science Advisory and Coordinating Committee

AHA Board of Directors

funding decisions for all research programs

application scores
Cardiorenal - Clinical
Cardiorenal - Clinical

Cardiorenal - BSc
Cardiorenal - BSc 1
Cardiorenal - BSc 2

Cell Transport BSc
Cell Transport BSc 1
Cell Transport BSc 2

Collaborative Sciences Award
Collaborative Sciences Award
Collaborative Sciences Award Letter of Intent

Competitive Catalyst Renewal Grant
Competitive Catalyst Renewal Grant

Genomics and Translational Biology Epidemiology / Observational-Epidemiology - Clinical
Genomics and Translational Biology Epidemiology / Observational-Epidemiology - Clinical

Genomics and Translational Biology Epidemiology / Observational-Epidemiology - Population
Genomics and Translational Biology Epidemiology / Observational-Epidemiology - Population 1

Peer Review Committees
organized by scientific category
and research type
Merit Award
Merit Award
Merit Award Letter of Intent

Collaborative Sciences Award
Collaborative Sciences Award
Collaborative Sciences Award Letter of Intent

Strategically Focused Research Network
Strategically Focused Research Network
Strategically Focused Research Network - Childrens
The Review Panel

"Is it just me or are these review panels getting a lot tougher?"

Diversity
Gender
Faculty level
Geographical
Diversity
Gender
Faculty level
Geographical

Goals:

35% female reviewers across committees
10% underrepresented minorities across committees
Equal distribution among faculty levels
Spring 2017 reviewer data
926 reviewers in 60 review committees

% female committee members

- Both Male
- Female Chair
- Female Co-Chair
- Both Female
Spring 2017 reviewer data
926 reviewers in 60 review committees

# URM per committee

<table>
<thead>
<tr>
<th>Category</th>
<th># URM per Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Male</td>
<td>1.2</td>
</tr>
<tr>
<td>Female Chair</td>
<td>1.3</td>
</tr>
<tr>
<td>Female Co-Chair</td>
<td>2.0</td>
</tr>
<tr>
<td>Both Female</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Spring 2017 reviewer data
926 reviewers in 60 review committees

No apparent association of distribution of faculty level, e.g. assistant, associate, or full professor level with gender of committee leadership.
Lay Stakeholder in Science Initiative

*Lay person description in grant applications*

2013: Pilot program to place lay reviewers in selected committees

2015+: Identified 7 key characteristics of lay committee members
Lay Stakeholder in Science Initiative

1. Connection with the topic
2. Level of interest and experience evaluating research applications or science materials (based on professional experience)
3. Level of education, relates to critical thinking and written and oral competencies
4. AHA volunteer experience, preferably at board or leadership level
5. Knowledge of the AHA, commitment to its mission
6. Familiarity with heart disease and stroke
7. Basic knowledge of scientific method and peer review
Lay Stakeholder in Science Initiative

- Strategic Program Review Committees
- The Institute for Precision Medicine Review Committees
- Guidelines for Writing Groups
- Research Committees and Subcommittees

Since 2016-2017

1. Lay Stakeholders interviewed for potential placement on science and research committees is up from last year.  
   ![112%]

2. Lay Stakeholders are continually being trained to participate in science and research activities. Staff is testing new platforms to deliver training (i.e. Adobe Connect).  
   ![19%]

3. The projected number of Lay Stakeholders who will have participated in science and research activities before the end of the fiscal year is greater than projected. Recruitment is on-going, and many are ready to serve on peer review, writing groups and other committees.  
   ![13%]

Significance and potential impact on the AHA mission
Congressional authorization
1993 NIH Revitalization Act

Enhance geographical
distribution of NIH research
funds and increase research
capacity

Currently 23 states & Puerto
Rico are IDeA-eligible
<table>
<thead>
<tr>
<th>Spring 2011 Reviewers by Affiliate</th>
<th>Total #</th>
<th>Total %</th>
<th>Spring 2011 Apps by Affiliate</th>
<th>Total #</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founders</td>
<td>192</td>
<td>17%</td>
<td>Founders</td>
<td>491</td>
<td>14%</td>
</tr>
<tr>
<td>Great Rivers</td>
<td>182</td>
<td>16%</td>
<td>Great Rivers</td>
<td>393</td>
<td>11%</td>
</tr>
<tr>
<td>Greater</td>
<td></td>
<td></td>
<td>Greater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southeast</td>
<td>213</td>
<td>19%</td>
<td>Southeast</td>
<td>466</td>
<td>14%</td>
</tr>
<tr>
<td>MidAtlantic</td>
<td>100</td>
<td>9%</td>
<td>MidAtlantic</td>
<td>385</td>
<td>11%</td>
</tr>
<tr>
<td>Midwest</td>
<td>183</td>
<td>16%</td>
<td>Midwest</td>
<td>478</td>
<td>14%</td>
</tr>
<tr>
<td>SouthWest</td>
<td>133</td>
<td>12%</td>
<td>South Central</td>
<td>297</td>
<td>9%</td>
</tr>
<tr>
<td>Western States</td>
<td>132</td>
<td>12%</td>
<td>Pacific Mtn</td>
<td>153</td>
<td>4%</td>
</tr>
<tr>
<td>N/A</td>
<td>0</td>
<td></td>
<td>Western States</td>
<td>439</td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td>1135</td>
<td></td>
<td>Total</td>
<td>3439</td>
<td></td>
</tr>
</tbody>
</table>
1. Organizations that fund research are in a strong position to assess and seek improvement in effectiveness and value of the peer review process.

2. Evidence-based evaluation of peer review needs more attention. Performing randomized controlled trials on innovative aspects of peer review are warranted.

3. Formal sharing of peer review practices between organizations should be encouraging.

4. Peer review practices for special purposes should undergo evaluation and testing.

5. Mathematical and technical aspects of scoring grants needs evaluation and scrutiny (weighting, normalization, statistical analysis, variation)