CSR Advisory Council Update
September 21, 2020

Noni Byrnes, Ph.D.
Director
Center for Scientific Review
Welcome: CSR Advisory Council Members

<table>
<thead>
<tr>
<th>Member</th>
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<tr>
<td>Jinming Gao, Ph.D.</td>
<td>Professor of Pharmacology and Otolaryngology</td>
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<td>University of Texas Southwestern Medical Center</td>
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<tr>
<td>Alfred George, M.D.</td>
<td>Magerstadt Professor and Chair</td>
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<td></td>
<td>Department of Pharmacology</td>
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<td>Northwestern University</td>
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<td>Yasmin Hurd, Ph.D.</td>
<td>Professor, Psychiatry, Neuroscience, Pharmacology and System Therapeutics</td>
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<td>Mount Sinai School of Medicine</td>
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<td>Deanna Kroetz, Ph.D.</td>
<td>Professor, Bioengineering and Therapeutic Sciences</td>
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<td>University of California, San Francisco</td>
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<td>José López, M.D.</td>
<td>Professor, Hematology</td>
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<td>University of Washington</td>
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<td>Scott Miller, Ph.D.</td>
<td>Irénée Dupont Professor, Chemistry</td>
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<td>Yale University</td>
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<td>Tonya Palermo, Ph.D.</td>
<td>Professor and Associate Director, Anesthesiology and Pain Medicine</td>
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<td>Julie Price, Ph.D.</td>
<td>Professor and Investigator, Radiology and Biomedical Imaging</td>
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<td>Harvard Medical School</td>
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<td>Elizabeth Villa, Ph.D.</td>
<td>Assistant Professor, Biological Sciences</td>
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<td>University of California, San Diego</td>
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<td>Denise Wilfley, Ph.D.</td>
<td>Scott Rudolph University Professor</td>
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<td>Hooker Distinguished Professor, Biology</td>
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Welcome...CSR Advisory Council Ad Hocs

Narasimhan Rajaram, Ph.D.
Associate Professor
Department of Biomedical Engineering
University of Arkansas at Fayetteville

Alexis Stranahan, Ph.D.
Associate Professor
Department of Neuroscience and Regenerative Medicine
Medical College of Georgia, Augusta University
Leadership & Management Transitions [Since March 2020]

Acting Division Director (effective 10/26/20)
Division of Neuroscience, Development and Aging
Delia Olufokunbi Sam

IRG Chief
Bioengineering Sciences and Technologies
Vinod Charles

IRG Chief
Immunology
Audrey Lau

IRG Chief
Biological Chemistry and Macromolecular Biophysics
James Mack

Acting IRG Chief
Musculoskeletal, Oral and Skin Sciences
Dr. Katherine Malinda

Referral Officers

- Thomas Beres
- Alok Mulky
- Raul Rojas
- Sudha Veeraraghavan
- Wei-Qin Zhao

Chief of Staff
Amy Wernimont

Reviewer Training Coordinator
Tasmeen Weik
Impact of COVID-19 on Peer Review
CSR response to COVID-19 pandemic

• **Ahead of the curve:** Acquisition of FedRAMP-certified Zoom platform, 650 licenses in preparation for an emergency. Tested the platform to prepare for adaptation in early/mid 2019

• Most advanced **telework** policy at NIH - enabled 100% of CSR workforce to be virtual with 100% productivity immediately. All **review meetings virtual** with very short notice, relevant security and integrity in place

• **April Review Matters blog on Zoom security** to address community concerns re: Zoom-bombing, etc.
CSR held 600+ Zoom review meetings [Mar-Aug 2020]
>1000 additional planned Sept 2020-Mar 2021
Summer 2020 Reviewer/SRO Survey Results
REVIEWER and SRO Meeting Format Preference
Zoom Compared to In-Person

REVIEWERS

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<td>In-person</td>
<td>40</td>
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<tr>
<td>Zoom/video</td>
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SROs

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<tr>
<td>In-person</td>
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<td>Zoom</td>
<td>20</td>
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<tr>
<td>Hybrid</td>
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<td>Other</td>
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REVIEWER Impressions: Quality of Review
Zoom Compared to In-Person

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<td>Much better</td>
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<td>Slightly better</td>
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<tr>
<td>Same</td>
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<td>Slightly worse</td>
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<tr>
<td>Much worse</td>
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Productive Discussion
Reviewer Engagement
Meeting Management
Overall Quality
SRO Impressions: Quality of Review
Zoom Compared to In-Person

Quality Discussion
- Much better
- Slightly better
- Same
- Slightly worse
- Much worse

Reviewer Engagement
- Much better
- Slightly better
- Same
- Slightly worse
- Much worse

Meeting Management
- Much better
- Slightly better
- Same
- Slightly worse
- Much worse

Overall Quality
- Much better
- Slightly better
- Same
- Slightly worse
- Much worse
REVIEWER Experience: Participation
Zoom Compared to In-Person

Contributed to Discussion
Confident Voicing Opinions
Others Responsive to My Feedback
Clearly Communicated Opinions
Comfort Voting Outside Range
Attention Span Lasted
SRO Experience: Ease of Reviewer Recruitment
Zoom Compared to In-Person

- Minorities:
  - Much better: 10
  - Slightly better: 20
  - Same: 30
  - Slightly worse: 40
  - Much worse: 50

- Women:
  - Much more: 10
  - Slightly more: 20
  - Same: 30
  - Slightly less: 40
  - Much less: 50

- Clinicians:
  - Much more: 10
  - Slightly more: 20
  - Same: 30
  - Slightly less: 40
  - Much less: 50

Percent
Post-pandemic: Future of peer review meetings?

- **Forced Experiment**
  - Zoom vs. older Cisco platform – easier to use
  - Socialization, lowered resistance among staff, reviewers

- **Data-driven decisions** about the future
  - Objective data re: scoring, recruitment, diversity
  - Reviewer/staff surveys re: experience, discussion quality

- **Environmental and fiscal considerations** balanced with primary goal to maintain or improve quality of the NIH review process

- **Unlikely to go back to the way it was** – if safe, then some hybrid reality (1-2 times/year virtual)
Framework: Quality of Peer Review

Reviewers
• Reviewer Training & Evaluation – consistent, transparent
• Review Service – broadening pool, incentivizing service

Process
• Confidentiality/Integrity in review
• Bias in Review
• Assignment/Referral of Applications
• Review Criteria and Scoring System

Study Sections
• Scientific scope (relevance, adapting to emerging areas, perpetuating stale science)
• Output (identification of meritorious science)
• Size appropriate for competition

ENQUIRE
Evaluating Panel Quality in Review
ENQUIRE

Multiple Possible Actions Follow

- Change in scientific guidelines
- Redistribute areas across study sections
- Merge study sections
- Add emerging areas of science
- Create new study sections
- Eliminate study sections

Process Overview for Each Cluster of Study Sections

- **Cluster Formation**
  - How? Determined by science, not management structure - 9-12 study sections in each cluster

- **External Scientific Evaluation Panel**
  - Who? Scientifically broad, senior scientists provided with:
    - current scientific guidelines
    - sample abstracts & aims
    - data on workload trends, bibliometric output, ESR submission and success rates
  - Asked: How well does the scope of the study sections align with the current state of the science?

- **Internal Process Evaluation Panel**
  - Who? NIH extramural staff with broad perspective
    - workload data
    - scoring trends
    - survey feedback from reviewers & program officers
    - site visit information on meeting function
    - External Scientific Working Group’s report
  - Asked: Does the study section function in a way that supports optimal identification of high impact science?

- **Approvals**
  - Office of Extramural Research
  - CSR Advisory Council
ENQUIRE 2019
Implementation – 42 study sections

- Approved by CSR Advisory Council, March 2020
- Implementation delayed due to COVID-19 – from June 5, 2020 to Oct 5, 2020 receipt dates
- New and restructured study section descriptions posted on the web
- Members being reassigned according to expertise need/scientific area realignment- Nov 2020
- First study section meetings of new/restructured committees in Feb 2021

ENQUIRE 2020
Ongoing: Basic Sciences (16 study sections)
Upcoming (2 clusters, each with 10-12 study sections): Epidemiological & Oncological Sciences
BIAS IN REVIEW
“Reviewer Bias” based on Topic Choice

Important Points to Note:

- Award rates differ 4-fold across different topic clusters
- E.g. Cluster A (low award rate): child obesity intervention, physical activity, weight loss program….Cluster B (high award rate): corneal wound healing, ocular surface, cataract development...
- The science of high and low award rate topic clusters are generally not reviewed in the same study sections, so “reviewer bias” to explain differential award rates was puzzling
“These new analyses demonstrate …… that differential award rates, rather than decisions made by peer reviewers, as indicated in Hoppe, were critical drivers of differences in funding outcomes for applications linked to different topics” - See Open Mike, Aug 12, 2020; Corrigendum submitted.
CSR’s “Anonymization” Study

1200 applications
400 from Black PIs
400 from (matched) White PIs
400 from (randomly-selected) White PIs

Reviewed in standard and anonymized form

2011
NAS issues diversity report. Ginther study on racial disparities in NIH award rates. NIH forms ACD-Workgroup.

2012
ACD WG sub-committee and internal NIH group design study.

2013-2016
Independent contractor selected to conduct study

2016
Analytic plan preregistered. Study initiated.

2017
Data collection and analysis.

2018-2019
NIH/CSR evaluates the findings and reports results.

2020
Anonymization Study

Main Results:

• No effect on scores of Black applicants
• Worsens scores of White applicants (significant, small effect size)
• 20% of the time, reviewers could correctly identify the applicant

Publication ready, submitted/rejected without peer review by Sci Adv, preparing for submission elsewhere

Three takeaways:

• Isolating the effect of race in the peer review process is challenging due to secondary, linked variables (e.g. institutional “prestige”, investigator “pedigree”, Matthew/halo effects, etc.) all tied to racial disparities in opportunity/access. **Positive bias effects**
• Implicit bias is in all of us, including the 18,000 CSR reviewers
• Anon study (post-submission redaction, mail reviews only, no meeting, no discussions, no final scores) **not the same** as carefully-designed, double-blinded review process
Piloting Multi-Stage Partially Double-Blinded Review
CSR/Common Fund Collaboration (Fall 2020 transformative R01s)

- **Self-redaction** by investigators – no identifiers/institutions
- Stage 1: **Editorial Board** reviews Specific Aims; selects top subset.
- Stage 2: **Subject matter experts** evaluate Specific Aims, Abstract, Research Strategy.
- Stage 3: **Editorial Board** selects top subset, gives prelim scores, followed by receiving full application with investigator info, meeting with discussion and final scores of all 5 criteria.
- **Analysis by external contractor** regarding process, outcomes, reviewers’ ability to evaluate or identify the applicant, etc. will determine feasibility.
CSR will launch bias awareness module for reviewers, SROs

*Spring 2021 (before summer 2021 meetings)*

- **Piloted in summer 2020** for NIGMS MIRA reviewers, SROs, POs - collaboration between CSR, NIGMS, and NIH’s COSWD
- Based on pilot feedback, CSR is designing multimedia, interactive module for reviewers and SROs – **Planned launch: Apr/May 2021**
  - Bias (including positive bias) awareness in self, in others
  - Case studies in review
  - Mitigation and bystander strategies in review
Under Development: CSR Data Book

- Dynamic, interactive site for public access to CSR peer review data
- Application numbers, meeting data, reviewer data, demographics, etc.
- Accuracy, Transparency, Accountability
### Demographics, Career-Stage of CSR Reviewers 2020

#### Applicants

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<th>%URM</th>
<th>%B/AA</th>
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<td>33.5%</td>
<td>7.8%</td>
<td>2.3%</td>
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<tr>
<td>2020</td>
<td>34.9%</td>
<td>8.4%</td>
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#### Study Section Members

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<td>40.2%</td>
<td>11.2%</td>
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<tr>
<td>2020</td>
<td>42.9%</td>
<td>13.2%</td>
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#### All Reviewers

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<td>38.2%</td>
<td>8.5%</td>
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### Professor, Associate, Assistant

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<td>2015</td>
<td>55.5%</td>
<td>29.1%</td>
<td>6.3%</td>
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<tr>
<td>2020</td>
<td>49.8%</td>
<td>32.1%</td>
<td>10.5%</td>
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**CSR Scientific Review Officer Demographics [June 2020]**

**SRO Workforce**
- 43% minorities
- 34% Other Minorities
- 7% B/AA
- 57% White (non-Hispanic)
- 9% Under-represented Minorities

**Supervisors**
- 45% minorities
- 27% Other Minorities
- 14% B/AA
- 55% White (non-Hispanic)
- 18% Under-represented Minorities

**Gender**
- 50% women
- 50% men

- 50% women
- 55% men
Broadening the Pool of Reviewers
Broadening the Pool
Early Career Reviewer Program Expanded

- Sept 2019 CSRAC Working Group Recommendations re: qualifications, usage, consistency, engagement

- Sept – Dec 2019:
  - Database revamped – usable, trackable, accurate
  - CSR SRO guidance developed
    - 2 ECRs/standing committee
    - 2 ECRs/SEP with >49 R01/R21
    - 1 ECR/SEP with 25-49 R01/R21

- 940 ECRs recruited in 2020, compared to 575 in 2019

- ECR pool is more diverse; 12.1% URM vs. 8.5% for all CSR reviewers in 2020
Broadening the Pool
The critical role of SROs

- Increased attention to diversity on Special Emphasis Panels (SEPs)
- Moving away from diversity as a “requirement” to recognition of the critical need for the NIH to hear diverse (race/ethnicity, gender, career-stage, scientific fields) perspectives to identify the best, most disruptive, novel science.
- Moving away from old habits of recruiting from the “mental rolodex” approach
- New and enhanced resources to make it easier for SROs to interrogate a broad pool of scientific expertise (CSR’s Reviewer Finder Tool)
Broadening the Pool: Aug 2020 Launch of CSR Reviewer Finder

Multiple Data Sources

- Early Career Reviewer database
- Program Officer Recommendations
- Scientific Society Recommendations
- PIs with limited svc

One Interface – user-friendly for SROs
Update: CSR AC Working Group on Simplifying Review Criteria
[Jan 2020 – Mar 2020]

1. Reorganize the current five scored review criteria into three scored factors
2. Define each criterion and factor conceptually
3. Alter templates to focus reviewer attention on score driving factors
4. Clarify reviewer responsibility for evaluating the budget
5. Relieve reviewers of responsibility for most “additional review considerations”
6. Convene an additional workgroup for review criteria for clinical trials applications

Shared with NIH leadership – very well-received, go-ahead to convene CT WG
Next steps forward with OER/ICs after CSRAC WG on Simplifying CT Review Criteria has a final report
Discussion