Center for Scientific Review Update
NICHD Advisory Council
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Director
Center for Scientific Review
CSR’s Mission

To ensure that NIH grant applications receive fair, independent, expert, and timely reviews - free from inappropriate influences - so NIH can fund the most promising research.
Scope of Review Operations

- 247 Scientific Review Officers
- >18,000 Distinct Reviewers
- >200 Chartered or Recurring Study Sections
- >1,450 Annual Review Meetings
- >75% NIH Applications (62,000 of 82,600)

FY19 Applications
Scope of Review Operations

CSRReviews a Majority of R01s, SBIRs & Fs for NIH...

- RPGs 84% 49,833
- SBIRs/STTRs 95% 6,189
- Fellowships 80% 4,702

Plus...

A Variety of Special Initiatives, Inter-agency and International Collaborations

- Common Fund
- ORIP
- INCLUDE
- ORWH Score Centers
- All of Us/Other Transaction Authority
- All FIC
- DA/MH HEAL initiatives (e.g. bBCD, SCORCH)
- Many Alzheimer’s initiatives
- CA Moonshot
- GM MIRA
- CC U01s
- AI Antimicrobial Resistance Challenge Prize
- BRAIN
- NLM

- GACD
- US-China
- US-Brazil
- Expanded NIAID international programs, e.g. South Africa
- FDA/Tobacco

...and many more PARs, RFAs

Less than 0.4% of the $39.3B NIH budget
CSR Priorities
Quality of Peer Review

Reviewers
- Training reviewers/Chairs – consistent, transparent
- Review Service – Overuse vs. broadening pool, incentivizing service
- Evaluating reviewers – qualifications/expertise, scoring patterns, critiques

Study Sections
- Scientific boundaries (relevance, adapting to emerging areas, perpetuating stale science)
- Output (identification of meritorious science)
- Size – appropriate for competition and breadth?

Process
- Confidentiality/Integrity in review
- Bias in review
- Assignment/Referral of Applications
- Review Criteria
- Scoring system
Underlying Principles

- Transparent, data-driven decision-making
- Involvement/engagement of stakeholders
- Open, multi-directional communication strategies
A New CSR Office of Communications and Outreach
(within CSR Office of the Director)

Planning

• Proactive communication plan
• Incorporate CSR’s operational principles

Target Audiences

• External scientific community
• Special focus on under-represented populations
• NIH Extramural programs
• CSR staff

Increase Engagement

• Ensure transparency in peer review
• Capitalize on the diversity to get broader perspective
• Tools – increase collaboration between ICs, scientific societies and CSR

Blog, webinars, social media
Twitter: @CSRpeerreview
Facebook: CSRpeerreview
Blog: https://www.csr.nih.gov/reviewmatters
CSR Advisory Council

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CSR Advisory Council Working Groups

- **Revamping the Early Career Reviewer Program** – launched Dec. 2019

- **Development of a Reviewer Integrity Training Module** with case-studies – piloting in Feb/Mar meetings with ~30 study sections, launch for all CSR reviewers planned Jun/July meetings

- **Up Next:** **Simplification of Peer Review Criteria** to refocus on scientific assessment/reduce reviewer burden - ongoing, interim report by working group at Mar 2020 full CSRAC meeting
CSR Anonymization Study Update: Preliminary Findings

• Study by external contractor (SSI) completed in September 2019.

• 1200 previously-reviewed applications in both full and redacted forms

• Preview of results:
  • Redaction does not appear to make scores of African-American applicants better or worse
  • Redaction appears to slightly worsen the scores of White applicants
  • Small, significant difference, but effect size is very small
  • Over 20% of reviewers were able to identify the applicant correctly despite redaction

• CSR’s next steps:
  • Get results peer reviewed and published
  • Make all the de-identified data from the study publicly available for further analyses
Pilot Implicit Bias Training for SROs, Reviewers (and POs)

- Using NIGMS MIRA program as a pilot – person-based, finite, small numbers of SROs, reviewers
- Collaboration between CSR, NIGMS, and NIH’s Chief Officer for Scientific Workforce Diversity (COSWD)
- Background narrated slides, followed by case studies/scenarios specifically targeted to the audience
- Planned launch: Jan 2020 receipt date for MIRA (summer 2020 meetings)
- Refinement, plans for **broader rollout** for all CSR reviewers and SROs in late 2020/early 2021

Understand and Mitigate Potential Biases
Maximizing Investigators’ Research Award (MIRA)

**Science Workforce Diversity, NIH Office of the Director**
National Institute of General Medical Sciences
Center for Scientific Review
Redesigned CSR Internet

Acknowledgment: Web Team and Kristin Kramer
The Pregnancy and Neonatology Study Section [PN] reviews applications related to the physiology of pregnancy and placental development, parturition, clinical obstetrics, maternal/fetal medicine, and fetal/neonatal development utilizing molecular/genetic, cellular, whole-organ/animal model/human subject, and/or biochemical methodologies. Emphasis is on basic and/or clinical models to understand pregnancy progression and its disorders.

**Topics**

- Placental development and maintenance: trophoblast invasion and differentiation; endocrinology; transport; the development of utero-placental blood flow; maternal/fetal immune-tolerance mechanisms; hypoxia; epigenetics; application of novel technologies or approaches to assess placenta development/function across pregnancy.

- Parturition: cervical ripening; myometrial contractility; production of factors leading to labor; obstructive labor; clinical obstetrics.

- Complications of pregnancy: preeclampsia; gestational diabetes; maternal metabolic changes and obesity; fetal origins of disease involving fetal/neonatal/maternal endpoints; spontaneous abortion; pre-term labor; recurrent pregnancy loss; diabetic embryopathy; intra-uterine growth restriction.

- Fetal biology: growth, development, and metabolism; fetal physiology, pharmacology, toxicology, and neurobiology; fetal diseases; in utero infection; maternal-fetal interactions; fetal microchimerism.

- Neonatology: transition to extra-uterine life; neonatal physiology, endocrinology, and pathophysiology; jaundice; complications of low birth weight; SIDS

[https://public.csr.nih.gov/StudySections/DPPS/EMNR/PN](https://public.csr.nih.gov/StudySections/DPPS/EMNR/PN)
Shared Interests and Overlaps

There are shared interests with Cellular, Molecular and Integrative Reproduction [CMIR] in the investigation of factors that modulate early embryo implantation. Grant applications that focus on post-implantation and trophoblast invasion may be reviewed in PN. Applications focused on preimplantation embryo development up to implantation may be review in CMIR.

There are shared interests with Integrative Nutrition and Metabolic Processes [INMP] in the investigation of nutrient effects on maternal/fetal health. Grant applications focused on nutritional effects to maternal/fetal development may be reviewed by PN. Applications focused on nutritional regulation of maternal-fetal programming may be reviewed by INMP.

There are shared interests with Clinical and Integrative Diabetes and Obesity Study Section [CIDO] in the investigation of maternal obesity and diabetes. Grant applications that focus on understanding complications to pregnancy, fetal development, or the neonate by gestational diabetes or obesity may be reviewed in PN. Applications that focus on maternal nutrition and gestational diabetes effects on childhood or adult obesity may be review by CIDO.

There are shared interest with Integrative and Clinical Endocrinology and Reproduction [ICER] in the investigation of reproductive toxicology. Applications that focus on endocrine or reproductive function may be reviewed by ICER. Applications focused on effects on pregnancy complications or fetal development may be reviewed in PN.

There are shared interests with Cardiovascular Differentiation and Development [CDD] in the investigation of neonatal physiology. Grant applications that focus on effects of pregnancy complications on fetal heart development may be reviewed in PN. Applications focused on development and differentiation of the heart may be reviewed by CDD.

https://public.csr.nih.gov/StudySections/DPPS/EMNR/PN
Incoming Study Section Chair Orientations (Summer 2019)

Completely redesigned and restructured orientations by a small group of creative CSR staff

- **15 min overview** – chair as a role-model, what chairs can do to ensure a culture of integrity/confidentiality, and how chairs can address conservatism in peer review (getting at “significance”).
- **15 min nuts-and-bolts of chairing** – pre-, at- and post-meeting expectations, role of chair versus SRO, practical tips.
- **1.5 hours of interactive discussion** using a vignette-based framework – facilitated by 2 CSR SROs.

**Videos Available Online**

Well done. Appropriate. both administrative input and comments from prior chairs useful.

Excellent session- particularly the case vignettes.

Received uniformly positive reviews from our new chairs, and from SROs!
CSR Staff Outreach at Scientific Societies
Actively Seeking Qualified Reviewer Recommendations
IC Program, Scientific Societies, Early-Career Reviewer (ECR)

New, User-Friendly Platform for Entering Reviewer Suggestions - Coming Soon (Spring 2020)
Quality of Peer Review

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Study Sections

Previous Study Section Evaluations at CSR (2003-2015)

By CSR’s internal organizational/management groupings (IRG)

- Input from CSR management only (2004 - 2008)
- Input from chairs/selected reviewers (2008 - 2011)
- Input from blue-ribbon external scientific working group, given data re: application, workload, bibliometric, (2011 – 2015)

Output: Comments about use of surveys, exit interviews, ranking, H-indices, bibliometrics, should Chairs be used to recruit new members, % ND, private discussion with SROs assess IRG management, NIH A2 policy.

** Only scientific changes recommended were endorsement of proposals made by the CSR IRG Chief during his/her presentation of the science

Problems:

1) Reviews by study sections clustered by CSR organizational structure
2) Too much info, too broad a scope including both science and process
Previous Study Section Evaluations at CSR (2015-2018)

**Reviewed in scientific, not organizational groupings**
- Input from blue-ribbon external scientific working group, given data re: applications, workload, bibliometric data, etc.

**Output:** Significant scientific changes recommended, study sections restructured, eliminated, formed, etc.

**Problem:**
Addressed scientific structure, but not study section function that can affect quality of output – i.e. reviewers, assignments, scoring, discussions, etc.
Evaluating Panel Quality in Review (ENQUIRE)
A New, Systematic Evaluation Framework for CSR Study Sections
ENQUIRE STEP 1: **Scientific Evaluation**

- Review by **scientific clusters**, not by management/organizational clusters or IRGs (10-20 SRGs)

- Assemble blue-ribbon **External Scientific Working Group** of scientifically broad, senior scientists (with interest in more than one SRG)

- Provide **enough information** for each study section in cluster (current scientific guidelines on web, sampling of titles/abstracts/specific aims, workload trends, bibliometric output of awarded grants, ESI submission and success rates)

- Provide enough **time and guidance** for meaningful evaluation and recommendations

- Ask 1 **question** designed to focus discussion on science, not process: “How well does the scientific scope of the study sections align with the current state of the science?”
Multiple Actions for Restructuring Study Sections

- Change in scientific guidelines
- Merge study sections
- Create new study sections
- Eliminate study sections
- Move an area of science from one study section to another/others
- Add emerging areas of science
ENQUIRE STEP 2: Process Evaluation

- Assemble **Process Working Group** of NIH (Institute and CSR) extramural scientists with broad perspective and interest in more than one SRG

- Provide process-related **information** (workloads, web guidelines, scoring trends, survey feedback from reviewers/POs, site-visit information on meeting function/dynamics)

- Provide External Scientific Working Group’s report/recommendations for input

- Questions: *Does the study section function support optimal identification of high-impact science?*
ENQUIRE Characteristics and Timeline

- **Systematic, data-driven, continuous** process – about 20% of CSR study sections evaluated per year, every study section gets evaluated every 5 years

- **Stakeholder** input and involvement

- **Iterative** Approach: Continuous refinement/modification of process based on experience and feedback

- **Critical to success – matching referral of applications and reviewer expertise to redefined scientific content of study section**
Complex Operation, Critically Important Mission Needs Many Hands to Accomplish

Receipt/Referral

Administrative Services
Information Management
Events Management

Referral
Scientific Review
Committee Management
HR/Training

Receipt/Referral

Project Control
Ethics
Review Support
Communications

Review

SREA (hotels/reviewer travel, reimbursement)
Policy/Evaluation
Budget

Summary Statements
This is CSR
Discussion
For Same Dataset: IC R01 Award Rates Vary Considerably
Low to High “Reviewer Topic Preference” ⇒ Low to High IC Award Rates