

U.S. Department of Health & Human Services



Center for  
Scientific Review

# Center for Scientific Review Update

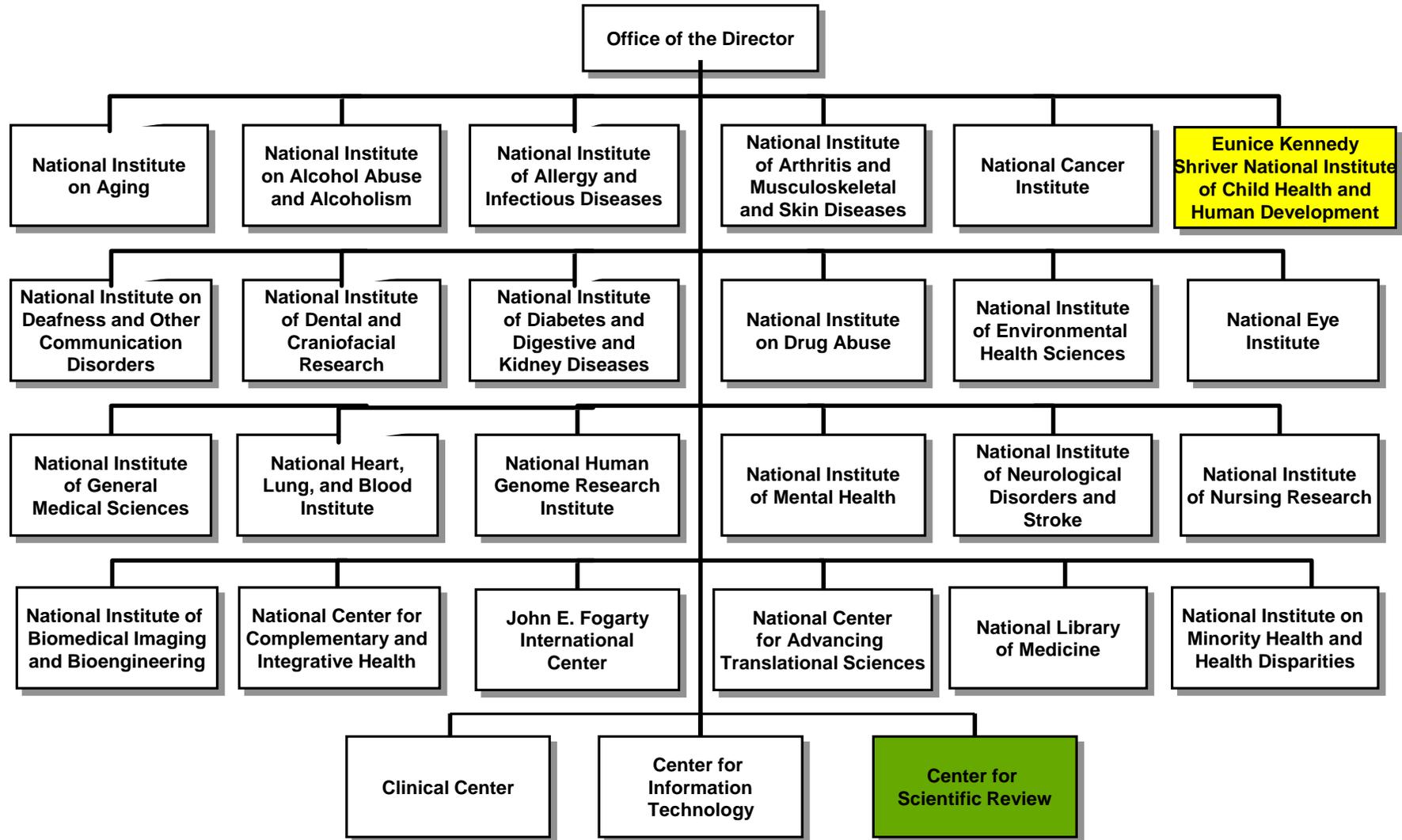
NICHD Advisory Council  
January 2020

Noni Byrnes, Ph.D.

Director

Center for Scientific Review

# NIH Institutes and Centers



# CSR's Mission



Center for  
Scientific Review

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**



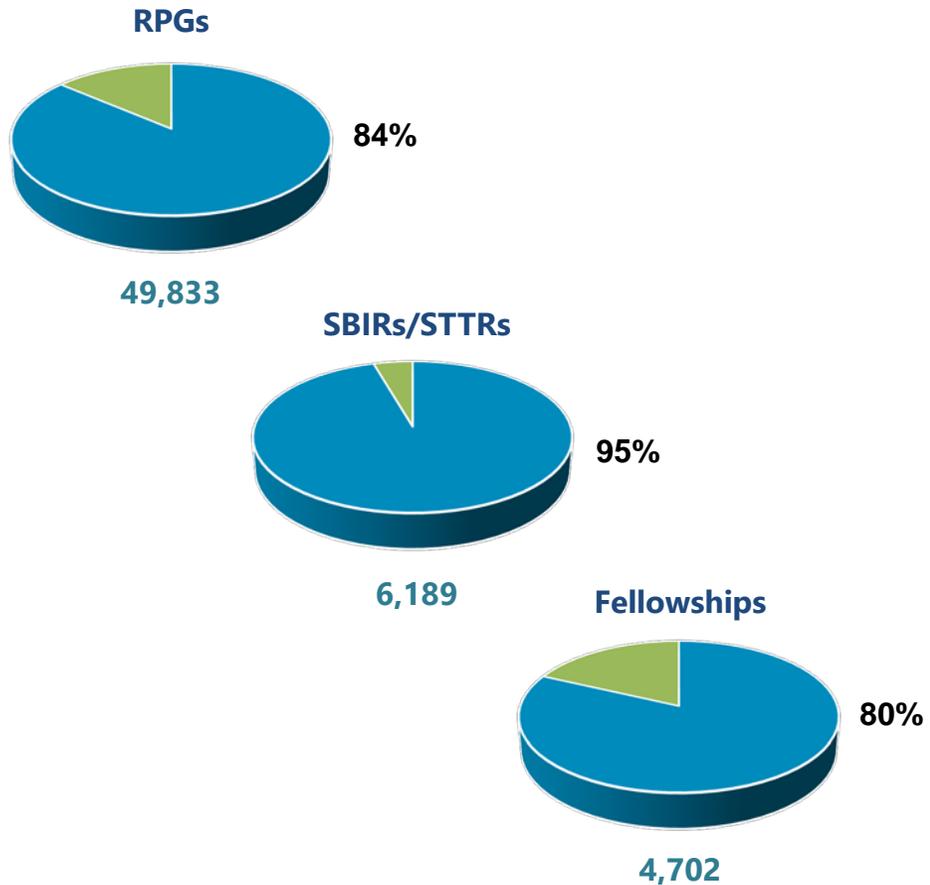
**>75%**

**NIH Applications  
(62,000 of 82,600)**

FY19 Applications

# Scope of Review Operations

CSR Reviews a Majority of R01s, SBIRs & Fs for NIH...



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)



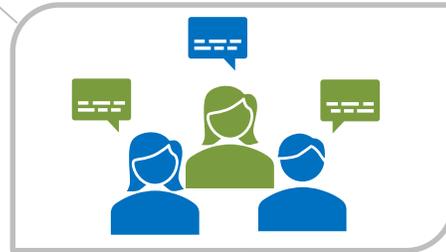
## Planning

- 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



Jinming Gao, Ph.D.  
Pharmacology and Otolaryngology  
University of Texas Southwestern Medical  
Center



José López, M.D.  
Hematology  
University of Washington



Julie Price, Ph.D.  
Radiology and Biomedical Imaging  
Harvard Medical School



Alfred George, M.D.  
Department of Pharmacology  
Northwestern University



Scott Miller, Ph.D.  
Chemistry  
Yale University



Elizabeth Villa, Ph.D.  
Biological Sciences  
University of California, San Diego



Yasmin Hurd, Ph.D.  
Psychiatry, Neuroscience, Pharmacology  
and System Therapeutics  
Mount Sinai School of Medicine



Tonya Palermo, Ph.D.  
Anesthesiology and Pain Medicine  
University of Washington



Jennifer West, Ph.D.  
Biomedical Engineering  
Duke University



Deanna Kroetz, Ph.D.  
Bioengineering and Therapeutic Sciences  
University of California, San Francisco



Mark Peifer, Ph.D. (Ad-hoc)  
Biology  
University of North Carolina



Denise Wilfley, Ph.D.  
Psychiatry, Pediatrics, Psychological and  
Brain Sciences  
Washington University

# 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*

The image shows a presentation slide with two main sections. The top section, titled "Review Matters", is a text-based announcement from Noni Byrnes, Director, dated November 18, 2019. It discusses the re-evaluation of the Early Career Reviewer (ECR) Program and lists several members of the CSR Advisory Council Working Group, including Dr. Mark Peifer, Dr. Elizabeth Villa, Dr. Kristin Kramer, Dr. Antonello Filleggi, Dr. Vinay Akalali, Dr. Stephanie Cook, Dr. Lisa Jones, and Dr. Manuel Llano. The bottom section, titled "CSR Reviewer Training", features a progress bar at 64% complete and an "EXERCISE 3" section. This section includes a video player showing a conversation between Dr. Martinez and Dr. Jones, with a transcript on the right side of the video. The transcript discusses a meeting at the Biopharma Society Meeting and a first R01 award.

# 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**



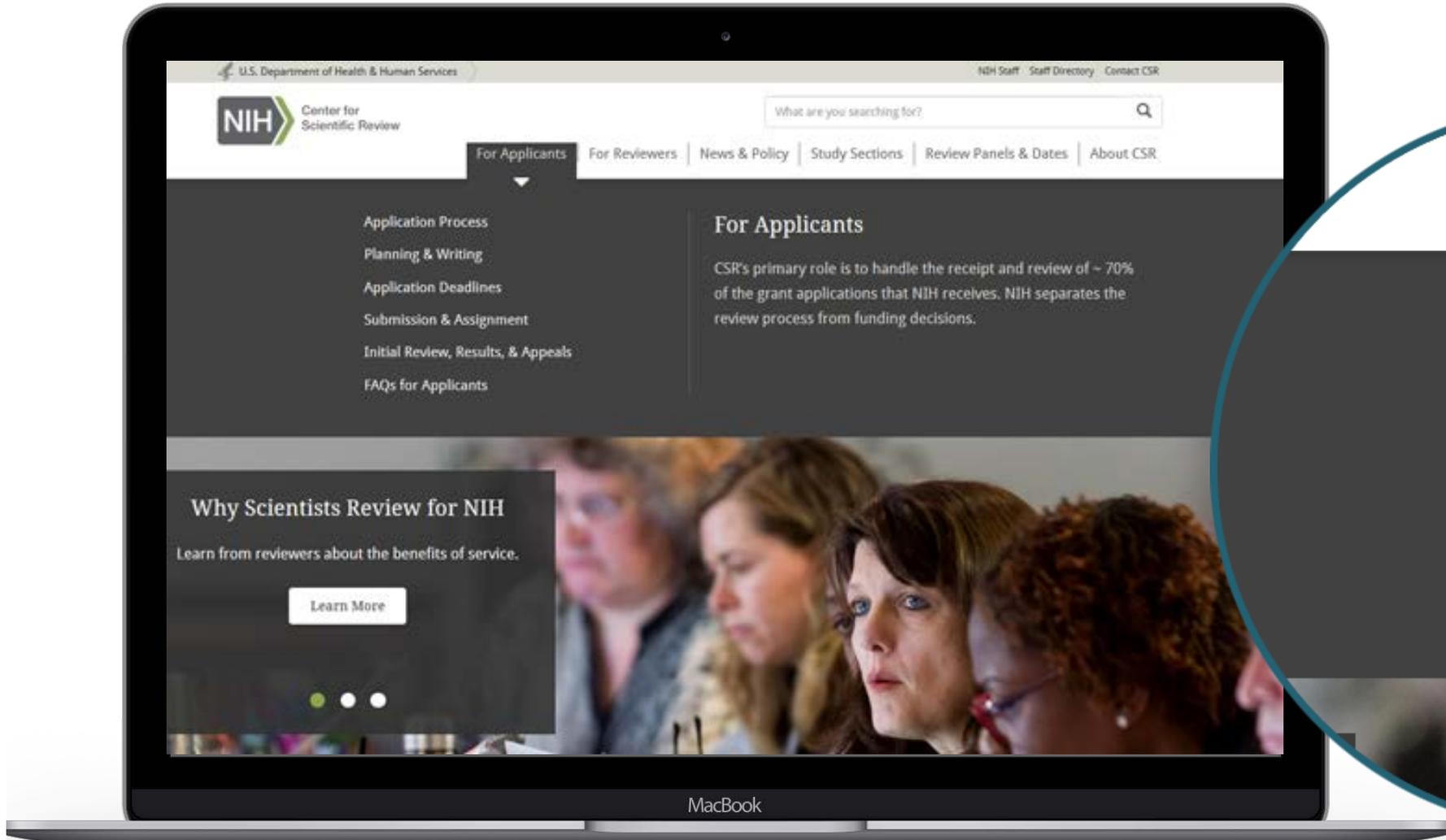
**Understand and Mitigate Potential Biases**  
Maximizing Investigators’ Research Award (MIRA)

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

# All 175+ Study Section Descriptions Updated

## Pregnancy and Neonatology Study Section – PN

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

The screenshot shows the NIH website for the Pregnancy and Neonatology Study Section (PN). The page features a search bar at the top, navigation links for 'Home', 'Study Sections', 'DPPS', and 'EMNR'. Below the navigation is a header for the 'Pregnancy and Neonatology Study Section – PN'. A profile picture of Dr. Andrew Wolfe, Scientific Review Officer, is shown. The main content area is titled 'Topics' and lists several key areas of research: Placental development and maintenance, Parturition, Complications of pregnancy, Fetal biology, and Neonatology. A 'Shared Interests and Overlaps' section provides detailed information about related research areas and how they intersect with the study section's focus.

<https://public.csr.nih.gov/StudySections/DPPS/EMNR/PN>

# All 175+ Study Sections Added Scientific Overlap Statements

## 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 programing 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 appliations 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.

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Home > Study Sections > DPPS > EMNR

### Pregnancy and Neonatology Study Section - PN

**Dr. Andrew Wolfe**  
Scientific Review Officer  
awolfe@nih.gov  
301-495-3019

The Pregnancy and Neonatology Study Section (PN) reviews applications related to the physiology of pregnancy and neonatal development, including: maternal/fetal development, maternal/fetal medicine, and fetal/neonatal development including muscular, skeletal, and/or organ system malformations. Emphasis is on basic and/or clinical models to understand pregnancy progression and its outcomes.

This list of Reviewers lists all present, whether permanent or temporary, to provide the full scope of expertise present on that date. Lists are posted 30 days before the meeting and are tentative; joining or leaving may result in change.

Review Dates

- List of Reviewers on 10/28/2019
- List of Reviewers on 08/23/2019
- List of Reviewers on 02/23/2019

Membership Panel

This membership panel is a list of chartered members only.

- View Membership Panel

#### Topics

- Maternal development and maintenance; trophoblast invasion and differentiation; embryonic; transport the development of utero-placental blood flow; maternal/fetal immunologic mechanisms; hybrid cooperative; assessment of reproductive or approaches to assess placental development/function across pregnancy.
- Complications of pregnancy; obstetrical; gestational diabetes; maternal metabolic changes and obesity; fetal origins of disease including fetal/neonatal/metabolic endpoints; obstetrical; abortion; pre-term labor; recurrent pregnancy loss; diabetes; employment; intra-uterine growth restriction.
- Fetal origin; growth, development and metabolism; fetal physiology; pharmacology; toxicology; and neurobiology; fetal disease; in utero infection; maternal/fetal interactions; fetal microenvironment.
- Neonatology; transition to extra-uterine life; neonatal physiology; endocrinology; and anthropometry; perinatal complications of low birth weight; SIDS.

#### Shared Interests and Overlaps

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<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.

**88** 

**Incoming chairs**

**9** 

**Separate Sessions**

9-10 chairs per session  
*Livestreamed*

## 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



SOCIETY for  
NEUROSCIENCE



qBio 2019



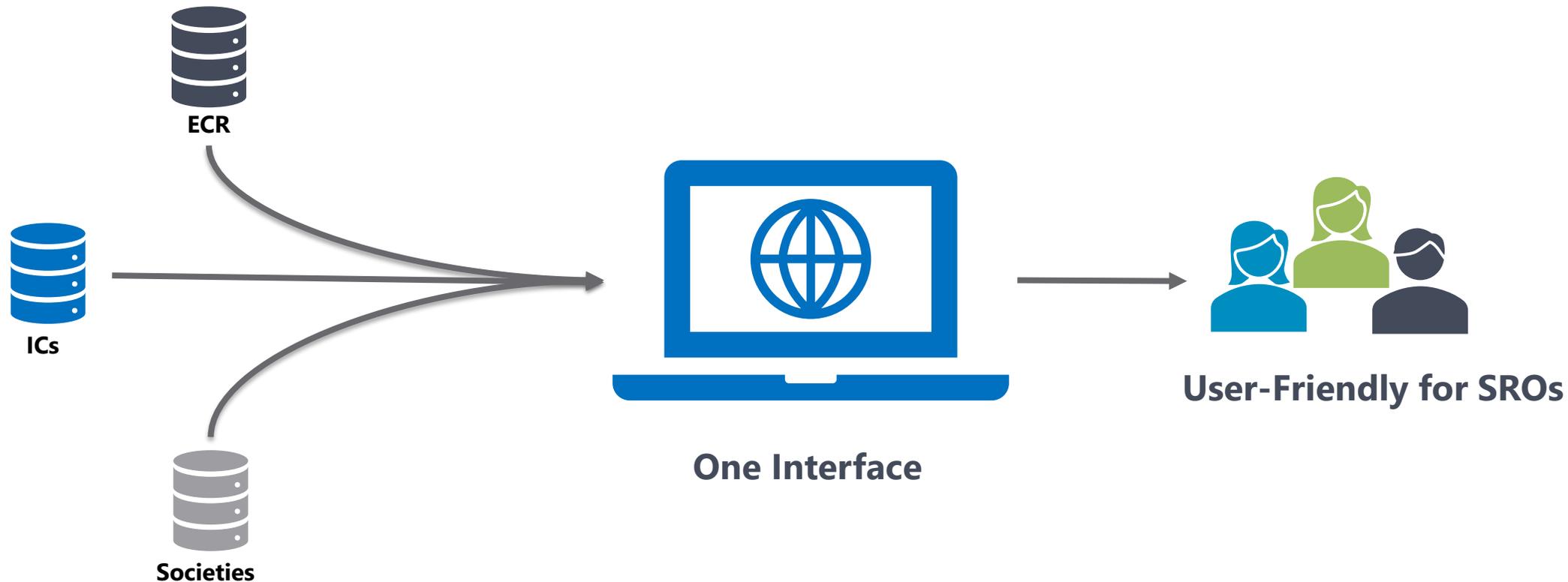
BPS19





# Actively Seeking Qualified Reviewer Recommendations

## IC Program, Scientific Societies, Early-Career Reviewer (ECR)



Multiple Data Sources

One Interface

User-Friendly for SROs

***New, User-Friendly Platform for Entering Reviewer Suggestions - Coming Soon (Spring 2020)***

# 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

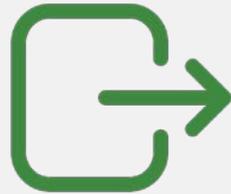
- Confidentiality/Integrity in review
- Bias in review
- Assignment/Referral of Applications
- Review Criteria
- Scoring system

## 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:

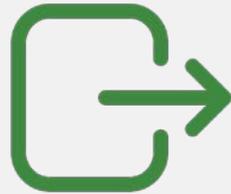
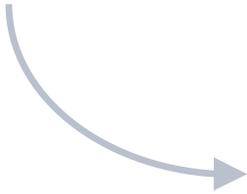
- 1) Reviews by study sections clustered by CSR organizational structure
- 2) Too much info, too broad a scope including both science and process

## 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.

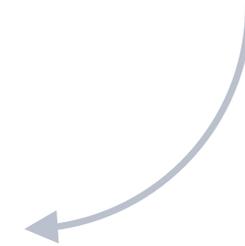


**Output: Significant scientific** changes recommended, study sections restructured, eliminated, formed, etc.



### Problem:

**Addressed scientific structure, but not study section function that can affect quality of output – i.e. reviewers, assignments, scoring, discussions, etc.**



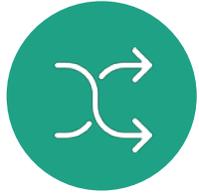
# Evaluating Panel Quality in Review (ENQUIRE)

## 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?"*

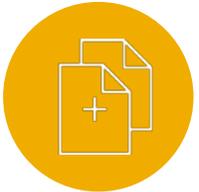
# Multiple Actions for Restructuring Study Sections



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



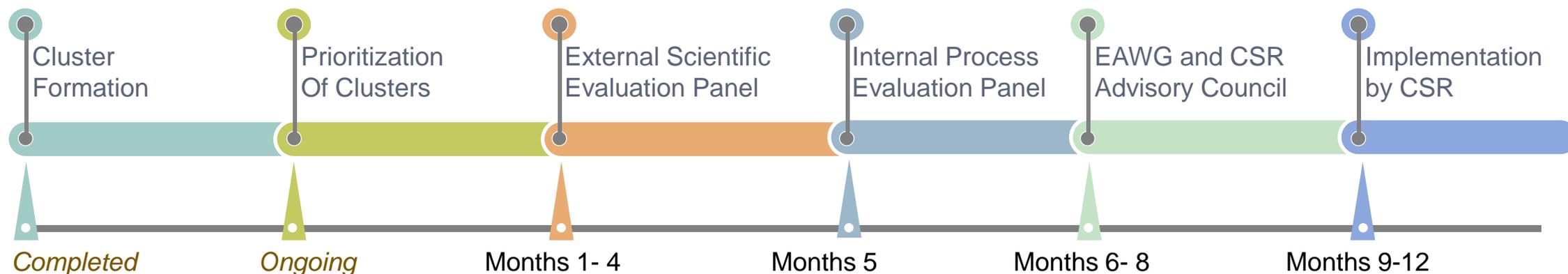
Add emerging areas of science

## 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



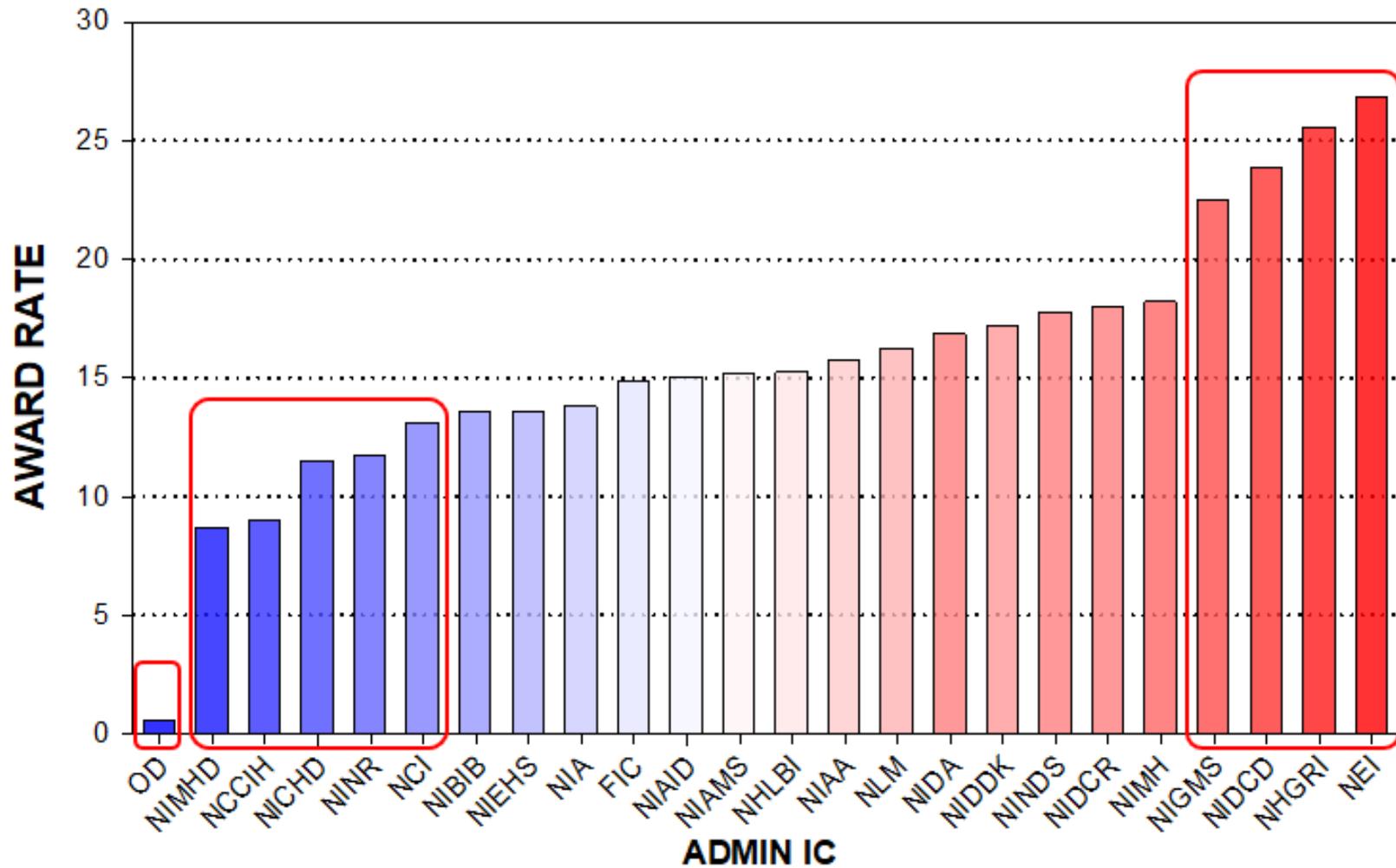
# This is CSR



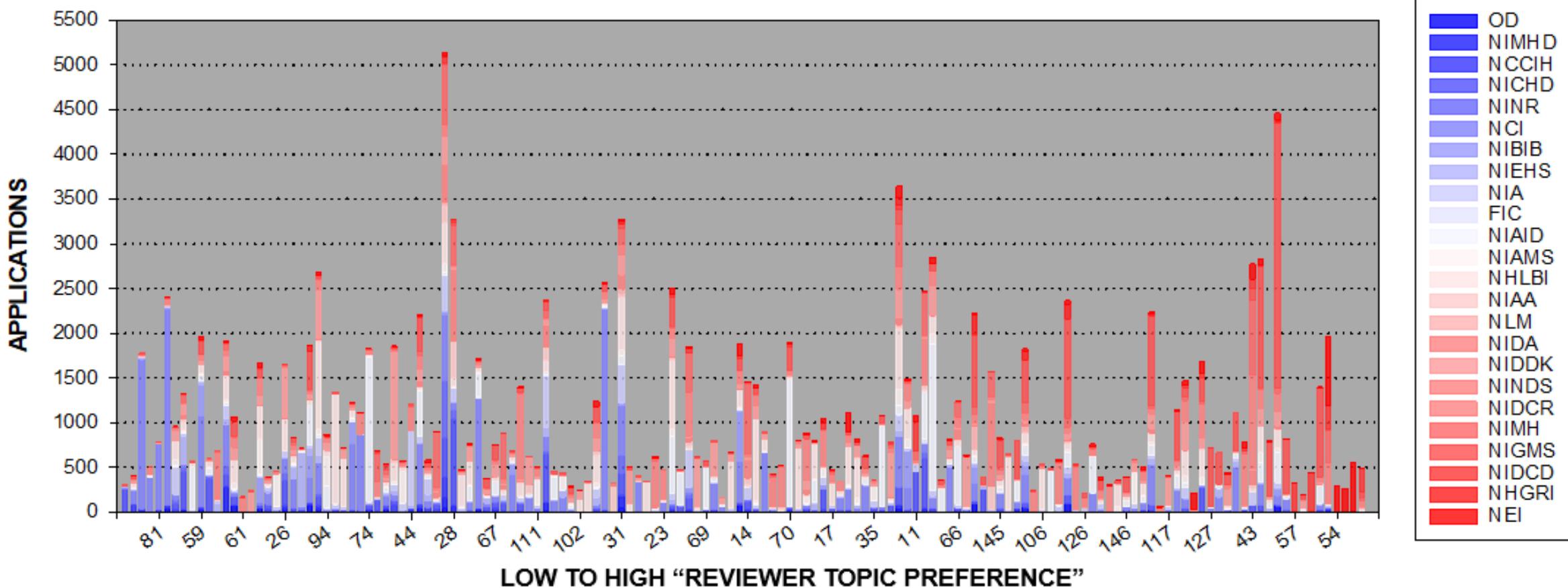


# Discussion

# For Same Dataset: IC R01 Award Rates Vary Considerably



# Low to High "Reviewer Topic Preference" → Low to High IC Award Rates



# IC Funding Decisions

