

# Negotiating the Funding Agencies

## A focus on NIH

**Richard J. Levy, M.D.**

Director, Cardiac Anesthesia

Vice Chief, Division of Anesthesiology and Pain Medicine

Children's National Medical Center

Associate Professor of Anesthesiology and Critical Care

Medicine, Pediatrics, and Information Systems Biology

# Most Common NIH Awards

Mentored Clinical Scientist Development Award  
(K08)

Mentored Patient-Oriented Research Career  
Development Award (K23)

Pathway to Independence Award (K99/R00)

Small Grant Program (R03)

Exploratory/Developmental Grant Award (R21)

Research Project Grant Award (R01)

# **K08**

## **Mentored Clinical Scientist Development Award**

- Clinical doctoral degree only (MD)
- US citizenship or green card
- 3-5 yrs of support
- Salary: up to \$75K/yr
- Supplies: up to \$20K/yr
- 75% effort required (guaranteed protected time)

# K23

## Mentored Patient-Oriented Research Career Development Award

- MD or PhD working with patients
- US citizen or green card
- Candidates just out of specialty or sub-specialty training
- Project must be patient-oriented research
- 3-5 yrs of support
- Salary: up to \$75K/yr
- Supplies: \$25K/yr
- 75% effort required

# K99/R00

## Pathway to Independence Award

- MD or PhD with no more than 5 years of post-doc training
- US citizen
- 1-2 years of initial mentored support (K99)
- Up to 3 years of independent support (R00)
- Salary: up to \$50K for first year
- Supplies: \$20K for first year
- 75% effort required
- Up to \$249K/yr for independent phase

# R03

## Small Grant Program

- Small research projects that can be carried out in short period of time with limited resources
- Feasibility/New Technology/  
Innovative High Risk Ideas
- \$50,000/yr
- Up to 2 years maximum
- Does not require preliminary data\*

# R21

## Exploratory/Developmental Grants

- Early conceptual stages of development
- Feasibility, exploratory in nature
- \$275K for entire project (no more than \$200K in a single year)
- Up to 2 years
- Does not require preliminary data\*

# R01

## Research Project Grant Award

- The original and historically the oldest NIH award
- Investigator initiated or in response to PA, RFA, RFP
- supports discrete project in an area representing the PI's specific interest and competencies, based on the mission of the NIH
- Up to \$250K per year
- Up to 5 years
- Eligible for competitive renewal



# RFA

## Requests for Applications

- Announcement describing an Institute's research initiative in a well-defined scientific area
- Invitation to the field to submit research grant applications for a one-time competition
- Set-aside of funds for a certain number of awards
- Applications generally reviewed within the issuing Institute by one-time study section

# RFP

## Request for Proposals (RFP)

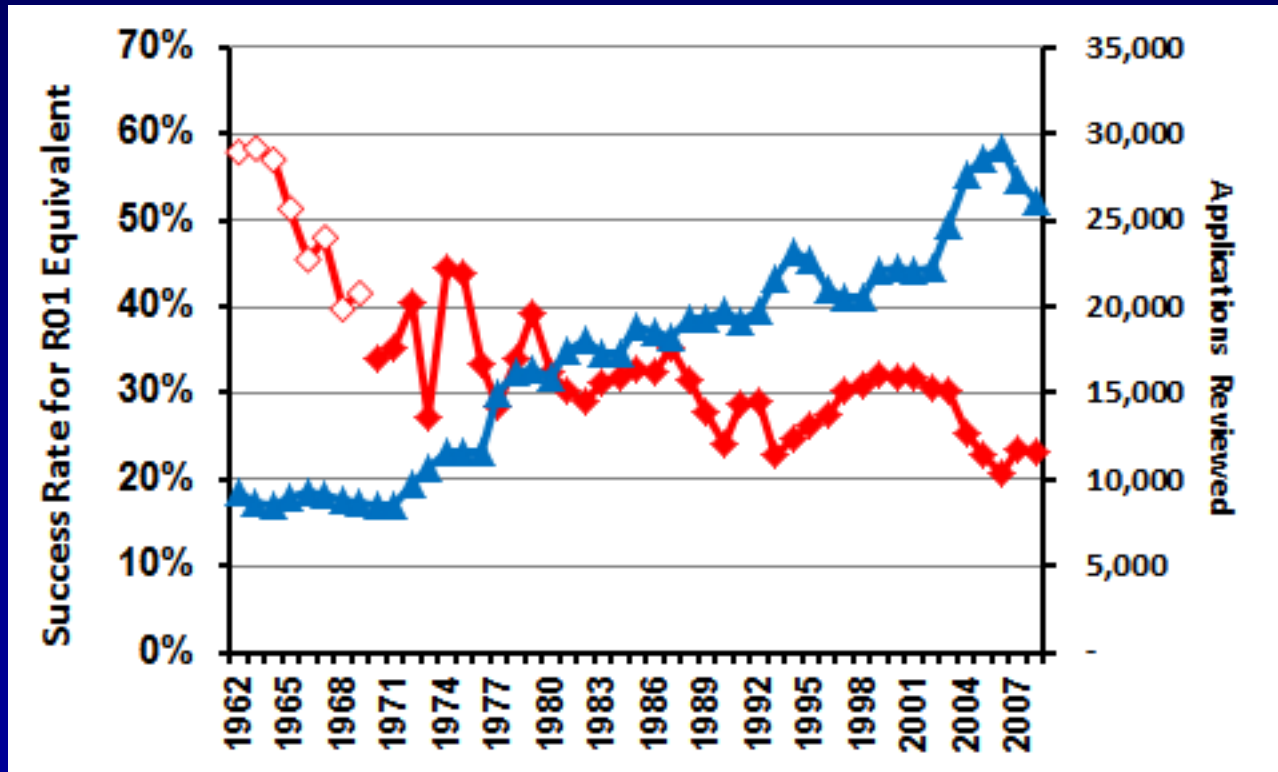
- Invites proposals in a given research area
- Describes specific need(s) to be met by contractor and lists milestones for progress
- Single receipt date designated
- Projected costs are estimated and funds are set aside
- Proposals are reviewed by Institute Contract Review Committee

# PA

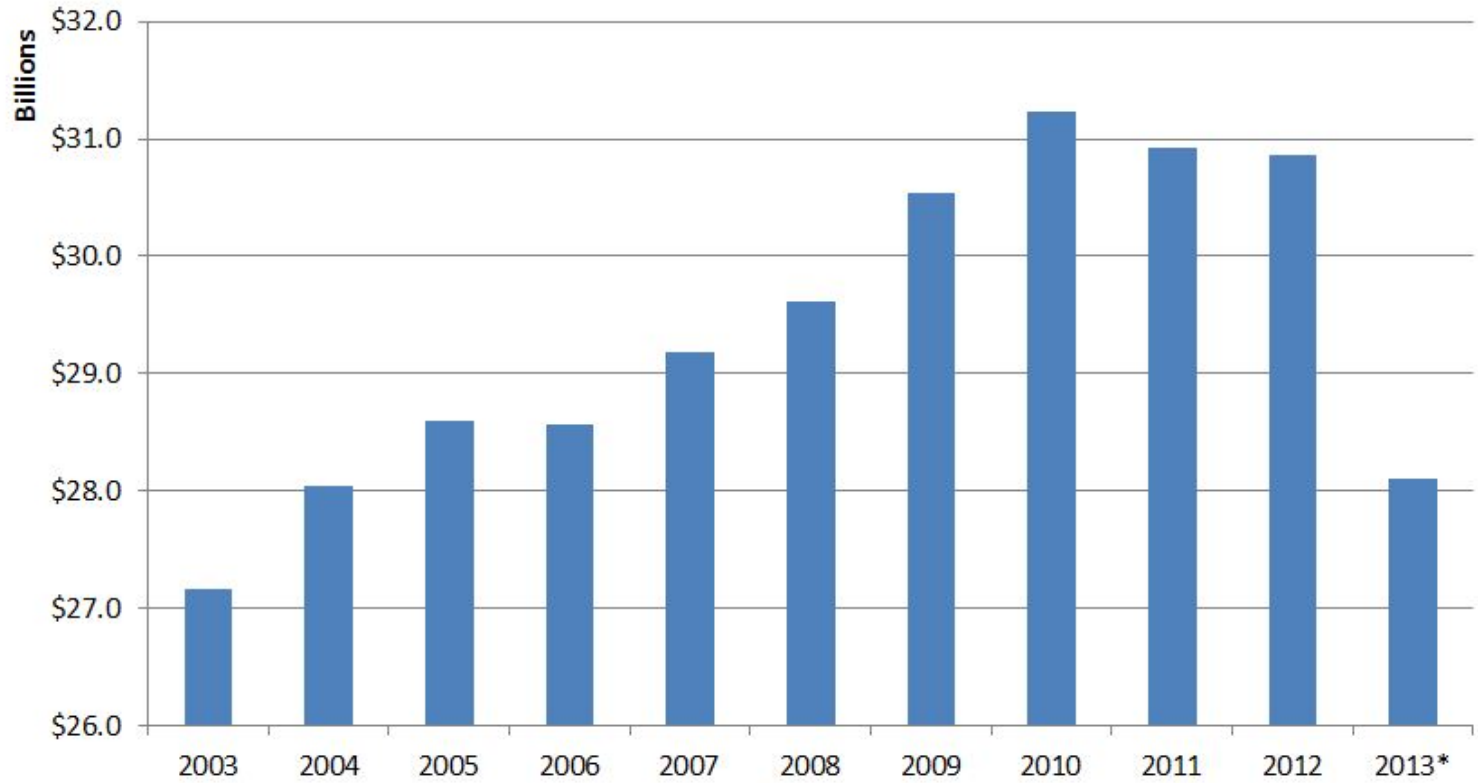
## Program Announcement

- Invites grant applications in a given research area
- May describe new or expanded interest in a particular research area
- May be a reminder of a continuing interest in a particular research area
- Generally has no funds set aside
- Applications reviewed in study section along with unsolicited grant applications

NIH receives and reviews nearly 80,000 applications per year



## NIH Overall Budget by Fiscal Year



# National Institutes of Health

**Primary Federal agency in the US**

for conducting and supporting biomedical research

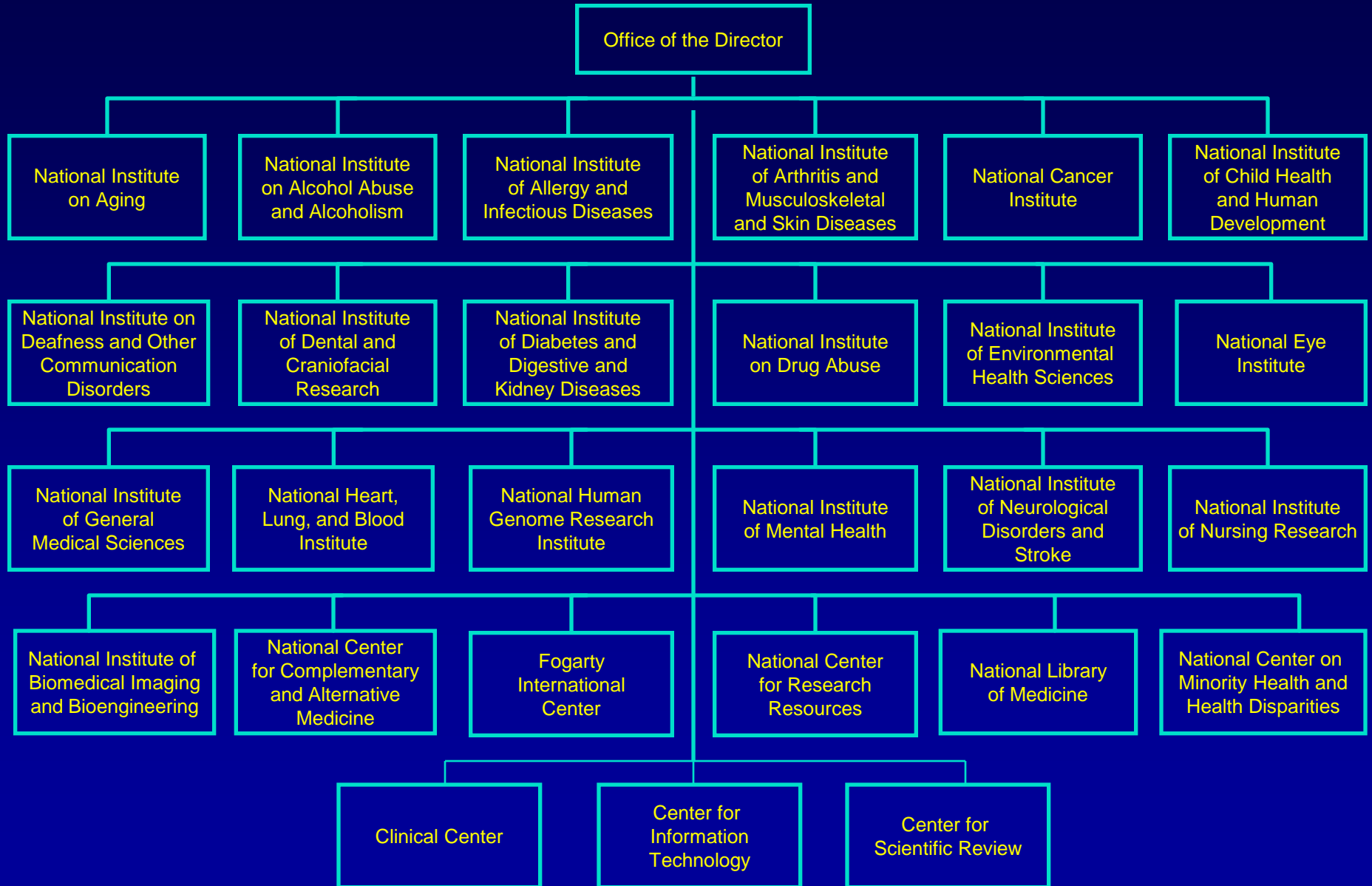
**27 Institutes & Centers (ICs)**

Extramural and intramural programs

24 ICs have funding authority



# National Institutes of Health



# CSR

## Center for Scientific Review

- Serves as central receipt point for most NIH grant applications
- Assigns applications to CSR Integrated Review Groups/Study Sections or Institute Scientific Review Groups (SRG)
- Assigns applications to NIH Institute(s) as potential funding sponsor
- Conducts initial scientific merit review of most research applications submitted to the NIH in more than 100 Study Sections



**Application received**  
**Assignments made**



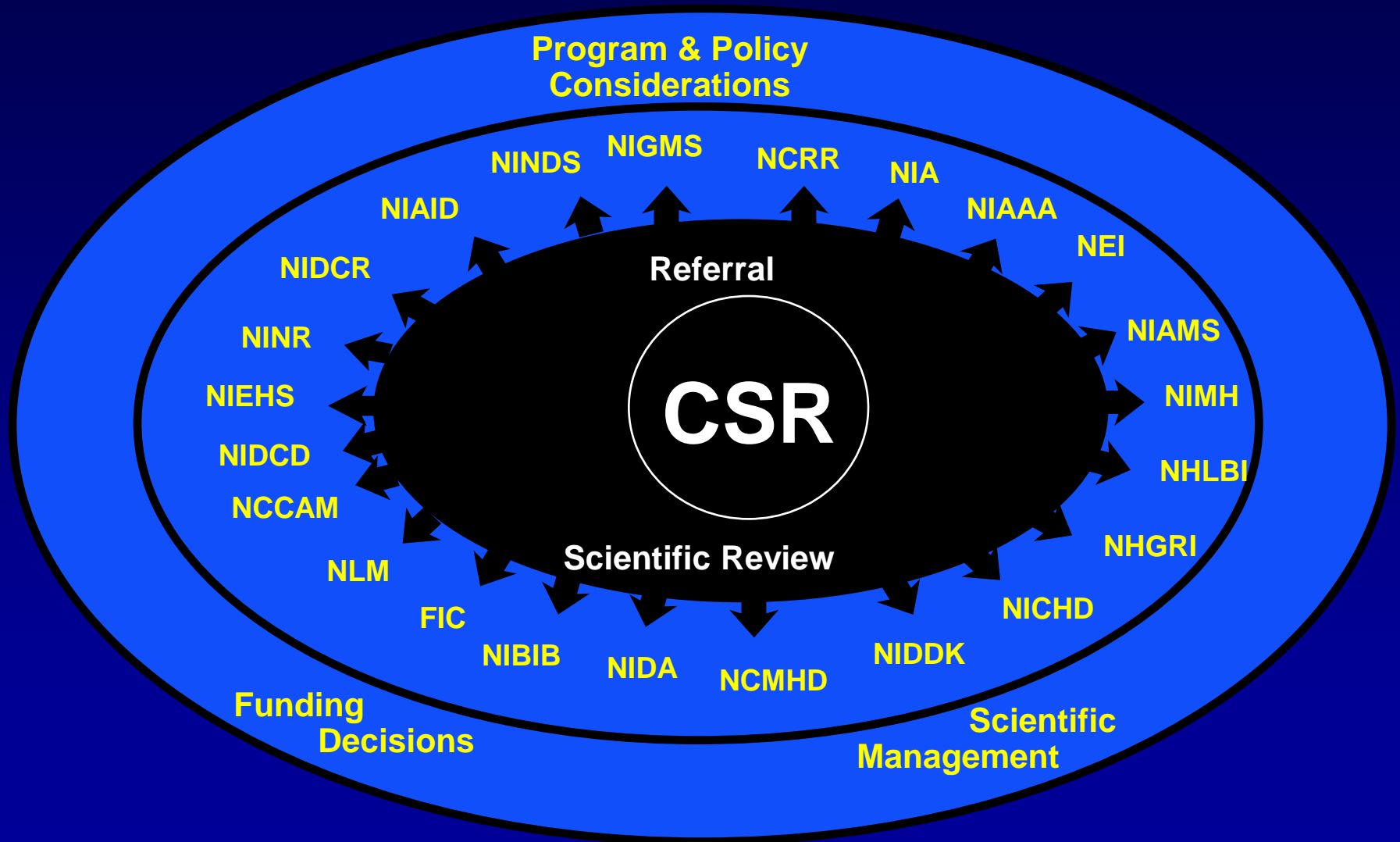
**Initial peer review**

SRG; study section  
Scientific Review Officer

**Funding considerations**

Institutes or Centers (ICs)  
Duals possible  
Program Officer

# NIH Referral and Review System Regular Research Grant Applications



# Applications Assignments

- Scientific review groups
  - Specific review guidelines for each scientific review group
  - Areas of expertise
- Institutes
  - Overall scientific mission of the Institute
  - Specific programmatic mandates and interests of the Institute

# Scientific Review Administrator

- Designated Federal official (scientist) with overall responsibility for the review process
- Checks applications to ensure completeness
- Selects reviewers for study section
- Assigns applications to reviewers
- Manages the study section meeting
- Prepares the summary statements
- Provides advice to applicants about study sections

# Institute Program Officer

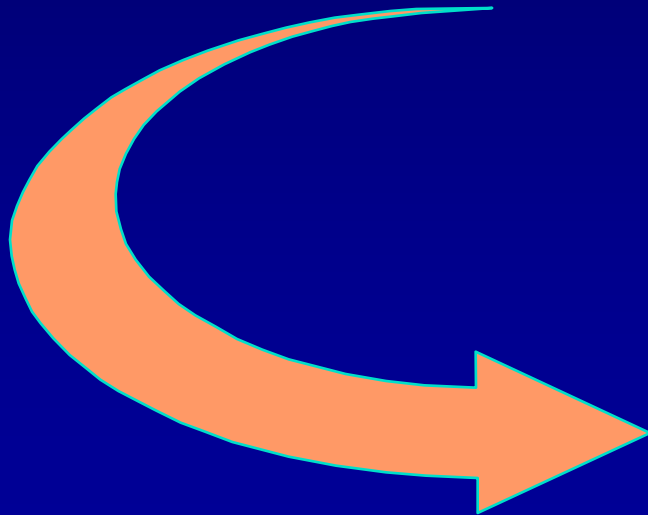
- Designated Federal official with overall responsibility for the funding process
- Scientist trained in area of coverage
- Develops targeted research programs
- Approves funding and oversees funded grants
- Approves yearly progress reports
- Assists PI with both administrative & scientific questions
- Attends study section as observer

# Dual Review System for Grant Applications

## First Level of Review

### Scientific Review Group

- Provides Initial Scientific Merit Review of Grant Applications
- Rates Applications and Makes Recommendations for Appropriate Level of Support and Duration of Award



## Second Level of Review

### National Advisory Council

- Assesses Quality of SRG Review of Grant Applications
- Makes Recommendation to Institute Staff on Funding
- Evaluates Program Priorities and Relevance
- Advises on Policy

Each CSR standing study section has 12 - 24 members who are primarily from academia

As many as 60 - 100 applications are reviewed at each study section meeting



# Peer Reviewers

Expertise

Stature in field

Mature judgment

Impartiality

Managed conflicts of interest

Balanced representation

Diversity

Gender

Geography

Age





**MEETING ROSTER**  
**Surgery, Anesthesiology and Trauma Study Section**  
**Surgical Sciences, Biomedical Imaging and Bioengineering Integrated Review Group**  
**CENTER FOR SCIENTIFIC REVIEW**

**SAT**

**February 06, 2013 - February 07, 2013**

**Chairperson**

Sen, Chandan K, PHD  
Professor and Vice Chair of Research  
Associate Dean of Translational  
and Applied Research  
Department of Surgery  
Ohio State University  
Columbus, OH 43210

**MEMBERS**

BAIRD, ANDREW, PHD \*  
Professor/Vice Chair  
UCSD Medical Center  
University of California at San Diego  
San Diego, CA 92103

Brennan, Timothy J, MD, PHD  
Samir Gergis Professor and Vice Chair  
Department of Anesthesia  
Roy J. and Lucile A. Carver School of Medicine  
University of Iowa  
Iowa City, IA 52242

Bulger, Eileen M, MD  
Professor  
Department of Surgery  
Harborview Medical Center  
University of Washington  
Seattle, WA 98104

Christman, John W, MD  
Visiting Professor  
Director of the Critical Care Center  
Chief, Section of Pulmonary, Allergy,  
Critical Care and Sleep Medicine  
The Ohio State University Wexner Medical Center  
Columbus, oh 43210

Coopersmith, Craig M, MD  
Professor and Associate Director  
Department of Surgery  
Emory Center for Critical Care  
Emory University School of Medicine  
Atlanta, GA 30322

Duran, Walter N, PHD  
Professor and Vice Chair  
Department of Pharmacology and Physiology  
New Jersey Medical School  
Rutgers - The State University of New Jersey  
Newark, NJ 07103

Ford, Henri R, MD  
Vice President and Surgeon-in-Chief  
Professor and Vice Dean for Medical Education  
Children's Hospital Los Angeles  
Keck School of Medicine  
University of Southern California  
Los Angeles, CA 90027

Forman, Stuart A, MD, PHD  
Associate Professor  
Departments of Anesthesia, Critical Care  
and Pain Medicine  
Massachusetts General Hospital  
Boston, MA 02114

Hackam, David J, MD, PHD  
Watson Family Professor  
Department of Surgery  
Children's Hospital of Pittsburgh  
University of Pittsburgh  
Pittsburgh, PA 15224

HEBER-KATZ, ELLEN S, PHD \*  
Professor  
Department of Cellular and Molecular Oncogenesis  
THE WISTAR INSTITUTE  
Philadelphia, PA 19104

Hellman, Judith, MD  
Professor  
Department of Anesthesia  
School of Medicine  
University of California, San Francisco  
San Francisco, CA 94143

Higgins, Paul J, PHD  
Professor and Director  
Center for Cell Biology and Cancer Research  
Albany Medical College  
Albany, NY 12208

Jevtovic-Todorovic, Vesna MBA, MD, PHD  
Harold Carron Professor  
Department Of Anesthesiology and Neuroscience  
University Of Virginia  
School Of Medicine  
Charlottesville, VA 22908

Lang, Charles H, PHD  
Distinguished Professor and Vice Chairman  
Department of Cellular and Molecular Physiology  
College of Medicine  
Pennsylvania State University  
Hershey, PA 17033

LAU, CHRISTINE L, MD \*  
Associate Professor  
Division of Thoracic & Cardiovascular Surgery  
Department of Surgery  
University of Virginia  
Charlottesville, VA 22908

Lee, H. Thomas, MD, PHD  
Professor  
Department of Anesthesiology  
Columbia University  
New York, NY 10032

Levitsky, Sidney, MD  
Cheever Professor and Senior Vice Chairman  
Department of Surgery  
Beth Israel Deaconess Medical Center  
Boston, MA 02215

MACIVER, M Bruce, PHD \*  
PROFESSOR  
DEPARTMENT OF ANESTHESIA  
STANFORD UNIVERSITY MEDICAL SCHOOL  
STANFORD, CA 94305

MacMillan-Crow, Lee Ann, PHD  
Professor  
Departments of Pharmacology and Toxicology  
University of Arkansas for Medical Sciences  
Little Rock, AR 72205

Meng, Xianzhong, MD, PHD  
Professor and Director  
Department of Surgery  
Cardiothoracic Inflammation Research  
University of Colorado Denver  
Aurora, CO 80045

Pittet, Jean-Francois, MD  
Professor and Vice Chair  
Department of Anesthesiology  
School of Medicine  
University of Alabama at Birmingham  
Birmingham, AL 35249

Sherwood, Edward R, MD, PHD  
Professor  
Department of Anesthesiology  
Vanderbilt University  
Nashville, TN 37232

Tan, Xiao-Di, MD \*  
Professor  
Department of Pediatrics  
Northwestern University  
Feinberg School of Medicine  
Chicago, IL 60614

Tracey, Kevin J, MD  
Professor and President  
LAB OF BIOMEDICAL SCIENCE  
Feinstein Institute for Medical Research  
Manhasset, NY 11030

Ware, Lorraine B, MD  
Associate Professor  
Divisions of Allergy, Pulmonary  
and Critical Care Medicine  
Department of Medicine  
Vanderbilt University School of Medicine  
Nashville, TN 37232

Wells, Carol L, PHD  
Professor and Mildred King Rohwer Chair  
Department of Laboratory Medicine and Pathology  
University of Minnesota  
Minneapolis, MN 55455

Wong, Hector R, MD  
Professor and Director  
DIVISION OF CRITICAL CARE MEDICINE  
Department of Pediatrics  
School of Medicine  
University of Cincinnati  
CINCINNATI, OH 45229

Younger, John G, MD  
Professor and Associate Chair  
Department of Emergency Medicine  
University of Michigan  
Medical School  
Ann Arbor, MI 48109

**Mail Reviewer(s)**  
KJUEWSKI, MARIE FOLEY, SCD  
ASSOCIATE PROFESSOR  
DEPARTMENT OF RADIOLOGY  
BRIGHAM AND WOMEN'S HOSPITAL  
HARVARD MEDICAL SCHOOL  
BOSTON, MA 02115

**Scientific Review Officer**  
Luo, Weihua, MD, PHD  
Scientific Review Officer  
Center for Scientific Review  
National Institutes of Health  
Bethesda, MD 20892

# Peer Review



## Each grant

- 1 primary reviewer
- 2 discussants

## Reviewer workload

- ~ 6 – 8 as “reviewer”
  - ~ 2 – 3 as “discussant”
- 
- ~ 60 applications/SRG meeting
  - ~ 50% streamlined
  - 30 applications to discuss and score

# Peer Review



## 9 hour SRG meeting

- ~ ½ hour introduction, streamlining
- ~ 1 hour lunch, 2 x 15 minute breaks

## Leaves

- ~ 14 minutes/application
- ~ 3 - 4 minutes/reviewer

# Scoring Research Grants

Significance

Approach

Innovation

Investigator

Environment

Overall Evaluation



- Significance: Does the study address an important problem? How will scientific knowledge be advanced?
- Approach: Are design and methods well-developed and appropriate? Are problem areas addressed? Feasibility?
- Innovation: Are there novel concepts or approaches? Are the aims original and innovative?
- Investigator: Is the investigator appropriately trained?
- Environment: Does the scientific environment contribute to the probability of success? Are there unique features of the scientific environment?

# Scoring System

<b>Impact</b>	<b>Score</b>	<b>Descriptor</b>
<b>High Impact</b>	<b>1</b>	<b>Exceptional</b>
	<b>2</b>	<b>Outstanding</b>
	<b>3</b>	<b>Excellent</b>
<b>Moderate Impact</b>	<b>4</b>	<b>Very Good</b>
	<b>5</b>	<b>Good</b>
	<b>6</b>	<b>Satisfactory</b>
<b>Low Impact</b>	<b>7</b>	<b>Fair</b>
	<b>8</b>	<b>Marginal</b>
	<b>9</b>	<b>Poor</b>

Final Impact/Priority Score available  
three days after the SRG meeting  
eRA commons

Summary statement available 4 – 8  
weeks after meeting

# Summary Statement

## RPG Review Critique Template

<b>1. <u>Significance</u></b>	Please limit text to 1/4 page
<b>Strengths</b> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul> <b>Weaknesses</b> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul>	

<b>2. <u>Investigator(s)</u></b>	Please limit text to 1/4 page
<b>Strengths</b> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul> <b>Weaknesses</b> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul>	



# Common Problems in Applications

- Lack of new or original ideas
- Absence of an acceptable scientific rationale
- Lack of experience in the essential methodology
- Questionable reasoning in experimental approach
- Diffuse, superficial, or unfocused research plan
- Lack of sufficient experimental detail
- Lack of knowledge of published relevant work
- Unrealistically large amount of work
- Uncertainty concerning future directions

# Calculation of Percentiles

$$\text{Percentile} = \frac{(\text{relative rank} - 0.5)}{\text{\# of applications}} \times 100$$

Based on the priority score, the percentile is the rank of an application relative to others reviewed over 3 cycles. It indicates the percentage of applications with better priority scores.



# New Investigator Policy



Support New Investigators at success rates equivalent to that of established investigators submitting new applications

Where feasible, NI applications are clustered in review

NI and ESI applications are identified for reviewers

Expectations for preliminary data or track record should not be the same as for established investigators

# NIH Definitions

## **New Investigator (NI):**

A PD/PI who has *not yet competed successfully* for a substantial NIH research grant

## **Early Stage Investigator (ESI):**

An NI who is within 10 years of completing the terminal research degree or medical residency (or equivalent)

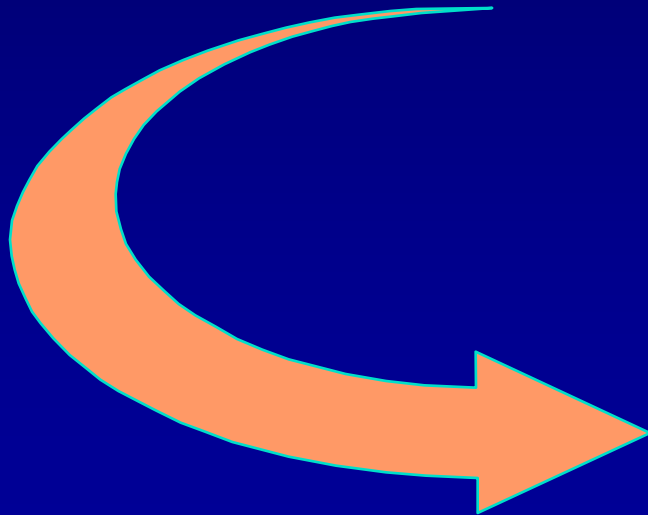


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# Council Actions

- Concur with study section action
- Modify study section action
- Defer for re-review



# What determines which grants are funded?

- Scientific merit
- Program considerations
- Availability of funds







*"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say!"*

A nighttime photograph of the Washington Monument and the Lincoln Memorial in Washington, D.C. The Washington Monument is a tall, slender, white obelisk that is brightly lit from the bottom, making it stand out against the dark sky. To its left, the Lincoln Memorial is also illuminated, showing its iconic columns. In the background, the United States Capitol building is visible with its dome lit up. A large, bright full moon is positioned in the upper left quadrant of the image. The foreground shows the dark water of the Tidal Basin, which reflects the lights from the monuments and the city. The overall scene is a classic view of the National Mall at night.

Thank You

**Acknowledgements:**

CTSI-CN, FRAXA,  
NIH R01GM103842