

Dr. Anita Miller Sostek, Division Director, CSR Clinical and Popular-Based Studies

1. Late 1990's – neuroscience integration plan mandated with 21 new neuroscience study sections
Fall 2001 – Evaluation of integration
2003 – Report due
2006-2007 – Internal review – first round

Principles in 1998:

1. Applications in study section should be determined by scientific focus rather than by professional affiliation of PI
2. Reviews should be flexible with broad range of scientific expertise
3. Every application should have one suitable home

Neurosciences: Old way

Behavioral science – 3

Sensory – 5

Physiology – 3

Neurological sciences – 7

Neuro A, B1, B2, C, NLS 1, 2, 3 and 4 in NIDA, 4 in ADMA

Neurosciences: New way

Looked at cluster of content areas of grants

Added AIDS and Behavioral; Social Sciences

New study section

Molecular cellular: Dev. Neuroscience – 7 study sections

Integrational Functioning Cognition – 9 study sections

Brain disorders – 6 study sections

Past reorganization:

Program staff

Applicants

Reviewers

Internal data on grants reviews

Scientific leaders attended one or more study sections in 2000

Findings:

Study sections working well

Concerns not limited to the neurosciences.

Identified 3 key needs:

Leg 1

Senior reviewers set tone and provide broad experience

Training of reviewers and chairs; SRA and chair need to be balanced

Review of fellowships needed to be moved to dedicated study sections

Leg 2

Interview grant applicants -- 870 web and 880 mailed interviews to PIs

Interview program staff

Assignment: 63% satisfied

Expertise: 53.8% satisfied

Understand reviews: 51.4% satisfied

Usefulness of reviews content: 45.7% satisfied

Timeliness of summary: 54.5% satisfied

Overall satisfied: 51.0% satisfied

Currently, the perception is that the new review process and the new reorganization did not produce much change.

Summary:

Applicant satisfaction strongly correlates with funding
Program staff

Leg 3

Conclusion:

Neurosciences did okay
Concerns identified
Fluctuation of reviewer expertise for each grant round is a problem
Changes in fellowship (now have 16 study sections in neurosciences)

Ongoing changes

Did not have descriptive names or verbal anchors for scores of grants – attached names in 2002

Created new study sections since many study sections had to review 80 or more grants, and this is too large.

Principle for modifying study section

Work load changes

Process

Involves stakeholders (the PIs)
Do not involve stakeholders in sorting
Develop new study sections

Reports of working group reports, realignments

Dan Schneider, Division Director

Response to need to change

MDCN regular study sections

IRGs set up and some subdivide if grant load >80 or so grants

Principles of reviewing the process

Core values be true to these principals: fair, timely, expert

Monitor continuous

Changes that involve stakeholders (the PIs)

Internal review last November

1. Issues with neurotechnology area
2. Neurobiology Diseases and Glia – needed to subdivide, both 9 months:
 - a. Mechanisms of neurobiology disease
 - b. Cellular and molecular biology of glia

NOTE: Reactive vs. Proactive – NIH appears to react to increased grant load to develop study sections, but also include RFAs for emerging fields

Example: Neuro-nanotechnology needs own study section

Dr. Christine Melchior, Chief, Integrative Review Groups

Topics of Review:

1. Scope, breadth of reviewers

2. Scope, breadth of science
3. Process

Response to #1: need to bring in new people but need to monitor since new reviewers hypercritical

Responses to #3:

1. 5-8 applications is a full load for reviewers – quality drops as number approaches 10
2. Number of reviewers not > than 5
3. Phone reviews not calibrated but necessary evils – provide needed expertise
4. Mail reviews have limited impact since reviewer not available
5. “Not scoring” is painful for reviewers and PI
6. Training of reviewer is needed – document generated but being at meeting is best experience
7. Score spread a struggle
8. Group dynamics is good
9. Praise of SRAs and Chairs
10. **Reviewers surprised at overemphasis of preliminary data and novelty was difficult to find in the typical application.**

Needs:

Better way to score applications

OPEN QUESTIONS FROM FLOOR TO NIH STAFF:

President Elect of Neuroscience – reviewers need to rank order grants – why isn't this being done? This would be a dramatic change but needed to calibrate reviews.

Answer: Percentile systems achieve this

Prof. SON: No it doesn't since priorities may be skewed i.e. reviewer may give all grants 1 and 4 whereas a rank order system would correct for this

President of Chemosenses: Process – review rank of grants based on scores to see how grants across multiple fields fall out

Answer: Continual process of review does occur

We are asked to combine cellular and molecular mechanisms with translational approaches – seems like study sections are primarily basic or primarily clinical

Answer: We try to balance study section

Innovation was supposed to be one of five review criteria but PIs find that there is a need for data to be funded so PIs afraid to be too innovative.

Answer: Reviewers try to respond to each of 5 criteria

Health needs and concerns of “man on street” may not be addressed. How to balance this vs. where research groups are going?

Answer: That is why we are here.

Broad applications that spread across several areas are not met by current study section needs. Representative study section needs to have integrated approaches.

Answer: This is recognized and CSR uses a considerable number of Ad Hoc and people with broad expertise.

Regarding the cross disciplinary theme, more study sections need genetics expertise.

Answer: Neurogenetics communities have been asked on study sections. Will evaluate this.

We need to be focused on what's not being funded, but another view is why grants are funded that should not be.

Answer: CSR does not address the "F" word so can not comment.

R21s (innovative) and RO1s reviewed at the same time discourages innovation since RO1s are more competitive. Need to move away from SILOS.

Answer: Thank you.

Afternoon Breakouts: What follows is section breakouts that combined NIH staff with PIs and organization representatives in groups A through F. Each group considered the answers to two questions:

- 1. Is science appropriately reviewed?**
- 2. Is there new science that should be targeted?**

I was assigned to breakout session B and this is what we discussed. You will see below it is distilled into 3 major points per question for presentation to the whole group:

- 1. Is science appropriately reviewed?**
- 2. Is there new science that should be targeted? Clinical multi-PI projects**

1. Scientific interest may be driven by existing study sections.
2. PI who works on visual systems gives examples of their grants that go to study sections with only 2 people with expertise. Consequently, work is not appreciated by the section.
3. Clinical work not well represented in study section
4. Invertebrate and in vitro models are fundamental and should not be ignored.
5. Look at reviewers expertise
6. Chairs should be more involved in grant assignments
7. Study section expertise seen as okay but specific examples where centralizing expertise exist that hurt a number of grants
8. Diffusion of expertise on grant is a problem
9. Focus of model systems should be broad

New scientific areas to be developed?

1. Emerging fields need broad expertise since potential for "sloppiness" or too careful critiques with narrow expertise.
2. New tools so can manipulate neuronal circuits from molecular to behavioral level.
3. Whole animal imaging – 200 nm – 1 nm gap in imaging
4. Multidimensional approach to problems should be encouraged with an understanding that there will be a data discovery period for new techniques and this period is going to be descriptive before it is mechanistic.
5. Epigenetics of animal should be considered.
6. More clinical and basic scientist communication

Afternoon Reports

A. Scientific Review Process question #1

1. Need more expertise relative to expertise of grants being reviewed

Top Priorities for Emerging Fields of Science question #2

1. In vivo imaging
2. Remote sensing in biological implants
3. Computational models from molecular to systems
4. The “omics” such as large scale biology proteins, DNA microarray analyses
5. Use of screening techniques for problems
6. Integrative physiology
7. Longitudinal behavioral and genetic studies

B. Scientific Review Process question #1

- Neurodevelopment expertise should be evident across all fields
- Perceived model bias
- Clinical disease and developmental issues require more clinical/basic science interactions

Emerging Technologies question #2

- Methods to turn on/off things in temporal spatial and pathway specific way
- Developing new methods for consolidation of large data sets
- Full scale epigenetics, back to natural environment

C. Question #1

- Need more individual members with broader expertise – get societies to suggest reviewers
- Expertise needs to travel with grants that move from 1st study section assignment
- Importance for continuity in culture with changing panels. Translational work may need own panel.

Question #2

- Need to integrate molecular and cellular back into physiology behavior
- Computational neuroscience / machine brain interface
- Gene and environmental interaction on disease processes

D. Question #1

- New areas not well represented in study section
- Multidisciplinary studies have no home ex. emergency medicine
- Expertise in translational research

Question #2

- Enabling technologies (bioinformatics, neurogenetic, neuroimaging)
- Important areas: prevention and early detection
- Emerging common disease mechanism so neurological disease should not be reviewed in “silos”, ex. chemokines/cytokines, angiogenesis

E. Question #1

- Expertise needed in neuroimmunological, neurogenetics, neurogenomics, biases against certain models and translation proposals
- Expertise is diffuse, inconsistent, difficulty in obtaining reviewers with translational grants

- Need more input from SRA to ensure review process

Question #2

- Real-time technology
- Nano and single cell engineering
- Neuroengineering
- New models

F. Question #1

- Special emphasis panels working very well for neurotech/neuroimaging and neuroinformatics
- Must get breadth of expertise of members with focus on neuroscience
- Focus on neuroscience and not technology for sake of technology

Question #2

- New technologies for data acquisition
- Archiving, data sharing, describing data
- New techniques in neural function
 - Understand neural circuits must be reductionist and constructionist
 - Way to deliver drugs invasive, but non-invasive

Open Discussion from floor:

- Multiple PI grants – important to acquire appropriate expertise
- One way to write a grant that is novel is to write experiments that will generate a hypothesis rather than test a hypothesis

Toni Scarpa, Director, CSR

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- Need rewards for permanent members
 - Abolish NIH deadlines
 - Compensation with length of time for awarded grant
- Across all groups – translational medicine is important
- New investigators are actually well served; ex:
 - New grant by established PI vs. new investigator – fair, the same
 - Every institute is mandated to fund more new investigators

Major complaints

Process too slow

Not experienced reviewers

Takes too much time to write grant and too much time until funding

Matrix 1:

1. Increase communication and transparency
2. Increase uniformity
 - a. Summary posted with in 1 month
 - b. Unscored 50% of grants best practice committee to overview
3. Changes in technology for grant submission
 - a. Text fingerprinting
 - b. Algorithm software

Changes in CSR

1. Shorten review cycle
2. Improve study section alignment and performance
3. Do more to recruit and retain high quality reviewers

	<u>2001</u>	<u>2006</u>
Total applicants	46,000	80,000
RO1s/R21s	21,000	39,000
Grants/PI/year	1.2	1.4
No. applicants reviewed by reviewers	11.6	6

2006 – used 18,000 reviewers

- Only <3,000 were chartered reviewers; the rest were trying to develop electronic review
- From desk can participate in review with video camera
- Asynchronous electronic discussions with “chat” room for several days

Solutions for best reviews

- Shorter meetings
- Electronic reviews
- Shorter application (scientists voted 3:1)

Q&A Session

Electronic reviews might dissuade good reviewers since they like to meet with folks at study section

Answer: This is test pilot program but what they hear from clinicians is that this mechanism would help.

Why not use rank to spread the score

Answer: We have this on the table and we are aware that there are problems with scoring

Electronic review sounds contradicting to core values

Answer: Study sections meeting face-to-face will continue for a long time. We are trying to include clinical folks who would not have input otherwise.

Senior investigators have not been asked to serve in over 8 years, so ask again!!