March 2, 2007 CSR Neuroscience Open House Breakout Groups Report Out Summary

The crux of the March 2, 2007 CSR Neuroscience Open House was the breakout groups. These groups provided a forum for external participants to respond to two science focused questions. All breakout groups were asked the same two questions. All breakout groups were led by a team of individuals: a Study Section chair and a Professional Society representative who together co-facilitated the group and two Scientific Review Administrators (SRAs) who recorded the discussion via laptop and flip chart. Each breakout group was allotted 20-25 minutes to respond to each of the questions and 15 minutes to come to consensus on the top three issues for that question. At the conclusion of the breakout groups, all participants reconvened in the auditorium where the Study Section chair who co-facilitated the breakout group reported out the top three consensus issues for each question.

Below is a summary of each breakout group's top three consensus issues for each question as reported out at the March 2, 2007 CSR Open House Workshop: Neuroscience. Email any post-meeting comments regarding these report-out issues to CSRNeurooh@csr.nih.gov. Post-meeting comments will close on April 24, 2007.

Question 1:

Is the science of your discipline, in its present state, appropriately evaluated within the current study section alignment?

Neural Excitability, Synapses & Gila: Cellular/Molecular Breakout Group

1. Enhance review of complex translational and multidisciplinary research - expand expertise and increase overlap in existing study sections

2. Discovery focused research, and structure, descriptive (i.e. anatomy), need expertise for understanding significance of these studies in context

3. Specific suggestions
    A. MNPS (molecular neuropharm and signaling - "chemical imbalance" (need more chemists)
    B. BDPE (biology and diseases of posterior eye) - more modeling and computational neuron expertise
    C. AED (Anterior eye disease) - move to Cell Biology IRG
    D. CMBG (Cell and molecular biology of glia)—expand expertise to more cell-type interactions

Developmental Neuroscience

1. Developmental expertise should be widely diffused (cover interdisciplinary apps in varied SS)

2. Avoid bias against non-genetic models; use strengths of all, appreciate all

3. Foster clinical – basic science interactions

Behavioral and Sensory Neuroscience

1. The need for more breadth in individual members of a study section is a problem that could be addressed by getting more senior scientists to serve. Societies could provide suggested reviewers. Senior scientists should remind others to serve.

2. The consensus is that proposal are reviewed well in home study sections, but do not fare so well when sent out to other sections because of the multidisciplinary or translational nature of the project. Expertise needs to travel with proposal to other study section.

3. Continuity of culture for reviews in SEPs is a problem with changing membership. Translational work in particular might need standing panels.

Disorders of the Nervous System

1. Newly developed areas/emergent fields not well represented: key is to have ongoing dynamic process of identifying these emergent areas. EXAMPLES: neuroimmunopharm, neurovascular malformations, bioinformatics.

2. Multidisciplinary/cross disciplinary studies have no home. All applications on a single disorder do not always have to be reviewed in one study section (sleep). Need ongoing dynamic process of identifying the most appropriate study section. Another example is emergency medicine.

3. CSR needs to acquire expertise in evaluating translational research, and should not just depend on the institute's review offices for this.

Neuroendocrinology, Neuroimmunology, and Neurogenetics

1. Not adequately grouped/covered : neuroimmunology, neurogenetics, neurogenomics, comparative neuroscience among many animal models, normal and pathological cerebrovascular, translational proposals

2. Appropriate expertise is needed in study sections. Too diffuse, inconsistent, or insufficient expertise; low number of experts. Animal experimental vs. human

experimental vs. patient clinical studies - Difficulty of assignment for translational grants

3. Need input from professional societies for recommended reviewers

4. SRA consultation with Study section chair for assignments

Neurotechnology, Neuroimaging, and Neuroinformatics

1. YES- SEPs are serving the community well.

2. SEPs work particularly well when breadth of panel membership is maintained.

3. Focus on neuroscience - applicability of technology development to neuroscience

Question 2:

What will be the most important questions and/or enabling technologies you see forthcoming within the science of your discipline in the next 10 years?

Neural Excitability, Synapses & Gila: Cellular/Molecular

1. Emerging technologies:
    A. In vivo imaging-Optical, MRI, etc,
    B. Remote sensing and biological implants,
    C. Computational modeling from molecular structure to systems,
    D. Large scale biology - proteomics, metabolomics, RNAi and other screens, chemical biology

2. Emerging Questions:
    A. Integrative physiology
    B. Longitudinal genetic and behavioral studies

Developmental Neuroscience

1. Better methods to turn things on and off in temporal, spatial, pathway specific way

2. Development of new methods to consolidate and analyze large data sets in developmental context (may be “descriptive” during discovery period)

3. Epigenetics and back to natural environment (vs. artificial laboratory stimuli)

Behavioral and Sensory Neuroscience

1. Physiology and behavior is reemerging as important for integration of cellular and molecular advances taken back to issues of human health and disease.

2. Computational neuroscience and bioinformatics are important for data processing and theory development.

3. Machine-brain interfaces for behavioral control, prostheses, robotics, and cellular biology.

4. Gene and environment interactions in development and disease.

Disorders of the Nervous System

1. Enabling technologies: bioinformatics, neurogenetic tools, neuroimaging, biotechnology/biomarkers

2. Important questions/emerging areas that should be addressed: Early detection (biomarkers) of chronic neurological disorders and developmental disorders. Deployment of early interventions can be deployed for prevention of neurological disease

3. Emerging common disease mechanisms. Examples: protein misfolding, chemokines/cytokines, angiogenesis. Neurological diseases should not be reviewed in silos

Neuroendocrinology, Neuroimmunology, and Neurogenetics

1. Real-time analysis of neural activity correlated with real time behavior

2. Nano and single cell technology

3. Neuroengineering

4. New models of disease – especially appropriate nontraditional animal models

5. Interdisciplinary/translational medicine studies:
    A. Hormones, immunity and cognition
    B. Life span development of brain and behavior
    C. Epigenetics
    D. Genetics of behavior

6. Information explosion post genomic era:

A. Hypothesis generating science - personalized medicine - complete individual sequencing ; genomics, proteomics, metabolomics; new technologies to understand pathophysiology
B. Systems neurobiology

Neurotechnology, Neuroimaging, and Neuroinformatics

1. New technologies in data acquisition for interrogating structure and function

2. Archiving, sharing, and describing data

3. New technologies in influencing neural function

Conclusion

The Center for Scientific Review will carefully review these comments and suggestions organized around the relatively broad areas of neuroscience represented by the breakout groups. CSR will consider appropriate steps to address concerns about the general focus of review and issues discussed that pertain to individual study sections. Examples that were mentioned at the Open House are the ongoing working groups to consider optimal approaches to review in cross-cutting areas such as neurotechnology, neurogenetics and neuroimaging. In addition, working groups are examining specific scientific areas such as neuropsychiatric models and neuroinformatics. With broad input from stakeholder groups, CSR plans to address the challenges of review of translational applications in neuroscience. To ensure stakeholder participation and broad perspective in this area and the others, the results of working group deliberations will be presented to the NIH Peer Review Advisory Committee (PRAC) for its consideration before changes are implemented.

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