U.S. Department of Health & Human Services

NIH Center for Scientific Review

External Scientific Review of Study Sections on Biology and Disorders of Vision

Request for Council Recommendations

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History

- Vision research has historically been reviewed in a small number study sections with high concentration of NEI applications.

- Vis A, Vis B, Vis C; then AEP and BDPE, then BVS and DPVS
  in 2016 DPVS became oversubscribed (150 applications)

- CSR met with NEI program officials and agreed on a plan—move cornea and other ocular surface applications to a SEP

- ZRG1 BDCN J81 has been running since with ~60 apps/round

The challenge

CSR believes topical (non-FOA based) SEPs should be term limited.

-- CSR's set of study sections is intended to cover the full range of science reflected in the R01s received by NIH

--science evolves. chartered study sections should take in rather than push out emerging fields.

-- keeps reviewers with expertise in emerging areas in the study section

--provides for better oversight of review, generally more efficient review

- ZRG1 BDCN J81
  - Initiated in 2017 to manage overflow from DPVS

The approach

A focused SRG review

- Expand the review beyond simple consideration of whether to charter J81.
- Scope is (confined to) vision science
- Get input from a variety of prominent external scientists
- Give them a broad charge
- Not ENQUIRE, not a broad SRG review like Biomedical Imaging

4 steps

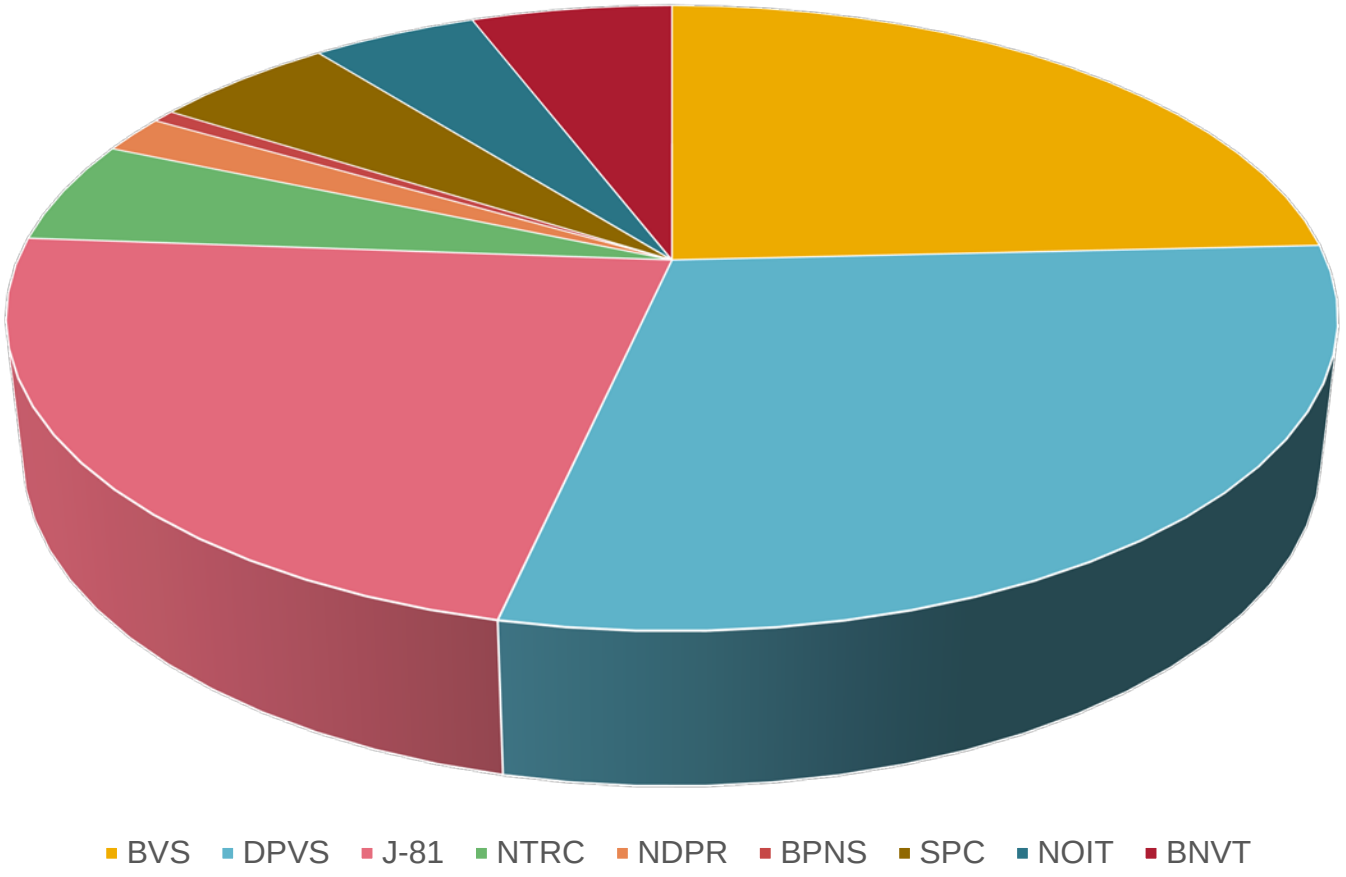
- External review
- CSR workload evaluation of committee recommendations
- Input from CSRAC
- Final implementation by CSR

Expand the review

- Scope = the study sections that review most applications to investigate the biology and disorders of vision

Acronym	Name	Focus for this review
BVS	Biology of the Visual System	All topics
DPVS	Diseases and Pathophysiology of the Visual System	All topics
BDCN J81	Ocular Surface, Cornea, Anterior Segment Glaucoma, and Refractive Error Special Emphasis Panel	All topics
NTRC	Neurotransporters, Receptors, Channels and Calcium Signaling	Retinal circuitry
NDPR	Neurodifferentiation, Plasticity, and Regeneration	Retinal development and regeneration
BPNS	Biophysics of Neural Systems	Structure/function of phototransduction molecules
SPC	Mechanisms of Sensory, Perceptual, and Cognitive Processes	Visual information processing, perception, eye movement
NOIT	Neuroscience and Ophthalmic Imaging Technologies	Ophthalmic imaging
BNVT	Bioengineering of Neuroscience, Vision and Low Vision Technologies	Low vision technologies

Distribution of applications



Recruit prominent external scientists

- Recommendations from NEI, IRG chiefs, and SROs. Vetted by DD, selected by DD.
- Broad and deep expertise in their fields; overlapping expertise, good reviewers—e.g. make strong contributions at meetings
- Experienced with NIH review
- Most had extensive experience with these study sections.

Guidance to the panel

- **review the study sections and consider the entire range of science, whether or not it is highly familiar to you**.
  - Do the study sections promote fair, expert, and competitive review?
  - Are the study sections guidelines appropriate?
  - Are the study sections workable in terms of workload and breadth of science?

- **Make recommendations—big or small**
  - Reassign topics, change guidelines
  - Terminate, combine, divide study sections
  - Create new
  - Consider numbers only very generally—CSR will evaluate

Additional questions to the panel

1. Should CSR charter BDCN J81?

2. Where should retinal circuitry applications be reviewed, NTRC or elsewhere?

3. Is there a better review home for the low vision technologies applications currently reviewed in BNVT?

4. Where, other than NOIT, might ophthalmic imaging applications be reviewed?

CSR seeks your input on two panel recommendations

1. Charter BDCN J81. Unanimously, the committee recommends making this a chartered review committee. The suggested name is “Ocular Surface and Anterior Segment of the Eye” (OSAS).

   - Panel recommended minimal changes to existing referral guidelines

2. Create a new Visual Circuits study section to be named Visual Circuit Development, Dissection, and Degeneration (VCD).

   - VCD would review applications on visual circuit development and circuit assembly, circuit regeneration and degeneration, circuit mapping and “circuit cracking” applications, studies of circuit function and dysfunction, and studies of visual circuits in the context of visuoperceptual and cognitive function.

Mock sort

To evaluate the feasibility of the panel's recommendations CSR conducted a mock sort of applications

- 179 applications sampled from last 3 rounds of BVS, DPVS, J81, NTRC and SPC
- Study section guidelines written to conform to panel recommendations
- Sorted independently by 1 RO, 2 IRG chiefs

Mock sort results.

Current and estimated number of applications per round in four vision science study sections

	Estimate based on consensus sort	Range of estimates based on individual sorts	3 round average as of 2019/01
BVS	70	62-82	63
DPVS	74	72-82	76
VCD (proposed new SEP)	19	12-19	--
J81/OSAS	64	54-64	58

Mock sort comments

- Sort-based estimates suggest little change in application counts for existing study sections and J81.
- Application counts for VCD (proposed) look low.
- 80% of the applications that were assigned to VCD came from SPC.
- SPC is currently ~65 applications per round

Council discussion

Thanks to

- Samuel Edwards, Maqsood Wani, Joseph Rudolph, Kristin Kramer, Nataliya Gordiyenko, Michael Chaitin, Alexei Kondratyev, Kirk Thompson, Carole Jelsema, Peter Guthrie

- Affia Sultana

- Ishrat Uddin, Verzhiniya Tancheva

Proposed VCD guidelines

- **ZRG1 IFCN X(80) Development, Dissection, and Degeneration of Visual Circuits [DVC)**
- DVC reviews applications seeking to study visual circuits as integrated neuronal ensembles, in multiple contexts. It reviews applications to investigate the development, normal function, dysfunction, degeneration, regeneration of circuits, and their function in sensory information processing, perception and cognition. Applications should emphasize circuit interrogation, and may address basic, applied, translational or clinical questions using in vitro and in vivo approaches in animal models and humans.
- **Topics**
- Visual information processing in neuronal circuits of the retina, subcortical and cortical structures.
- Identification and dissection of neural circuits that underlie visual or visuomotor behaviors
- Circuit dissection throughout the visual axis underlying different cognitive states including arousal, attention, and visually motivated behavior.
- Axon targeting that leads to the assembly of visual circuits.
- Remodeling of visual circuits associated with development, visual disorders, disease, and aging.
- Reorganization of visual circuits during trauma, degeneration and regeneration
- Role of visual circuits in multi-sensory integration, cross-modal plasticity, and perceptual decision-making.
- Circuit dissection throughout the visual axis underlying different cognitive states including arousal, attention, visually motivated behavior

Proposed VCD overlaps

- **Closely Related**
- **NTRC** and **IFCN X(80) DVC** share interests in the area of retinal circuitry. DVC reviews applications to investigate circuits as integrated, visual information processing neuronal ensembles. Applications that investigate visual circuits, but which emphasize synaptic function or the basic neurophysiology of ion channels, receptors, and transporters are generally reviewed in NTRC.
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- **SPC** and **IFCN X(80) DVC** share interests in retinal circuits. DVC reviews applications on a wide range of topics related to visual circuits. It covers applications that identify, dissect, or interrogate circuits in the context of visual information processing, visuomotor behavior, and cognitive states including attention, arousal, and motivated behavior. Applications that investigate visual circuits, but which emphasize human behavior with limited examination of neurobiological mechanism are generally reviewed in SPC and CP
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- Applications that focus primarily on sensorimotor integration or motor control may be reviewed by **SMI**
- Applications with a focus on translational and clinical studies of the eye may be reviewed by **DPVS**.
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Other Recommendations

3. Change the distribution of glaucoma applications between BVS and OSAS.

4. Change the distribution of glaucoma applications between BVS and J81/OSAS.

5. Review ophthalmic imaging technology development in NOIT (EITN)