



2019 ANNUAL MEETING

OCTOBER 19 - 23

Framework for an Internal Grant Review Program

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Audience

- ▶ Principal Investigators?
- ▶ Research Administrators?
- ▶ Other?

- ▶ Types of grants:
 - ▶ NIH/DoD/Gov't?
 - ▶ Industry?
 - ▶ Private?

**Raise your hand
please!**



Background:

Internal Grant Review Program (IGRP)

- ▶ Department needed it (Director-initiated)
 - ▶ Success rate of K's was low
 - ▶ Lack of mentor oversight (K's)
 - ▶ Support for new and early stage investigators

NOTE: R's = research grants (R01, R21)

K's = career development awards (K01, K08, K23, K99)

Laying the groundwork (requirements for success)

- ▶ Chair/Director full support
- ▶ Committee to run it
 - ▶ Ours: 6 faculty members, 1 administrator
- ▶ Department buy-in (i.e. future reviewers)
- ▶ Make it a requirement
 - ▶ All K-awards (postdocs and junior faculty)
 - ▶ 1st time R's must go through (e.g. “new investigators”)

Form a Committee

- ▶ **Start-up (2011):** 3 faculty members and 1 administrator
- ▶ **Today (2019):** 6 faculty members (1 from another dept) and 1 administrator
- ▶ **Faculty members:** seasoned grant writers with multiple NIH awards; many on study sections
- ▶ **Administrator:** experienced with grants management and program development

Get buy-in

- ▶ Chair/Director 100% support
- ▶ Faculty (i.e. reviewers/mentors): emphasize importance of internal review on success of junior faculty and possibility for increased funding for department (indirects & salary support)
- ▶ Applicants (i.e. new investigators): increase funding success rate, improve mentorship, career stability & advancement

Materials needed

- ▶ Email or software (both work)
 - ▶ We currently use *Research Logix* from Adminformatics, LLC
 - ▶ [Demo at Booth #112](#)
 - ▶ Evaluation form (we use NIH-style form)

Degree of Impact	Impact Score	Descriptor	Additional Guidance on Strengths/Weaknesses
High	1	Exceptional	Exceptionally strong with essentially no weaknesses
	2	Outstanding	Extremely strong with negligible weaknesses
	3	Excellent	Very strong with only some minor weaknesses
Moderate	4	Very Good	Strong but with numerous minor weaknesses
	5	Good	Strong but with at least one moderate weakness
	6	Satisfactory	Some strengths but also some moderate weaknesses
Low	7	Fair	Some strengths but with at least one major weakness
	8	Marginal	A few strengths and a few major weaknesses
	9	Poor	Very few strengths and numerous major weaknesses

Definitions
Minor: easily addressable weakness that does not substantially lessen the impact of the project.
Moderate: weakness that lessens the impact of the project.
Major: weakness that severely limits the impact of the project.

NIH Timelines: 3 cycles per year

▶ R-awards

Cycle 1

- ▶ New: February 5
- ▶ Resubmissions: March 5

Cycle 2

- ▶ New: June 5
- ▶ Resubmissions: July 5

Cycle 3

- ▶ New: October 5
- ▶ Resubmissions: November 5

▶ K-awards

Cycle 1

- ▶ New: February 12
- ▶ Resubmissions: March 12

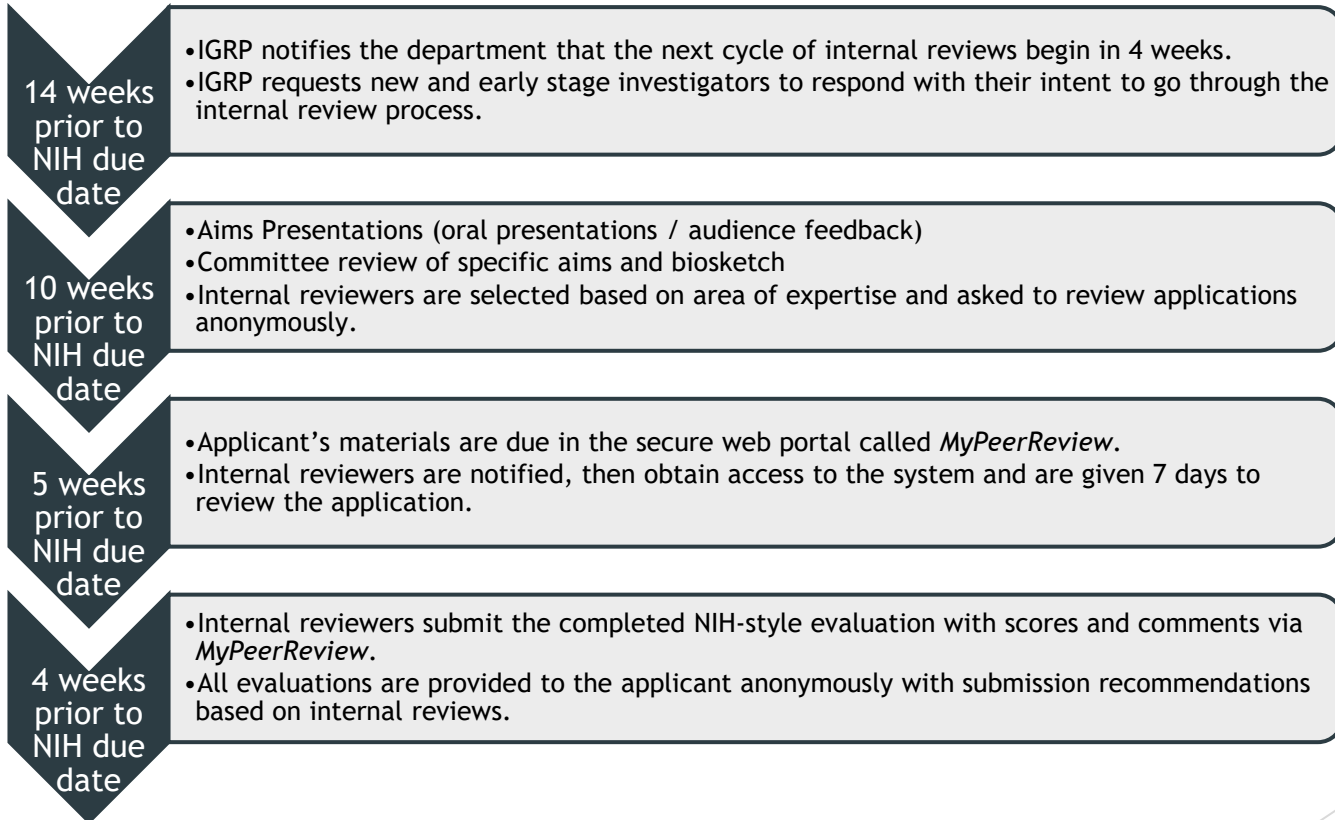
Cycle 2

- ▶ New: June 12
- ▶ Resubmissions: July 12

Cycle 3

- ▶ New: October 12
- ▶ Resubmissions: November 12

Internal Review Timeline



14 weeks before NIH due date

- ▶ Email announcement: IGRP notifies the department that the next cycle of internal reviews begin in 4 weeks.
 - ▶ Applicants sign up
 - ▶ Collect title of application, mechanism, grant type, mentors/co-investigators, new/re-submission

9:30am – 9:40am

Tae Hwan Chung, M.D.

Assistant Professor of PM&R and Neurology

Title: “Age-associated Muscle Weakness and Metabolic Disturbance”

Type: K08 NEW

Mentors: Ahmet Hoke and Jeremy Walston (Geriatric Medicine)

9:40am – 9:50am

Questions

- ▶ From this, Administrator creates the agenda for the Specific Aims Presentation
 - ▶ Applicant presents project in oral format
 - ▶ Entire department is invited

Specific Aims Presentation Agenda



**Johns Hopkins University School of Medicine
Department of Neurology
K/R Internal Grant Review Committee
Specific Aims Presentations**

Monday, August 12, 2019 | 9am-12pm | Meyer 1-191

AGENDA

9:05am – 9:15am

Xiaobo Mao, Ph.D.

Postdoctoral Fellow, Neuroscience; Nanotechnology

Title: “Influence of Age on Pathogenic α -Synuclein Spread”

Type: K01

Mentor: Ted Dawson

9:15am – 9:25am

Questions

9:30am – 9:40am

Tae Hwan Chung, M.D.

Assistant Professor of PM&R and Neurology

Title: “Age-associated Muscle Weakness and Metabolic Disturbance”

Type: K08

Mentors: Ahmet Hoke and Jeremy Walston (Geriatric Medicine)

9:40am – 9:50am

Questions

9:55am – 10:05am

Adrian Haith, Ph.D.

Assistant Professor of Neurology

Title: “The Effects of Practice on the Neural Representation of Motor Skill”

Type: R01 (resubmission)

Co-Investigators: John Krakauer, Zoltan Mari

10:05am - 10:15am

Questions



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10 weeks before NIH due date

- ▶ **Aims Presentations: timed!**
 - ▶ Conference setting (can be done on a smaller scale)
 - ▶ Oral presentations with slides: 10-minute
 - ▶ Audience questions & feedback: 10-minute
- ▶ **Committee review of specific aims and biosketch**
 - ▶ Written (email) feedback given within 7 days
 - ▶ Summary & reflection of the oral presentation
 - ▶ Formal critique of submitted aims & biosketch

Aims presentation format

- ▶ Specific format required for all applicants
 - ▶ 6 slides max (7 slides if a resubmission, *Slide 1B*)
- ▶ Examples...



Slide #1

Title of Application

- ▶ Applicant's name & degree
- ▶ Grant mechanism (K01, K08, K23, K99, R-type)
- ▶ 1st or 2nd submission? (if 2nd, give score)
- ▶ Applying to which Institute? (NINDS, NIA, etc.)
- ▶ Early stage investigator (ESI) (for R's)?

Specific to K's:

- ▶ Name of Primary Mentor
- ▶ Name of Co-Mentors

Slide #1:

“Cerebro-Cerebellar Contributions to Cognitive Function in Drug Addiction”

- ▶ Cherie Marvel, PhD
- ▶ K01
- ▶ 2nd submission; 1st score = 50
- ▶ NIDA
- ▶ Primary Mentor: John Desmond
- ▶ Co-Mentors: Eric Strain, Miriam Mintzer



Slide #1B: Major Criticisms of First Submission (and plans for response)

- ▶ This slide only applies to re-submissions!
- ▶ List major criticisms and a BRIEF response to each.
- ▶ Only 1 minute to go over this, so provide the gist of the major problems.

Slide #1B:

Major Criticisms of First Submission (and plans for response)

- ▶ Major Criticisms:
 - ▶ Small # of publications: have published 3 papers since first submission
 - ▶ Ambitious training program: has been scaled back to focus on methods directly related to this research project
 - ▶ Scientific approach: criticisms of MRI scan sequence and statistics, which have been discussed with mentors and revised



Slide #2: Gap, Goal, Impact

- ▶ Gap: Specify the gap in knowledge that the grant intends to fill.
- ▶ Goal: State the overall goal of the proposed work.
- ▶ Impact: State the potential impact.

Slide #2: Gap, Goal, Impact

- ▶ Gap: There is limited knowledge in the cerebro-cerebellar contributions to cognitive function in drug addiction.
- ▶ Goal: The primary goal of this proposal is to identify neural mechanisms that contribute to working memory dysfunction in drug addiction.
- ▶ Impact: Identification would shed light on mechanisms involved in risky decision making and inform treatment strategies.



Slide #3: Gap in Skills and Training Plan

- ▶ Include 1-3 bullet points of primary training goals, as they relate to the proposed research.

(Not applicable for R-applications)

Slide #3: Gap in Skills and Training Plan

To provide the candidate with:

1. Advanced skills in neuroimaging techniques
2. Extensive training in addiction research



Slides #4 - #6: Aims & Hypotheses

- ▶ State aim, followed by hypothesis and rationale.
 - Rationale may include relevant preliminary data
- ▶ Repeat for Aims #2 & #3

Slide #4:

Aims & Hypotheses

- ▶ Aim #1: to compare the role of the cerebro-cerebellar pathway in working memory for verbal vs. non-verbal content in drug users vs. controls
 - ▶ Hypothesis: Cerebro-cerebellar fMRI activity differences between the stimulus types will be augmented in the drug group.
- ▶ Aim #2: to compare the network connectivity of nodes within the cerebro-cerebellar pathway in drug users vs. controls
 - ▶ Hypothesis: Functional connectivity of nodes within the cerebro-cerebellar pathway will be diminished in drug users relative to that of controls during both fMRI tasks, indicating that some brain regions are not functioning in a coordinated manner.



Slide #5: Aims & Hypotheses

- ▶ Aim #3: to compare the integrity of white matter fiber tracts that subserve the cerebro-cerebellar pathway in drug users vs. controls
 - ▶ Hypothesis: The size and fractional anisotropy (FA) of white matter fiber tracts along the cerebro-cerebellar pathway will be diminished in the drug users relative to that of controls.



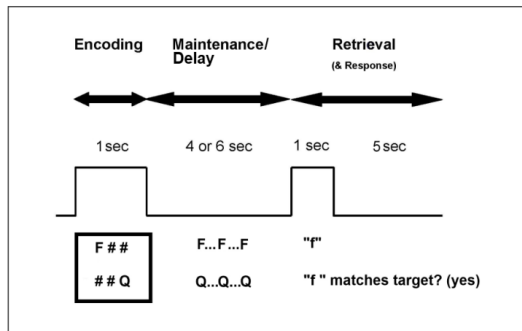


Slide #6: Relevant Preliminary Data

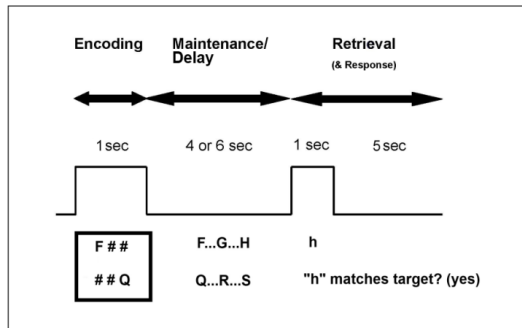
fMRI Task

Delayed Item Recognition Task

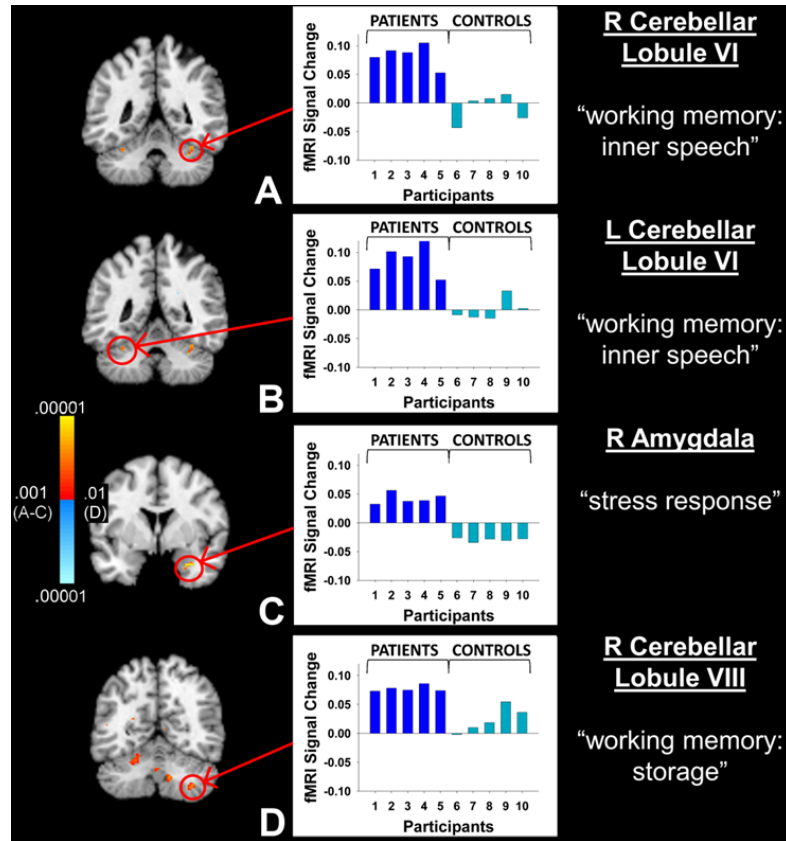
a) Match Condition



b) Manipulation Condition



Preliminary Results, N= 5 patients, 5 controls



After Aims Presentations

- ▶ Applicant receives feedback on their specific aims and biosketch from one committee member within 7 days of presentation.
- ▶ Internal grant reviewers (2-3) are assigned (reviewers are anonymous).

5 weeks before NIH due date

Documents required for internal review

Applicant materials are due in the secure web portal (or via email)

Research Grants (R's) (R01, R03, R21)

- ▶ Specific Aims
- ▶ Research Strategy
- ▶ Biosketch
- ▶ Response to Reviewer Comments (Resubmissions)

Career Development Awards (K's) (K01, K08, K23, K99/R00)

- ▶ Specific Aims
- ▶ Research Strategy
- ▶ Biosketch
- ▶ Candidate Information and Goals for Career Development
- ▶ Plans and Statements of Mentor and Co-mentor(s)
- ▶ Response to Reviewer Comments (Resubmissions)

Other important documents, but optional for internal review:

- Budget
- Facilities, equipment, institutional environment
- Letters of support (letter from Director for K's)
- Animal and human subjects research

4 weeks before NIH due date

- ▶ Internal reviewers submit the completed NIH-style evaluation with scores and comments via *Research Logix*.
- ▶ All evaluations are provided to the applicant anonymously within 7 days.
 - ▶ Committee makes an overall recommendation based on reviewers' comments and recommendation to submit or delay

NIH-Style Evaluation

- ▶ Criteria Score: 1-9 (1 = exceptional, 9 = poor)
- ▶ Review Criteria (each criteria is scored):
 - ▶ Written comments of the strengths and weaknesses of each criteria are provided to the applicant.
 1. Significance
 2. Investigator
 3. Innovation
 4. Approach
 5. Environment

Note: In addition to these, K's will be evaluated on their career development and mentorship plan

NIH guidance for reviewers

(provided to internal reviewers)

► Significance:

- *Does the project address an important problem or a critical barrier to progress in the field?*
- *If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved?*
- *How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?*

NIH guidance for reviewers (cont'd)

(Provided to internal reviewers)

► Investigator(s):

- *Are the PD/PIs, collaborators, and other researchers well suited to the project?*
- *If Early Stage Investigators or New Investigators, or in the early stages of independent careers, do they have appropriate experience and training?*
- *If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)?*
- *If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?*



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NIH guidance for reviewers (cont'd)

(Provided to internal reviewers)

► Innovation:

- *Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions?*
- *Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?*
- *Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?*

NIH guidance for reviewers (cont'd)

(Provided to internal reviewers)

► Approach:

- *Have the investigators included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project?*
- *Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?*
- *Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?*
- *Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?*



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NIH guidance for reviewers (cont'd)

(Provided to internal reviewers)

► Environment:

- *Will the scientific environment in which the work will be done contribute to the probability of success?*
- *Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed?*
- *Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?*

Reviewer's Evaluation

- ▶ Overall Score: 1-9 (1 = exceptional, 9 = poor)
- ▶ Overall Recommendation (Required):

Overall Recommendation for Internal Review (Required):

1. ____ Submit with revisions
2. ____ Delay submission to a later cycle
3. ____ Proposal should be completely re-packaged as new

Additional Comments (Optional):

1. ____ Proposal requires extensive editing (too rough to review)
2. ____ Reviewer wishes to discuss further in person with applicant
3. ____ Other:

Overall Impact: Write a paragraph summarizing the factors that informed your evaluation.

Overall SCORE:

When internal review is complete

- ▶ Follow-up with applicants:
 - ▶ Did you submit your application?
 - ▶ Did you get funded?
 - ▶ What was your score?
 - ▶ Are you willing to share your summary statement?
 - ▶ How did the review process help you?

Benefits of internal review...

- ▶ Timeline pushes the applicant to start early (2 ½ months).

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 - ▶ Direct mentor-mentee
 - ▶ Broad base mentorship through internal review

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- ▶ Applicants defend their ideas during the Aims Presentations

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- ▶ Applicants defend their ideas during the Aims Presentations
- ▶ Decide to delay submission to strengthen the application for the next cycle

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 - ▶ Direct mentor-mentee
 - ▶ Broad base mentorship through internal review
- ▶ Applicants defend their ideas during the Aims Presentations
- ▶ Can decide to delay submission to strengthen the application for the next cycle
- ▶ Future applicants view the process

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- ▶ Applicants defend their ideas during the Aims Presentations
- ▶ Can decide to delay submission to strengthen the application for the next cycle
- ▶ Future applicants view the process
- ▶ **Multidisciplinary approach; draws from audience expertise**

Potential Pitfalls

- ▶ Lack of reviewer participation
 - ▶ Workload may be too high already
 - ▶ Delayed evaluations returned to applicant
 - ▶ Could help to incentivize (e.g., \$\$)
- ▶ Additional workload for committee members
 - ▶ Could be mitigated by % salary, \$\$ bonus

IGRP Outcomes

- ▶ 24 cycles: February 2011 - December 2018
 - ▶ K01/K23/K08: 20/28 = 71%
 - ▶ K99: 6/7 = 86%
 - ▶ R's: 11/14 = 79%
 - ▶ K/R combined: 36/48 = 78%
 - ▶ Applications having two submissions for the same project are only counted once (per NIH).
 - ▶ Applications are not counted until results from the second submission are known, or if funded on the first submission.
- ▶ NIH National Average (NINDS, 2018):
 - ▶ K08 = 37%; K23 = 40%; K99 = 9%; R01 = 21%
 - (K01's at NINDS are for minorities only and not included here)*
- ▶ In total, the IGRP has reviewed 144 applications across 26 cycles from 2011 - 2019 (through cycle 2)

Manuscript

Annals of
NEUROLOGY

An Official Journal of
the American Neurological
Association and the
Child Neurology Society




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NEUROGENESIS

Internal Grant Review to Increase Grant Funding for Junior Investigators

Heather S. Thomas, MBA,¹ Martin B. Brodsky, PhD, ScM,²
Joshua B. Ewen, MD,^{1,3} Gregory K. Bergey, MD,¹ Thomas E. Lloyd, MD, PhD,¹
Norman J. Haughey, PhD,¹ and Cherie L. Marvel, PhD ¹

Published October 2017



Future directions

► Review of summary statements:

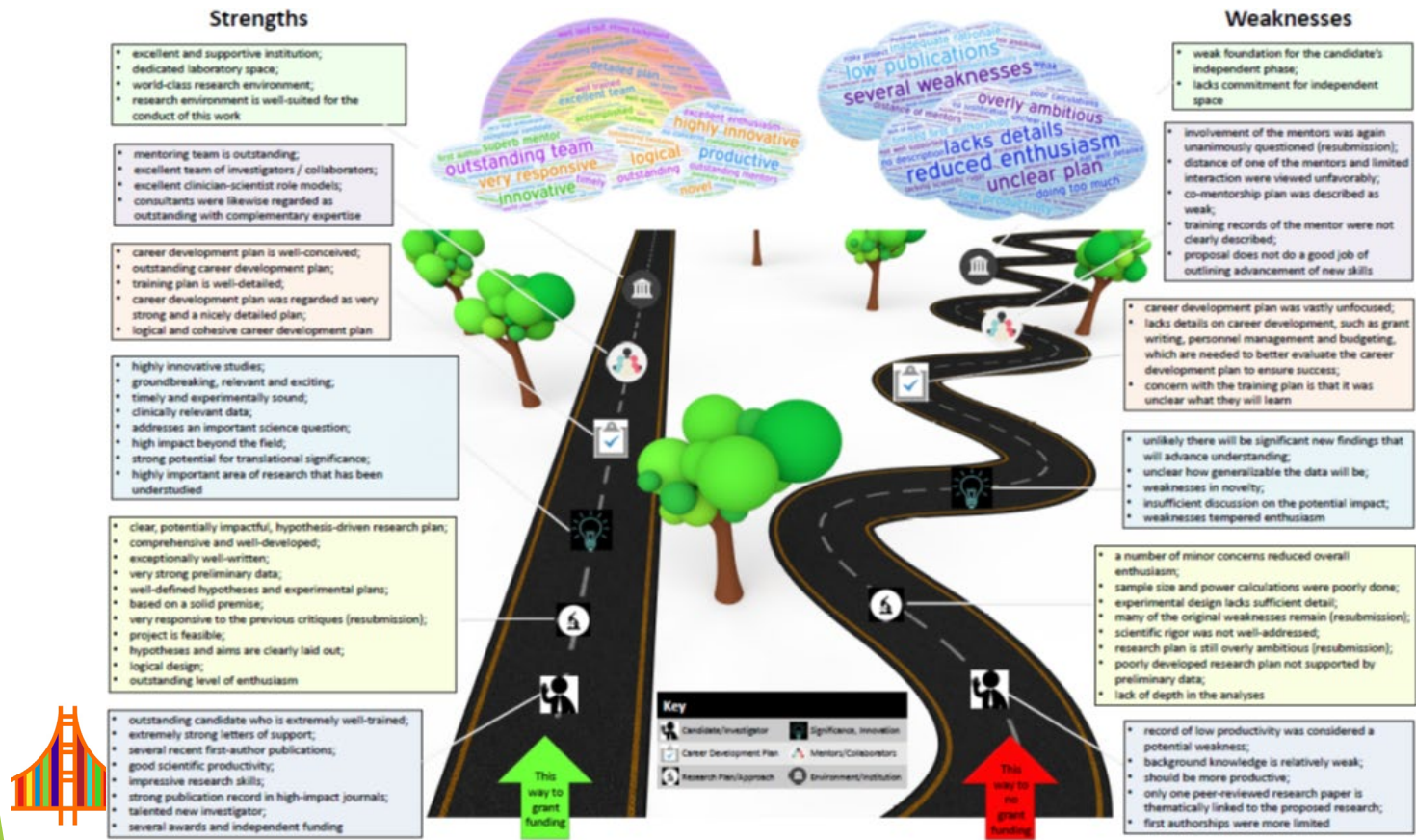
- Determine which scored criteria is “most important” for funding decisions.
 1. Significance (R’s only)
 2. Innovation (R’s only)
 3. Investigator/Candidate (R’s and K’s)
 4. Approach/Research Plan (R’s and K’s)
 5. Environment/Commitment to the Candidate (R’s and K’s)
 6. Career Development Plan/Career Goals/Plan to provide mentoring (K’s only)
 7. Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s) (K’s only)

Recent analysis

- ▶ 17 funded and 12 unfunded summary statements; frequently cited words and phrases pulled

Get your head in the clouds!

A lexical analysis of reviewers' comments distinguishing funded from unfunded grant applications



Take-home points

- ▶ IGRP can be built from the ground up at low cost
- ▶ Requires investment by senior faculty in the review process
- ▶ Generalizable to any academic department and grant mechanism
- ▶ Supports junior faculty in their academic research career

Questions? Contact us.

- ▶ Heather Thomas, MBA, Program Administrator, Johns Hopkins University, Department of Neurology, Baltimore, MD, USA
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- ▶ Cherie Marvel, PhD, Associate Professor, Johns Hopkins University, Department of Neurology, Baltimore, MD, USA
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