



**Pathway to Independence:
Preparing the K99/R00 and Understanding the NIH Review Process
Postdoc Seminar, April 5, 2023**

*****Before the meeting, please read this document & fill out the questionnaire in Section III*****

I. Meeting Agenda:

- 1:00 - 1:15 Welcome & Introductions. Discussion of assigned reading.
- 1:15 - 2:00 NIH mission. K99 overview. Career development. Research plan.
- 2:00 - 2:20 (Group activity) Defining your research and career goals (**see Section III**).
- 2:20 - 2:30 Break
- 2:30 - 2:45 (Group activity). Project Narrative pitch exercise
- 2:45 - 3:30 Proposal preparation. Best practices for grant writing. NIH review process.
- 3:30 - 4:00 Q&A. Evaluation survey.

II. Why the K99?

“Apart from the obvious financial benefits of submitting a successful grant proposal, the proposal writing process provides graduate students and postdocs with skill-building opportunities for **thinking critically and communicating ideas**, required competencies for most careers.

...

Writing a high-quality proposal requires the proposal writer to develop an in-depth understanding of the **primary literature**; to identify important problems or **critical barriers** to progress in their field; to evaluate **strategy, methodology, and analyses** to accomplish the specific aims of the project; and to articulate how the proposed research challenges or seeks to shift **current research paradigms**.¹

--

“Sufficient history now exists to assess the National Institutes of Health Pathway to Independence Award (K99/R00), first offered in 2007 to support the career development of biomedical researchers. The success of K99 (Mentored Phase of the K99/R00) principal investigators in obtaining subsequent grant support was compared with that of principal investigators supported by the long-standing K08 (Mentored Clinical Scientist Research Career Development Award) and K23 (Mentored Patient-Oriented Research Career Development Award) programs. For cardiovascular K awards initiated in fiscal years 2007 to 2009, K99 principal investigators were more successful in obtaining subsequent grant support than the other groups. Although a bibliometric analysis showed similar publication quality for all groups, **the K99 group was most persistent in applying for the next grant**.²

¹ Botham CM, et. al. (2020) “Biosciences Proposal Bootcamp.” PLoS ONE 15 (12): e0243973.
<https://doi.org/10.1371/journal.pone.0243973>

² Carlson, et. al. (2016) “Initial Outcomes for the NHLBI K99/R00...” *Circulation Research*, 119 (8): 904-908
<https://doi.org/10.1161/CIRCRESAHA.116.309238>



- III. **Before we meet, please write down responses to the following questions³. Write as much or as little as you are able. Make more space if needed. Feel free to use bullet points, brainstorming methods, or simply jot down ideas.**
1. What are you trying to do (with this project *and* your career?) Articulate your objectives using absolutely no jargon.
 2. How is your project's research done today, and what are the limits of current practice?
 3. What is new in your approach and why do you think it will be successful?
 4. Who cares? If you are successful, what difference will it make?
 5. What are the risks?
 6. How much will it cost and how long will it take? (ballpark)
 7. What are the mid-term and final "exams" to check for success? (Evaluation methods?)

³ George H. Heilmeier, a former DARPA director (1975-1977), crafted a set of questions known as the "**Heilmeier Catechism**" to help Agency officials think through and evaluate proposed research programs:



The Heilmeier Catechism is a great way to get to know your **scope of work (SOW)**. An **SOW**, in some form, is required by most federal funders (NIH calls it **Specific Aims**). You should be able to summarize in 1 page the major aspects of the entire proposal in a prescribed sequence that includes:

- 1) the overall purpose of the study and the research problem(s) you're investigating;
- 2) a consideration of your career goals and trajectory (for K99/R00).
- 3) gap in knowledge that your project addresses;
- 3) the basic design of the project;
- 4) major findings or advancements of your analysis; and,
- 5) a brief summary of your intended impact and outcomes.

IV. NIH Resources:

1. NIH Pathway to Independence Award Full Solicitation: <https://grants.nih.gov/grants/guide/pa-files/PA-20-188.html>
2. NIH How to Apply – Application Guide: <https://grants.nih.gov/grants/how-to-apply-application-guide.html>
3. Anatomy of a Successful K99 application: <https://www.nia.nih.gov/research/blog/2022/05/anatomy-successful-k99-application>
4. K99/R00 Sample Applications: <https://www.nia.nih.gov/research/training/k99-r00-sample-applications>

V. Helpful blogs on the K99 process:

1. Graham S. Erwin: Advice on how to apply for the NIH K99/R00 Pathway to Independence Award: <https://www.grahamerwin.org/advice-for-k99r00-pathway-to-independence-award>
2. Ward Lab Blog: <https://www.ucscwardlab.com/our-neglected-blog/how-to-write-a-successful-k99-one-canucks-perspective>
3. Edge for Scholars (re: diversity-focused MOSAIC K99): <https://edgeforscholars.org/nih-offers-new-type-of-k99-r00/>
4. Matthew Kiang Blog: <https://mathewkiang.com/2020/06/12/applying-for-a-k99/>
5. Brains Explained Blog: <https://www.brains-explained.com/guide-to-applying-for-the-k99-r00/>



VI. K99 CHECKLIST – COMPONENTS YOU WILL HAVE TO WRITE/COLLECT (unless otherwise noted)

1. Cover Page – *Research Administrator will help*
2. Project Summary/Abstract (*30 lines of text*)
3. Project Narrative (*3 sentences*)
4. Specific Aims (*1 page*)
5. Bibliography/References Cited
6. Facilities and Other Resources
7. Equipment - PI
8. List of Referees (check off specific letters once received): 3-5 reference letters accepted
 1. Ref #1
 2. Ref #2
 3. Ref #3
 4. Ref #4
 5. Ref #5
9. Biosketches (Candidate, Mentor, Co-Mentor, Advisory Committee Members)
 1. Yours – PI
 2. Co-Mentor #1
 3. Co-Mentor #2
 4. Advisory panel member #1
 5. Advisory panel member #2
10. Current & Pending Support (Mentor, Co-Mentor)
 1. Co-Mentor #1
 2. Co-Mentor #2
11. Budget – Work with your Research Administrator
 1. Budget
 2. Budget justification
12. **Candidate Section – PI (*K99 portion*)**
 1. **Candidate’s Background**
 2. **Career Goals and Objectives**
 3. **Candidate’s Plan for Career Development/Training During Award Period**
13. **Research Strategy – PI (*R00 portion*)**
14. Training in the Responsible Conduct of Research
15. Statements of Support (Mentor, Co-Mentor, Advisory Committee Members)
 1. Mentor
 2. Co-Mentor
 3. Advisory panel member #1 – if applicable
 4. Advisory panel member #2 – if applicable
16. Description of Institutional Environment
17. Institutional Commitment to Candidate’s Research Career Development - Chair
18. Vertebrate Animals – if applicable
19. Select Agents – if applicable
20. Resource Sharing Plan – if applicable
21. Appendix – if applicable



Section of Application	Page Limits * (if different from FOA, FOA supersedes)
Project Summary/Abstract	30 lines of text
Project Narrative	Three sentences
Introduction to Resubmission or Revision Application (when applicable)	1
Candidate Information and Goals for Career Development and Research Strategy	12 (for both attachments combined)
Specific Aims	1
Training in the Responsible Conduct of Research	1
Candidate's Plan to Provide Mentoring (Include only when required by the specific FOA, e.g., K24 and K05)	6
Plans and Statements of Mentor and Co-mentor(s)	6
Letters of Support from Collaborators, Contributors, and Consultants	6
Description of Institutional Environment	1
Institutional Commitment to Candidate's Research Career Development	1
Biographical Sketch	5