Writing an Effective K Application

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Division of Biomedical Research Workforce
Office of the Director
National Institutes of Health
Part 1. Overview Information
National Institutes of Health (NIH)
Funding Opportunity Title
NIH Pathway to Independence Award (Parent K99/R00)
PA-16-193
Timeline for K Applications

Receipt Date:
- Feb 12 (Mar 12)
- Jun 12 (Jul 12)
- Oct 12 (Nov 12)

Review:
- Jun/July
- Oct/Nov
- Feb/Mar

Council:
- October
- January
- May

Award Date:
- December
- April
- July
Individual Mentored K Awards

- **Support protected time for** intensive, supervised career development experience with an expectation for a transition to an independent Research Intensive position

- **K01 Research Scientist:** Biomedical or behavioral sciences

- **K08 Clinical Scientist:** Individuals with clinical doctoral degrees pursuing translational research—application of basic research discoveries toward the diagnosis, management, and prevention of human disease

- **K23 Patient Oriented:** Investigators committed to Patient-Oriented Research (POR – direct interaction with human subjects; research on mechanisms of human disease, therapeutic interventions, clinical trials, and development of new technologies)

- **K99/R00 Pathway to Independence:** Facilitates rapid transition from a mentored postdoctoral position to independent research position
Writing an Effective K Application

• Start Early
• Develop a Strategy
• Plan Your Application
• Application Requirement
• Review Criteria
The general rule of thumb for a K award is to start **at least 3 months** prior to the application due date (or sooner)

- Notify your referees early and give them plenty of time to submit letters of reference (ensure they have current CV and aims of grant)
- At least a month before you want to apply, you'll need to get an NIH Commons account
- You will also need to know who is your organization's **Authorized Organizational Representative (AOR)**
Develop a Strategy (1 of 2)

- Assess your career situation and needs.
- Find an experienced mentor(s) and collaborators
- Asses the field and the competition. See what is being funded by NIH: Research Portfolio Online Reporting Tools (RePORT)
- What are your strengths and weaknesses? Can you fill in any gaps with collaborators or consultants?
- Find out what resources and support your organization has and what additional support you will need
Develop a Strategy (2 of 2)

- Is there an *added value* to your receiving a K award? Why not another funding mechanisms?

- Give yourself plenty of time to write the application, at least three months (and six months for planning and preliminary data)

- Know your organization's key contacts and internal procedures for electronic application

- Call an *NIH Program Officer* to discuss your research training needs and career development plans
Plan Your Application

- Coordinate the application with your mentor’s schedule. *A K application is a collaboration between you and your mentor.*
- Make sure your planning and feedback are adequate by putting together your own review committee.
- After you've settled on a project, draft a short description of your specific aims and discuss these with the committee.
Don't Propose Too Much

- Sharpen the focus of your application ... avoid an “over-ambitious” project – but it should be novel and significant!

- Your hypothesis should be testable and aims doable with the resources you are requesting

- Make sure the scale of your hypothesis and aims fits your request of time and resources

- Reviewers will quickly pick up on how well matched your research and career development objectives are
Application Requirements

- Candidate Qualifications, Career Goals and Objectives
- Mentor(s), Collaborators, and Consultants
- Institution’s Environment and Commitment to the Candidate
- Specific Aims
- Research Strategy
A Few Tips as You Write

Make Life Easy for Reviewers:

- Write clearly and concisely
- Guide the reviewers with graphics as much as possible
- Label all materials clearly
- Make sure figures and legends are readable
- Edit and proof

Know These Review Problems and Solutions:

- Write a compelling argument for why your career will be enhanced by receiving a K award
- Write for both experts and non-expert in your field
Candidate’s Qualifications

Biographical Sketch:

- Personal Statement: Your research experience and other qualifications for this K award
- Research Support: Yours and your colleagues accomplishments attesting to qualifications of the research team

Candidate’s Background:

- Can coordinate with information in the Biosketch, but make sure key information is provided here, even if repeats Biosketch
Career Goals and Objectives

- Explain any new or enhanced research skills you will gain as a result of the K award.
- Stress other activities that will enhance your research career, e.g., courses, techniques.
- If you have *changed research direction*, discuss reasons for the change, and justify how it will help you to develop your research career.
- Always provide a career development timeline, including plans to apply for subsequent grant support.
- Career development can include a visit to another laboratory, to learn new technologies or approaches.
Mentor(s), Collaborators, Consultants

- *Each mentor* must explain how she/he will contribute to the development of the candidate.
- Discuss the research *and also* other activities, e.g., seminars, scientific meetings, presentations
- Document sources and amounts of anticipated support for the candidate’s research project
- Mentor should discuss the plans for transitioning the candidate to the independent investigator stage by the end of the K award—*and convey clear support for the pathway to independence*
- Provide details of previous experience as a mentor and outcomes of mentees
Institution’s Environment & Commitment

- Document a strong, well-established research program related to the candidate's interests
- Experienced faculty, facilities and resources available for the candidate
- Opportunities for intellectual interactions, e.g., journal clubs, seminars, and presentations
- Commitment to the candidate’s career development independent of the K award
- Agree to provide adequate office and lab space, time and support to the candidate for the period of K award
Specific Aims of the Project

Provide a clear statement of each aim’s objectives, for example:

- To test a stated hypothesis
- To create a novel design
- To solve a specific problem
- To challenge an existing paradigm
- To address a critical barrier to progress in the field
- To develop new technology
A few Tips on the Hypothesis (1/2)

- The research component of a K application should be driven by strong hypotheses rather than advances in technology.
- Generally, a research project should ask questions that prove or disprove a hypothesis rather than use a method to search for a problem or simply collect information.
- However, sometimes applied research is important to discover basic biology or develop or use a new technology.
- Develop a focused hypothesis that increases understanding of an important biologic process, health or disease related issue and is based on a strong premise (previous research, need for further study).
**A few Tips on the Hypothesis (2/2)**

- Make sure your idea is not too broad. Your hypothesis must be testable during your 3 to 5 year award with the level of resources you are requesting.

- Demonstrate how your project fits in and advances your field. Make this explicit.

- Remember, methods are the means to perform your experiments. Your experimental results will prove or disprove your hypothesis.

- **If you have more than one hypothesis, choose one- that is testable, significant and innovative.**
Significance:

- Provide an explanation of the importance of the problem you are trying to study
- Explain how your proposed study will improve scientific knowledge, technical capability, or clinical practice in one or more fields
- Discuss how existing concepts, methods, technologies, treatments, or interventions may be impacted if the proposed aims are achieved
Innovation:

- Provide an explanation on how your proposed research project may challenge or improve current research or clinical practice paradigms
- Describe and fully discuss any novel theoretical concepts, approaches, methodologies, or interventions that may be developed or used
- Describe any advantage over existing approaches, methodologies, instrumentation, or interventions
Research Strategy (3 of 3)

**Approach:**

- Describe the methodology and analyses to be used to accomplish the specific aims of the project.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- For early stages of development, describe strategies to establish feasibility and manage high-risk aspects of the proposed work.
- Pay attention to rigorous experimental design — power calculations, sufficient N, biological variables, appropriate statistical tests and authentication of reagents.
Discuss the five components outlined in the NIH Policy:

- (1) Format, (1) Subject Matter, (3) Faculty Participation, (4) Duration, and (5) Frequency

Is the plan appropriate for your career stage, and will it enhance your understanding of ethical issues related to research?

Document any prior participation in RCR training and/or propose plans to receive additional instruction
Scared Review Criteria:

- **Candidate**
- **Career Development Plan, Goals and Objectives**
- **Research Plan (Includes review of Scientific Premise, rigorous experimental design, biological variables)**
- **Mentor(s), Consultants(s), Collaborator(s)**
- **Environment and Institutional Commitment to the Candidate**
Career Award Review Criteria (2 of 5)

**Candidate:**
- Research, academic and/or clinical record
- Commitment and potential to develop as an independent and productive researcher
- Quality of letters of reference

**Career Development Plan, Goals and Objectives:**
- Contribute substantially to the scientific development of candidate
- Content, scope, phasing, and duration of the plan in the context of prior experience
Career Award Review Criteria (3 of 5)

Research Plan:

- Scientific and technical merit of the research question, design and methodology
- Strong premise, rigorous experimental design and statistical analyses, unbiased approach, addresses relevant biological variables (e.g. sex)
- Relevance of the proposed research to the candidate’s career objectives
- Is the research plan appropriate to the stage of research development and for developing the research skills described in the career development plan
Career Award Review Criteria (4 of 5)

Mentor(s), Consultants(s), Collaborator(s):

- Qualifications, funding, and statement by Mentor(s), collaborators, and/or Consultants

Environment and Institutional Commitment to the Candidate:

- Assurance that minimum 75% effort will be devoted to research and related activities
- Capable faculty and research facilities
- Assurance that institution intends for the candidate to be an integral part of its research program
**Career Award Review Criteria**

*(5 of 5)*

**Additional Review Criteria:**
- Protection of Human Subjects
- Inclusion of Women, Minorities, and Children
- Care and Use of Vertebrate Animals
- Biohazards

**Additional Review Considerations:**
- Responsible Conduct of Research
- Select Agents
- Authentication of key biological or chemical resources
- Resource Sharing Plans
- Budget and Period of Support
About Grants

http://grants.nih.gov/grants/about_grants.htm

Grants Basics
Grants Process Overview
Plan Your Application
How to Apply
Receipt & Referral
Peer Review
Pre-Award Process
Post-Award Monitoring and Reporting
Keep the Joy in Research
Writing a Grant is Fun
Trainees and Mentees provide a
Scientific Family Forever

THANK YOU!
QUESTIONS?
## Rigor in K Award Application and Review

<table>
<thead>
<tr>
<th>Element of Rigor</th>
<th>Section of Application</th>
<th>Criterion Score</th>
<th>Additional Review Consideration</th>
<th>Contribute to Overall Impact?</th>
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</thead>
<tbody>
<tr>
<td>Scientific Premise</td>
<td>Research Strategy</td>
<td>Significance</td>
<td>NA</td>
<td>Yes</td>
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<tr>
<td>Scientific Rigor</td>
<td></td>
<td>Approach</td>
<td>NA</td>
<td>Yes</td>
</tr>
<tr>
<td>Consideration of Relevant Biological Variables Such as Sex</td>
<td></td>
<td>Approach</td>
<td>NA</td>
<td>Yes</td>
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<tr>
<td>Authentication of Key Biological and/or Chemical Resources</td>
<td>New Attachment</td>
<td>NA</td>
<td>Adequate or Inadequate</td>
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