Grantsmanship for Postdocs: Pathway to Independence Awards (K99/R00)

- New York Academy of Sciences -

October 3, 2017

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Dept. of Medicine
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Course: “Funding and Grantsmanship for Research and Career Development Activities”

http://grantscourse.columbia.edu/
Topics to be Discussed

- National Institutes of Health
- K99/R00 Career Transition Funding Mechanism – Overview
- NIH Grant Review
  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria
- K99/R00 Career Transition Funding Mechanism - Application Components
- Approaches for Competitive Applications

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National Institutes of Health

National Cancer Institute
National Eye Institute
National Heart, Lung, & Blood Institute
National Human Genome Research Inst
National Institute on Aging

National Inst of Alcohol Abuse & Alcoholism
National Inst of Allergy & Infectious Diseases
National Inst of Arthritis & Musculoskeletal & Skin Diseases
National Institute of Child Health & Human Development
National Inst on Deafness & other Communication Disorders

National Inst of Dental & Craniofacial Research
National Institute of Diabetes & Digestive & Kidney Diseases
National Institute on Drug Abuse
National Institute of Environmental Health Sciences
National Institute of General Medical Sciences

National Institute of Mental Health
National Inst of Neurological Dis and Stroke
National Institute of Nursing Research
National Library of Medicine
National Ctr for Complementary & Integrative Health
National Inst on Minority Health & Health Disparities

National Ctr Adv Translational Sciences
John E. Fogarty International Center
Office of the Director
Center for Scientific Review
Center for Information Technology
NIH Clinical Center

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH EXTRAMURAL & INTRAMURAL FUNDING: FY 2016 ENACTED

Spending at NIH
$5,309,000,000
(17%)

Spending Outside NIH
$26,222,000,000
(83%)
Topics to be Discussed

- National Institutes of Health
- **K99/R00 Career Transition Funding Mechanism – Overview**
  - NIH Grant Review
    - Process
    - Scoring System
    - K99/R00 Specific Review Criteria
- K99/R00 Career Transition Funding Mechanism - Application Components
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Timeline of Funding for Junior Investigators

Graduate School
- Individual Fellowship Training Grant
- Mentors's Research Grant

Post-doctoral Years
- Individual Post-doc Fellowship
- Institutional T32 Post-doc Training Grant slot
- Mentor’s Research Grant

Instructor/Assistant Professor
- Career Transition Awards
Timeline of Funding for Junior Investigators

- **Short term Training**
  - Medical School

- **Research Support**
  - Internship/Residency

- **Fellowship – Research Years**
  - Fellowship – Research Years
    - Individual Post-doc Fellowship or Institutional T32 Post-doc Training Grant slot

- **Instructor/Assistant Professor**
  - Career Transition Awards
    - Year-long Enhancement Programs
      - MD/PhD Fellowship or Institutional T32

Funds research project
- Salaries of PI and other research personnel
- Supplies, reagents, etc
- Animal costs
- Patient care costs
- Core facilities
- Page charges for publications

Multi-Year (4yrs – 5yrs)
Renewable (e.g. original grant + 2 renewals = 15yrs)
Pathway to Independence Award

- Career Transition Award (K99/R00)
- No citizenship requirement
- Applicants must:
  - Have earned a clinical or research doctorate
  - Have no more than 4 years of research experience since completing the requirements of the doctoral degree
  - Have not been the principal investigator of an NIH research grant (e.g., R01, R03, R21), career development award (e.g., K01, K07, K08, K23, K25), other peer-reviewed NIH or non-NIH research grant over $100,000 direct costs per year, or have been a project leader on a sub-project of a program project (P01) or a center (P50) grant.

1-2 years as a **mentored K award** for “post-docs”
- Funding level is Institute-specific
  - Salary and Research Support
- 75% effort

3 years as a **Research award** for independent investigators
- Total/year: $249,000 (salary and research expenses)
  - D.C. + institution’s I.C. rate
- Must have an independent research position
Research Career Development Awards
<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>K99</td>
<td>NHLBI</td>
<td>92</td>
<td>24</td>
<td>26%</td>
<td>$2,074,283</td>
</tr>
<tr>
<td>2008</td>
<td>K99</td>
<td>NHLBI</td>
<td>85</td>
<td>25</td>
<td>29%</td>
<td>$2,277,137</td>
</tr>
<tr>
<td>2009</td>
<td>K99</td>
<td>NHLBI</td>
<td>77</td>
<td>34</td>
<td>44%</td>
<td>$3,373,194</td>
</tr>
<tr>
<td>2010</td>
<td>K99</td>
<td>NHLBI</td>
<td>91</td>
<td>35</td>
<td>38%</td>
<td>$3,759,077</td>
</tr>
<tr>
<td>2011</td>
<td>K99</td>
<td>NHLBI</td>
<td>106</td>
<td>22</td>
<td>21%</td>
<td>$2,353,970</td>
</tr>
<tr>
<td>2012</td>
<td>K99</td>
<td>NHLBI</td>
<td>130</td>
<td>39</td>
<td>30%</td>
<td>$4,121,559</td>
</tr>
<tr>
<td>2013</td>
<td>K99</td>
<td>NHLBI</td>
<td>112</td>
<td>25</td>
<td>22%</td>
<td>$2,680,777</td>
</tr>
<tr>
<td>2014</td>
<td>K99</td>
<td>NHLBI</td>
<td>167</td>
<td>40</td>
<td>24%</td>
<td>$4,590,006</td>
</tr>
<tr>
<td>2015</td>
<td>K99</td>
<td>NHLBI</td>
<td>111</td>
<td>27</td>
<td>24.3%</td>
<td>$3,094,830</td>
</tr>
<tr>
<td>2016</td>
<td>K99</td>
<td>NHLBI</td>
<td>124</td>
<td>32</td>
<td>25.8%</td>
<td>$4,066,065</td>
</tr>
</tbody>
</table>

The purpose of the NIH Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented, NIH-supported, independent investigators. This program is designed to facilitate a timely transition of outstanding postdoctoral researchers with a research and/or clinical doctorate degree from mentored, postdoctoral research positions to independent, tenure-track or equivalent faculty positions. The program will provide independent NIH research support during this transition in order to help awardees to launch competitive, independent research careers.

Prospective candidates are encouraged to contact the relevant NIH staff for IC-specific programmatic and budgetary information. [Table of IC-Specific Information, Requirements and Staff Contacts.](http://grants.nih.gov/grants/guide/pa-files/PA-16-193.html)
Eligible Individuals

“Applicants with a PhD or equivalent research doctoral degree” must have no more than 4 years of total aggregate postdoctoral research experience at the time of the initial or the subsequent resubmission application, and must be in mentored, postdoctoral positions to be eligible to apply to the K99/R00 program. If an applicant achieves independence (i.e., any faculty or non-mentored research position) before a K99 award is issued, neither the K99 award, nor the R00 award, will be considered for funding.

**Physician-scientists** must have no more 4 years of total aggregate postdoctoral research experience at the time of the initial or the subsequent resubmission application, and must be in non-tenure-track or equivalent positions (i.e., eligible candidates include residents, clinical fellows, instructors, and clinical assistant professors). Time spent in clinical training during residency or clinical specialty is not counted towards K99/R00 eligibility. Time spent in research training during these periods is counted toward K99/R00 eligibility.”
“PhD or equivalent research doctorate degree candidates in positions other than postdoctoral fellow positions: It is recognized that some institutions appoint postdoctoral fellows in positions with other titles although they are still in non-independent, mentored training positions. If a potential applicant is in a position that is not clearly identifiable as a postdoctoral training position, the request for an exception must be accompanied by an official statement of the institution's policy…

Physician-Scientists in positions not designated as postdoctoral positions: Following clinical training or fellowship training periods, clinicians often obtain a clinical faculty position that denotes independence in clinical responsibilities but not in research. A clinical faculty member who does not hold an independent research faculty position is eligible for the K99/R00 award, and should contact a Program Director… on the suitability of this award to their research needs and career development goals. Clinicians in such positions are encouraged to obtain confirmation of their eligibility before they begin to prepare their applications.”
Additional Information for Physician-Scientists

“For the purposes of this program, physician-scientists include individuals with an MD, DO, DDS/DMD, DVM/VMD, or nurses with research doctoral degrees who devote the majority of their time to biomedical research. The K99/R00 is intended for those physician-scientists who already have substantial research training and are dedicated to initiating a strong, research-intensive career as physician-scientists. The K99/R00 program is designed to facilitate a timely transition of outstanding physician-scientists from mentored, research positions to independent, tenure-track or equivalent faculty positions, and to provide independent NIH research support during the transition. Individuals who need a longer period of mentored career development before they are prepared to begin the transition to research independence should consider the K08 or K23 program”
Physician-Scientist Workforce

5. NIH should establish a new physician-scientist-specific granting mechanism to facilitate the transition from training to independence. This program should be similar to the K99/R00 program whose funding currently goes almost exclusively to individuals holding a PhD degree. This new grant program could serve either as a replacement or transition from existing K Awards for physician scientists, and should provide a longer period of support, potentially lengthening the R00 phase to 5 years (with an interim staff review at year 3). This new grant series, as well as K and all other training awards, should rigorously enforce protected time of at least 75 percent effort and provide sufficient salary support to make that possible.
The purpose of the NIAID Physician-Scientist Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented independent physician-scientists. This program is designed to facilitate a timely transition of outstanding postdoctoral researchers with a clinical doctorate degree from mentored, postdoctoral research positions to independent, tenure-track or equivalent faculty positions. The program will provide independent NIAID research support during this transition to help awardees launch competitive, independent research careers in biomedical fields and thereby help to address the national physician-scientist workforce shortage.
Topics to be Discussed

- National Institutes of Health
- K99/R00 Career Transition Funding Mechanism – Overview

- NIH Grant Review
  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria

- K99/R00 Career Transition Funding Mechanism - Application Components
- Approaches for Competitive Applications

# Application Due Dates

<table>
<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Application Instructions</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01 new</td>
<td>Research Grants</td>
<td>SF424 (R&amp;R)</td>
<td>February 5</td>
<td>June 5</td>
<td>October 5</td>
</tr>
<tr>
<td>U01 new</td>
<td>Research Grants - Cooperative Agreements</td>
<td>SF424 (R&amp;R)</td>
<td>February 5</td>
<td>June 5</td>
<td>October 5</td>
</tr>
<tr>
<td><strong>K series new</strong></td>
<td>Research Career Development</td>
<td>SF424 (R&amp;R)</td>
<td>February 12</td>
<td>June 12</td>
<td>October 12</td>
</tr>
<tr>
<td>R03, R21, R33, R21/R33, R34, R36 new</td>
<td>Other Research Grants</td>
<td>SF424 (R&amp;R)</td>
<td>February 16</td>
<td>June 16</td>
<td>October 16</td>
</tr>
<tr>
<td><strong>F Series Fellowships new, renewal, resubmission</strong></td>
<td>Individual National Research Service Awards (Standard) (see NRSA Training Page)</td>
<td>SF424 (R&amp;R)</td>
<td>April 8</td>
<td>August 8</td>
<td>December 8</td>
</tr>
<tr>
<td><strong>F31 Diversity Fellowships new, renewal, resubmission</strong></td>
<td>Individual Predoctoral Fellowships (F31) to Promote Diversity in Health-Related Research (see NRSA Training Page)</td>
<td>SF424 (R&amp;R)</td>
<td>April 13</td>
<td>August 13</td>
<td>December 13</td>
</tr>
</tbody>
</table>

**All Activity Codes Cited Above new, renewal, resubmission, revision**

AIDS and AIDS-Related Applications

NOTE: See Key Dates section of funding opportunity announcement to determine if AIDS dates apply.

Based on Activity Code | May 7 | September 7 | January 7
--- | --- | --- | ---

http://grants.nih.gov/grants/funding/submissionschedule.htm

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<th>Cycle III Due Date</th>
</tr>
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<tr>
<td>R01 renewal, resubmission, revision</td>
<td>Research Grants</td>
<td>SF424 (R&amp;R)</td>
<td>March 5</td>
<td>July 5</td>
<td>November 5</td>
</tr>
<tr>
<td>U01 renewal, resubmission, revision</td>
<td>Research Grants - Cooperative Agreements</td>
<td>SF424 (R&amp;R)</td>
<td>March 5</td>
<td>July 5</td>
<td>November 5</td>
</tr>
<tr>
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<td>November 16</td>
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http://grants.nih.gov/grants/funding/submissionschedule.htm
### Review and Award Cycles

<table>
<thead>
<tr>
<th></th>
<th>Cycle I</th>
<th>Cycle II</th>
<th>Cycle III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Merit Review</td>
<td>June - July</td>
<td>October - November</td>
<td>February - March</td>
</tr>
<tr>
<td>Advisory Council Round</td>
<td>August or October *</td>
<td>January</td>
<td>May</td>
</tr>
<tr>
<td>Earliest Project Start Date</td>
<td>September or December *</td>
<td>April</td>
<td>July</td>
</tr>
</tbody>
</table>

[http://grants.nih.gov/grants/funding/submissionschedule.htm](http://grants.nih.gov/grants/funding/submissionschedule.htm)

<table>
<thead>
<tr>
<th>Ctr Scientific Rev</th>
<th>Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Research Grants (R01, R03)</td>
<td>• Multi-Project Grants (P01, P50, etc)</td>
</tr>
<tr>
<td>• Fellowships (F’s)</td>
<td>• Training Grants (T’s)</td>
</tr>
<tr>
<td>• Small Business</td>
<td>• Career Development (K’s)</td>
</tr>
<tr>
<td></td>
<td>• Conference Grants (R13)</td>
</tr>
<tr>
<td></td>
<td>• Research Grants in response to RFAs</td>
</tr>
<tr>
<td></td>
<td>• Contracts</td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

PHS Assignment Request Form

Funding Opportunity Number:

Funding Opportunity Title:

Awarding Component Assignment Request (optional)

If you have a preference for an Awarding Component (e.g., NEI/Histology & Cell Biology), please use the link below to identify the most appropriate assignment, then enter the short abbreviation (e.g., NEI for National Eye Institute) in "Assign to/Do Not Assign To Awarding Component" sections below. Your first choice should be in column 1. All requests will be considered; however, locus of review is predetermined for some applications and assignment requests cannot always be honored.

Information about Awarding Components can be found here: https://grants.nih.gov/grants/phs_assignment_information.html#Awarding Components

Assign to Awarding Component: 1 2 3

Do Not Assign to Awarding Component: 1 2 3

Study Section Assignment Request (optional)

If you have a preference for a study section assignment, please use the link below to identify the most appropriate study section, then enter the short abbreviation for that study section in "Assign to/Do Not Assign to Study Section" sections below. Your first choice should be in column 1. All requests will be considered; however, locus of review is predetermined for some applications and assignment requests cannot always be honored.

For example, you would enter "CAMP" if you wish to request assignment to the Cancer Molecular Pathobiology study section or enter "STR" if you wish to request assignment to the Healthcare Delivery and Methodologies SBIR/STTR panel for informatics. Be careful to accurately capture all formatting (e.g., spaces, hyphens) when you type in the request.

Information about Study Sections can be found here: https://grants.nih.gov/grants/phs_assignment_information.html#Study Section

Assign to Study Section: 1 2 3
Only 20 characters allowed

Do Not Assign to Study Section: 1 2 3
Only 20 characters allowed

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PHS Assignment Request Form

List Individuals who should not review your application and why (optional)

Only 1000 characters allowed

Identify Scientific areas of expertise needed to review your application (optional)

Note: Please do not provide names of individuals

Identify Scientific areas of expertise needed to review your application (optional)

Note: Please do not provide names of individuals


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  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria

- K99/R00 Career Transition Funding Mechanism - Application Components
- Approaches for Competitive Applications
Overall Impact

“Reviewers should provide their assessment of the likelihood that the proposed career development and research plan will enhance the candidate’s potential for a productive, independent scientific research career in a health-related field, taking into consideration the criteria below in determining the overall impact score.”

https://grants.nih.gov/grants/peer/critiques/k.htm
NIH's Evaluation System

9-point rating scale (1=exceptional; 9=poor)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Exceptional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>Moderate Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Very Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td>Low Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>


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

**Minor Weakness:** An easily addressable weakness that does not substantially lessen impact  
**Moderate Weakness:** A weakness that lessens impact  
**Major Weakness:** A weakness that severely limits impact
FELLOWSHIPS & CAREER AWARDS

Overall Impact:
The likelihood that the proposed training (F) or career development (K) will enhance the candidate's potential for a productive, independent scientific research career in a health-related field.

Evaluating Overall Impact
Consider the 5 criteria (weighting based on reviewer's judgment):

<table>
<thead>
<tr>
<th>Fs</th>
<th>Ks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Applicant</td>
<td>• Candidate</td>
</tr>
<tr>
<td>• Sponsor(s)</td>
<td>• Career</td>
</tr>
<tr>
<td>• Research</td>
<td>Development</td>
</tr>
<tr>
<td>Training</td>
<td>Plan/Goals*</td>
</tr>
<tr>
<td>Plan</td>
<td>Research</td>
</tr>
<tr>
<td>Training</td>
<td>Plan</td>
</tr>
<tr>
<td>Potential</td>
<td>Mentor(s)**</td>
</tr>
<tr>
<td>Institutional</td>
<td>Environment &amp;</td>
</tr>
<tr>
<td>Environment &amp;</td>
<td>Commitment</td>
</tr>
</tbody>
</table>

and other score influences, e.g. human subjects, animal welfare, inclusion plans, and biohazards

*K05 and K24: Plan to Provide Mentoring
**K02: Consultants/Collaborators

Overall Impact

<table>
<thead>
<tr>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1 2 3</td>
<td>4 5 6</td>
</tr>
</tbody>
</table>

- e.g. Proposes training or career development of high value/benefit for the candidate who has high potential for developing into a productive, independent scientist.
- May have some or no weaknesses in the criteria.

- e.g. Proposes training or career development of high or moderate value/benefit for the candidate who has high or moderate potential for further development, but weaknesses in the criteria reduce the overall impact to medium.

- e.g. Proposes training or career development of moderate value/benefit for the candidate who shows moderate potential. May have some weaknesses in the criteria.

- e.g. Proposes training or career development of low value/benefit for the candidate who shows low potential. May have some weaknesses in the criteria.

5 is a good, medium-impact application. The entire scale (1-9) should always be considered.
Impact Score

- **Preliminary Impact Scores** determine which applications discussed at study section
  - Impact Score given by each member of the study section

- **Overall Impact Score** (for discussed applications):
  - Average of reviewers’ Impact Scores (rounded to one decimal place) \( \times 10 \)
  - 81 possible overall Impact Scores
    - (10 – 90, whole numbers)

http://enhancing-peer-review.nih.gov/timelines.html
http://www.niaid.nih.gov/researchfunding/grant/strategy/pages/7payline.aspx
Topics to be Discussed

- National Institutes of Health
- K99/R00 Career Transition Funding Mechanism – Overview
- NIH Grant Review
  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria
- K99/R00 Career Transition Funding Mechanism - Application Components
- Approaches for Competitive Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Separate Scores for the Individual Criteria

- All applications receive scores
  (even those not discussed at study section)
- Individually reported in summary statement
- Major strengths and weaknesses that influenced the overall impact/priority score - ¼ page per criterion

http://enhancing-peer-review.nih.gov/docs/ReviewerVideoslides030609_Modified.ppt

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Reviewers will consider each of the five review criteria below in the determination of scientific and technical merit, and give a separate score for each.

1. **Candidate**
   - **Strengths**
   - 
   - **Weaknesses**
   - 

2. **Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring**
   - **Strengths**
   - 
   - **Weaknesses**
   - 

3. **Research Plan**
   - **Strengths**
   - 
   - **Weaknesses**
   - 

https://grants.nih.gov/grants/peer/critiques/k_critique_template.docx
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
4. **Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s)**

<table>
<thead>
<tr>
<th>Strengths</th>
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<table>
<thead>
<tr>
<th>Weaknesses</th>
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</table>

5. **Environment and Institutional Commitment to the Candidate**

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<table>
<thead>
<tr>
<th>Weaknesses</th>
</tr>
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</tbody>
</table>
1. Candidate

“Based on the candidate’s prior research and training experience, track record, referee’s evaluations, and the quality and originality of prior research and the current application, what is the candidate’s potential to become a highly successful, independent investigator who will contribute significantly to his/her chosen field of biomedical, behavioral, or clinical related research?

Considering the years of postdoctoral research experience to date, what is the candidate’s record of research productivity, including the quality of peer-reviewed scientific publications?”

https://grants.nih.gov/grants/peer/critiques/k.htm
1. Candidate

■ “What is the quality of the candidate's pre- and postdoctoral research training, with respect to development of appropriate scientific and technical expertise?

■ Given the candidate’s prior training, proposed career development plan, and the referees’ evaluations, is it reasonable to expect that the candidate will be able to achieve an independent, tenure-track or equivalent faculty position within the time period requested for the K99 phase of this award?”
2. Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring

- “Are the content and duration of the proposed components of the career development plan appropriate and well-justified for the candidate’s current stage of scientific and professional development and proposed research career goals?

- To what extent does the proposed career development plan enhance or augment the applicant’s research training and skills acquisition to date?”
2. Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring

■ “Is the proposed career development plan likely to contribute substantially to the scientific and professional development of the candidate, and facilitate his/her successful transition to independence?

■ To what extent are the plans for evaluating the K99 awardee’s progress adequate and appropriate for guiding the applicant towards a successful transition to the independent phase of the award?”
2. Career Development Plan/Career Goals & Objectives/Plan to Provide Mentoring

“Is the timeline planned for transition to the independent phase of the award appropriate for the candidate’s current stage of scientific and professional development, anticipated productivity, and the career development proposed for the K99 phase of the award?”

https://grants.nih.gov/grants/peer/critiques/k.htm
3. Research Plan

- “Is the proposed K99 phase research significant and scientifically sound?
- Is there a strong scientific premise for the project?
- Has the candidate presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?
- Has the candidate presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?”
3. Research Plan

- “Are the scientific and technical merits of the K99 research appropriate for developing the research skills described in the career development plan, and appropriate for developing a highly successful R00 research program?

- Is the proposed R00 phase research significant, scientifically sound, and a logical extension of the K99 phase research? Is there evidence of long-term viability of the proposed R00 phase research plan?”
3. Research Plan

“Does the **R00 phase** project address an **innovative hypothesis or challenge existing paradigms**? Does the project develop or employ novel concepts, approaches, methodologies, tools, or technologies?

To what extent is the proposed **R00 phase** research likely to **foster the career** of the candidate as a successful, independent investigator in biomedical, behavioral, or clinical research?”
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

- “To what extent does the mentor(s) have a strong track record in training future independent researchers?
- To what extent are the mentor’s research qualifications and experience, scientific stature, and mentoring track record appropriate for the applicant’s career development needs?
- Is the supervision proposed for the mentored phase of support adequate, and is the commitment of the mentor(s) to the applicant’s career development appropriate and sufficient?”
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

“Does the mentor provide an appropriate plan that addresses the candidate’s training needs, and that is likely to foster the candidate’s continued development and transition to independence?

Does the mentor describe an acceptable plan for clear separation of the candidate’s research and research career from the mentor’s research, including identifying the components of the research plan that the K99 candidate may take to an independent research position?”

https://grants.nih.gov/grants/peer/critiques/k.htm
4. Mentor(s), Co-mentor(s), Consultant(s), Collaborator(s)

“Are the consultants’/collaborators’ research and/or mentoring qualifications appropriate for their roles in the proposed K99 phase of the award? Do they provide letters of support that affirm their commitment? If applicable, are the Advisory Committee members’ qualifications appropriate for their roles in the proposed K99 phase of the award? Do they provide letters of support that affirm their commitment?”
5. Environment and Institutional Commitment to the Candidate

““To what extent does the institution provide a high quality environment appropriate for the candidate’s development during the K99 phase of the award? To what extent are the research facilities and educational opportunities, including collaborating faculty, adequate and appropriate for the candidate’s research and career development goals during the K99 phase of the award? Is adequate evidence provided that the K99 sponsoring institution is strongly committed to fostering the candidate’s development and preparation for transition to independence?”

https://grants.nih.gov/grants/peer/critiques/k.htm
5. Environment and Institutional Commitment to the Candidate

“Is there adequate assurance that the required minimum of 9 person-months (75% of the candidate’s full-time professional effort) will be devoted directly to the research training, career development, and research activities proposed for the K99 phase of the award?”
Implementing Rigor and Transparency in NIH & AHRQ Career Development Award Applications

Notice Number: NOT-OD-16-012

These updates focus on four areas deemed important for enhancing rigor and transparency:

1) the scientific premise forming the basis of the proposed research,
2) rigorous experimental design for robust and unbiased results,
3) consideration of relevant biological variables, and
4) authentication of key biological and/or chemical resources.

Updates include:

- Revisions to application guide instructions for preparing your research strategy attachment
- Use of a new "Authentication of Key Biological and/or Chemical Resources" attachment
- **Additional rigor and transparency questions reviewers will be asked to consider when reviewing applications.**

https://grants.nih.gov/grants/peer/critiques/k.htm
Reviewer Guidance on Rigor and Transparency: Research Project Grant and Mentored Career Development Applications

<table>
<thead>
<tr>
<th>Element of Rigor and Transparency</th>
<th>Section of Application</th>
<th>Criterion Score</th>
<th>Additional Review Consideration</th>
<th>Contribute to Overall Impact Score?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Premise</td>
<td>Research Strategy</td>
<td>Research Plan</td>
<td>NA</td>
<td>Yes</td>
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<tr>
<td>Scientific Rigor</td>
<td>Research Strategy</td>
<td>Research Plan</td>
<td>NA</td>
<td>Yes</td>
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<tr>
<td>Consideration of Relevant Biological Variables, such as Sex</td>
<td>Research Strategy</td>
<td>Research Plan</td>
<td>NA</td>
<td>Yes</td>
</tr>
<tr>
<td>Authentication of Key Biological and/or Chemical Resources</td>
<td>New Attachment</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Topics to be Discussed

- National Institutes of Health
- K99/R00 Career Transition Funding Mechanism – Overview
- NIH Grant Review
  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria
- K99/R00 Career Transition Funding Mechanism - Application Components
- Approaches for Competitive Applications
New NIH "FORMS-E" Grant Application Forms and Instructions
Coming for Due Dates On or After January 25, 2018

Notice Number: NOT-OD-17-062

Key Dates
Release Date: April 27, 2017

Availability of FORMS-E Application Guides
Application guides for FORMS-E application packages will be posted to the How to Apply - Application Guide page no later than October 25, 2017.

Availability of FORMS-E Application Packages
We will begin posting new funding opportunity announcements (FOAs) with FORMS-E application packages on October 25, 2017.

CAREER DEVELOPMENT INSTRUCTIONS
FOR NIH AND OTHER PHS AGENCIES
SF424 (R&R) APPLICATION PACKAGES

FORMS VERSION D SERIES
UPDATED MARCH 24, 2017
<table>
<thead>
<tr>
<th>Section of Application</th>
<th>Page Limits * (if different from FOA, FOA supersedes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Summary/Abstract</td>
<td>30 lines of text</td>
</tr>
<tr>
<td>Project Narrative</td>
<td>Three sentences</td>
</tr>
<tr>
<td>Introduction to Resubmission or Revision Application (when applicable)</td>
<td>1</td>
</tr>
<tr>
<td>Candidate Information and Goals for Career Development and Research Strategy</td>
<td>12 (for both attachments combined)</td>
</tr>
<tr>
<td>Specific Aims</td>
<td>1</td>
</tr>
<tr>
<td>Training in the Responsible Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Candidate’s Plan to Provide Mentoring (Include only when required by the specific FOA, e.g., K24 and K05)</td>
<td>6</td>
</tr>
<tr>
<td>Plans and Statements of Mentor and Co-mentor(s)</td>
<td>6</td>
</tr>
<tr>
<td>Letters of Support from Collaborators, Contributors, and Consultants</td>
<td>6</td>
</tr>
<tr>
<td>Description of Institutional Environment</td>
<td>1</td>
</tr>
<tr>
<td>Institutional Commitment to Candidate’s Research Career Development</td>
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<tr>
<td>Biographical Sketch</td>
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</tbody>
</table>

https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/page-limits.htm#car

1 + 12 Pages Combined

- **Candidate Information**
  - Section 2

- **Research Plan**
  - 3. Specific Aims (1 page)
  - 4. Research Strategy
2. Candidate Information

- Candidate’s Background
- Career Goals and Objectives:
  Scientific Biography
- Career Development/ Training Activities During Award Period
Candidate’s Background

- Personal background for this career path
- Other training experiences
- Other research experiences
- Reasons for basic, clinical, translational, behavioral, multidisciplinary research, relevant publications
Career Goals and Objectives

- Unique expertise/Scientific history
  - Previous work
    - Consistent themes, or
    - Why research interests have changed direction
  - e.g. Joint appointments, Multidisciplinary

- Skills that are lacking
  - Identification of specific modules to address areas for growth, provides justification of award
  - Role of specific Mentor(s) and Advisory Committee member(s)
Justify award

- Fits into past and future research career

Short-term Career Goals

- Timeline for funded period

Year 1: Preliminary data

Year 2: Submit publications (possible journals), Presentations at national meetings (examples), Formulation of project to submit for R00 application

Year 3-5: By the end of the funded period, applicant will be an independent investigator near to R01 funding

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Long-term Career Goals

Scientific goals

- Basic science, translational, clinical, epidemiologic, behavioral

Mentoring goals

- How mentoring has been important to you
- Previous/current mentoring responsibilities

Networking goals

- Multidisciplinary activities, grants, etc
Career Development/Training Activities During Award Period

- Review of didactic courses, training, and research experiences to date
- New research skills/knowledge required
- Identification of training modules required to fill gaps in knowledge in order to reach long term goals
  - Rational for each of the modules

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
New Section on each Module

- Reason for module
- Specific Description of each “Mode of Learning”
  - Role of Mentors and Advisors
  - Specific courses, workshops, and other didactics
  - Details on research meetings

Module: Career skills

- Grantsmanship
- Becoming a mentor
- Laboratory management

Table: Career Development/Training Activities During Award Period
<table>
<thead>
<tr>
<th>Module</th>
<th>Mentor(s)</th>
<th>Mode of learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Area (1-3)</td>
<td>Specific names</td>
<td>Coursework (completed and new) 1-on-1 meetings (schedule? e.g. weekly) Guided readings Research meetings (schedule? e.g. weekly) Applied training Clinical experience</td>
</tr>
<tr>
<td>Career skills</td>
<td>All mentors</td>
<td>Improving communication skills Grant writing course Professional workshops/seminars Collaborations Abstracts and manuscripts Small grant application submission</td>
</tr>
<tr>
<td>Dissemination of Research Results</td>
<td></td>
<td>Supervising technical support personnel, organizing lab meetings, journal clubs</td>
</tr>
<tr>
<td>Research management</td>
<td></td>
<td>e.g. training new lab members, undergraduate, summer students</td>
</tr>
<tr>
<td>Mentorship</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mentors/Advisory Committee

- Scientific area per mentor/committee member
- Schedule of meetings

#### Career Development and Research Training

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Role</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name (Title)</td>
<td>Mentor</td>
<td></td>
</tr>
<tr>
<td>Name (Title)</td>
<td>Co-Mentor</td>
<td></td>
</tr>
<tr>
<td>Name (Title)</td>
<td>Advisory Board Member</td>
<td></td>
</tr>
<tr>
<td>Name (Title)</td>
<td>Advisory Board Member</td>
<td></td>
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<tr>
<td>Name (Title)</td>
<td>Advisory Board Member</td>
<td></td>
</tr>
<tr>
<td>Name (Title)</td>
<td>Collaborator</td>
<td></td>
</tr>
<tr>
<td>Name (Title)</td>
<td>Consultant</td>
<td></td>
</tr>
</tbody>
</table>
Summary of coursework

List previous relevant coursework

Proposed coursework

- Course number and description
- Include courses on grant writing and responsible conduct of research

Additional didactic activities

- e.g. Those offered by professional societies, workshops, symposiums
- Clinical and/or Teaching activities
  - Be specific, mention hrs. per week, restate % of time dedicated to research
- Percentage of time for each activity
- Timetable
<table>
<thead>
<tr>
<th>Career Development Activities</th>
<th>K99</th>
<th>R00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mentorship</strong></td>
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<tr>
<td><strong>Mentor</strong> (name) – frequency (e.g. weekly) of individual meetings, frequency of lab meetings, frequency and listing of specific journal clubs, seminars, and other recurring relevant programs</td>
<td>X</td>
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<tr>
<td><strong>Co-Mentor</strong> (name) – frequency (e.g. weekly) of individual meetings, frequency of lab meetings, frequency and listing of journal clubs, seminars, and other recurring relevant programs</td>
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<tr>
<td><strong>Advisory Group</strong> – frequency (e.g. quarterly) of meetings</td>
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# Career Development Activities

## Experimental Training

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<th>Role</th>
<th>Name</th>
<th>Specific Area</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<tbody>
<tr>
<td>Mentor</td>
<td>(name)</td>
<td>Specific area of research and/or methodology</td>
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<tr>
<td>Co-Mentor</td>
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<tr>
<td>Co-Investigator 1</td>
<td>(name)</td>
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<td>Co-Investigator 2</td>
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<td>Collaborator 1</td>
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<td>Collaborator 2</td>
<td>(name)</td>
<td>Specific area of research and/or methodology</td>
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## Formal Coursework – e.g., Graduate School, Public Health, Engineering

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<tr>
<th>Course</th>
<th>Title</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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<td>Course #1</td>
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<td>Course #3</td>
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<td>Responsible Conduct of Research</td>
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<td>Career Development Activities</td>
<td>K99 Year 1</td>
<td>Year 2</td>
<td>R00 Year 3</td>
<td>Year 4</td>
<td>Year 5</td>
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<td><strong>Workshops &amp; Additional Training Programs</strong></td>
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<td>Cold Spring Harbor Course on.....</td>
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<td>American Association for.... Junior Investigators Training on.....</td>
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<td>CTSA “K to R” Program</td>
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<td>IRB 101 Course</td>
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<td>NYAS Science Alliance Sessions on......</td>
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<td>Society of...... (biannual)</td>
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<tr>
<th>Career Development Activities</th>
<th>K99</th>
<th>R00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 2</td>
</tr>
<tr>
<td><strong>Mentoring Skills</strong></td>
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<td>Students (summer, undergraduate, medical)</td>
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<td><strong>Communication Skills (Written)</strong></td>
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<td>Preparation of manuscripts for peer reviewed</td>
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<td>journals</td>
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<tr>
<td><strong>Grant Writing</strong></td>
<td></td>
<td></td>
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<tr>
<td>Pilot award for junior investigator</td>
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<td>X</td>
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<tr>
<td>(to supplement K award)</td>
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<tr>
<td>Center for..... award for new investigators</td>
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<tr>
<td>R01 preparation and submission</td>
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<td></td>
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<tr>
<td>(on research funded by K award)</td>
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</tbody>
</table>

6. Training in the Responsible Conduct of Research

- 1) Format, 2) Subject Matter,
   3) Faculty Participation, 4) Duration, and
   5) Frequency of Instruction

- Role of Mentor

- Prior instruction in RCR

- Once every four years requirement

- Don’t do the minimum

- Additional IRB or IACUC-related programs?

- [http://grants.nih.gov/training/responsibleconduct.htm](http://grants.nih.gov/training/responsibleconduct.htm)

- No more than 1 page
8. Plans and Statements of Mentor and Co-Mentor(s)

- Mentor’s Assessment of the Candidate
- Mentor’s Research and Career Development Plans for the Candidate
  - Research
  - Developmental activities
    - Seminars, scientific meetings, presentations, becoming a mentor, RCR
- Expectations for Publications
What Aspect of the Research will the Candidate be Allowed to Take to Start their Own Independent Research Career

Mentor’s Plans for Providing Guidance and Counseling

- How this will promote candidate’s development

Plan for Candidate’s Transition from Mentored Stage to Independent Investigator

Candidate’s Additional Responsibilities

- Courses, seminars, lab meetings
- Teaching, clinical, administrative
Source of Support for Candidate’s Research Project

- Grants
- Core/shared facilities
- Technical support

Previous Experience as a Mentor

- Mentor’s Past and Current Trainees [table]
  - Name, position (e.g. graduate student, post-doctoral fellow, junior faculty) and date when mentored by sponsor, mentee’s current position (title and institution), mentee’s awards/ grants

No more than 6 pages
9. Letters of Support from Collaborators, Contributors, and Consultants

- Advisory Committee
  - Purpose
    - Reviews research progress, publications, R01 submission, career development activities, didactic program
    - Provides scientific guidance
    - Documents meetings with an annual report
  - Name, title, and short paragraph on each member
  - Each should provide a letter and Biosketch
Collaborators and Consultants
- Name, title, and short paragraph on each individual
- Each should provide a letter and Biosketch

Director of Core Facility

No more than 6 pages
Environment and Institutional Commitment to the Candidate

- 10. Description of Institutional Environment
- 11. Institutional Commitment to the Candidate’s Research Career Development
Environment and Institutional Commitment to the Candidate

10. Description of Institutional Environment

- Information relevant to Candidate’s research and career development activities
  - Institution, Dept/Division
  - Other institutions, schools, centers, shared resources, core facilities, CTSA, etc.
  - Degree programs, courses, seminars
  - Institution/Dept’s formal mentoring program

No more than 1 page
Environment and Institutional Commitment to the Candidate

11. Institutional Commitment to the Candidate’s Research Career Development

- Letter from Dept. Chair/Institute Director
  - Specifics on protected time
  - Statement that appointment and salary are not contingent on award
  - Statement on availability of research resources, personnel, office space, etc. required for project
  - Statement that sponsors will be able to provide time and support for mentoring responsibilities
  - Signed and dated on letterhead stationery

- No more than 1 page
Letters of Reference: 3-5

- From individuals not directly involved in the application or proposed research project, not mentor
- Familiar with candidate’s qualifications, training, and interests
- Should address candidate's competence, professional training and qualifications, and potential to develop into an independent investigator
- Where possible, not from the candidate's current department or organization
- Submitted electronically through NIH Commons

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
10. Facilities & Other Resources

Scientific/Technical Resources

- Facilities to be used for the conduct of the proposed research
  - Laboratory
  - Animal
  - Computer
  - Office
  - Clinical [patient/research subject populations]
  - Other: Core facilities [e.g. research pharmacy, biostatistics, technical cores (microscopy, biomarkers)]

- Discuss ways in which the proposed studies will benefit from unique features of the scientific environment, subject populations, collaborative arrangements, specialized core facilities
R&R Other Project Information:

10. Facilities & Other Resources

**Career Development Resources** - also referenced in “main body” of the grant (Table) and Mentor’s section

- **Career development programs**
  - Institutional (e.g. Office of Postdoctoral Affairs)
  - Department/Institute
  - Professional societies

- **Formal degree programs and other didactics**
  - Degree program
  - Scientific courses: e.g., Statistics
  - Career Development courses: e.g., Funding & Grantsmanship

- **Workshops, webinars, other training programs**

NIH “K” Sites of Interest

- **K Kiosk** – includes Program Announcements for the K99/R00 grant mechanism
  
  https://researchtraining.nih.gov/programs/career-development

- **Guidance for K applications (Forms-D and -E)**
  

- **Reference Letters**
  
  http://grants.nih.gov/sites/default/files/instructions-for-fellowship-referees.docx

NIH “K” Sites of Interest

- NIH Biosketch Format Pages, Instructions and Samples
  [http://grants.nih.gov/grants/forms/biosketch.htm](http://grants.nih.gov/grants/forms/biosketch.htm)

- Instruction in the Responsible Conduct of Research

- Application Page Limits
NIH “K” Sites of Interest

- Review Criteria and Considerations, Guidelines for Reviewers, Review Critique Fillable Templates
  https://grants.nih.gov/grants/policy/review_templates.htm

- Additional Scoring Guidance

- Review Criteria at a Glance – Training
NIH “K” Sites of Interest

- Research Training and Career Development Programs
  https://researchtraining.nih.gov/

- Research Training and Career Development Programs at Specific Institutes
  https://researchtraining.nih.gov/institute
Topics to be Discussed

- National Institutes of Health
- K99/R00 Career Transition Funding Mechanism – Overview
- NIH Grant Review
  - Process
  - Scoring System
  - K99/R00 Specific Review Criteria
- K99/R00 Career Transition Funding Mechanism - Application Components
  - Approaches for Competitive Applications

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Approaches for Competitive Applications

- Identify Funding
- Prepare to Write the Grant Application
- Complete the Grant Application
Approaches for Competitive Applications

- Identify Funding
- Prepare to Write the Grant Application
- Complete the Grant Application
It’s not the will to win, but the will to prepare to win that makes the difference.

Bear Bryant, University of Alabama
Prepare to Complete the Grant Application

- Speak with Agency Program Officer
- Speak with colleagues who are/were awardees
- Review funded applications if possible
- Review agency’s review criteria
- Identify what will make the application more competitive
  - Research and/or career development arrangements
  - Access to core facilities/research resources
- Strengthen “Preliminary Work/ Pilot Data”
- Who will write confidential letters of reference?
Research and Career Development Arrangements

- Multiple Principle Investigators (research awards)
- Multiple Mentors (mentored awards)
- Advisors (mentored awards)
- Co-investigators/Collaborations
- Subcontracts to other institutions
- Multidisciplinary/Interdisciplinary

Prepare to Complete the Grant Application

- Identify and meet with Co-investigators, Collaborators, Consultants, Advisors
  - Identify roles and responsibilities
  - Administrative requirements (e.g. if other countries/institutions are involved)
- Identify necessary core facilities and other research resources
- Meet with research administrators
- Human subjects, lab animals and any other regulatory issues?

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Approaches for Competitive Applications

- Identify Funding
- Prepare to Write the Grant Application
- Complete the Grant Application
Complete the Grant Application

- Review the application instructions
- Identify the different components
- Create a checklist
- Create an outline
  - Content, Length of section (vis a vis page limits)
- Identify and delegate responsibilities for the different components
  - Technical/Scientific
  - Administrative – e.g. budget
  - Regulatory
  - Draft letters of collaboration/support
Complete the Grant Application

- Confirm page limits for each component
- Create a schedule for any required meetings
- Determine:
  - Shared computer drive/folders
  - Naming of files (dates?)
  - Track changes?
  - Font, margin, format of literature citation
- Set a **firm** time-line for each responsibility
  - Writing milestones
  - Absolute deadline date for final compilation

Complete the Grant Application

- Read instructions
- Never assume that reviewers “will know what you mean”
- Refer to literature thoroughly and thoughtfully
- Explicitly state the rationale of the proposed investigation (“the hypothesis of my study is…”)
- Discuss limitations and potential “challenges” and how these will be addressed (e.g., “alternate approaches”)
- Include well-designed tables and figures
- Present an organized, lucid write-up (use an outline)
- Ask colleagues to review and comment
Complete the Grant Application

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- Ask colleagues to review and comment
Include Well-Designed Tables and Figures

- Include explanatory caption with the figure (not buried in text)
- Not overly complicated
- Informative, even if printed in black and white
- Easy for the reviewers to read

Tips:
- Bold label in text (e.g., Fig. 4) so it’s easier for reviewers to locate relevant text for individual Figure
- Try to have Figure and relevant text on the same page
Timeline for Specific Aims and Benchmarks/Milestones of Research Progress

<table>
<thead>
<tr>
<th>Benchmarks/ Milestones</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Specific Aim 1a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary of Specific Aim 1b</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Summary of Specific Aim 2a</td>
<td></td>
<td></td>
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<tr>
<td>Summary of Specific Aim 2b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary of Specific Aim 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anticipate Questions
and
Answer them before they are asked
Not everything that can be counted counts.
Not everything that counts can be counted.

Research Plan Section
3. Specific Aims
4. *Research Strategy

Candidate Section
2. Candidate Information and Goals for Career Development

Quote Investigator suggests crediting sociologist William Bruce Cameron
http://quoteinvestigator.com/2010/05/26/everything-counts-einstein/

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Investigator

- Competent
- Enthusiastic
- Thorough
- Professional
Personal Statement/
Candidate’s Background

When describing a previous research experience:

- What was the hypothesis/scientific question?
- Why was the study important?
- What were the findings and conclusions?
- What were your role and responsibilities?
- What did you learn and accomplish?
  - “Intellectual aspects”
  - Do not focus on technical aspects
- Cite any resulting publications
- Describe any honors/awards and conference/workshop presentations
Possible Problems Specific for Mentored Fellowship Awards

Mentor

- Too many other responsibilities (e.g. administrative, clinical)
- Too many other mentees (e.g. students, post-docs)
- Not appropriate scientifically
- Too junior
- Limited experience as a mentor
- Limited funds to support proposed research
Possible Problems Specific for Mentored Fellowship Awards

Institution

- Limited scientific/technical resources
- Limited career development opportunities
- Limited opportunities for career advancement
Elements of a Good Proposal

- Feasible
- Relevant
- Unique
- Innovative
- Clear
- Brief
- Consistent
Common Problems with Grant Applications from New Investigators

- Does not address/follow funding agency’s mission, specific instructions, budget limits, etc.
- Overly ambitious
- Not independent of previous mentor’s research
- Fishing expedition
- Not hypothesis driven
- Descriptive, not mechanistic project
- Unfocussed
- No or insufficient preliminary data
- Unrealistic budget
- Methodologies beyond the expertise of investigator or research team
Pink Sheet: Reviewers’ Comments
NIH: one round of applications
Bell Curve of Reviewer’s Grant Applications

Definitely do not fund

Fine

Definitely fund

Great

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Poor Statistics
Research Resources not Adequately Described

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Career Development/Research Training Plan not Comprehensive
Figure Caption Font too Small
All Components of the Application are as Strong as Possible
Good Luck!