NIH Fellowships, Career Development Awards, and Grantsmanship

Superfund Research Program
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Michael Humble, Ph.D.
Carol Shreffler, Ph.D.
Program Administrators
Division of Extramural Research and Training
National Institute of Environmental Health Sciences
National Institutes of Health
Department of Health & Human Services
Outline

• What are Fellowships?
  – Components of Fellowship Applications
  – Review Criteria
• What is the K99/R00?
  – Components of the K99/R00
  – Review Criteria for the K99/R00
• Other Award Options
• Application Reviews, Study Sections, and Reviewer Comments
• Submitting and Application
• Resources
• Questions
What are Fellowships?
F = Fellowships

Purpose: Support full time research training

- Includes stipend, tuition and fees, training
- Awards are for individuals
- Citizenship requirement
- No direct support for research
Current NIH NRSA Fellowship Opportunities

**F30:** Individual Predoctoral MD/PhD Fellowships  
-up to 6 years of support towards the combined MD/PhD degree

**F31:** Individual Predoctoral Fellowships  
-up to 5 years of support towards the PhD degree

**F31:** Individual Predoctoral Fellowships to Promote Diversity in Health-Related Research  
-up to 5 years of support towards the PhD degree for qualifying candidates

**F32:** NRSA Individual Postdoctoral Fellowship  
-up to 3 years of support following the completion of a doctoral degree
“...Years of support....” – What does that mean?

F31: Individual Predoctoral Fellowships provided **up to 5 years of support** towards the PhD degree

- “...years of support” means the **total number of years** an individual can be supported by any combination of NRSA support as a predoctoral person is **5 years**
- includes time spent on a T32 institutional training program

Example: a predoctoral student currently supported on a T32 applies for an F31

- 2 years of support on the T32
- 3 year limit of support through the F31
= 5 years total

**Note** – Predoc years do not count towards the Postdoc years
The Fellowship Mentor(s)

• It’s expected that the mentor(s) will:
  – Be an expert in the field
  – Match the research interests of the applicant fellow
  – Have funding
  – Have a track record of mentoring
  – Collaborator(s) and/or consultant(s)
    • Are they appropriate
    • Do they add strength to the training plan/environment
Components of the Fellowships
# Application Components and Page Limits

<table>
<thead>
<tr>
<th>Section of Application</th>
<th>Page Limits * (if different from FOA, FOA supersedes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Resubmission or Revision Application (when applicable)</td>
<td>1</td>
</tr>
<tr>
<td>Specific Aims</td>
<td>1</td>
</tr>
<tr>
<td>Research Strategy</td>
<td>6</td>
</tr>
<tr>
<td>Respective Contributions</td>
<td>1</td>
</tr>
<tr>
<td>Selection of Sponsor and Institution</td>
<td>1</td>
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<tr>
<td>Responsible Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Applications for Concurrent Support (when applicable)</td>
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<tr>
<td>Goals for Fellowship Training and Career</td>
<td>1</td>
</tr>
<tr>
<td>Activities Planned Under This Award</td>
<td>1</td>
</tr>
<tr>
<td>Doctoral Dissertation and Other Research Experience</td>
<td>2</td>
</tr>
<tr>
<td>Sponsor(s) and Co-Sponsor(s)</td>
<td>6</td>
</tr>
<tr>
<td>Biographical Sketch</td>
<td>5</td>
</tr>
</tbody>
</table>

*Also: Three letters of reference*
Letters of Reference

• 3 letters of reference are required

• letters are due by the application due date
  – April 8, Aug 8, Dec 8

• It is important to note that neither the mentor/sponsor nor any co-sponsor of this application can be counted as a confidential reference.
  – The sponsor/co-sponsor's recommendation is included as part of the application
Responsible Conduct of Research (RCR)

• All fellowship applicants must include a plan to obtain instruction in the responsible conduct of research.

• Five points
  1. Format
  2. Subject Matter
  3. Faculty Participation
  4. Duration
  5. Frequency of Instruction
New – “Additional Educational Information”

- provides the reviewers with information about the graduate or dual-degree program in which the applicant is enrolled
  - the structure of the program
  - required milestones and their usual timing (e.g., number of courses, any teaching and clinical requirements, and qualifying exams)
  - the average time to degree over the past 10 years
- Describe the frequency and method by which the program formally monitors and evaluates progress.
- information is typically provided by the director of the graduate program or the department chair.
It may not seem like much, but…

70+ pages!

Don’t forget those References

Moral of the story:  START EARLY!
Review Criteria for Fellowship
Review Criteria for Fellowships

Core Criteria

- Fellowship Applicant
- Sponsors, Collaborators, and Consultants
- Research Training Plan
- Training Potential
- Institutional Environment & Commitment to Training

- Each assigned Reviewer will provide a score (1-9) for each core criteria
- You’ll also get an overall impact score (10-90) reflecting the Reviewer impressions of the entire application
What is the K99/R00?
K99/R00: NIH Pathway to Independence Award

- Two grants, one application
- K99 - Career Development Award
- R00 - Research Grant Award
K99/R00: NIH Pathway to Independence Award

Goal:

• Facilitate the transition from postdoctoral position to independent faculty
• Establish independent research support
• To increase and maintain a strong cohort of new and talented, NIH-supported, independent investigators
General Information

- NIH makes 250 K99/R00 awards per year

- Most NIH Institutes offer K99/R00s

- Three standard receipt dates per year:

<table>
<thead>
<tr>
<th></th>
<th>Feb 12</th>
<th>June 12</th>
<th>Oct 12</th>
</tr>
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<tbody>
<tr>
<td>New</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resubmission</td>
<td>Mar 12</td>
<td>July 12</td>
<td>Nov 12</td>
</tr>
</tbody>
</table>

- Current Program Announcement: PA-16-077
K99/R00 Award Eligibility

• Must be in a postdoctoral or mentored position

• No more than 4 years postdoc experience

• Cannot be a PI on an NIH research grant or career development award or have non-NIH research support over $100K per year

• Both U.S. citizens and non-U.S. Citizens eligible

• Intramural, extramural, or for-profit Institutions
K99/R00 Award Eligibility: Nuances

- The K99/R00 award is intended for individuals who require at least 12 months of mentored research training and career development (K99 phase) before transitioning to the R00 award phase of the program.

- If an applicant achieves independence (any faculty or non-mentored research position) before a K99 award is made, neither the K99, nor the R00 award, will be made.

- Consequently, an individual who cannot provide a compelling rationale for at least one year of additional mentored research training at the time of award is not a strong candidate for this award.
The Pathway to Independence

Two phases

Mentored K99

Independent R00

5 years of support

1-2 years

3 years
K99: Mentored Phase (1-2 years)

- Minimum 75% full-time professional effort to K award is required
- Additional training, complete postdoctoral projects, publish results
- $90K: Salary + fringe benefits
- $20K: research support
- 12 month minimum mentored phase required
R00 Award (3 years)

- Tenure track or equivalent at a domestic NGO
- 75% protected time for research required
- Institutional support is evaluated
- Budget: $249K total cost
- Continuous in time with the K99
Components of the K99/R00
## Application Components and Page Limits

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<tr>
<td>Specific Aims</td>
<td>1</td>
</tr>
<tr>
<td>Research Strategy and first three items of Candidate Information (Candidate's Background, Career Goals and Objectives, and Candidate's Plan for Career Development/Training Activities During Award Period)</td>
<td>12 (for all sections combined)</td>
</tr>
<tr>
<td>Training in the Responsible Conduct of Research</td>
<td>1</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>
<td>1</td>
</tr>
<tr>
<td>Biographical Sketch</td>
<td>5</td>
</tr>
</tbody>
</table>

*Also: Three letters of reference*
It may not seem like much, but....

Introduction (if needed)
Specific Aims
Candidate Info and Research Plan
Plans and Statements from Mentor(s)
Training in RCR
Description of Institutional Env
Institutional Commitment to Candidate Research Career Dev
Applicant Bio
Mentor Bio
Candidate Info and Research Plan

90- 100 pages!

Don’t forget those References

Protection of Human Subjects
Inclusion of Women and Minorities
Planned Enrollment
Inclusion of Children
Select Agent Research

Moral of the story: START EARLY!
Review Criteria for K99/R00
Review Criteria for K99/R00s

Core Criteria

- Candidate
- Career Development Plan
- Research Plan
- Mentors, Consultants, Collaborators
- Environment & Institutional Commitment to Candidate
Other Award Options
Additiona “K Awards” supported by NIEHS

- **Early Faculty:**
  - K22: Transition to Independent Environmental Health Research (TIEHR) Career Development Award

- **Junior faculty development:**
  - K02: Independent Scientist Award

- **Clinically trained scientist:**
  - K08: Laboratory or epidemiology research
  - K23: Patient Oriented research

- **Mid-Career – Patient Oriented Research:**
  - K24: Midcareer Investigator Award in Patient-Oriented Research (K24)

- **Career Shift**
  - K25: Quantitative and Engineering
NIEHS Transition to Independent Environmental Health Research (TIEHR) Career Development Award (K22)

- For **newly independent** faculty, within 3 years of appointment
- Need to have independent research space and resources
- The award provides **up to three years** of support for:
  - Salary up to $75,000 plus fringe benefits per year
  - Research development funds up to $50,000 per year

http://grants.nih.gov/grants/guide/pa-files/PA-12-188.html
Transition to Independent Environmental Health Research (TIEHR) Career Development Award (K22)

• Must have a sponsor, an NIEHS grantee who will:

  – assist in the establishment of an advisory committee with appropriate research expertise for the candidate
  
  – attend at least two meetings of the advisory committee, including one to provide feedback on an R01 draft of a grant submission
  
  – sponsor the candidate at meetings largely attended by other NIEHS grantees

http://grants.nih.gov/grants/guide/pa-files/PA-12-188.html
NIEHS Outstanding New Environmental Scientist (ONES) Award (R01)

• designed to identify the best new biomedical investigators across the spectrum of science supported by the NIEHS

• PI must be an ESI

• PI must have a tenure track or equivalent faculty position

• NIEHS intends to commit $3.0 million in FY 2016 to fund 5-6 awards

Application Reviews, Study Sections, and Reviewer Comments
Fellowship Study Sections

• Fellowships are reviewed in special “Fellowship study sections” are run by CSR

• There is no study section dedicated to environmental exposures
  – NIEHS fellowship applications get assigned to almost all of the CSR study sections

• Website:
  http://public.csr.nih.gov/StudySections/Fellowship/Pages/default.aspx

Career Development Awards

• Reviewed by the assigned NIH institute
## Fellowship Study Sections

<table>
<thead>
<tr>
<th>Study Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AARR</td>
<td>AIDS and AIDS Related Applications</td>
</tr>
<tr>
<td>F01</td>
<td>Brain Disorders, Language, Communication and Related Neurosciences</td>
</tr>
<tr>
<td>F02A</td>
<td>Behavioral Neuroscience</td>
</tr>
<tr>
<td>F02B</td>
<td>Sensory and Motor Neurosciences, Cognition and Perception</td>
</tr>
<tr>
<td>F03A</td>
<td>Neurodevelopment, Synaptic Plasticity and Neurodegeneration</td>
</tr>
<tr>
<td>F03B</td>
<td>Biophysical, Physiological, Pharmacological and Bioengineering Neurosciences</td>
</tr>
<tr>
<td>F04A</td>
<td>Synthetic and Biological Chemistry</td>
</tr>
<tr>
<td>F04B</td>
<td>Biochemistry and Biophysical Chemistry</td>
</tr>
<tr>
<td>F04</td>
<td>Chemistry, Biochemistry, and Biophysics</td>
</tr>
<tr>
<td>F05</td>
<td>Cell Biology, Developmental Biology and Bioengineering</td>
</tr>
<tr>
<td>F06</td>
<td>Endocrinology, Metabolism, Nutrition and Reproductive Sciences</td>
</tr>
<tr>
<td>F07</td>
<td>Immunology</td>
</tr>
<tr>
<td>F08</td>
<td>Genes, Genomes and Genetics</td>
</tr>
<tr>
<td>F09A</td>
<td>Oncology</td>
</tr>
<tr>
<td>F09B</td>
<td>Oncological Sciences Overflow</td>
</tr>
<tr>
<td>F09B</td>
<td>Oncological Sciences</td>
</tr>
<tr>
<td>F09</td>
<td>Oncology F32</td>
</tr>
<tr>
<td>F09</td>
<td>Oncological Sciences</td>
</tr>
<tr>
<td>F10A</td>
<td>Physiology and Pathobiology of Cardiovascular and Respiratory Systems</td>
</tr>
<tr>
<td>F10B</td>
<td>Physiology and Pathobiology of Musculoskeletal, Oral and Skin Systems</td>
</tr>
<tr>
<td>F13</td>
<td>Infectious Diseases and Microbiology</td>
</tr>
<tr>
<td>F15</td>
<td>Surgical Sciences, Biomedical Imaging and Bioengineering</td>
</tr>
<tr>
<td>F16</td>
<td>Risk, Prevention and Health Behavior</td>
</tr>
<tr>
<td>OBT</td>
<td>Oncologic Sciences</td>
</tr>
</tbody>
</table>
# Reviewer Guidance on Strengths and Weaknesses

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

- The Final Score is based on the criterion scores

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rev 1</th>
<th>Rev 2</th>
<th>Rev 3</th>
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<tbody>
<tr>
<td>Fellowship Applicant</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sponsors, Collaborators, and Consultants</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Research Training Plan</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Training Potential</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Inst'l Environment &amp; Commitment to Training</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Average**

| Average | X | 5 | X | 5 | X | 4 |

**Overall Average:** 47, so a Priority Score of 46
Reviewer Comments
Comments from Reviews:
Research Plan Strengths

• The proposal is very logical and compelling.
• The research topic has important public health significance.
• The proposal is well written ... and shows great attention to detail.
• Proposed experiments are based on credible preliminary data demonstrating that X exposure affects Y via Z.
• Three complimentary SA are designed to assess X exposure on ...
• The proposed research makes use of state-of-the-art techniques and instrumentation available through the _____.
• The research plan is well-constructed and expands on the research study of the applicant’s mentor without duplicating what is already being done by the R01.
Comments from Reviews:
Research Plan Weaknesses

- Preliminary data does not support the proposed experiments.
- Experiments do not test the hypothesis.
- Aims 2 and 3 are dependent on Aim 1.
- Specific Aim 2 [or the whole project] is overly ambitious.
- Aim 3 is not well justified and is overly vague.
- No consideration of statistical power.
- The background is lacking important citations in [this area].
- The Research Training Plan has many grammatical errors.
- There are two Figure 4s.
Submitting an Application
Submitting an Application

- Submit to the NIH Center for Scientific Review (CSR)
- **Receipt**: Check for completeness, enter information into database, assign number
- **Referral** (assignments):
  - To a funding agency/institute
  - To a review group (“study section”)
- **Note**: You can request a certain institute for funding or a study section for review. Requests won’t always be honored.
NIH Grant Process

The National Institutes of Health Initiates Research Idea and Prepares Application

Investigator

University/Institution

Conducts Research

Manages Funds

The National Institutes of Health

CSR Assigns to IRG and Institute

IRG Evaluates for Scientific Merit

Institute Evaluates for Program Relevance and Need

National Advisory Council for Board Recommends Action

Institute Makes Funding Decisions and Awards

Submits Application
Resources
Internet Resources

• NIH Research Training and Career Development Programs
  https://researchtraining.nih.gov/
  – Frequently Asked Questions:
    https://researchtraining.nih.gov/resources/faq

• Resources for New Investigators:
  http://grants.nih.gov/grants/new_investigators/index.htm#indaward

• Center for Scientific Review Resources:
  http://public.csr.nih.gov/ApplicantResources/Pages/default.aspx
  – Center for Scientific Review Fellowship Study Sections:
    http://public.csr.nih.gov/StudySections/Fellowship/Pages/default.aspx

• Sample Fellowship Applications

• Pathways to Independence Program Announcement (K99/R00):

• K99/R00 Frequently Asked Questions: http://grants.nih.gov/grants/new_investigators/QsandAs.htm

• NIEHS Transition to Independent Environmental Health Research (TIEHR) Career Development Award (K22):
  http://grants.nih.gov/grants/guide/pa-files/PA-12-188.html
Resources

Contact information

NIEHS Career Development Program (K awards)
Carol Shreffler, PhD
shreffl1@niehs.nih.gov

NIEHS Fellowship Program (F awards)
Mike Humble, PhD
humble@niehs.nih.gov
Questions