GRANTS 101: TRAINING & CAREER DEVELOPMENT AWARDS

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Outline

• Overview of career development awards and when to apply
• Types of career development awards: K-awards and foundation grants
• Components of a NIH K application
• Grant writing tips
• Submitting the grant- what happens next?
What is a career development award (CDA)?

- Purpose: early career grant to provide requisite skills and mentorship to launch an independent research career
- 3-5 year grant
- Supports 75%+ of time as a junior faculty member
- Provides funds to support research
- Mentored award (next step: independent award)
- Geared towards junior faculty members or senior fellows
When is the right time to apply for a CDA?

- Latter part of fellowship or as junior faculty
- Need to demonstrate success in research by publications
- Identify an area of scientific focus and have preliminary data to support this focus
- Strong mentoring relationships
- Institutional and departmental/divisional support
When is the right time to apply for a CDA?

- Remember the NIH timeline
  - Grant cycles: February, June, October
  - Grants submitted in October, reviewed in February, Funding will start July
  - Give yourself time to reapply (e.g. work backwards to when you want your faculty appointment to start)

- Discuss timing with mentors!
Types of CDA: NIH K-awards

https://researchtraining.nih.gov/career/early-career

- Overview of K awards
- Each NIH institute has its own funding announcement for K awards (requirements and conditions of award may vary by institute)- review carefully!
**Program Announcement**

Department of Health and Human Services

**Part 1. Overview Information**

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<th>Participating Organization(s)</th>
<th>National Institutes of Health (NIH)</th>
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<td><strong>Components of Participating Organizations</strong></td>
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<td>National Human Genome Research Institute (NHGRI)</td>
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<td>Division of Program Coordination, Planning and Strategic Initiatives, Office of Research Infrastructure Programs (ORIP)</td>
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**Special Note:** Because of the differences in individual institutes and center (IC) program requirements for this FOA, prospective applicants strongly suggest that the Table of IC Specific Information, Requirements and Staff Contacts, to make sure that their application is responsive to the requirements of one or more ICs.

**Funding Opportunity Title:** Mentored Research Scientist Development Award (Parent K01)

**Activity Code:** R001 Research Scientist Development Award - Research & Training

**Announcement Type:** Reissue of PA-11-190

**Related Notices**

- June 4, 2014 - Notice NOT-DA-14-074Supersedes Instructions in Section III.3 regarding applications that are essentially the same.
- February 27, 2014 - See Notice NOT-EB-14-003. Notice of Change to the Duration of Career Development Awards Supported by the NIBIB.

**Funding Opportunity Announcement (FOA) Number:** PA-14-044

**Companion Funding Opportunity:** None

**Number of Applications:** See Section III.3 Additional Information on Eligibility


**Funding Opportunity Purpose:** The purpose of the NIH Mentored Research Scientist Development Award (K01) is to provide support and "protected time" (three, four, or five years) of supervised career development experience in the biomedical, behavioral, or clinical sciences leading to research independence. Although all of the Institutes and Centers (ICs) use this support mechanism to support career development experiences that lead to research independence, some ICs limit individuals who propose to train in a new field or for individuals who have a hiatus in their research career because of illness or personal family obligations. ICs utilize the K01 award to increase research workforce diversity by providing enhanced research career development opportunities. Prospective applicants are encouraged to contact the relevant NIH staff for IC-specific programmatic and budgetary information. Table of IC Specific Information, Requirements and Staff Contacts.

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**READ THIS CAREFULLY!!**

- Purpose
- Eligibility
- Deadlines
- Page limits
- Links to forms
- Required sections
- Review criteria
- Animal, human subjects info
- Contacts
K-awards: who is eligible?

- MD, DO, DVM, DDS, other Clinical Doctorate
- PhD
- U.S or permanent residents
- U.S. Domestic Institutions
K08: Mentored Clinical Scientist Research CDA

- Clinically trained individuals
- Biomedical, behavioral, or clinical research, including translational research
- 3-5 years
- Salary support: $90,000 per year (may vary by institute)
- Research support: $50,000 per year (may vary by institute)
- 75% protected time for research
K23: Mentored Patient-Oriented Research Career Development Award

- Clinically trained individuals
- Patient-oriented research
- 3-5 years
- Salary support: $90,000 per year (may vary by institute)
- Research support: $50,000 per year (may vary by institute)
- 75% protected time for research
K01: Mentored Research Scientist Career Development Award

- Research or clinical doctorate degree
- Biomedical, behavioral, or clinical sciences
- 3-5 years
- Salary support: $75,000 per year (may vary by institute)
- Research support: $25,000 per year (may vary by institute)
- 75+% protected time for research
K25: Mentored Quantitative Research Career Development Award

- Investigators whose quantitative science and engineering research (e.g., statistics, economics, computer science, physics, chemistry) has thus far not been focused primarily on questions of health and disease, but re-focusing to biomedical research
- 3-5 years
- Salary support: $75,000 per year (may vary by institute)
- Research support: $25,000 per year (may vary by institute)
- 75+% protected time for research
K99/R00: Pathway to Independence Award

- Research or clinical doctoral degree, and no more than 4 years of Post-Doctoral research experience
- Citizen or non-U.S. citizen
- Details vary by institute
- Supports transition from mentored award to independence
- 3-5 years
  - 1-2 years mentored (K99)
  - 2-3 years independence (R00)
UW KL2 Multidisciplinary Clinical Research Career Development Program

• Institutional K award: NIH awards UW ITHS → selects KL2 recipients
• [https://www.iths.org/education/post-doc/kl2/](https://www.iths.org/education/post-doc/kl2/)
• Research or clinical doctorate degree
• Patient-oriented research, translational research, clinical trials, epidemiologic studies, health services research, and health behavior research
UW KL2 Multidisciplinary Clinical Research Career Development Program

- Up to 3 years of support (most apply for NIH K award)
- 75% protected time for research
- $85,000 per year for salary and $25,000 per year for research
- Timeline: applications due in October, notification in December and award start in March (quick!)
- Cannot be transferred if leave UW!
Other CDA: Foundation Grants

- Check your national societies and other specialty-specific foundations
- Many offer substantial amount of support
- Often non-U.S. citizens are eligible
- Deadlines and format will differ from NIH grants
HOW TO WRITE A K APPLICATION
Brainstorming

• Schedule uninterrupted time to sit and think—days of time
• Keep a notepad handy to jot down your thoughts and ideas
• Think about the unknowns in the topic that you are studying
• Read the latest papers in your field as well as some well-written review articles—know the literature!!
Getting ready to write..

- Read the program announcement carefully
- NIH SF424: detailed instructions
- Read examples of successful applications
- Talk to faculty on study sections to understand review process
- Talk to NIH program officer
- Meet with grants administrator in your Division/Department EARLY!
Timeline

4-6 months ahead:
• Decide on grant mechanism
• Discuss with mentor and grants administrator
• Talk with NIH official

3-4 months ahead:
• Identify area of scientific focus and begin drafting Aims
• Identify complimentary areas of career development
• Assemble appropriate mentorship team
Timeline

3 months ahead:
• Work on all components of grant

1.5-2 months ahead:
• Full draft to mentors
• Request letters

1 month ahead:
• Final revisions

**Remember that some components of the grant are due 7 business days prior to NIH deadline; final version of all other components – 3-5 business days**
Administrative components of a K application

- Cover letter
- Study section request
- Abstract
- Project narrative
- Budget
- Budget justification
- Facilities and resources
- Equipment
- Biohazards
Components of K application (cont’d)

• Human subjects section (additional sections for clinical trials)
• Vertebrate animals
• Select Agents
• Consortium/Contractual Arrangements
• Resource Sharing Plan
• Reproducibility and Authentication of Reagents
Components of a K application

- Candidate Section* 
  *12 pages together
- Specific Aims (1 page)
- Research Strategy*
- Training in the Responsible Conduct of research (1 page)
- Mentor and co-mentors statement (6 pages)
Components of K application (cont’d)

• Letters of support from collaborators/consultants (6 pgs)
• Environment & Institutional Commitment to Candidate (2 pages)
• Biosketch (5 pages per individual)
• Reference letters (3-5 letters from well-established scientists who are not part of mentoring team and know candidate well)
Career Goals and Objectives

• How did you get to this point in your career? Why are you passionate about research and this area?
• Where do you want to be in 5, 10, 20 years?
• What do you need to learn to achieve your goals?
Candidate Section

Career Development/Training Activities

• How will this award fill your training gaps?
• Didactic coursework (req’d for 5 years)
• Technical training
• Identify appropriate mentors for each training activity
• What will you be able to take with you to write an R01?
• Timeline
Candidate Section

Career Development/Training Activities

• Training in manuscript & grant writing, manuscript reviewing, budget and lab management, directing staff/students
• Attending scientific meetings, journal clubs
• Presenting work orally, posters
• Networking at meetings, conferences
• Measuring progress to independence
Candidate Section

Training in the Responsible Conduct of Research

• Provide details per new requirements: format, topics, faculty participation, duration, frequency

• Future plans for RCR training

• 1 page (not counted in limit)
Statements of support from mentors

• Mentor’s statement should include
  – Evidence of successful training history (table of past trainees and current positions)
  – Evidence of active productive research
  – Evidence of support for proposed research
  – Details about mentoring—e.g. frequency of meetings, etc
  – Topic areas in which mentoring will occur
  – Plan and metrics for transitioning candidate to independence

• Co-Mentors’ statements should be specific about the expertise that they bring to the mentoring team

• Co-mentors are different from collaborators
Environment

• Description of Institutional Environment (1 page)
  – Intellectual environment
  – Available facilities, resources relevant to application
Institutional commitment to candidate

- Usually letter from Chair/ Division Head
- Guarantees >75% protected time for research training
- Lab space, office,
- Academic appointment
Scientific Research Plan (finally 😊)

• Specific Aims—1 page (not in 12-page limit)

• Research Strategy
  – Significance
  – Innovation
  – Approach
Specific Aims

• The most important page in the application
• It is a one page summary of the application
  - Why is this problem significant?
  - What questions will you answer?
  - What is the hypothesis(es), and what data support it?
  - What are the exciting new preliminary data that support your aims?
  - What are you going to do?
  - What will your results mean for the field?
  - How will this work lead to a R01?
Specific Aims

• List your aims simply
  – Be somewhat general
  – Avoid long (laundry) list of things you are going to do
  – 2-4 Specific Aims is sufficient

• Should not be inter-dependent

• Aims serve as the backbone of your Research Plan and Candidate Training Plan
Research strategy: Significance

• Assume you are not writing for an expert
• Emphasize general medical importance and then specific importance of your topic
• Identify gaps in knowledge; state how you will fill those gaps
• Tie the background to each Specific Aim
• Discuss relevant controversies in the field if relevant
• Avoid selective citation of the literature
• No limit on number of citations
Innovation

• What is new about your idea?
• Will it change the way people think about the topic?
• How will your results affect the future of research in your field?
• Will it affect research in other fields? Paradigm-shift?
Approach: Research Design and Methods

Organize by Specific Aim
- Rationale and Hypothesis
- Experimental Approach
- Include preliminary data that highlights content or methodological expertise
- Statistical approach; power calculations
- Expected Results & Interpretation
- Potential Pitfalls and Alternative Approaches

Other Important Sections
- Future Directions
- Timeline
GRANT WRITING TIPS
Grant writing tips

• Use formal language—no slang or jargon
• Use correct grammar, punctuation
• No typos!
• Pay attention to required fonts and margins
• Leave white space on the pages—not solid text
Hard to stay engaged…. 

malaria parasites displayed on infected red blood cells (RBCs) promotes adherence of the RBC to platelets/integrons, we have previously shown that Bdh2 promotes its adhesion to platelets/endothelial cells and to RBCs. Bdh2 knockdown in the parasites reduces their adherence to RBCs (5). The adherence is mediated by the thrombospondin type 1 repeats (TSPs) of Bdh2 (5). This phenomenon is also observed in other protist parasites such as Trypanosoma brucei and Plasmodium falciparum. In addition, Bdh2 is also involved in the invasion of host cells by these parasites. The mechanism of Bdh2-mediated adherence is not yet fully understood, but it is proposed that Bdh2 promotes the release of adhesion molecules from the RBCs, which then interact with the host cells. This process is crucial for the survival and dissemination of the parasites in the host. Future studies will aim to elucidate the molecular mechanisms underlying this process and to identify potential targets for antiparasitic drug development.
Visual Appeal

- Open space
- Clear organization
- Use of Bold, CAPITALS, underlining to define sections and important points
- Figures break up text
What happens after you submit?

Priority score posted on NIH Commons a few days after study section meets

• Overall Impact
• Candidate
• Career Development Plan
• Research Plan
• Mentor(s), Consultants, Collaborators
• Environment & Institutional Commitment
What happens after you submit?

• Summary Statement 3-6 weeks later
• Paylines are posted by Institutes (and change)
• Council meets several months later and makes final funding decisions – Notice of Grant Award
It’s ok not to be funded the first time!

- Read the comments carefully and put them away
- Read the comments again 3-5 days later
- Don’t get discouraged
- Discuss options with your mentor
- Revision-one revised application can be submitted
- Listen to what the reviewers said!!!
Don’t give up!!

• Unfunded first applications are common
• Learn from an unfunded submission & succeed next time
  - Study criticisms in Summary Statement
  - Decide whether the problems are reparable
  - Attend diligently to each criticism
  - Keep a positive tone and attitude
  - Be responsive, not defensive!
• “Responsive” amended applications tend to do well
Submitting a revised application

One page Introduction

• Restate each criticism and explain how you revised the application in response—make it easy for reviewer to find your “answers” by using a different font for revisions

• Misunderstandings are your fault—if the reviewer missed a key fact in a figure or table, maybe it wasn’t clear enough
Big Picture: Rewarding Career

• Discovery!
• Help to understand, control, prevent, or cure a disease
• Impact care of patients
• Opportunity to develop the next generation of outstanding scientists
GOOD LUCK!