Writing a Successful Career Development Grant (K Award)

Moderator: Jonathan Katz, MD

Panel:
- K23   Erum Hartung, MD, MTR
         Susan Furth, MD, PhD
- K08   Jeffrey Thompson, MD, MTR
         Steven Albelda, MD
- K99   Kiran Musunuru, MD, PhD, MPH

NIH K Awards

(K01, K08, K23, K99/R00, and others – also R03; vary by institute)
http://grants.nih.gov/training/careerdevelopmentawards.htm

- <u>K01 Mentored Research Scientist Development Award</u>
  - Career development in a new area of research; 3-5 years; salary determined by sponsoring institution

- <u>K08 Mentored Clinical Scientist Development Award</u>
  - Career development of the clinical research scientist; 3-5 years; 75% effort

- <u>K23 Mentored Patient Oriented Research Career Development Award</u>
  - Career development of the clinical research scientist in patient oriented research; 3-5 years; 75% effort

- <u>K99/R00 Pathway to Independence (PI) Award</u>
  - Support for individuals with a terminal clinical or research doctorate degree to foster the transition of postdoctoral scientists from mentored training environments to research independence (R01 support) earlier in their career; up to 5 years
    - Mentored Phase (K99); up to 2 years
    - Independent Investigator Phase (R00); up to 3 years
  - K99-R00 Transition
    - Evaluation by NIH extramural program staff
      - Success in K99 phase
      - Commitment of candidate's institution to his/her career development
    - Extramural institutional appointment – full-time tenure-track position at the assistant professor level (or equivalent) not contingent on transfer of the K99/R00 award

Start with a timeline

Ann Intern Med. 2005 Feb 15;142(4):274-82
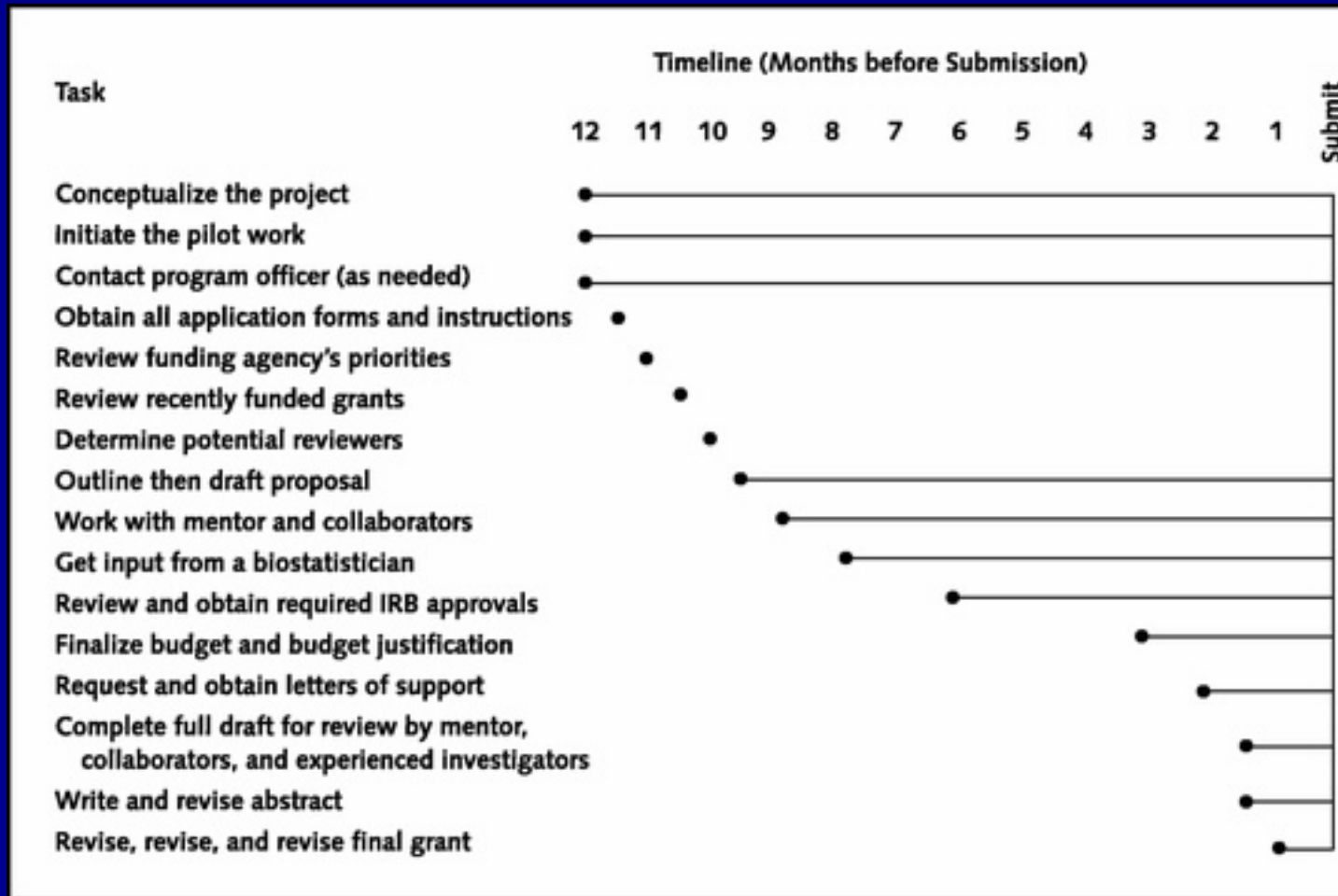
Make the the work of the reviewer easy

- Use models, figures, and white space throughout the grant
  - Don't make your figures too small (this applies also to text in figures)

- Some repetition is necessary (reviewers will rarely read an entire grant in one sitting) but don't copy and paste exact text

- Don't try to "trick" the reviewer – don't hide the holes
  - Confront issues head-on (e.g. conflicts in the literature may be a strength – i.e. need to study this as there is no clear consensus)
  - Make sure to include potential pitfalls and alternative approaches in your research strategy
  - If you can identify potential flaws or limitations in your proposal (issues with your research, gaps in your training, etc.), chances are a reviewer will too

Candidate's background

Use the candidate's background to tie things together:

- How did your interest in the themes of your grant developed (i.e. medical school to residency to fellowship, etc.)?

- How do your various achievements support your ability to become an independent investigator?

- Address any potential concerns in your application (e.g. a few years where you focused on something else, were exclusively clinical, etc.).

Career development plan

Propose a career development/training plan that is distinct from what you are doing now:

- Address gaps in your knowledge
  - Additional coursework, workshops, etc.
  - New techniques from mentors, collaborators
  - Including a table with a time-course is very helpful
- Don't simply propose to continue going to lab and other group meetings - <u>if you don't convince reviewers that you need additional training and mentorship, reviewers may question why you are applying for a career development grant and not an independent award!</u>

A training matrix of the proposed career development activities is below.

	T32/Current Achievements	K99 Goals--Year 1	K99 Goals—Year 2
Research (85% effort)	*C. elegans* techniques and genetics Lineaging analysis w/ confocal microscopy Recombineering Transgenesis by germline injection	*Specific Aim 1:* CRISPR/Cas gene targeting ChIP-seq HTS data analysis	*Specific Aim 2:* Computational enhancer identification Enhancer assays
Coursework	CSHL Genomics course Penn Programming Bootcamp College Teaching for Postdocs course	Penn Bioinformatics course Attend BPP seminars	Attend BPP seminars
Teaching & Mentorship (5% effort)	Founded Penn Education Journal Club PGFI Undergraduate Outreach lecture Mentored undergraduates	Education Journal Club Mentor undergraduates Teach GCB534 grad lecture	Education Journal Club Mentor undergraduates Supervise technician
Grant Writing (10% effort)	F32 Fellowship application R01 application participation Grant writing workshops	Assist with NIH/NSF applications	NIH R21
Presentation Skills	International *C. elegans* Meeting talk Genetics Trainee seminars Developmental Biology Club Penn Worm Group Penn Postdoctoral Research Symposium	Society for Developmental Biology Philadelphia/NJ Worm Group Genetics Trainee seminars Developmental Biology Club Penn Worm Group	GSA Model Organism Meeting Genetics Trainee seminars Developmental Biology Club Penn Worm Group
Job Search	Prepared teaching philosophy statement	Applications Career Services workshops	Interviews

Courtesy of Amanda Zacharias, PhD

Letters of Reference

- Minimum of 3, no more than 5 letters submitted directly through eRA Commons and due by the application receipt deadline date

- Choose well-established scientists with a personal connection who can address your strengths and potential to become an independent investigator - letters should be strong, personal, and specific.

- Keep in mind those individuals who might be expected to write letters (e.g. thesis advisor, prior postdoctoral mentor) and think carefully before excluding them.

- **Take the initiative to track the letters and send reminders** (your letter writers are busy and your letter may not be their top priority; it is your responsibility to ensure that your letters are submitted on time).

Statements by the mentor(s)

- Mentor's (and Co-Mentor's) track record of successful mentoring of trainees

- Nature of the supervision and mentoring including metrics for monitoring the candidate's research, publications, and progression towards independence

- Description of the advisory committee

- Plan for career progression of the candidate from the mentored stage to an independent research investigator - how your career path will be distinct from that of your mentor?

- **Clear statement** of <u>what aspects of the proposed research the candidate will be able to take into an independent position</u>

Institutional Commitment

- Institutional commitment should **<u>NOT</u>** be contingent upon receipt of the career development award.

- Letter must contain assurances that the candidate will be able to devote a minimum of 75% effort (i.e. 9 person-months) to research.

- Description of office and laboratory space, equipment, and other resources and facilities (including access to clinical and/or other research populations, cores, and other facilities) to carry out the proposed research.

A few other key points

- Write for an experienced scientist but not necessarily an expert in your field

- Refer to the NIH guidelines
  - For example, the NIH gives clear guidelines for points to include in RCR and vertebrate animals sections – use these

- Don't propose more than you can do in the allotted time

- Stay focused throughout your application – training and research plan should fit together like a hand in a glove

- Review the NIH review criteria for your grant mechanism (think like a reviewer!)
  - Specific review criteria are typically listed within each program announcement

Scoring for K grants

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.

Overall Impact	High	Medium	Low
Score	1 2 3	4 5 6	7 8 9

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

Fs	Ks
• Applicant	• Candidate
• Sponsor(s)	• Career Development Plan/Goals*
• Research Training Plan	
• Training Potential	• Research Plan
	• Mentor(s)**
• Institutional Environment & Commitment	• Environment & Institutional Commitment

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

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

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 moderate or low value/benefit for the candidate who has moderate or low potential for further development. Weaknesses in the criteria reduce the overall impact to low.

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.

Whom do I contact with questions?

Prior to submission – Program Officer*

    Example of question:

        "Is my grant more appropriate for a K08 or K23 mechanism?"

        "I was thinking about writing for a K99. Do you think I am a strong enough candidate?"

After submission but before review – Scientific Review Officer

    Example of question:

        "What is the deadline to submit supplementary information?"

After review – Program Officer*

    Example of question:

        "What is the likelihood of funding?"

        "What should I do for my resubmission?"

*Get to know your Program Officer.

Panel discussion:
Other topics, questions?