K Club, Week 1

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Today's Topics

- K Awards: What are they?
- Funding Opportunity Announcement (FOA)
- National Institutes of Health (NIH) process for a research grant
- Overview of the Grant Submission Process + NIH Structure
- Program Officers
- K Award Sections
- K Award Scope
- K Mentorship Team
- Action Items

K Awards: What are They?

- Training grants from National Institutes of Health (NIH)
  - What skills do you have that you want to further develop?
  - What NEW skills do you want to learn?
  - What are your career goals that this grant can help you accomplish?
  - How can training help you transition to become a successful independent investigator?
  - Research section
  - Career development section

# K Awards: What are They?

- Applicant Requirements
  - Senior level post-docs or faculty-level candidates
  - Must have full-time appointment at institution
  - Full-time effort (at least 9 months, or 75%) on research, with the rest on other career-development opportunities
- Mentor Requirements
  - 1+ mentors should have current, active R01-level funding
- Money
  - Salary and health insurance benefits for you
  - Research costs: (a) tuition/fees related to career development; (b) supplies, equipment, technical personnel; (c) travel; (d) statistical services
  - NO $$$ allowed to go to mentors
  - Waiting period between grant submission and potential award ~ 8-9 months (if you get it the first time, which is highly unlikely)
- Types
  - K01, K08, K23, K25, K99/R00

Notes

▶ We will go over the basics of each K award next!

▶ Examples tend to focus on National Institute of Mental Health (NIMH) rules because that is where many of LIBR researchers submit grant applications

▶ After we go through K award basics, most of my slides will be geared toward K99/R00 applications, although there is quite a bit of overlap across K applications
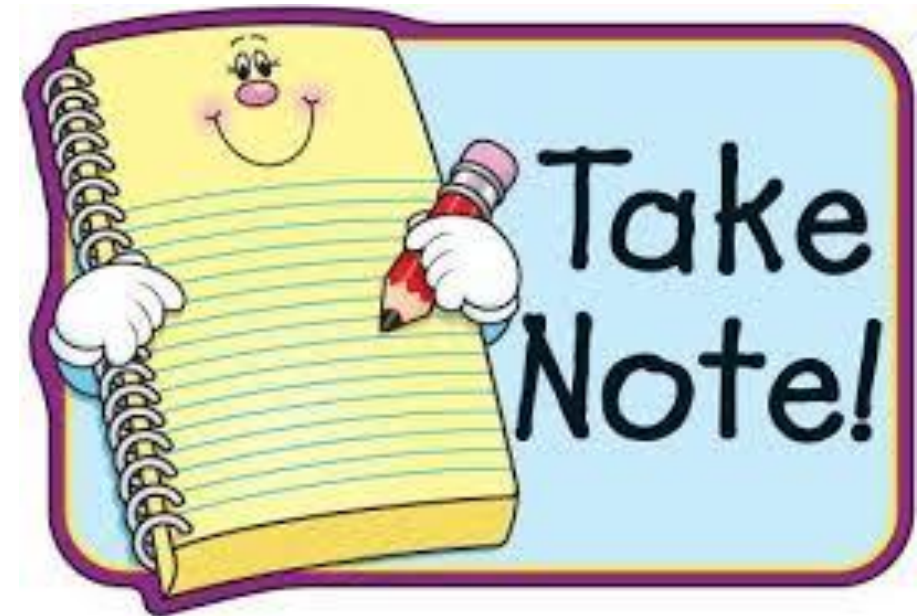
K01: Mentored Research Scientist Career Development Award

- Applicant Requirements
  - For post-doc and early-career (within 10 years of Ph.D.) research scientists
  - Must be U.S. citizen, foreign national, or U.S. resident to apply
  - For people who **propose to train in a new field**, have had a hiatus in their research career, or can argue that this grant will enhance workforce diversity
- You must show that you:
  - Are committed to a research career
  - Need advanced research training
  - Need additional research experience
- You can do a clinical trial if you want to
- Money
  - 3-5 years of funding
  - Different Centers/Institutes have different salary caps
    - NIMH salary cap = $90K/year and research support = $50K/year

K08: Mentored Clinical Scientist Research Career Development Award

- Applicant Requirements
  - Good for clinical psychology Ph.D. or M.D. who has already shown promise in research
  - Must be U.S. citizen, foreign national, or U.S. resident to apply
- You must show that you:
  - Are clinically trained
  - Want to pursue a career that has a significant impact on health-related research needs in the U.S., preferably as an academic faculty member in a health-based institution
- You can do a clinical trial if you want to (but you don't have to!)
- Money
  - Up to 5 years of funding
  - Different Centers/Institutes have different salary caps
    - NIMH salary cap = $100K/year and research support = $50K/year

K23: Mentored Patient-Oriented Research Career Development Award

- Applicant Requirements
  - Good for clinical psychology Ph.D. or M.D. who has already shown promise in research; for post-docs or early-career (within 10 years of degree)
  - Must be U.S. citizen, foreign national, or U.S. resident to apply
- You must show that you:
  - Are clinically trained
  - Want to pursue a career as a clinical investigator focusing on patient-oriented research, directly interacting with subjects
- You can do a clinical trial if you want to (but you don't have to!)
- Money
  - Up to 5 years of funding
  - Different Centers/Institutes have different salary caps
    - NIMH salary cap = $100K/year and research support = $50K/year

K25: Mentored Quantitative Research Career Development Award

- ▶ Applicant Requirements
  - ▶ Good for engineering or science Ph.D. whose research has not been primarily focused on health and disease (statistics, economics, computer science, physics, chemistry)
  - ▶ Must be U.S. citizen, foreign national, or U.S. resident to apply
  - ▶ Post-docs or any level of investigators
- ▶ Money
  - ▶ Up to 5 years of funding
  - ▶ Salary cap = $100K/year and research support = $40K/year

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K99/R00: Pathway to Independence Award

- Applicant Requirements
  - Post-docs ONLY (no more than 4 years of post-doc experience)
- Grant = Initial mentored research experience (K99, up to 2 years) followed by independent research (R00, up to 3 years) to secure an independent research position
- You are supposed to apply for R01-level funding during the R00 period
- You can do clinical trials, but you don't have to!
- Typically you start off at one institution and move to an Assistant Professor faculty position elsewhere (people don't tend to stay in the same place)
- Money
  - Up to 5 years of funding
  - Different Institutes/Centers may have different salary caps for K99
  - K99 NIMH salary cap = $75K/year
  - K99 research support = $20K/year
  - R00 total costs cannot be more than $249K/year

What do I need to consider before writing a K grant application?

- Do you have at least one Mentor who has a successful track record of (a) getting NIH or other grants funded, and (b) training students to become independent scientists?
    - If yes, awesome!
    - If no, no worries, you may be able to put together a Mentorship team who has these skills [we will get to this later]
    - In either case, talk to your Primary Mentor about whether a K application is a good way to go
- How much time can you commit to this?
    - You can submit K applications three times a year
    - https://grants.nih.gov/grants/how-to-apply-application-guide/due-dates-and-submission-policies/due-dates.htm
    - I recommend that you start writing a K grant **SIX MONTHS** before a particular due date (no joke!) because there are a LOT of pieces you need to pull together [we will go over those in a few slides]

How do I find out about these K awards?

▶ You can look for **Funding Opportunity Announcements (FOAs)** fitting your research/career on the NIH website

▶ There are different K awards with varying eligibility criteria and timelines

  ▶ https://researchtraining.nih.gov/programs/career-development

▶ For this course, we will focus on the K99/R00 grant mechanism, but most components of the K99/R00 are like other K applications

Funding Opportunity Announcements (FOA)

Overview of the Grant Submission Process

▶ Before we dive too deep into **FOAs**, let's take a step back and go over what happens to a K application in the NIH after you submit it

▶ Then we will review overall NIH structure to explain the role of **Program Officers** in your K grant application

NIH Process for a Research Grant

National Institutes of Health

Research Grant Application

School or Other Research Center

Center for Scientific Review

- Initiates Research Idea
- Submits Application
- Assigns to IRG/Study Section & IC

Study Section

- Evaluates for Scientific Merit

Institute

- Evaluates for Program Relevance

National Advisory Council

- Conducts Research
- Allocates Funds
- Recommends Action

Institute Director
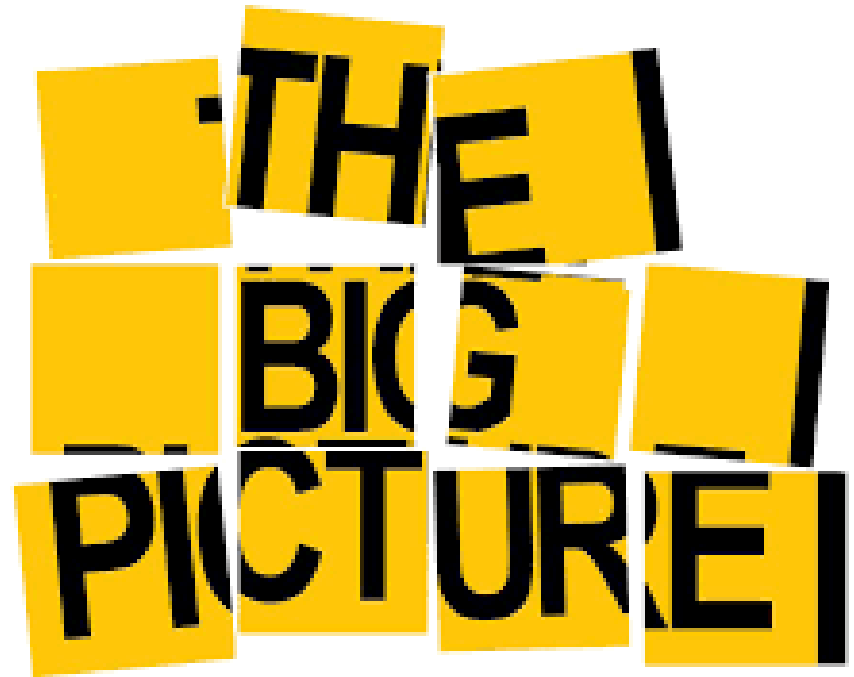
Overview of NIH Structure

- There are 27 institutes and centers within NIH

  - https://www.nih.gov/institutes-nih/directors-nih-institutes-centers

- Specific K grants are sponsored by one or more of these institutes/centers

- You need to find a K **Funding Opportunity Announcement (FOA)** and a **Program Officer** from an institute or center that fits your research area

NIH Director

National Institutes of Health (NIH)
Francis S. Collins, M.D., Ph.D.

Institute Directors

National Cancer Institute (NCI)
Ned Sharpless, M.D.

National Eye Institute (NEI)
Santa Tumminia, Ph.D. (Acting)

National Heart, Lung, and Blood Institute (NHLBI)
Gary H. Gibbons, M.D.

National Human Genome Research Institute (NHGRI)
Eric D. Green, M.D., Ph.D.

National Institute of Allergy and Infectious Diseases (NIAID)
Anthony Fauci, M.D.

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Robert Carter, M.D. (Acting)

National Institute of Biomedical Imaging and Bioengineering (NIBIB)
Bruce J. Tromberg, Ph.D.

Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
Diana W. Bianchi, M.D.

National Institute on Deafness and Other Communication Disorders (NIDCD)
Debara L. Tucci, M.D., M.S., M.B.A.

National Institute of Dental and Craniofacial Research (NIDCR)
Lawrence A. Tabak, D.D.S., Ph.D. (Acting)

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
Griffin P. Rodgers, M.D., M.A.C.P.

National Institute on Drug Abuse (NIDA)
Nora D. Volkow, M.D.

National Institute of Mental Health

Institute Director
Joshua Gordon

https://www.nimh.nih.gov/about/organization/od/index.shtml

Division Directors

Translational Research (DTR)
Sarah Lisanby

AIDS Research (DAR)
Dianne Rausch

Services and Intervention Research (DSIR)
Robert Heinssen

Extramural Activities (DEA)
Jean Noronha

Neuroscience and Basic Behavioral Science (DNBBS)
Linda Brady

Branch Chiefs (within DTR)

Adult Psychopathology and Psychosocial Interventions Research
Sarah E. Morris

Adult Pathophysiology and Biological Interventions Development

Developmental Mechanisms and Trajectories of Psychopathology

Geriatrics and Aging

Biomarker and Intervention Development for Childhood-Onset Mental Disorders

Program Chiefs + Program Officers

Adult Psychopathology and Psychosocial Interventions Research Branch

Anxiety Disorders
Program Chief:
Alexander M. Talkovsky
Program Officer:
Janani Prabhakar

Computational Psychiatry
Program Chief:
Michele Ferrante
Program Officer:
None listed

Eating Disorders
Program Chief:
Mark Chavez
Program Officer:
None listed

Mood Disorders
Program Chief:
Alexander M. Talkovsky
Program Officer:
Janani Prabhakar

Psychotic Disorders
Program Chief:
Sarah E. Morris
Program Officer:
Janani Prabhakar

Social Neuroscience and Communication in Adult Psychopathology
Program Chief:
David I. Leitman
Program Officer:
None listed

Statistical Methods in Psychiatry
Program Chief:
Abera Wouhib
Program Officer:
None listed

NIDA — NATIONAL INSTITUTE ON DRUG ABUSE

Nora Volkow, NIDA

Institute Director

Division Directors

Divisions within NIDA:
- Epidemiology, Services, Prevention Research
- Extramural Research
- Therapeutics and Medical Consequences
- Neuroscience and Behavior

https://www.drugabuse.gov/about-nida/organization

Branch Chiefs

Branches within the Neuroscience and Behavior Division:
- Chemistry Pharmacology
- Genetics, Epigenetics, Development
- Integrative Neuroscience
- Behavioral Cognitive Neuroscience

National Institute on Drug Abuse — organizational chart (Current April 2020)
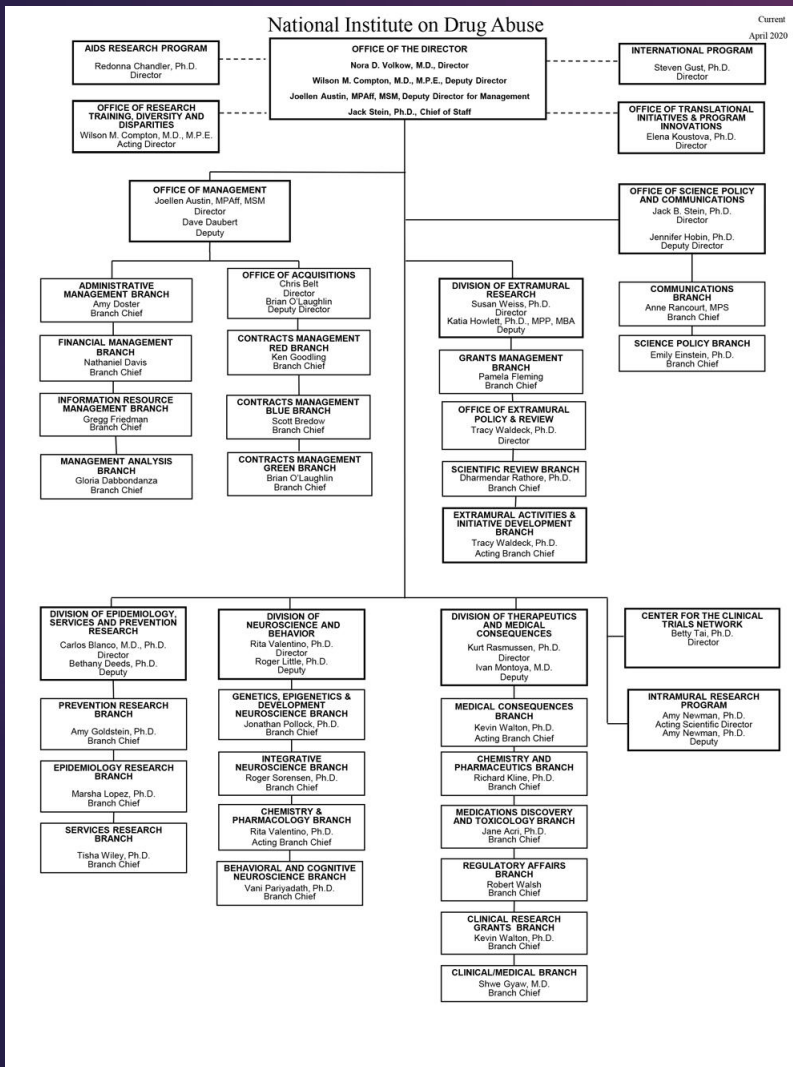
Program Officers

Behavioral and Cognitive Neuroscience Branch (BCN)

| Name	Title	Phone
Pariyadath, Vani, Ph.D.	Branch Chief	(301) 443-3209
Grant, Steve, Ph.D.	Program Officer; DNB Coordinator for Accelerating the Translation of Research Findings	(301) 443-8869
Kautz, Mary, Ph.D.	Program Officer; Director, NIDA Tobacco Regulatory Science Program	(301) 443-3206
Moore, Holly, Ph.D.	Program Officer	(301) 827-7376
Nkongho, Lizette, MPH	Scientific Program Manager (Contractor), Tobacco Regulatory Science Program	(301) 435-1322
Wenzel, Jennifer, Ph.D.	Program Officer	(301) 827-7084
Wetherington, Cora Lee, Ph.D.	Program Officer; NIDA's Women & Sex/Gender Differences Research Coordinator	(301) 435-1319

Program Officers: What do they do?

- ▶ Advise grant applicants on what the institute is interested in funding

- ▶ Attend scientific review meetings (where grant applications are reviewed)

- ▶ Make funding recommendations

- ▶ Monitor awarded grants

- ▶ Foster specific science through initiatives, meetings, conferences

- ▶ Talk to the public

- ▶ Maintain their own scientific expertise

■ **Holly Moore, Ph.D.** ✉ – *Program Officer*
(301) 827-7376

Dr. Moore oversees a portfolio focused on preclinical and basic studies in non-human models on neural mechanisms underlying the cognitive, affective and behavioral processes that mediate the risk and maintenance of compulsive drug taking and dependence. Dr. Moore's background is in behavioral neuroscience and translational research using primarily rodent model systems to probe neural circuit function relevant to psychiatric disease. She received a dual-degree B.S. in Psychology and Chemistry from Wright State University and a PhD in Neuroscience with an emphasis on animal cognition from The Ohio State University. She obtained post-doctoral training in translational neuroscience and techniques including neurophysiology, neurochemistry and neuroanatomy at the University of Pittsburgh. From 2001-2018, Dr. Moore was a faculty of the Department of Psychiatry at Columbia University as Assistant then Associate Professor of Neurobiology in Psychiatry and as a Research Scientist VI for the New York State Psychiatric Institute. Her research program there focused on developing and validating rodent models of the neural circuit-behavioral relationships in schizophrenia and mood disorders. She also established and directed the New York State Psychiatric Institute/Columbia Psychiatry Rodent Neurobehavioral Analysis Core, and served as Director of Research Resource Management. Dr. Moore joined NIDA in 2019.
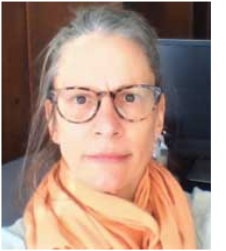
Holly Moore, Ph.D.

Why Do I Need to Contact a Program Officer early on during my grant writing process?

- This person knows what a particular NIH center/institute (e.g., NIMH, NIDA etc.) is currently funding
  - If they think that their division of the center/institute won't be interested in your research project, they may:
    - Direct you to another division
    - Give you feedback on how to revise your project to make it more fundable
- If you ask, they can give advice on whether the FOA you are using is what they would recommend, or if there is another one that better suits your application
- You don't want to spend all this time on a grant for NOTHING!!!!

DO YOU HAVE THE TOOLS YOU'LL NEED TO SUCCEED?

You're still figuring out the puzzle.
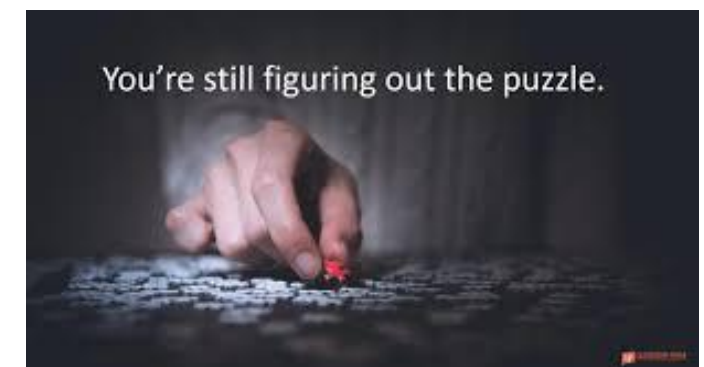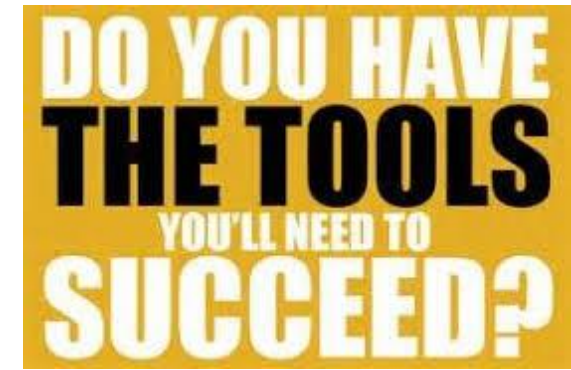
How do I figure out who my Program Officer is?

- Here is a tool to help find a **Program Officer**: https://projectreporter.nih.gov/reporter_matchmaker.cfm?source=RPCO&new=1

- Alternatively, if you like an adventure, you can go down a fun rabbit hole of government websites!

- After you figure out which NIH institute/center (e.g., NIMH, NIDA, etc.) you are applying to, and what funding announcement you are using, you go on that institute's/center's website

  - Read about each Division until you find one that could fit your research

  - Then within that Division, read about each Branch until you find one or more fitting your research

  - Then with those Branches, look at the Programs fitting your research

  - Write down names of these **Program Officers**, their phone numbers, and their email addresses along with what Program/Branch/Division they are in

  - Talk with your Mentors about your potential options on who to contact first if there is more than one **Program Officer** overseeing research related to your research
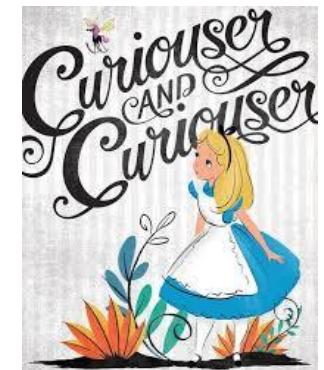
Do I really need SIX MONTHS to pull a K application together?

Let's talk K Application Sections…

Research

- **Specific Aims** (1 page)
- **Research Strategy** (6 pages: **Significance, Innovation, Approach**)
- **Training in Responsible Conduct of Research** (1 page)
- **Project Summary / Abstract** (30 lines of text)

- **Project Narrative** (3 sentences)

- **Protection of Human Subjects from Research Risk**

- **Inclusion of Women and Minorities**

- **Inclusion of Individuals Across the Lifespan**

- **Inclusion Enrollment Report**

- **Budget + Budget Justification**
- **Bibliography + References Cited**

Career

- **Candidate Information and Goals for Career Development** (6 pages: **Candidate Background, Career Goals/Objectives, Career Development/Training Plan**)

- **Plans and Statements of Mentor and Co-Mentors** (6 pages)

- **NIH Biosketches** for you, Mentor, Co-Mentors (max 5 pages each)

- **Three Letters of Reference**

- **Letters of Support from Collaborators, Contributors and Consultants** (6 pages max)

- **Cover Letter**

Setting

- **Facilities and Other Resources**

- **Equipment**

- **Environment and Institutional Commitment to Candidate**

- **Resource Sharing Plan (if applicable)**

- Your K application could easily be over 50 pages long!

- You will also write an email to at least one **Program Officer**

- If your research project meets criteria for a **Clinical Trial**, there will be additional sections you will need to write [beyond scope of this course]

Wow! That's a lot of writing. Where Do I Start?

- Meet with your **Primary Mentor** to:
  - Brainstorm the scope/content of your K research project(s)
  - Discuss new skills that you want to learn and what your short- and long-term career goals are
  - Visualize an ideal potential **Mentorship Team** for your K that can help you achieve these research/career goals
- Next week we will cover how to write:
  - **Specific Aims**
  - **NIH Biosketch**
- After your **Primary Mentor** gives you feedback on both documents, you can:
  - Email a **Program Officer**, attaching your **Specific Aims/NIH Biosketch**, asking for feedback
  - Email potential **Mentorship Team** members, also attaching these documents, asking if they would be willing to join your K Team

Scope of your K Project (K99/R00 example)

- K99 (1st 2 years of the grant, training part): Secondary data analysis of an already collected research project makes sense, or development of new protocol/pilot study
  - Up to 2 years
  - Research budget = $20K/year

- R00 (Years 3-5 of the grant, transitioning to independence part): New data collection building on K99 themes (but not dependent on whether or not your K99 hypotheses work out!)
  - Up to 3 years
  - Research budget = $249K/year

K Mentorship Team

- Your mentors should <u>NOT</u> be a total repeat of GRAD SCHOOL advisors!

- Your **Primary Mentor** should have a current or recent R01 (or equivalent) grant

- If you plan to have **Co-Mentors**:
  - They should have research/training strengths that your **Primary Mentor** does not have (they complement each other)
  - They should be able to help you develop research ideas that are independent from your **Primary Mentor**
  - It would also be good for them to have NIH R-level grants

- **Consultant**
  - This person provides advice or services
  - Supplying software, providing technical assistance or training, or setting up equipment
  - Could be a statistician or another researcher whose task you're using

Work with your Primary Mentor to brainstorm K99/R00 Research and Training Goals

- ▶ For the K99 phase of your grant, devise:
  - ▶ At least one research goal (involving hypothesis-testing)
  - ▶ At least one career goal (e.g., gaining advanced training in a particular skill or area, securing Assistant Professor position)

- ▶ For the R00 phase of your grant, devise:
  - ▶ At least one research goal (involving hypothesis-testing)
  - ▶ At least one career goal (e.g., setting up your own lab and training staff as you transition to an independent investigator)

Two Accounts You Need to Set Up and Link Together

▶ **Electronic Research Administration (eRA) Commons**

  ▶ Online interface where NIH officials, Principal Investigators, Trainees, and Post-Docs can access and share administrative info related to grants

  ▶ Talk to your Primary Mentor about who you should contact at your Institution to set this up

  ▶ https://era.nih.gov/faqs.htm#I1

▶ **Open Researcher and Contributor ID (ORCID)**

  ▶ This is used within NIH to relate your publications to your grants

  ▶ After you get an eRA Commons account, you can create an ORCID account and link them together yourself

  ▶ https://era.nih.gov/erahelp/commons/PPF_Help/8_2_orcid.htm

  ▶ https://nexus.od.nih.gov/all/2019/09/04/dont-forget-to-link-your-orcid-id-to-your-era-commons-profile/

▶ All key personnel listed on your grant (we will discuss these people in Week 2) need to have these accounts as well!

electronic Research Administration
Office of Extramural Research

ORCiD
Connecting Research and Researchers

Other Important Things to Note

- Your grant application is based on your project AND your history of productivity/success

- You want to have 2-3 papers published on the topic you're covering (unless you are going into a new field or innovation area)

- Grant applications are a total time-killer (some of you already know this! ☺) so get ready to set aside many hours for this writing process

- Regardless of whether you're a last-minute person or an early planner, MAKE SURE YOU FAMILIARIZE YOURSELF WITH ALL OF THE REQUIRED GRANT SECTIONS WAY AHEAD OF TIME, at least 2 months before the grant is due

  - You will need letters of support from your Institute/University, your Mentor, Co-Mentors, any Collaborators, and reference letter-writers (if required) and often you end up writing the drafts of these letters YOURSELF that the people then slightly edit ☺

  - If your University/place of research has a grants office, please contact them to determine when they will need all of your grant documents

Action Items

- Talk with your **Primary Mentor** about whether a K application is right for you – review the various K funding mechanisms and see which one is the best fit given your research and career goals

- Work on setting up eRA Commons and ORCID accounts

- Figure out what NIH Center/Institute fits your research best, and search for a **FOA** sponsored by that Center/Institute that you will use when applying

- Carve out time with your **Primary Mentor** to:
  - Brainstorm the scope/content of your K research project(s)
  - Discuss potential K **Co-Mentors** to aid in your research/career goals
  - Develop a timeline for K submission, picking the K deadline ~6 months away from your starting point