

F and K Awards 101

Tips and Tricks for Successful F and K Applications

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Discussion of NIH Grant Mechanisms for Predocs and Postdocs

F30/F31: Individual Predoctoral Fellowship Award

F99/K00: Predoctoral to Postdoctoral Fellow Transition Award

F32: Postdoctoral Fellowship

K99/R00 and K22: Pathway to Independence Awards

K99/R00: NCI Pathway to Independence Award for Outstanding
Early Stage Postdoctoral Researchers

(Data Science, Cancer Control Science, Cancer Research)

General Tips

- **Start early** (at least three to four months prior to deadline)
- Read instructions carefully
- Find examples, confer with F & K awardees, seek input from department's grants administrator
- Seek input from sponsor, other faculty, colleagues; go to NIH Reporter and read summaries of applications
- Place equal emphasis on documents about you as an applicant and the training environment as on the science
- Clearly explain why the science is important; avoid being overambitious
- *All the components of the application should tell a cohesive story; tell a consistent story throughout the entire application – every document needs to reinforce your potential*

General Tips

- Ask others to read your application
- Revise, revise, revise
- Pay attention to details. Application must be aesthetically pleasing and error free!
- Leave white space on pages
- Be prepared to have to resubmit your application
- Make your PO your friend!

F awards

Purpose of a F30/31 award

- **F30:** To promote the integrated research and clinical training of promising MD/PhD students and enhance their potential to develop into productive, independent physician/clinician-scientists
- **F31:** To enable promising predoctoral students to obtain individualized, mentored cancer research training from outstanding faculty sponsors while conducting dissertation research



Changes to Fellowship Review Criteria and Application Form (apply to all F awards)

New emphasis on:

- **Candidate's preparedness and potential**
- **Research Training Plan**
- **Commitment to the candidate (without undue consideration of narrow markers of academic success and sponsor/institutional reputation - designed to reduce bias)**
- **Note that the new application contains same essential elements**

Reorganized Fellowship Review Criteria Areas

CURRENT	NEW
Fellowship Candidate	Candidate Preparedness and Potential
Sponsors, Collaborators, Consultants	Research Training Plan
Research Training Plan	Commitment to Candidate
Training Potential	
Institutional Environment and Commitment to Training	

- Shorter application, aligned with new review criteria
- Less emphasis on sponsor track record, more emphasis on training plan and preparedness of candidate

The Three Main Components of an F application

NEW
Candidate Preparedness and Potential
Research Training Plan
Commitment to Candidate

RATIONALE

- **Ensure that a broad range of candidates and research training contexts can be recognized as meritorious**
- **Reduce bias in review by emphasizing the commitment to the candidate**

The Fellowship Applicant

New: The Candidate

Written by Candidate

Changes to Fellowship Application Form

CURRENT	NEW
Candidate Biosketch Grades required	Grades no longer required/allowed
Fellowship Applicant Section <ul style="list-style-type: none">• Applicant's background• Goals for fellowship training	Candidate Section (Candidate's Goals, Preparedness, and Potential) <ol style="list-style-type: none">1. Statement of professional and fellowship goals2. Fellowship qualifications3. Self-assessment4. Statement of scientific perspective

Candidate Section (Candidate's Goals, Preparedness, and Potential)

1. Statement of professional and fellowship goals

Candidates share career goals and explain how the fellowship training fits in with those goals

2. Statement on fellowship qualifications

Describe scientific, research, and other experiences that have prepared the candidate to successfully complete the fellowship training (courses, workshops, other training, but not grades)

3. Self-assessment

Personal characteristics (e.g., skills, abilities, traits, attitudes) that will contribute to success as a scientist

4. Statement of scientific perspective (beyond own research training project: show that you can think as a scientist)

Reveals candidate's potential to think about and express ideas within a scientific field.

Candidates should discuss:

- Why their chosen field of science is important and how their research training project will advance the field
- A broader, unresolved scientific question in the chosen scientific field, the importance of the problem, and the ways biomedical research might advance the scientific field

F Fellowship Candidate



- The candidate must be a **US citizen or permanent resident**
- **Must show strong potential to develop into an independent and productive researcher: highlight qualities such as scientific understanding, creativity, curiosity, resourcefulness, drive, resilience**
- Productivity
 - A **first-author publication** is a definite plus, but not required for success (new review criteria put less emphasis on publications)
 - Most applicants list middle author papers (with specific contribution to the study indicated)
 - Oral and poster presentations at meetings can reflect productivity
 - OK to include “manuscripts in preparation” in the Candidate section
- Having **honors and awards** is also a plus - mention accomplishments repeatedly in the application (Biosketch, Candidate section, Sponsor Letter, Letters of Recommendation)
- Highlight prior research experience; courses; workshops; technical skills; professional memberships; leadership roles; community outreach

Scored Review Criteria :

What Reviewers Consider and Where They Look for the Information

Candidate's Preparedness and Potential

- Career stage and training readiness
- Opportunities available
- Candidate's key qualities
- Potential training benefit
- Biosketch
- Candidate's Goals, Preparedness, and Potential
- Sponsor(s) Commitment
- Reference Letters

The Research Training Plan

Written by Candidate in Consultation
with the Advisor

Changes to Fellowship Application Form

- Some headings revised to emphasize the importance of training in the fellowship project
- Selection of Sponsor and Institution information moved elsewhere in the application

CURRENT	NEW
Research Training Plan <ul style="list-style-type: none">• Specific Aims• Research Strategy• Respective Contributions**• Selection of Sponsor and Institution**• Training in Responsible Conduct of Research	Research Training Plan <ol style="list-style-type: none">1. Training Activities and Timelines (aligned with Goals)*2. Research Training Project Specific Aims*3. Research Training Project Strategy*<ul style="list-style-type: none">• Scientific Foundation and Rationale• Approach4. Training in Responsible Conduct of Research (Institutionally Provided)

* Section added or revised

** Moved to a different part of the application

F Research Training Plan

- Identify **gaps in training** and justify the need for further career development
- Must prepare a detailed training plan that **expands** technical, professional, and/or research skills
- Describe what you will learn and where the training will come from (didactic classes; seminars; workshops; one-on-one training)
- Explain how filling these gaps will contribute to achieving career goals
- Describe opportunities to present and publish findings; attend conferences, additional lab meetings, journal clubs; interaction with scientists; learn new techniques; enhance manuscript and grant writing skills; etc.
- Include a **timeline** with milestones (including **manuscripts**) and benchmarks for evaluation of progress by your mentor(s). Sponsor statement should echo this timeline

Career Development Plan Time-Line

- Include a timeline with milestones and benchmarks for evaluation of progress by your mentor(s)

F Research Training Plan

- Research project should be scientifically rigorous, novel and fill a knowledge gap
- Should be well integrated with training plan
 - Preliminary data are not required (if included, should be high quality; unconvincing preliminary data will reflect poorly on mentors and training)
- Should provide potential for growth in skills such as data analysis, techniques, communication skills, etc.
- The project should relate to the sponsor or co-sponsor's expertise; **work closely with sponsor(s) in drafting the plan**
- Experimental plan should be feasible; **avoid being overambitious**
- **Rigor of the research training project will be assessed**
- Potential pitfalls and alternative strategies should be addressed
- Exploratory experiments are accepted, especially if they are linked to the training plan

F Research Training Plan

- Spend time on your application and figures. **Aesthetics matter**
- Pay attention to grantsmanship issues; seek help with proofreading
 - A poorly crafted application will raise questions about attention to detail and mentorship
- If using vertebrate animals, take time do the sample size calculations and include the information in the research plan

Scored Review Criteria : What Reviewers Consider

Research Training Plan

- Rigor and Reproducibility of the project
- Research training goals and how the plan will facilitate attainment of goals
- Whether the research training plan identifies needed areas of development and if activities and milestones are realistic
- Whether sufficient guidance and resources are available
- Innovation is no longer a review criterion

Sponsor(s), Collaborator(s), and Consultant(s) Section

**New: Commitment to Candidate,
Mentoring, and Training Environment**

Written by Sponsor

Changes to Fellowship Application Form

CURRENT	NEW
<p>Sponsor(s), Collaborator(s), and Consultant(s) Section</p> <ul style="list-style-type: none">• Sponsor and Co-Sponsor Statements• Letters of Support from Collaborators, Contributors, and Consultants• Description of Institutional Environment and Commitment to Training**• Description of Candidate's contributions to Program Goals	<p>Commitment to Candidate, Mentoring, and Training Environment</p> <ol style="list-style-type: none">1. Sponsor and Co-Sponsor Statements<ul style="list-style-type: none">• Mentoring approach and candidate mentoring plan• Prior commitment to training and mentoring• Commitment to candidate's research training plan• Research training environment (aligned with candidate's needs)• Candidate's potential2. Letters of Support from Collaborators, Contributors, and Consultants3. Description of Candidate's contributions to Program Goals

** Moved to a different part of the application

F Mentoring Team

- Mentor/Co-mentor Credentials
 - Primary mentor must have a rigorous research program
 - Less emphasis on training record (having an early career sponsor is no longer a disadvantage)
 - Important that needs and goals of the candidate are matched by sponsor
 - Include a co-primary mentor if needed
- Include co-mentors who will complement the primary mentor's strengths: ensure that relevant expertise is available for all proposed training
- Each member of the candidate's "team" must play a role in the training/research plan
 - Call out mentors and collaborators throughout the application
 - Include biosketches that specify role
- Mentor must provide a strong mentoring plan that echoes the candidate's training goals - must show commitment to the candidate's success
- Specify how often you will meet with primary mentor, co-primary mentor if relevant, and members of mentoring team



F Sponsor/Co-Sponsor Statement(s)

- Another very important component; must be tailored to the applicant
- Must align with candidate's training plan (conferences, classes; manuscripts, workshops, lab meetings, training in scientific integrity, etc)
- Lab environment should be described
- Should discuss applicant's qualifications and potential for a research career – strengths of the application should be highlighted

Scored Review Criteria : What Reviewers Consider

Commitment to Candidate

- Whether a strong mentoring plan was presented by the mentor(s)
- Sufficient commitment from mentor(s) and institution
- Whether level of commitment provided will ensure to success
- Professional rank of sponsor(s) is no longer considered
- If a co-sponsor is included, role should be clearly justified
- Environment and institutional commitment

Revisions to Reference Letters

- **Strong letters of reference very important**
- **Should attest to candidate's personal characteristics (e.g., skills, abilities, traits, attitudes), talents, accomplishments and potential for independent research**
- **Should highlight areas for development**
- **Overall assessment of candidate's preparedness and likelihood for success**

F99/K00 award – Hints for Success

Candidate

- **3rd or 4th year of PhD training (domestic or international)**
- **Need to convince Reviewers that candidate is ideally suited to advance and succeed as an independent researcher; strengths should be clearly identified**
- **Compelling body of preliminary research - a **paper**, especially first-author, is a big plus**
- **Compelling project with potential for questions that can be carried into postdoctoral and independent phases**
- **Prior funding is a plus**
- **Need for additional training should be clearly conveyed**

Sponsor

- **Must be committed to the career development of the candidate and be in a position to help the candidate achieve goals**

F99/K00 award – Hints for Success

Training Plan

- Training goals should be broader - cover F and K phase goals separately
- Identify gaps in knowledge/training and describe how they will be addressed
- Include training in managing a research group, building a professional network, mentoring trainees, relevant skillsets
- A timeline is helpful
- Assembly of a strong, diverse F99 Advisory Committee of experts to supplement training; consider adding co-sponsor from a different institution

Research Plan

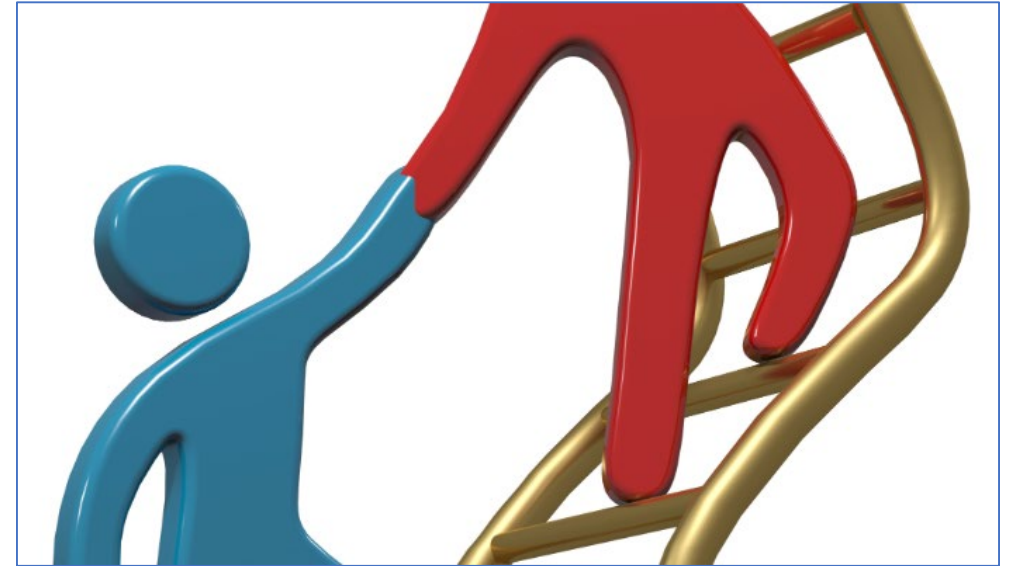
2 Specific Aims (one for F and one for K phase)

- A **clear plan for the postdoctoral phase** with a list of names that indicates the type of mentor/institution that will be sought to help fulfill career development goals

K awards

Purpose of a K award

- To facilitate transition of outstanding postdoctoral fellows to independent research
- To support acquisition of new technical and professional skills
- To protect time for research activity and facilitate establishment of a record of independent research
- To generate pilot data
- To obtain R01 funding by the end of the K or soon after



K99/R00 Pathway to Independence Award Transition from a mentored postdoctoral research position to a stable independent research position with independent NIH or other independent research support

K22 Career Transition Award Move from a postdoctoral research position to an independent research position—not mentored

To Do List

- **Generate preliminary data in support of hypothesis**
- **Publish papers**
- **Develop a strong mentoring team**

The Ideal Candidate

K99 and K22 Fellowship Applicants

Eligibility: No citizenship requirement for K99/R00 applications

Citizenship or green card is needed at the time of K22 award issuance (citizenship or green card is not needed to apply for K22 funding)

Career Stage: Postdoctoral or Clinical Fellows

K99: Applicants must have no more than 6 years of postdoctoral research experience at the time of the initial or the subsequent resubmission application

K99/R00: NCI Pathway to Independence Award for Outstanding Early Stage Postdoctoral Researchers – **2 years**

K22: ≥ 2 years and ≤ 8 years of mentored research training experience after doctorate at time of submission and resubmission

<https://www.cancer.gov/grants-training/training/funding/k99>

<https://www.cancer.gov/grants-training/training/funding/k22>

K Fellowship Applicant

- **Productivity is key:**
 - **First-author papers** from PhD **and** postdoctoral work essential
 - Manuscripts in review or uploaded to bioRxiv do not count
 - Preferable to have sole first-author paper(s)
 - Co-first author papers count
 - Co-authored papers are valued because they point to collaboration and willingness to be part of a team
- Awards, conference presentations
- Track record of extramural fellowships



A Strong Career Development Plan

K Career Development Plan

BRIDGE TO
INDEPENDENCE

- Identify **gaps in training** and justify the need for further career development; convey how the award will fill training gaps
- Describe career development activities for K99 phase:
 - hands-on training
 - didactic courses
 - conferences and workshops
 - training in professional skills (laboratory management, grant writing, networking, oral and written communication)
- Provide **a plan for separation from mentor**
- Provide a **plan for transition to independent position** and **first R01 submission** (R00 phase)



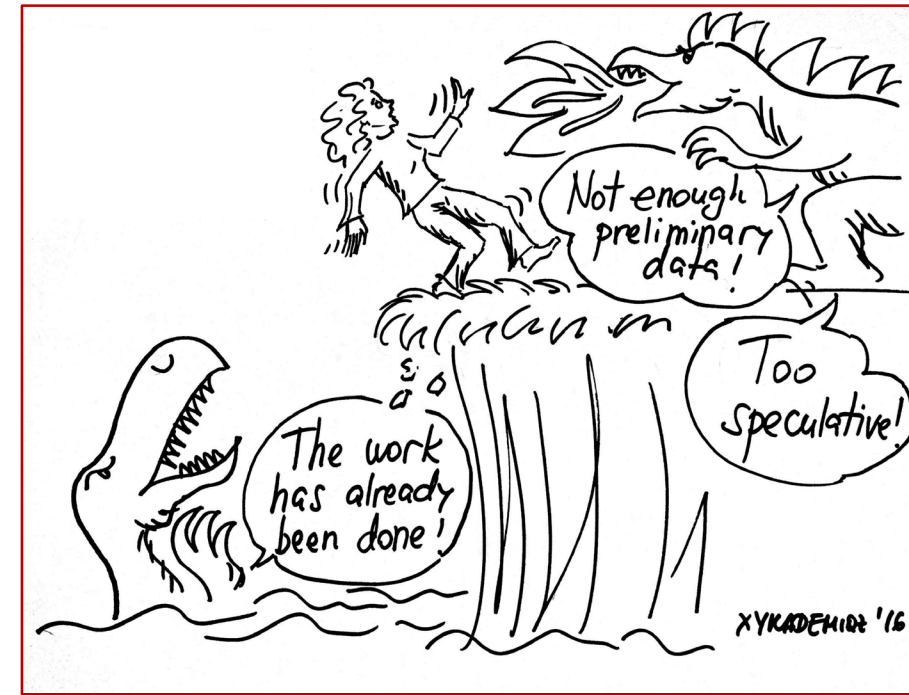
K Career Development Plan

- Include a detailed timeline with milestones and benchmarks for evaluation of progress by your mentor(s)

The Research Plan

K Research Training Plan

- Must have **strong preliminary data** in support of the proposed Aims, preferably published
- Clearly define work that will be done in the **mentored (K99) vs independent (R00) phase** of the award
- Indicate what you still need to accomplish during the mentored phase to successfully launch an independent research program
- Describe how you will **separate your scientific program** from that of your mentor
- Avoid exploratory and overambitious aims
- Pay attention to grantsmanship issues; seek help with proofreading



<https://xykademiqz.com/2016/04/21/preliminary-data/>

Components of K Research Training Plan

Specific Aims (1 page)

Significance of problem, hypothesis, key preliminary data, goals, impact

Avoid interdependence between Specific Aims

Research Strategy

Significance: Assume you are not writing for an expert, highlight importance, identify gaps in knowledge, link background to Specific Aims

Innovation

Approach: Provide rationale and hypothesis; preliminary data; experimental approach; expected results, potential pitfalls and alternative strategies; statistical analysis

Convince reviewers that you can do what you propose

**Mentor(s), Co-Mentor(s),
Consultant(s), Collaborators**

K Mentoring Team

- Identify a primary mentor(s) and co-mentors with relevant expertise who are committed to your career development (include biosketches)
- Primary mentor must have a strong research program, a record of training and sufficient funding to cover the costs of the mentored phase (can include a co-primary mentor if needed)
- Ensure that relevant expertise is available for all proposed training
- Mentor statement should echo your training goals
- Specify how often you will meet with mentor(s) and members of your mentoring team
- Mentor should indicate that you can take your project, reagents etc with you to the independent phase



K Mentoring Team

- Mentor's statement should highlight:
 - Training history
 - Evidence of active productive research
 - Support for proposed research
 - Frequency of meetings
 - Plan for transitioning candidate to independence
- Co-mentors should highlight specific expertise they bring to the mentoring team



Environment and Institutional Commitment

K Research Environment and Institutional Commitment

- Institution should show commitment to the career development of the candidate – this is extremely important
 - Protected time
 - Space
 - Resources
- Letter of Institutional Commitment should be included in the application (should state that continued support of the candidate is not dependent on receipt of the award)
- The Institution does not need to commit to hiring the candidate

THE F AWARD PANEL

Reviewer: F09B FELLOWSHIPS: ONCOLOGY (2025)



Anat Erdreich-Epstein, PhD

Attending Physician; Hematology, Oncology and Blood and Marrow Transplantation

Investigator, Hematology-Oncology

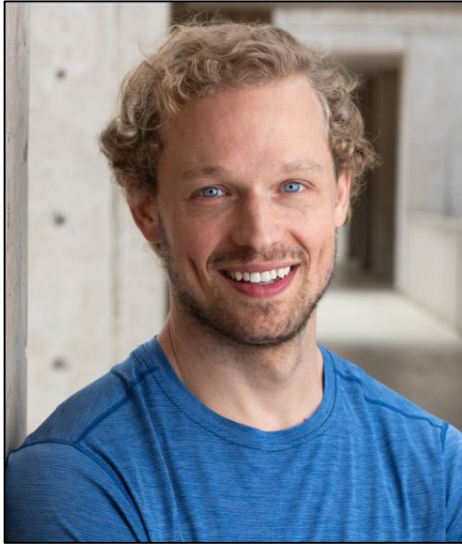
Associate Professor of Pediatrics, Keck School Medicine at USC

Director, R25 Summer Oncology Research Fellowship (SORF) Program for Medical Students

Research Interests: Biology of brain cancers

THE F AWARD PANEL

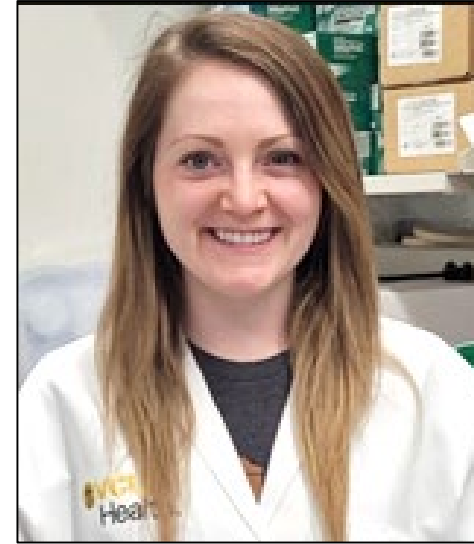
F31 RECIPIENT



Samuel Bloom, PhD

**Postdoctoral Fellow, Cancer Biology
Salk Institute for Biological Studies**
Research Interests: Role of Telomeres in
Cell Fate Choice, Aging, and Cancer
Initiation

F31 RECIPIENT



Emily Zboril

**PhD Candidate, Department of Biochemistry
Virginia Commonwealth University**
Research Interests: Breast Cancer Bone
Metastasis

THE F AWARD PANEL

F99/K00 RECIPIENT



Alex Arreola

PhD Candidate, Cancer Biology

University of Oklahoma Health Science Center

Research Interests: Cancer Cachexia

F99/K00 RECIPIENT



Sumit Saha

PhD Candidate, Biochemistry and

Molecular Biology Program

Virginia Commonwealth University

Research Interests: Role of Sphingosine

Kinase 2 in liver macrophages and its

effect on the pathophysiology of MASH-

driven hepatocellular carcinoma

THE K AWARD PANEL

**REVIEWER (NCI-I)
(K99/R00, K22)**



**Steven J. Kridel, PhD
Chair, Cancer Biology**

Wake Forest University School of Medicine
Research Interests: Role of Fatty Acid Synthesis
in Tumors

**REVIEWER (NCI-I)
(K99/R00, K22)**



**Jennifer Black, PhD
Professor, Cancer Biology**

**PI T32 Cancer Biology Training Program
University of Nebraska Medical Center**
Research Interests: Cell Signaling in GI
Cancers

THE K AWARD PANEL

K99/R00 RECIPIENT



Inna Smalley, PhD
Principal Investigator
Moffitt Cancer Center

Research Interests: Melanoma Biology and
Therapy, Drug Resistance Mechanisms

K22 RECIPIENT



Chih-Hang Anthony Tang, MD, PhD
Assistant Professor of Cancer Biology in Medicine
Houston Methodist Cancer Center

Research Interests: Tumor Interactions with the
Immune System in the Tumor Microenvironment

