National Institutes of Health
National Research Service Award
(Kirschstein Fellowship: F30, F31, F32)
Information Session
December 12, 2018

Presenters:
Dr. Jim Slauch - Professor of Microbiology & Director of the Medical Scholars Program
Dr. Sayeepriyadarshini Anakk - Associate Professor, Molecular & Integrative Physiology
Hanna Erickson - NRSA Fellow & MD/PhD Student, Molecular & Integrative Physiology
NIH/NRSA/Kirschstein
F30, F31, F32 Pre- and Postdoctoral Fellowships
-Nuts and Bolts-

A Professor’s Prayer

Grant me the Patience to Endure the Students I cannot Change...

The Audacity to Publish the Things I can...

And the Wisdom to get Tenure so none of it makes a difference.

But mostly, just Grant Me.

James M. Slauch
Dept of Microbiology
Medical Scholars Program

December 12, 2018
What are we talking about?

• Individual fellowships from the National Institutes of Health

• Who’s eligible?
  – Must be a US citizen or permanent resident (at the time of the award)

• Predocs: 5 Years
• MD/PhDs: 6 years including some Med school after PhD.
  – Must apply within 48 months of joining the program
• Postdocs: 3 years
• Years funded by other NIH training grants are subtracted
How to Start

• Give yourself plenty of time ~6 weeks
  – More if your project involves animals or humans

<table>
<thead>
<tr>
<th>Submission</th>
<th>April 8</th>
<th>August 8</th>
<th>December 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30 F31 F32</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scientific Merit Review</th>
<th>June - July</th>
<th>Oct - Nov</th>
<th>Feb - March</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Advisory Council Review</th>
<th>Aug or Oct</th>
<th>Jan</th>
<th>May</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Earliest Project Start Date</th>
<th>Sept or Dec</th>
<th>April</th>
<th>July</th>
</tr>
</thead>
</table>
Program Announcements

http://grants.nih.gov/grants/guide/search_results.htm?scope=pa

• Can be confusing

• F31s
  – PA-18-671 Individual PhD Fellowships
  – PA-18-666 PhD or MD/PhD Fellowships for under-represented minority or disabled students

• F30s
  – PA-18-673 MD/PhD Fellowships (for institutions w/o MSTPs)

• F32s
  – PA-18-670 Postdoctoral Fellowships
  – PA-12-261 AHRQ – Healthcare research and quality
How to Start

• Read the Program Announcement CAREFULLY

• Why different PAs?
  – “F” specific directions
  – Institute-specific rules
  – Not all Institutes participate in each PA

• Download the Application Instructions; NEW FORMS as of Jan 2018 (E vs D)
  – For all grants: https://grants.nih.gov/grants/how-to-apply-application-guide.html
  – Fellowship (F) Instructions:  https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/fellowship-forms-e.pdf
    – Read it carefully

• The PA trumps the general instructions
How to Start

• Contact your “Grants Administrator” in your Dept
  – Talk to your thesis advisor – who do they go to when filling out an NIH grant?
• The Grants Administrator should download the application package and fill out all the detailed stuff
• F Kiosk - https://researchtraining.nih.gov/programs/fellowships
Register in the eRA Commons

• All PIs (that’s you) need to interact with the NIH via the “eRACommons”

• Go to the OSP website
  – http://sponsoredprograms.illinois.edu/sponsors/national-institutes-health
  – Under “Help” at the bottom, click on “Create an eRACommons account”

• You will need:
  – UIN
  – First & Last Name
  – Date of birth
  – Email
The Application

- The application is a fancy PDF file

---

**APPLICATION FOR FEDERAL ASSISTANCE**
**SF 424 (R&R)**

1. **TYPE OF SUBMISSION**
   - Pre-application
   - Application
   - Changed/Corrected Application

2. **DATE SUBMITTED**
   - Applicant Identifier

5. **APPLICANT INFORMATION**
   - Legal Name:
   - Department:
   - Division:
   - Street1:
   - Street2:
   - City:
   - County / Parish:
   - State:
   - Province:
   - Country: USA: UNITED STATES
   - ZIP / Postal Code:

Person to be contacted on matters involving this application

Prefix:  First Name:  Middle Name:  Suffix:  

Position/Title:

Street1:
Street2:
City:
County / Parish:
State:
Province:
Country: USA: UNITED STATES
ZIP / Postal Code:

Phone Number:  Fax Number:
The Application

• The application is a fancy PDF file

There are lots of directions for each item
The Application

- Some info is entered directly – the important stuff is uploaded

---

**R&R Other Project Information Form**

**RESEARCH & RELATED Other Project Information**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are Human Subjects Involved?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a. If YES to Human Subjects Is the Project Exempt from Federal regulations?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, check appropriate exemption number. 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If no, is the IRB review Pending?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRB Approval Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Subject Assurance Number:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are Vertebrate Animals Used?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a. If YES to Vertebrate Animals Is the IACUC review Pending?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IACUC Approval Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal Welfare Assurance Number:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Is proprietary/privileged information included in the application?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4a. Does this Project Have an Actual or Potential Impact - positive or negative - on the environment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4b. If yes, please explain.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Application

- Some info is entered directly – the important stuff is uploaded

<table>
<thead>
<tr>
<th>Fellowship Applicant Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. * Applicant's Background and Goals for Fellowship Training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Training Plan Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. * Specific Aims</td>
</tr>
<tr>
<td>4. * Research Strategy</td>
</tr>
<tr>
<td>5. * Respective Contributions</td>
</tr>
<tr>
<td>6. * Selection of Sponsor and Institution</td>
</tr>
<tr>
<td>7. Progress Report Publication List (for Renewal applications)</td>
</tr>
<tr>
<td>8. * Training in the Responsible Conduct of Research</td>
</tr>
</tbody>
</table>

Note that even boxes that are not yellow may be “required”
Format Everything Correctly

• Follow the directions: https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/format-attachments.htm

• PMCID MUST be included on any reference from “Senior Personnel” both in the reference section and biosketchs

• Do NOT put page numbers on the PDFs you create, but do put titles

• 11 pt Arial, Georgia, Helvetica, or Palatino Linotype
Letters of Recommendation

• Ask for your letters at least three weeks in advance (a month’s notice is better).

• Provide your letter writers with a resume as well as a summary of your research interests/specific aims. They don’t need to see the proposal per se.

• The LORs are submitted electronically. Follow the instruction in the “Application Guide”.

• You are allowed 3-5 LORs – NOT your advisor or co-advisor.
Letters of Recommendation

• Send an email to each letter writer.
• Thank you for agreeing to write me a letter of recommendation for my NRSA application. The due date for my application is [August 8]. The letter must be submitted via the eRA Commons at: https://commons.era.nih.gov/commons/reference/submitRefereeInformation.jsp
• The additional information you need is:
  – PI Commons User ID: [Your Commons ID]
  – PI Last Name: [Your last name]
  – Funding Opportunity Announcement Number: [The appropriate PA number, eg, PA-18-671]
• Provide instructions:
  – https://grants.nih.gov/sites/default/files/instructions-for-fellowship-referees.docx
Stipend and Tuition Projection

- Your grant administrator will provide a projection of tuition and fees for the next five to six years. This will differ depending on your graduate program.
- You will also need to show this table to the Graduate College Fellowship Office. Note that this projection is your best estimate and you are not limited by what you say here. The Univ actually bills the NIH later based on real costs.

<table>
<thead>
<tr>
<th>Budget Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Fellowship Applicants:</strong></td>
</tr>
<tr>
<td>25. Tuition and Fees:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>None Requested</th>
<th>Funds Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Year 1 | |
| Year 2 | |
| Year 3 | |
| Year 4 | |
| Year 5 | |
| Year 6 (when applicable) | |

Total Funds Requested:
Choose a Study Section

- [http://public.csr.nih.gov/StudySections/Fellowship/Pages/default.aspx](http://public.csr.nih.gov/StudySections/Fellowship/Pages/default.aspx)

<table>
<thead>
<tr>
<th>Study Section</th>
<th>Study Section Description</th>
<th>Scientific Review Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01A</td>
<td>Fellowships: Brain Disorders and Related Neurosciences</td>
<td>Dr. Vilen Movsesyan</td>
</tr>
<tr>
<td>F01B</td>
<td>Fellowships: Learning and Memory, Language, Communication and Related Neurosciences</td>
<td>Dr. Susan Gillmor</td>
</tr>
<tr>
<td>F02A</td>
<td>Fellowships: Behavioral Neuroscience</td>
<td>Dr. Mei Qin</td>
</tr>
<tr>
<td>F02B</td>
<td>Fellowships: Sensory and Motor Neurosciences, Cognition and Perception</td>
<td>Dr. Sharon Low</td>
</tr>
<tr>
<td>F03A</td>
<td>Fellowships: Neurodevelopment, Synaptic Plasticity and Neurodegeneration</td>
<td>Dr. Mary Schueller</td>
</tr>
<tr>
<td>F03B</td>
<td>Fellowships: Biophysical, Physiological, Pharmacological and Bioengineering Neuroscience</td>
<td>Dr. Sussan Paydar</td>
</tr>
<tr>
<td>F04A</td>
<td>Fellowships: Chemistry, Biochemistry and Biophysics A</td>
<td>Dr. Mike Radtke</td>
</tr>
<tr>
<td>F04B</td>
<td>Fellowships: Chemistry, Biochemistry and Biophysics B</td>
<td>Dr. Sudha Veeraraghavan</td>
</tr>
<tr>
<td>F05-D</td>
<td>Fellowships: Cell Biology, Developmental Biology, and Bioengineering</td>
<td>Dr. Alexander Gubin</td>
</tr>
</tbody>
</table>

Etc....
PHS Assignment Request Form

Funding Opportunity Number: 

Funding Opportunity Title: 

Awarding Component Assignment Request (optional)

If you have a preference for an awarding component (e.g., NIH Institute/Center) assignment, use the link below to identify the appropriate short abbreviation and enter it below. All requests will be considered; however, assignment requests cannot always be honored.

Awarding Components: https://grants.nih.gov/grants/phs_assignment_information.html#AwardingComponents

Assign to Awarding Component: 

First Choice

Second Choice

Third Choice

Do Not Assign to Awarding Component:

Study Section Assignment Request (optional)

If you have a preference for study section assignment, use the link below to identify the appropriate study section (e.g., NIH Scientific Review Group or Special Emphasis Panel) and enter it below. Remove all hyphens, parentheses, and spaces. All requests will be considered; however, assignment requests cannot always be honored.

Study Sections: https://grants.nih.gov/grants/phs_assignment_information.html#StudySection

Assign to Study Section:

First Choice

Second Choice

Third Choice

Only 20 characters allowed

Do Not Assign to Study Section:

Only 20 characters allowed
COVER LETTER

Application title:

Really cool stuff that you should fund

Funding Opportunity:

PA-18-671 Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31)

Letters of recommendation will be sent from:

Sayeepriyadarshini Anakk
Dept of Molecular and Integrative Physiology
University of Illinois

Albert Einstein
Institute for Advanced Study
Princeton University

Also fill out the “Assignment Request Form”

Thank you,

Jane Doe, PI
Get Feedback

• Your advisor!
• Others: Fellow students, post-docs, committee members...
• After your advisor has signed off on it:
  – Ken Vickery – Grad College
Application Sign-Off

• Several university officials must sign off on your application
• You must allow sufficient time for each of these entities to act.
• These individuals are not competent to judge the actual proposal. So although
  you need a “complete” application to get signatures, you can continue to make
  minor edits to the proposal and upload new PDF files into the master PDF UNTIL
  it is time to send it to OSP. (I THINK this is true, but the process has gone online
  recently.)
• Your Grants Administrator will help with the university form
• For fellowship applications, the Grad College Fellowship Office also needs to sign
  off. This is not explicitly listed on the transmittal form; rather this is an “other
  signature if required.”
• Submit completed application that has been reviewed by the appropriate offices
  (with help from your Grants Administrator) to OSP (at least 48 hours in advance).
Other Important Points

• This is a “training grant”. The NIH training record of your thesis advisor matters.

• Ideally, your advisor is:
  – Tenured
  – NIH Funded
  – Has successful PhDs out in the world doing good

• If not, fear not
  – Seek out a “co-advisor” that meets the above criteria
Good Luck!
CONTENT FOR F30/F31/F32
NRSA APPLICATIONS

Sayeepriyadarshini Anakk and Hanna Erickson
Department of Molecular and Integrative Physiology
December 12, 2018

Adapted from presentation by Dr. Lori Raetzman and Dr. Matt Biehl in Fall 2017.
CHOOSE AN NIH INSTITUTION

Preparing an application is a **very significant investment of time** by you AND your advisor. Need to be aware of this in determining probability of success. Make sure you **fit the mission** of the institution.

**MSP website:** [https://www.med.illinois.edu/MSP/Students/Fellowships/](https://www.med.illinois.edu/MSP/Students/Fellowships/)


Participating Institutes:
- National Cancer Institute (NCI)
- National Eye Institute (NEI)
- National Heart, Lung, and Blood Institute (NHLBI)
- National Human Genome Research Institute (NHGRI)
- National Institute on Aging (NIA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- National Institute of Allergy and Infectious Diseases (NIAID)
- *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD)
- National Institute on Deafness and Other Communication Disorders (NIDCD)
- National Institute of Dental and Craniofacial Research (NIDCR)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Institute on Drug Abuse (NIDA)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute of Mental Health (NIMH)
- National Institute on Minority Health and Health Disparities (NIMHD)
- National Center for Complementary and Integrative Health (NCCIH)
CORE REVIEW CRITERIA

- Fellowship Applicant
- Sponsors and Collaborators
- Research Project
- Training Plan and Potential
- Institutional Environment
FELLOWSHIP APPLICANT

Important to provide evidence for your potential/alignment with institute mission and explicitly state how this fellowship will help you improve/achieve your goals.

Relevant documents:

• Applicant’s Biosketch
• Applicant’s Background and Goals for Fellowship Training
  • Doctoral Dissertation and Other Research
• Sponsor and Co-Sponsor Statement
  • Applicant’s Qualifications and Potential for a Research Career
• Letters of Reference
# APPlicant BIOSketch

Use NIH biosketch format: [https://grants.nih.gov/grants/forms/biosketch.htm](https://grants.nih.gov/grants/forms/biosketch.htm)

<table>
<thead>
<tr>
<th>Personal Statement</th>
<th>Career goals consistent with the mission of the institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Credentials</td>
<td>Grades, productivity, quality of undergraduate institution*</td>
</tr>
<tr>
<td></td>
<td>*May be disadvantage to be at same school</td>
</tr>
<tr>
<td>Demonstrated Scientific Accomplishment</td>
<td>Publications, Presentations (Authorship on peer-reviewed paper is useful but not essential.)</td>
</tr>
<tr>
<td>Past Funding</td>
<td>Graduate fellowship, slot on NIH training grant, undergraduate research fellowship/grant</td>
</tr>
</tbody>
</table>
I am an aspiring physician-scientist focused on becoming a leader in the field of hepatobiliary cancers. I want to address the gaps in liver cancer prevention and treatment from both the bench and the bedside by leading an active research laboratory, managing patient care, and using my expertise to impact others through leadership, research, and teaching. Physician-scientists are uniquely trained to integrate these roles, and with the NRSA fellowship, I will be able to strengthen my skills and gain expertise necessary for this career.

My utmost goal is that my research and clinical interests will be mutually beneficial. While I will develop strong research skills during my PhD training, it is essential that I learn to apply these skills to the clinic and be able to maneuver my research based on my clinical findings. Thus, receiving NRSA support for my medical school years will be imperative to foster my development into a physician-scientist. The College of Medicine provides a number of hands-on clinical training opportunities to facilitate this training and allot 20 weeks for electives and/or research during M4 for students to pursue specific interests. By performing clinical and basic research during this time, I will be able to combine my knowledge from my PhD and medical training and establish myself as a clinician-investigator.
POSIIONS AND HONORS

Applicant Biosketch

<table>
<thead>
<tr>
<th>ACTIVITY/OCCUPATION</th>
<th>BEGINNING DATE (mm/yy)</th>
<th>ENDING DATE (mm/yy)</th>
<th>FIELD</th>
<th>INSTITUTION/COMPANY</th>
<th>SUPERVISOR/EMPLOYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Volunteer</td>
<td>06/06</td>
<td>08/13</td>
<td>Medicine</td>
<td>University of Minnesota Medical Center</td>
<td>Mrs. Sarah Blanchette</td>
</tr>
<tr>
<td>Vice President</td>
<td>07/17</td>
<td>Present</td>
<td>Leadership</td>
<td>American Physician Scientists Association</td>
<td>Ms. Jillian Liu</td>
</tr>
</tbody>
</table>

Academic and Professional Honors:
2008 Junior Volunteer Scholarship, University of Minnesota Medical Center
2017 Graduate Teacher Certificate, Center for Innovation in Teaching

Memberships in Professional Societies:
American Association for the Study of Liver Disease
**CONTRIBUTIONS TO SCIENCE**

*Applicant Biosketch*

<table>
<thead>
<tr>
<th>1. IQGAP1 coordinates nutritional signaling and contributes toward liver cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQGAP1 is a scaffolding protein that is largely known for its role in cell-cell adhesion, motility, and proliferation. However, its role in regulating metabolism has not been studied. <strong>I discovered that</strong> hepatic IQGAP1 expression is induced by fasting and is essential for adaptation to nutritional ketosis. Loss of IQGAP1 results in impaired PPARα activation, which is consistent with the elevated mTORC1 levels observed. This is interesting because IQGAP1 expression and mTORC1 activity have both independently been found to be elevated in HCC, but our data indicates that they are inversely related in healthy liver tissue. This work was initiated by a technician in the laboratory, Karen Wendt, who began a fasting study to teach me how to work with mice and do controlled metabolic studies. I then performed follow up experiments under the guidance of Dr. Anakk and was responsible for identifying the reciprocal IQGAP1-mTORC1 regulation.</td>
</tr>
<tr>
<td>a. Erickson H, Anakk S. IQGAP1-mTORC1 interaction coordinates fat metabolism. Oral presentation at Central Society for Clinical and Translational Research Meeting. 2017 Apr 21; Chicago, IL.</td>
</tr>
<tr>
<td>c. Erickson H, Wendt K, Anakk S. Bridging the (IQ)GAP between liver metabolism and cancer. Oral Presentation: Beckman Institute Graduate Student Seminar Series. 2016 Feb 10; Champaign, IL.</td>
</tr>
</tbody>
</table>
# SCHOLASTIC PERFORMANCE

## Applicant Biosketch

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SCIENCE COURSE TITLE</th>
<th>GRADE</th>
<th>YEAR</th>
<th>OTHER COURSE TITLE</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Organic Chemistry I</td>
<td>B+</td>
<td>2009</td>
<td>American Government and Politics</td>
<td>B+</td>
</tr>
</tbody>
</table>

**UNIVERSITY OF ILLINOIS GRADUATE CLASSES**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SCIENCE COURSE TITLE</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Advanced Biochemistry</td>
<td>A-</td>
</tr>
</tbody>
</table>

**UNIVERSITY OF ILLINOIS MEDICAL CLASSES**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>COURSE TITLE</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2014</td>
<td>Clinical Practice Preceptorship</td>
<td>S</td>
</tr>
</tbody>
</table>

M1 courses are graded O (Outstanding), S (Satisfactory), and U (Unsatisfactory). Seminars, Research Ethics, and Clinical Practice Preceptorship are graded S (Satisfactory) and U (Unsatisfactory).

## STANDARDIZED EXAM SCORES

<table>
<thead>
<tr>
<th>EXAM</th>
<th>QUANTITATIVE: 168 (96 percentile)</th>
<th>VERBAL: 163 (91 percentile)</th>
<th>WRITING: 5.5 (97 percentile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Requirement Exam (GRE)</td>
<td>TOTAL SCORE: 35 (93.8-95.7 percentile)</td>
<td>PHYSICAL SCIENCES: 13 (95.3-97.3 percentile)</td>
<td>BIOLOGICAL SCIENCES: 11 (77.1-88.8 percentile)</td>
</tr>
<tr>
<td>Medical College Admissions Test (MCAT)</td>
<td>VERBAL REASONING: 11 (83.5-95.4 percentile)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DOCTORAL DISSERTATION AND GOALS FOR FELLOWSHIP TRAINING

Applicant’s Background and Goals for Fellowship Training – Part 1

- Describe previous research experience
  - Questions asked, techniques used, major findings
- Include only substantial research experience (not ones that didn’t yield a presentation/publication)

**August 2011 – August 2013**

**Project:** Synthesis and Analysis of Deoxyguanosine-Cisplatin-Cysteine Cross-links

**Advisor:** Dr. Natalia Tretyakova, Ph.D., Professor, Department of Medicinal Chemistry, University of Minnesota – Twin Cities, Minneapolis, MN

**Role:** Undergraduate Research Assistant

Cross-linking agents have long been used as anti-cancer therapeutics, with numerous side effects. The goal of Dr. Tretyakova’s laboratory is to understand the exact mechanism by which these drugs work and how cells respond to this damage…
APPLICANT’S QUALIFICATIONS AND POTENTIAL FOR A RESEARCH CAREER

Sponsor and Co-Sponsor Statement – Part 5

• Written from the perspective of the sponsor/co-sponsor.
• Highlights the unique accomplishments/abilities of the applicant
LETTERS OF REFERENCE

Should be excellent (“enthusiastic support”).

Reach out to LOR writers 1-2 months in advance. Provide biosketch and specific aims page.

Who to select:
• Previous research mentors (undergraduate, masters, etc.)
• Thesis committee members
• Collaborators
CORE REVIEW CRITERIA

- Fellowship Applicant
- Sponsors and Collaborators
- Research Project
- Training Plan and Potential
- Institutional Environment
SPONSORS AND COLLABORATORS

Important to show that you have established adequate support that will be able to help you achieve your research and training goals (financially and otherwise).

Relevant documents:

- Sponsor’s and/or Co-Sponsor’s Biosketch
- Sponsor and Co-Sponsor Statement
  - Research Support Available for this Project
  - Sponsor’s/Co-Sponsor’s Previous Fellows/Trainees
  - Number of Trainees to be Supervised during Fellowship
- Selection of Sponsor and Institution
## Key Sponsor Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>$$$</td>
<td>Grants and funding, ideally covering the entire length of the fellowship</td>
</tr>
<tr>
<td>Productivity</td>
<td>Publications, publications, and more publications</td>
</tr>
<tr>
<td></td>
<td>Expertise in relevant research area</td>
</tr>
<tr>
<td>Mentoring Record</td>
<td>Successful previous and current fellows and trainees, mentoring awards</td>
</tr>
</tbody>
</table>
**PICKING A CO-SPONSOR**

Fill a gap:

Since Dr. Anakk is a new faculty member, Hanna will receive additional mentoring from Dr. Katzenellenbogen (co-sponsor), which will tremendously boost her development as a scientist. Dr. Katzenellenbogen is a renowned expert in the field of nuclear receptor signaling and cancer biology and has an extensive track record as a highly successful investigator and mentor.

Her laboratory is also adept at evaluating tumor promotion and progression. This overlaps with Hanna’s long-term interest, so having Dr. Katzenellenbogen as her co-sponsor will benefit Hanna as she proposes to determine the role for IQGAP1 in tumor progression and metastasis proposed in Aim 2.

Define relationship:

Both laboratories are proximal within the department, which will facilitate collaborations and mentoring. Dr. Katzenellenbogen will separately meet with Hanna for an hour every month to review her progress and provide advice on her science, feedback on research presentations, and suggestions on how to best achieve her career objectives.
COLLABORATORS AND LETTERS OF SUPPORT

Benefits:
• Provide evidence of additional methodology that they are experts in and that you would benefit from
• Additional mentoring opportunities, e.g. if they are in a career path that you would like to follow such as medicine or industry
• Evidence of opportunity for additional training in another setting

Collaborators vs. Letters of Support
• Collaborators need to provide letter of support and biosketch
• Letters of Support can come from research core or department to show that resources are available to perform experiments/training
I chose Dr. Anakk as my sponsor and Ph.D. advisor for a number of reasons. First, she is a successful scientist and completed her postdoctoral training in the laboratory of Dr. David Moore at Baylor College of Medicine who is a leader in the field of nuclear receptor signaling. Dr. Anakk has a strong background in studying liver physiology and using transgenic mice, and she has studied bile acid signaling for over a decade...

As a faculty member of the College of Medicine and School of Molecular and Cellular Biology at UIUC, she has demonstrated commitment to my medical education and graduate training. She is also a faculty member of the Division of Nutrition Sciences and an affiliate of the Beckman Institute, which provides me access too resources that will enhance my training in tumor biology and metabolism.

Since Dr. Anakk is a new advisor, I additionally chose Dr. Benita Katzenellenbogen as my co-sponsor because of her extensive experience with mentoring students. She is a nationally recognized scientist with decades of experience studying hormonal signaling and cancer. Notably, she has trained over 90 pre-doctoral and post-doctoral students in her laboratory. She is also a prolific author, with 340 papers. Thus, her decades of experience will be an excellent complement to Dr. Anakk as she will be able to advise me on my research, career development, and writing skills.
CORE REVIEW CRITERIA

- Fellowship Applicant
- Sponsors and Collaborators
- Research Project
- Training Plan and Potential
- Institutional Environment
TRAINING PLAN AND POTENTIAL

Need to have a training plan that is **specific** to your career goals and current skills. Must **go beyond** basic requirements for degree.

Relevant documents:

- Applicant’s Background and Goals for Fellowship Training
  - Training Goals and Objectives
  - Activities Planned Under This Award
- Sponsor and Co-Sponsor Statement
  - Training Plan
Connect to your career goals:

My overall career goal is to become an academic physician-scientist who is a leader in the clinical management and study of hepatobiliary cancers.

State where this falls along your training path:

Following my completion of the MD/PhD program, I plan to train in an internal medicine physician-scientist residency program in either gastroenterology or oncology. I specifically identified these programs since they provide physician-scientists protected research time and a mentorship committee for the entirety of the program. This training will help be obtain expertise in the biological and clinical manifestations of hepatobiliary cancer and enable me to acquire a tenure-track faculty position at a major research university where I will have access to all the necessary tools to successfully establish myself as an independent investigator.
TRAINING GOALS AND OBJECTIVES

Applicant’s Background and Goals for Fellowship Training – Part 2

Specify how training will benefit you in individual categories such as:
• Research training
• Courses and seminars
• Conferences
• Publications
• Leadership and teaching
• Clinical training
• Grant writing

*Adjust categories to fit your research goals

Courses and Seminars – So far in my Ph.D. studies, my focus has been to establish a strong knowledge base in liver physiology with an emphasis on bile acid and metabolic signaling. In preparation for my tumor studies, I will take coursework in exercise oncology and cancer biology to appreciate diverse perspectives. With the support of this fellowship, I will additionally take two biochemical nutrition courses to build a broad foundation in metabolic signaling that will help me become a versatile researcher.
ACTIVITIES PLANNED UNDER THIS AWARD

Applicant’s Background and Goals for Fellowship Training – Part 3

Detailed plan for each year and timeline for entire award
- Explain structure of your program and where you currently are
- Include when each Aim will be accomplished and all courses, professional development, and training activities are planned
- Name specific research techniques you will learn and how you will learn them (i.e. training courses, collaborations)
- List specific professional development opportunities.

My first year in the Anakk lab was dedicated to learning techniques, breeding mice for experiments, and contributing to grant proposals. The next two years have been primarily dedicated to advancing my project in which I have identified a role for the scaffolding protein IQGAP1 in regulating ketogenesis and mTORC1 activation… These [proposed] time-consuming experiments have been carefully planned so that I would utilize my upcoming 2 years of graduate school to gain as much expertise as I can to become a cancer biologist with a focus on metabolism.
ACTIVITIES PLANNED UNDER THIS AWARD

Applicant’s Background and Goals for Fellowship Training – Part 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Program Benchmarks</th>
<th>Research (%)</th>
<th>Coursework (%)</th>
<th>Clinical (%)</th>
<th>Professional Development (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Defend dissertation.</td>
<td>85%</td>
<td>10%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>M2 coursework. Take STEP 1.</td>
<td>20%</td>
<td>75%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>M3 clinical clerkships. Take STEP 2.</td>
<td>20%</td>
<td>0%</td>
<td>75%</td>
<td>5%</td>
</tr>
<tr>
<td>4</td>
<td>M4 clinical clerkships. Apply to residency</td>
<td>25%</td>
<td>0%</td>
<td>70%</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aim</th>
<th>2017-2018</th>
<th>Fall 2018</th>
<th>Spring 2019</th>
<th>Summer 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Determine which pathways are involved in lqgap1 regulation</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b. Examine the relative contribution of transcription and translation</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1c. Define the role of FXR in regulating lqgap1 transcription</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1d. Determine the tissue-axis responsible for regulating hepatic lqgap1 expression</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2a. Initiation of tumorigenesis in mice</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. Characterization of tumors</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2c. Examine the effect of IQGAP1 in cell motility</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
TRAINING PLAN

Sponsor and Co-Sponsor Statement – Part 3

Similar to “Training Goals and Objectives” and “Activities Planned Under this Award” but from sponsor/co-sponsor’s perspective.

• **Seminars and courses** – taken and planned, find unique things tailored to your career trajectory

• **Research training** – technical and intellectual skills learned/to learn, critical analysis, grant writing, presentation skills, mentorship skills, interaction with scientific community

• **Mentoring** – how often will you meet with your sponsor and collaborators, what you will glean from these meetings, other support available (i.e. committee members, program directors)

• **Scientific presentations and publications** – attended and planned
Core Review Criteria

- Fellowship Applicant
- Sponsors and Collaborators
- Research Project
- Training Plan and Potential
- Institutional Environment
RESEARCH PROJECT

Needs to be feasible in the available timeline, well-designed, and complementary to existing skill set and career goals.

Relevant documents:

- Specific Aims
- Research Strategy
- Project Summary
- Project Narrative
- Responsible Conduct of Research
- Vertebrate Animals*
- Human Subjects*
- Resource Sharing Plan
SPECIFIC AIMS

Should include:

• **Disease your research addresses and its impact on human health** (prevalence, cost, morbidity)

• **What is NOT known**: e.g. mechanisms of biological processes that impact the disease; how to design targeted therapeutic

• **Research question/hypothesis**

• **Brief summary of preliminary data**: how it fits into the question and what is known

• **Specific Aims**: experimental design to test hypothesis (1-3, should be complementary but independent)
SPECIFIC AIMS

Example:

**IQGAP1 and Hepatic Tumorigenesis:** The overall goal of this proposal is to (i) define IQGAP1’s role in promoting hepatic tumorigenesis and (ii) identify the mechanism(s) that regulate IQGAP1 expression in hepatocytes. Hepatocellular carcinoma (HCC), the major form of liver cancer, is the fourth most common cancer in the world and the second most lethal cancer... The Anakk laboratory identified that bile acids (BA) promote hepatic tumorigenesis... this... was found to be dependent on the scaffolding protein IQGAP1... However, the signals that induce IQGAP1 expression are completely unknown. We hypothesize that BA-induced IQGAP1 expression is sufficient to promote hepatic tumorigenesis...

**Specific Aim 1:** Identify the mechanism by which BAs regulate Iqgap1 expression.

**Specific Aim 2:** Determine whether IQGAP1 is required to promote hepatic tumorigenesis.

**Overall impact:** This work will be the first to provide an understanding of IQGAP1 regulation and its role in promoting hepatic tumorigenesis in the presence and absence of BAs. These studies will determine if IQGAP1 can act as a therapeutic target for HCC and identify mechanisms for controlling its expression and function.
RESEARCH STRATEGY

Background and significance:
• What is the major question?
• What is the relevance to human health?
• What will be accomplished if aims are achieved?
• How will these studies change the field?
• How is this approach innovative?

Preliminary studies:
• Detailed explanation of how your data address the research question and lead to hypothesis

Research approach:
• Expand on aims
• Overview, rationale, and design of each aim (include statistical analysis)
• “Expected Results” and “Potential Pitfalls and Alternative Approaches”
RESEARCH STRATEGY

Formatting

• Break up sections with headings
• Use bold, italics, underlining to emphasize points
• Don’t fill up all the available space
• Leave blank lines between sections if you can
• A picture is worth a thousand words

Your advisor/sponsor should provide advice and examples of previous grants
PROJECT SUMMARY AND NARRATIVE

Project Summary (30 lines)
• Significance of project and relevance to human health
• Brief description of what is known about the question you are addressing
• How your proposal will address unknown aspects and connect to human health
• This is published on a public NIH database

Project Narrative (3 sentences)
• Very brief description of question you are addressing
• What results from your proposal will add to knowledge about particular disease or question
• Lay person should be able to understand
NIH requires that fellows have received training in the responsible conduct of research (RCR).

- Explain how you will fulfill this requirement
- If you have or plan to take the MCB ethics course requirement, outline topics covered and how they were covered (texts read, exercises, etc.) and time spent on these activities
  - Format
  - Subject Matter
  - Faculty Participation
  - Duration of Instruction
  - Frequency of Instruction
- List any other possible ethics courses, workshops or ethics discussions or mentorship with sponsors
STUDY SUBJECTS

If you’re proposing to use either **Vertebrate Animals** or **Human Subjects**, you are required to complete the respective section.

Get info on this from your sponsor. You should be covered under their protocols.

Will need to provide justification for sample size (use power analysis).
RESOURCE SHARING PLAN; RESPECTIVE CONTRIBUTIONS

Resource Sharing Plan (1 page)
Must adhere to NIH Grants Policy on Sharing Research Resources
• Data Sharing Plan – important to share data with the public (present at meetings, publish promptly), make protocols of our procedures available by request
• Sharing Model Organisms – available after publication
• Genome-wide Association Studies – available after publication

Respective Contributions (1 page)
• Delineate applicant role in obtaining preliminary data generated for proposal vs. data from others
• Applicant role in preparing grant application
CORE REVIEW CRITERIA

- Fellowship Applicant
- Sponsors and Collaborators
- Research Project
- Training Plan and Potential
- Institutional Environment
INSTITUTIONAL ENVIRONMENT

Should have all of the required resources and support to complete proposed research and training.

Relevant documents:

• Selection of Sponsor and Institution
• Description of Institutional Environment and Commitment to Training
• Facilities & Other Resources
• Equipment
• Sponsor and Co-Sponsor Statement
  • Environment
  • Research Facilities
SELECTION OF (SPONSOR AND) INSTITUTION

• Prestige and reputation of university and applicant’s affiliated program
• How selection of university/program fits into applicant’s research interest and training plan for future career

The University of Illinois at Urbana-Champaign (UIUC) is a highly ranked institution with a unique environment to foster innovation and creativity. I was drawn to UIUC because of its Medical Scholars Program (MSP) that takes advantage of the rich culture of collaboration at the university to provide a multidisciplinary, research-focused program for its MD/PhD students.

One particularly unique aspect of the MSP that appealed to me is its non-traditional structure that provides freedom for its diverse student population to create a training plan that best fits their interests and goals.
DESCRIPTION OF INSTITUTIONAL ENVIRONMENT AND COMMITMENT TO TRAINING

• Describe the facilities and resources available for research
• Document a strong research program
• List intellectual interactions available (seminars, presentations, lab meetings, courses, journal clubs)
• Facilities and resources for career enhancement
• For F30/F31, describe the program (structure, milestones, courses, teaching, average time to degree, how students are monitored)
• For F30, describe clinical activities during graduate years and research activities during clinical years
Facilities & Other Resources (1 page)
Describe the scientific environment, especially what is unique
- **Institutional support:** animal care and use, trainee travel grants
- **Physical resources:** core facilities
- **Personnel resources:** collaborators, collegiality (MCBees)

Equipment (1 page)
List (in outline form) the equipment available to you during your training and where it is located
- **Common lab facilities:** list all *common* equipment including microscopes and data processing equipment
- **Core facilities:** histology, sequencing, flow cytometry

*Your advisor probably has “boiler plate” documents for these.*