Graduate Studies at UCI
R. Michael Mulligan, PhD
Professor & Associate Dean for Graduate Studies
The NSF GRFP Fellowship and Graduate Fellowship Opportunities

Associate Dean Mulligan:

- GSP-STEM
- Professional Support as a Continuum: opportunities from pre-doc to professional researcher
- Preparation of a competitive NSF GRFP application

Panel Discussion:

- Karissa Jade Munoz      DCB (Cell Biology/Pathogenesis)
- Bryan Ruiz            MBB (Cancer Biology)
- Keiland Cooper        NBB (Neurobiology/Memory)
- Pieter Derdeyn        MCSB (Neuro/Systems Biology)
- Tiffany Nada Batarseh EEB (Genomics)

Panel Q&A
Graduate Professional Success in Science, Technology, Engineering & Math

Harinder Singh, Ph.D.
Program Director
"We aim to better prepare our scientists for a **variety of careers** within the **biomedical research workforce**, and **empower** them to become **skilled researchers** and **polished professionals**."

**4 Elements for Career Readiness:**

- Explore
- Train
- Experience
- Transition
Fellowship Writing Course by Prof. Fruman

- Preparation of F31 and F32 (pre- and post-doc) Fellowship Applications
- Presentation by faculty mentors
- Peer Working Groups facilitated by trainees & faculty with experience writing & receiving grants
- Panel discussion for best practices from successful applicants
- Professional podcasts (NIH & Nature)
Academic and Professional Support Continuum: Pre-doc to Professional Researcher

External Pre-doctoral Fellowships
- NSF GRFP, NIH F-31, Ford Foundation, NOAA, EPA, HHMI Gilliam Fellowship

Campus Fellowships:
- Faculty Mentor Program
- President’s Dissertation Year

Training Grant Opportunities (NIH T-32)

Post-doctoral Fellowships
- NIH F-32 & T-32, Private Foundations

Faculty Transition Grants and Fellowships
- UC President’s Post-doctoral Fellowship
- NIH K99/R00
Pre-doc Fellowship Opportunities

UCI Resources:

https://www.grad.uci.edu/funding/index.php

Other UC campus websites:

https://grad.ucla.edu/funding/
https://grad.ucdavis.edu/financial-support/external-fellowships
Postdoctoral fellowships for outstanding scholars

Research, teaching, service contribute to diversity & equal opportunity
Objective to increase equitable access for underrepresented groups

Awards
• research at any UC campus
• salary, benefits, $5K for research-related expenses
• 1 yr. appt., renewable
• support for initial faculty appointment at a UC campus

Eligibility
• must receive a Ph.D. prior to fellowship start
• legally authorized to work in the United States, includes DACA individuals

Application: typically in November

Resources:
• watch for campus workshops
• several alumni in the SoBS
Research Career Development Awards: NIH K99/R00 “Pathway to Independence Award”

Program Objectives:

• Prepare a strong cohort of NIH-supported, independent investigators
• Facilitate transition from post-doc to tenured faculty positions
• Provides independent NIH research support for transition to competitive research careers
• U.S. citizen/non-citizen, doctoral degree, and no more than 4 yrs post-doctoral research experience
• U.S. domestic institutions
Preparation of a Competitive NSF GRFP Application

Award Info
Eligibility/Submission Strategy
NSF GRFP Application
• Personal Statement
• Research Plan
• Broader Impacts
• Intellectual Merit

Letters of Reference
Review Criteria, Sample Reviews
Best Practices (Biomedical Research)

Resources
5-year award: $138,000

Three years of support
• $34,000 annual stipend
• $12,000 in educational allowances (tuition and fees)

Access to other NSF opportunities
• INTERN: Non-academic internship
• FASED: Support for individuals with disabilities
• Career-Life balance awards (family leave)

See NSF GRFP solicitation for more information
• Nsfgrfp.org
• GRFP FAQs: NS 20-114
Eligibility (abbreviated)

- Be a U.S. citizen, national, or permanent resident
- Intend to enroll, or be enrolled, in research-based MS or PhD in eligible field
- Never previously applied to GRFP while enrolled in a graduate degree program
- Never earned a PhD in any field
- Never earned a MS or professional degree in any field, or completed more than one academic year in a graduate degree-granting program, unless
  - returning to graduate study after an interruption of two or more consecutive years immediately preceding the application deadline, and;
  - not enrolled in a graduate degree program at the application deadline

Ineligible: If you have a MS and are enrolled in a graduate program at the time of the application, you are NOT eligible
Academic Level & Eligibility

Level 1: Seniors, baccalaureates with no graduate study

Level 2: First-year graduate students

Level 3: Second-year grad students (12 months of graduate study or less by Aug 31 prior to submission)

Level 4: >12 months graduate study - change in field
Strategy: Submit in yr. 1? or wait for yr. 2?

Applicants are considered separately within academic level:

4 academic levels: (UG/1\textsuperscript{st} yr grad/2\textsuperscript{nd} yr grad/2+ yr gap)

- Applicants are ranked within their academic level
- Expectation and competitiveness increase through the levels

If you have strong Broader Impacts & Intellectual Merit, you have an advantage as UG or 1\textsuperscript{st} yr grad
Submit now? or wait until year 2?

Compared to your academic level, do you have:
Strong Intellectual Merit (IM)?
publications, awards, academic background, fellowships, high GPA
A strong & consistent record of Broader Impacts (BI)?
outreach to K-12, diversity groups, society or community activities

Determine if your academic profile is competitive for year 1

YES! Apply in year 1! (and give ‘em hell!)

If profile could be improved, work on IM & BI, apply in year 2 (and bring you’re “A” game!)
If you wait until year 2, what can you do to improve your application?

• Develop a **strong** research proposal
• Develop research and writing skills
• Authorship on publication(s)
• Develop and engage in Broader Impacts
• Show **consistent** participation in Broader Impacts
• Develop strong relationship with research mentors including research faculty, training grant directors, etc.
NSF GRFP Application Cycle

Applications Due
Late October
Varies by Field

Reference Letters Due Shortly After Application
<table>
<thead>
<tr>
<th>Date</th>
<th>Fields</th>
</tr>
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<tbody>
<tr>
<td>October 18, 2021</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>October 19, 2021</td>
<td>Computer and Information Science and Engineering, Materials Research, Psychology, Social Sciences, STEM Education and Learning Research</td>
</tr>
<tr>
<td>October 21, 2021</td>
<td>Engineering</td>
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<tr>
<td>October 22, 2021</td>
<td>Chemistry, Geosciences, Mathematical Sciences, Physics and Astronomy</td>
</tr>
<tr>
<td>October 29, 2021</td>
<td>Reference letters must be submitted by 5 PM Eastern Time</td>
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NSF GRFP Application

A complete application includes…

- Personal information, education, work/research experience, proposed field of study, honors, awards, publications
- Personal, Relevant Background and Future Goals (3 pages)
- Graduate Research Plan
- Transcripts
- Letters of reference (3 required; up to 5 can be submitted)

Applications are submitted online via FastLane (Fastlane.nsf.gov/grfp)
- Make sure to save a copy of your complete application
Formatting and Due Dates

• Due Dates
  • Various depending on field, late October
• 8.5x11” page size
• Times New Roman font for all text,
• Cambria Math font for equations,
• Symbol font for non-alphabetic characters
  • equations and symbols should be inserted as an image
• No smaller than 11-point, except text that is part of an image
• 1” margins on all sides
• Single spaced
• No less than single-spacing (approximately 6 lines per inch). Do not use line spacing options such as "exactly 11 point," that are less than single spaced.
Letters of Recommendation

Request 3 to 5 Letters
• Applications with fewer than 3 will **NOT** be reviewed
Request references with high impact
• Knows you and your work
• Faculty preferred
• Former/current research advisor
• Faculty that you know well from courses **and know you outside of class**
• Prominent researchers

Best practices
• Give recommenders plenty of time (~ 4 weeks)
• Be prepared to give recommenders drafts of your materials
• **Provide succinct summary of your IM and BI and ask them to refer to these statements in their letter**
• Provide bullet points of what you want addressed in letter
• Letters can be tracked using FastLane
• Check for submission
Personal, Relevant Background and Future Goals

• 3 pages
• How will the PhD prepare you for a career that will contribute to expanding scientific understanding and broadly benefit society?
• Describe your personal, educational, and professional experiences that motivated you to pursue the PhD.
• Include specific examples of research or professional activities.
• Present a concise description of your research, academic and outreach activities, highlight results and outcomes.

• Be specific regarding your contributions
• Discuss how these activities have prepared you to seek a graduate degree.
• Specifically address your contributions to Broader Impacts through outreach and community activities.
• Describe the contributions of your activity to advancing knowledge in STEM fields as well as the potential for broader societal impacts.
• BI and IM should be directly stated in subsections or bolded text.
Research Plan

• 2 pages
• Present an original research topic that you would like to pursue.
• Propose hypothesis driven research, describe the overall objective, approach, expected results, alternative and corroborative approaches.
• Address high impact and important goals.
• Include a timeline and feasibility assessment.
• Avoid jargon.
• Include important literature citations.
• Address the potential of the research to advance knowledge and understanding within science as well as the potential for broader impacts on society.
• The Research plan should be clear and simple, easy to understand
• BI and IM should be directly stated in subsections or bolded text
Intellectual Merit

Potential to advance knowledge
Your demonstrated intellectual ability
Record as a researcher and student

• Propose hypothesis driven research
• State your hypothesis
• Provide a logical framework to address the hypothesis experimentally
• Address caveats, expected and unexpected outcomes, alternative approaches, etc.

Research Plan

• What’s new/novel about your research?
• What does your proposed research contribute to STEM?
• What does your proposed research contribute to your field?

Personal Statement

• What experiences have you had that demonstrate your intellectual ability?
• Research Experience:
  • Planning/Conducting Research
  • Work in team and independently
  • Evidence of resilience, grit, resolve
Broader Impact

Potential to benefit society
Achievement of specific, desired societal outcomes

Demonstrated commitment to making STEM more inclusive, outreach to underserved communities

Research topics
• How does your proposed research benefit society?
• Do you focus on communities that are often underserved?

Research Plan
• How does your research benefit society?
• How does your research benefit underserved groups?

Personal Statement
• What experience do you have with science outreach?
• What do you do to make sure your research benefits your community?
• What experience do you have making STEM education more inclusive?
Best Practices

• Start early!
• Read the Solicitation carefully
• Address both Review Criteria (IM & BI) in each statement
• Use Section headings or BOLD text to address IM & BI section
• Have faculty and peers read your statements
• No excuse for spelling and grammar errors
• Make statements clear and easy to understand
• Verify statement and transcript uploads
• Check application status for # of reference letters
Application Review

• Panelists are academics or researchers in general areas, and are not experts in your research are your area.

• Applicants are evaluated within academic level (UG/1\textsuperscript{st} yr/ 2\textsuperscript{nd} yr/2+ yr gap)

• Applications are individually reviewed by 3 panel members.

• Each panelist ranks Intellectual Merit and Broader Impacts and provides a succinct statement for each category.

• A proposal may be referred to discussion if reviewer’s scores diverge.

• Applicants receive anonymous copies of the reviews.

• Panelists make recommendations, NSF makes award decisions.
If you work in a biomedical research area:

- **emphasize basic scientific principles**
- **avoid discussing “disease-related” aspects of your research such as drug development, therapies, animal disease models.**

“Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings is normally not supported. Animal models of such conditions or the development or testing of drugs or other procedures for their treatment also are not eligible for support.”
Outreach Activities at UCI

**COSMOS**: California State Summer School for Mathematics & Science at [www.cosmos.uci.edu](http://www.cosmos.uci.edu)

**CAMP**: California Alliance for Minority Participation in Science, Engineering and Mathematics at [www.camp.uci.edu](http://www.camp.uci.edu)

**UCI Rocket Science Tutors**: [http://www.rocketscience-tutors.com](http://www.rocketscience-tutors.com)

**TechTrek Science and Math Camp for Girls**: partnership between AAUW and UC Irvine - [http://www.aauw-techtrek.org/uci/](http://www.aauw-techtrek.org/uci/)


**Graduate Division Mentorship Opportunities**:


**The UCI Community Outreach Partnership Center (COPC)**: Engage the community: [http://sites.uci.edu/copc/](http://sites.uci.edu/copc/)
Center for the Neurobiology of Learning and Memory

CNLM Outreach Programs

• Become a Docent for CNLM’s school tour program
  • Educate students about the brain using hands-on exhibits
  • Gain teaching experience
• Brain Awareness Week (BAW)
  • Visit local schools to educate students about the brain and brain health
• Visit website for more details  www.cnlm.uci.edu
Outreach Activities in Physical Sciences

**LEAPS:** Laboratory Experiments and Activities in the Physical Sciences: [https://ps.uci.edu/node/8837](https://ps.uci.edu/node/8837)

- **Physical Sciences Undergraduate Mentoring Program:** [http://ps.uci.edu/content/undergraduate-mentoring-program](http://ps.uci.edu/content/undergraduate-mentoring-program)

- **UCI Chemistry Outreach Program:** [http://www.chem.uci.edu/~jsnowick/outreach/UCI_Outreach/Home.html](http://www.chem.uci.edu/~jsnowick/outreach/UCI_Outreach/Home.html)

- **Math Counts:** Outreach to middle school students: [http://www.physsci.uci.edu/outreach/mathcounts](http://www.physsci.uci.edu/outreach/mathcounts)

- **Irvine Area Math Modeling (IAMM):** [https://ps.uci.edu/content/irvine-area-math-modeling-iamm](https://ps.uci.edu/content/irvine-area-math-modeling-iamm)

- **UCI Math Circle:** Enrichment program for middle and high school students: [http://www.math.uci.edu/~mathcircle/](http://www.math.uci.edu/~mathcircle/)

- **CLEAN Mission - Climate, Literacy Empowerment And iNquiry:** [http://www.ess.uci.edu/researchgrp/clean/home](http://www.ess.uci.edu/researchgrp/clean/home)
Outreach Activities in the OC Area

- Aquarium of the Pacific
- Newport Bay Conservancy
- Back Bay Science Center
- OC Conservation Corps
- Boys & Girls Club Santa Ana
- OC Science and Engineering Fair
- Discovery Science Center

- OC Science Education Assoc.
- Girls Inc.
- San Diego Zoo
- LA Natural History Museum
- Santa Ana Zoo
- Latino Health Access
Intellectual Merit Criterion – First Submission

Review #1: Overall Assessment of Intellectual Merit  Good

Explanation to Applicant: Applicant has a record of scientific productivity and letters of support are strong. Research plan would be strengthened if written in a hypothesis-driven manner rather than a descriptive one. Previous research experience could also be written in a more explicit and direct manner.

Review #2: Overall Assessment of Intellectual Merit  Good

Explanation to Applicant: Applicant is very bright and driven. Applicant has a very strong undergraduate academic track record in chemistry and programming. Applicant has strong prior research that has led to co-authorship on a recent publication and several poster presentations. Research plan proposes an interesting, original and ambitious project. There is no specific mention of what hypotheses are to be tested and there is no mention of the challenges/problems that might be expected.
Intellectual Merit Criterion – Resubmission

Review #1: Overall Assessment of Intellectual Merit  Excellent

Explanation to Applicant  This application has many strengths. They include the academic success of the applicant; the previous research experience, pilot data, and productivity of the applicant; the quality and relevance of the hypotheses-driven research proposal; the excellence of the laboratory environment in which the applicant is doing the research; and the strong reference letters provided.

Review #2: Overall Assessment of Intellectual Merit  Good

Explanation to Applicant  The applicant brings a useful background in biophysical chemistry to a long-standing problem in neuroscience. Already having a strong set of quantitative skills is a great advantage in modern neuroscience.
Broader Impacts Criterion – First Submission

Reviewer #1: Assessment of Broader Impacts  Fair

Explanation to Applicant  Applicant presents a limited history of outreach by the standards of this competition. Application might be strengthened by explicitly describing the degree to which he was involved in chemistry demos as President of the chemical society. Such leadership roles are needed to make the application competitive. In addition, future plans in this area should be explicit, planning to participate in something already organized is not sufficient at this level.

Reviewer #2: Assessment of Broader Impacts  Fair

Explanation to Applicant  Applicant has background experiences that give great promise for broader impacts. Applicant’s participation in the SOLUR program and mentoring activities has made the applicant aware of the continued need of students from disadvantaged populations. However, applicant does not show evidence of significant leadership in contributions to encouraging diversity or integrating research and education.
Broader Impacts Criterion – Resubmission

Reviewer #1: Assessment of Broader Impacts Very Good

Explanation to Applicant The applicant has a history of mentoring and outreach, which is to be commended. In particular, their participation at Reddit Science is an excellent way to provide science information, and excitement, to the general public.

Reviewer #2: Assessment of Broader Impacts Very Good

Explanation to Applicant Applicant has a very strong history of enhancing scientific understanding and integrating research and education. Applicant has shown leadership in these areas and has additional plans to expand online information and discussion of relevant scientific topics.
Graduate Division Activities

Fellowship advising with Dr. Kayleigh Anderson available.

Summer Workshops:

August 11, 2021: NSF & Ford Fellowship/Extramural Student Panel @ 9:00 a.m.

August 12, 2021: NSF & Ford Q&A/Follow-Up @ 11:30 a.m.

School of Biological Sciences Activities

• Writing support by current NSF GRFP recipients (TBA in September)
• Gary Roman has recent successful applications
Resources

• NSF GRFP Official Page
  • [https://www.nsfgrfp.org/](https://www.nsfgrfp.org/)

• NSF Fastlane (application submission)
  • [https://www.research.gov/grfp/Login.do](https://www.research.gov/grfp/Login.do)

• NSF GRFP Program Solicitation

• Sample documents (UCI students)
  • Available via zotportal
  • You MUST be logged in (make sure you’re logged in)
  • Find the weather, and look immediately underneath it
GPSRC Resources

- UCI Graduate Division Campus Groups Page
- Events and Programs
- Recordings (accessible through Forum)
- Appointments
  - Writing Consultant
  - Fellowship Mentors (coming in August)
  - Fellowship Advising with Kayleigh Anderson-Natale

If you haven’t already, sign up for Campus Groups to access the Graduate Division page and resources:
https://campusgroups.uci.edu/graddiv/club_signup