NSF CAREER: GETTING STARTED ON YOUR PROPOSAL

RESEARCH AND FACULTY DEVELOPMENT FACULTY SUCCESS SEMINAR SERIES

Nancy Holmes, Proposal Development Specialist, Office of Research and Economic Development

Please keep your microphone muted until the Q&A session

Please note that this session is being recorded
Mission: To provide the resources and services to University of Idaho faculty that enhance their success and productivity in their field of scholarly efforts, with the ultimate goal of growing the U of I’s research enterprise

- Alignment with U of I strategic plan
- Across all disciplines
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WHAT DOES RFD DO?

Successful, funded research leaders

- Faculty Development
- Proposal Development
- Leadership Development
PROPOSAL DEVELOPMENT SERVICES

Level 0
• Brainstorming
• Strategic planning for submissions

Level 1
• Search for funding opportunities
• Training to use Pivot

Level 2
• Preparing to contact Program Officers
• Assessing “fit” of a proposed idea

Level 3
• Strategize for a resubmission
• Analyze reviews, develop responses

Level 4/5
• Ensuring proposal documents are clear, concise, cohesive, and responsive to the solicitation

Level 6
• Support for large, complex proposals
• Center grants, infrastructure, etc.

All services are optional and are granted on a first come, first served basis.
# Faculty Development Success Seminars

## FALL 2021
- **Sept. 8**: Find Funding with Pivot, a Database of Grant Opportunities and More
- **Sept. 15**: M.J. Murdock Charitable Trust’s Partners in Science Program
- **Sept. 29**: Partnering with the U of I McClure Center on Your Research: Why and How
- **Oct. 6**: Working with the Research and Faculty Development Team to Enhance the Competitiveness of Your Next Proposal
- **Oct. 13**: NSF CAREER: Essential Steps Toward Developing a Competitive Proposal
- **Oct. 20**: Improving Your Grant Competitiveness: Strategies for Resubmission
- **Nov. 3**: UPDATE: Mountain West Clinical and Translational Research-Infrastructure Network (MW CTR-IN) Funding
- **Nov. 10**: NSF S-STEM: Strategies for Competitive Proposals

## SPRING 2022
- **Jan. 19**: Find Funding with Pivot, a Database of Grant Opportunities and More
- **Jan. 26**: Idaho Higher Education Research Council (HERC) Funding Opportunities
- **Feb. 9**: Lessons Learned from Serving on Proposal Review Panels
- **Feb. 23**: NSF Research Traineeship (NRT) Program: Strategies for Competitive Proposals
- **Mar. 2**: NSF CAREER: Getting Started on Your Proposal - Now is the Time!
- **Mar. 30**: First Impressions: Steps to Create a Captivating Proposal Title and First Page
- **Apr. 6**: Partnering with the U of I Project ECHO on Your Research: Why and How
- **Apr. 13**: Diversity, Equity, Inclusion, and Belonging: Broadening Participation in Funded Research

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**Zoom ID**: uidaho.zoom.us/j/81536190096

**Office of Research and Faculty Development**
- **Email**: ored-rfteam@uidaho.edu
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**We guide the development of competitive external grant proposals.**
Proposal Development Academy: What You Need to Know Before You Write

- Enhancing grant readiness of early-career faculty members

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<td>Developing a 5-year Research Funding Plan</td>
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<td>The Anatomy and Architecture of a Successful Proposal</td>
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- 9-week cohort program in Spring semesters
- Dean nomination to participate
OFFICE OF RESEARCH AND ECONOMIC DEVELOPMENT (ORED)

ORA: Office of Research Assurances
OSP: Office of Sponsored Programs
OTT: Office of Technology Transfer
NSF CAREER: ALL YEAR

- NSF CAREER: Essential First Steps toward Developing a Competitive Proposal – October 13, 2021 (access recording here)
- NSF CAREER All Year: Getting Started on Your Proposal (today)
- NSF CAREER Proposal Conversation Groups (see schedule here)
TODAY’S DISCUSSION

- Brief overview of the NSF CAREER Award program
- Steps to get started on now
- Understanding the Education Plan and Broader Impacts
- Resources
- Reminder: RFD support for proposal development
National Science Foundation Faculty Early Career Development Award

also known as

NSF CAREER

“...a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research.”
NSF Program Officer Elizabeth Rom (during a CAREER seminar on Oct 13, 2021):

“A common tendency for PIs new to writing a CAREER proposal is to approach it as one would a standard research proposal with the addition of an education plan. However, a competitive CAREER is not a research proposal, rather, it describes:

1) the PI’s research activities and education plan,  
2) the integration of these two, and  
3) how the proposed 5-year project will build a foundation “for a lifetime of contributions to research and education.”
NSF CAREER Proposal =

Research Plan +

Education Plan +

How these are integrated

5 years
Eligibility

- Untenured (until Oct. 1 after due date of July 25)
- Tenure track or equivalent
- Assistant Professor or equivalent
- Propose to conduct research in an area that NSF funds
- Have not submitted a proposal to the NSF CAREER program more than twice before
Other details

- 5 years of funding
- **Minimum** $400K total; includes F&A
  
  ($500K for BIO, ENG and Polar Programs)
- Must apply to a particular program within a directorate
  - Note: different NSF directorates and divisions use the CAREER program differently
To-do now

A. Study the NSF CAREER solicitation
B. Determine which NSF Directorate and Program to submit to, i.e., are right for your project
C. Read funded CAREER proposals from that Program
D. Identify your Program Officer
E. Talk to your Department Head/Chair

If you are unsure about any of the above: Contact RFD
B. Determine which NSF Directorate and Program are right for your project

https://www.nsf.gov/about/research_areas.jsp
C. Find and read funded CAREER proposals from your Program

https://www.nsf.gov/awardsearch/advancedSearch.jsp
CAREER: Ecosystem Processes in the Age of Antibiotics
Award Number: 1804147; Principal Investigator: Michael Stickland; Co-Principal Investigator: Organization: Regents of the University of Idaho; NSF Organization: DEB Start Date: 03/01/2019; Award Amount: $51,690.00; Relevance: 51.05%

CAREER: Cellular Mechanisms of Killer Toxin Resistance in Yeasts
Award Number: 2144405; Principal Investigator: Paul Rowley; Co-Principal Investigator: Organization: Regents of the University of Idaho; NSF Organization: MCB Start Date: 03/01/2022; Award Amount: $346,886.00; Relevance: 49.93%

CAREER: Integrating Western Science and Traditional Ecological Knowledge (TEK) to Understand Aphelopelma Diversity Across the Madrean Sky Islands and Educate K-12 Tribal Students
Award Number: 2144532; Principal Investigator: Chris Hamilton; Co-Principal Investigator: Organization: Regents of the University of Idaho; NSF Organization: DEB Start Date: 01/13/2022; Award Amount: $419,928.00; Relevance: 49.93%

CAREER: Islands as Models to Study Effects of Multidimensional Selection
Award Number: 1751157; Principal Investigator: Christine Parent; Co-Principal Investigator: Organization: Regents of the University of Idaho; NSF Organization: DEB Start Date: 05/15/2018; Award Amount: $887,808.00; Relevance: 49.93%

Collaborative Research: Effects of top scavenger declines—from microbes to ecosystems
Award Number: 2054716; Principal Investigator: Laurel Lynch; Co-Principal Investigator: Michael Stickland; Taka Hudiburg; Organization: Regents of the University of Idaho; NSF Organization: DEB Start Date: 09/01/2021; Award Amount: 1677,000.00; Relevance: 48.15%

RAPID: The effects of wildfire on an ecophysiological experiment and the role of abiotic drivers of resistance and resilience in sagebrush steppe landscapes
Award Number: 2037648; Principal Investigator: Marie Anne de Graaff; Co-Principal Investigator: Organization: Boise State University; NSF Organization: DEB Start Date: 07/15/2020; Award Amount: $259,152.00; Relevance: 48.15%

REU Site: Raptor Research "Soaring Higher"
Award Number: 1852133; Principal Investigator: James Belthoff; Co-Principal Investigator: Organization: Boise State University; NSF Organization: DEB Start Date: 04/01/2019; Award Amount: $231,707.00; Relevance: 48.15%

Collaborative Research: Multidimensional single-cell phenotyping for elucidating genome to phenotype relationships
Award Number: 2041522; Principal Investigator: Andreas Vasdekis; Co-Principal Investigator: Organization: Regents of the University of Idaho; NSF Organization: MCB Start Date: 03/01/2021; Award Amount: $336,514.00; Relevance: 48.09%
Reach out to CAREER awardees in your Directorate, to ask if you may read their proposals.
Or click here:

2021 CAREER Awards

and browse...
D. Identify your CAREER program officer

https://www.nsf.gov/crssprgm/career/contacts.jsp
E. Talk to your department chair/head

*CAREER proposals require a Departmental Letter that:*

1. States that the PI is eligible for the CAREER program;

2. Indicates the PI's proposed CAREER research and education activities are supported by and advance the educational and research goals of the department and the organization, and that the department is committed to the support and professional development of the PI;

3. Describes a) the relationship between the CAREER project, the PI's career goals and job responsibilities, and the mission of his/her department, and b) the ways in which the department head will ensure the appropriate mentoring of the PI, in the context of the PI's career development and his/her efforts to integrate research and education throughout the period of the award and beyond.
Begin developing your research idea

Guiding questions:

▪ What do you want you to do?
▪ Does it address important questions/gaps in your field?
▪ Is it novel?
▪ Do you have the background and resources to do it?
▪ Will it contribute to your long-term career goals?
▪ Can you do it as a single PI? (No co-PIs allowed, but collaborators are okay)
▪ Is the scope appropriate for a CAREER proposal (5 years)?
Begin developing your education plan

Guiding questions:

▪ What are your interests? What types of education and outreach activities might you already be doing?

▪ Do you need to partner with existing programs, e.g.
  ▪ Programs with/for teachers, and/or K-12 students
  ▪ Undergraduate research programs
  ▪ Science camps
  ▪ Community organizations
  ▪ Connections with industry

▪ Database of Education and Outreach Partners
“The education component of the proposal may be in a broad range of areas and may be directed to any level: K-12 students, undergraduates, graduate students, and/or the general public, but should be related to the proposed research and consistent with the career goals of the PI.”

(From the CAREER program solicitation)
Integration of Science and Education
“Proposals should describe an integrated path that will lead to a successful career as an outstanding researcher and educator.”

- NSF CAREER Solicitation
“Effective integration of research and education generates a synergy in which the process of discovery stimulates learning and assures that the findings and methods of research and education are quickly and effectively communicated in a broader context and to a large audience.”

-NSF CAREER Solicitation
Example 1

Heayoung Yoon, University of Utah, Dept of Electrical and Computer Engineering

CAREER: Optoelectronic Local Probes Measuring Microstructural Degradation and Recovery Under Accelerated Environmental Stressors

The PI’s research vision is integrated with an educational plan that aims to generate curiosity and excitement for solar energy and electron microscopy for a broad range of students, with a particular focus on young women students in Utah. The PI will involve undergraduate and graduate students in research and promote the participation of students from underrepresented groups in STEM. An interactive website with streaming videos and educational resources will assist in disseminating the research findings to the general public in the US and abroad.
Example 2

Paul Rowley, University of Idaho, Dept of Biological Sciences

**CAREER: Cellular mechanisms of killer toxin resistance in yeasts**

With the current design of our objectives, we are ideally placed to assay novel toxins identified from educational activities to test generalities of the RAM complex and Kre1p in killer toxin function. We also see the opportunity for synergy by having students begin their research careers in the killer yeast discovery laboratory and learning key techniques and developing good working practices. With these skills in place, we can predict that motivated and talented students would be able to embark on more advanced studies directly related to the research objectives presented in this proposal.
Broader Impacts
Begin formulating the Broader Impacts of your project

NSF uses two merit criteria to evaluate all proposals:

1. Intellectual Merit – The potential to advance knowledge

2. Broader Impacts – The potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

“Broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are directly supported by, but are complementary to, the project.”

NSF Proposal & Award Policies & Procedures Guide
Questions to consider when formulating a BI plan

- What are the societally-beneficial impacts of my research?
- What are the societally-beneficial impacts of my education plan?
- Who is my audience(s)? Or, to whom are these important?
- What activities I will implement to achieve broader impacts?
- What resources will I need?
- How will I evaluate/assess/measure impact?
NSF Broader Impacts (BI)

As part of its proposal review process, the National Science Foundation requires that all proposals substantially address the broader impact (BI) of the proposed research. The resources below can help you address this important merit review criterion.

- NSF Report: Perspectives on Broader Impacts
- National Alliance for Broader Impacts (NABI) Guiding Principles
- National Alliance for Broader Impacts (NABI) Current State of Broader Impacts
- A Scientist’s Guide to Achieving Broader Impacts
- Broader Impacts Activities Worksheet

Web resources:

- NSF Broader Impacts page
- NSF Advancing Research Impact in Society (ARIS)
- NSF Advancing Research Impact in Society (ARIS) BI 101 webinar
- Sample Broader Impact Statements
- BioScience article: Beyond the Deficit Model: The Ambassador Approach to Public Engagement
- CoSEE Broader Impact Wizard
- Broader Impact Wizard 7-minute video
Talk to your program officer
Talk to your program officer about your project

4-6 months ahead of proposal deadline (now):

- Develop a one-page concept paper or quad chart describing your research, education plan, broader impact activities
- Send a brief email, with the concept paper or quad chart and your biosketch attached, requesting a phone conversation or Zoom meeting
Why talk to your NSF program officer?

- Make sure you’ve selected the right NSF program
- Get feedback on your planned project
- Understand who your audience (the panel) will be
- Gives the PO a heads-up to expect your CAREER proposal
- Develops a relationship with your PO
Questions to ask your program officer(s) about your project:

- Does it fit the program?
- Is it suitable for CAREER?
- How are CAREERs in this division reviewed?
- What will the reviewers’ backgrounds be?
- Does the PO have any recommendations?

Listen carefully to PO’s advice and comments
Common Mistake #1: Not contacting the Program Officer

Common Mistake #2: Contacting the Program Officer too late
THE CAREER PROPOSAL
PROJECT SUMMARY - 1 PAGE

- 3 sections:
  - Overview
  - Intellectual Merit
  - Broader Impacts

- Summarizes plans for integration of research and education activities

- The summary is the most important piece, but it is the last part of the proposal you’ll write
PROJECT DESCRIPTION - 15 PAGES
PAGE 1 OF THE PROJECT DESCRIPTION:

- Clearly presents what you plan to do, why it’s important, and how you propose to do it
  - Both for the research and the education plan
- Presents your central idea and gets reviewers interested in the problem
- Describes landscape of your field
  - What is the knowledge gap you are looking to address?
  - Significance – what is not being done because of this gap?
- Argues how you are positioned to fill this gap, advance NSF’s mission, and propel your career
Proposed research project

Proposed educational plan, including plans to evaluate its impact

Description of integration of research and education

Broader Impacts

Results of prior NSF support, if applicable
BIOGRAPHICAL SKETCH (3 PAGES)

- Should include BOTH research and educational activities and accomplishments
- Must use the new NSF-approved format
OTHER DOCUMENTS

- Budget
- Budget Justification
- Departmental Letter
- Current and Pending Support
- Collaborators and Other Affiliations
- Facilities, Equipment and Other Resources
- Data Management Plan
- Letters of Collaboration
- List of Suggested Reviewers
RFD CAN PROVIDE:

- Brainstorming ideas
- Timeline of proposal development tasks
- Assistance finding and contacting a Program Officer
- Assistance finding partners of the education plan and broader impact activities
- Reviews of all documents (except the budget)
- Templates for Biosketch, Current & Pending Support, Collaborators & Other Affiliations, CAREER proposal checklist
- And more...

REQUEST RFD SERVICES
**NSF CAREER 2022 Proposal Checklist**

Based on PAPPG 22-1 effective 10/4/2021

**PI:**

**Title:**

**Deadline:** July 25, 2022 at 5:00 p.m. local time for submitting organization

Blue hyperlinks lead to specific sections within NSF’s Proposal and Award Policies and Procedures Guide and/or to UI Research and Faculty Development resource page.

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<th>Deadline</th>
<th>General Formatting</th>
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<td>□ Page numbers: Each section individually paginated</td>
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<td>□ Font: Recommend Times New Roman or Computer Modern family (11 pt.)</td>
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<td>□ Title must begin with “CAREER:” and follow with an informative title</td>
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|          | Simple-Copy Documents: For NSF programmatic use only, not sent to reviewers |
|          | □ Collaborators & Other Affiliations document for each senior personnel (Download template here) |
|          | □ List of Suggested Reviewers, optional but highly recommended |
|          | - In last name, list the names, email addresses, and institutional affiliation of possible reviewers |
|          | - May also list names of persons who should not be asked to review your proposal |

|          | Cover Sheet: input information directly into Fast Lane or Research.gov |
|          | If international travel is included, indicate the name(s) of the country(ies) or “Worldwide” if not known |

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<tr>
<th>Project Summary</th>
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<tr>
<td>Summarizes plans for integration of research and education activities. Required sections:</td>
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<td>● Project Overview</td>
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<td>-Provide references in support of both the research and education aspects proposal</td>
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<td>A. Professional Preparation (Institution, Location, Major, Degree &amp; Year)</td>
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<td>B. Appointments (reverse chronological order)</td>
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<td>C. Products or Publications – choose 1 of these headings; list up to 5 most closely related and up to 5 other significant</td>
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<tr>
<td>D. Synergistic Activities (up to 5 examples of broader impact of professional/scholarly activities)</td>
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CAREER-Specific Resources from NSF

- NSF CAREER Program Page
- NSF CAREER solicitation (RFP)
- FAQs 2020-2025
- Webinars
- NSF contacts
- NSF CAREER Webinar presentation slides
# Faculty Success Seminars

## Fall 2021

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**WE GUIDE THE DEVELOPMENT OF COMPETITIVE EXTERNAL GRANT PROPOSALS**

**Office of Research and Faculty Development**

Email: ORED-rfsteam@uidaho.edu
Website: uidaho.edu/orfd

ZOOM ID: uidaho.zoom.us/j/81586190096