Writing Your First R-Series Proposal

November 19, 2019
Agenda

• First steps for successful submission
• Components of a proposal
• Developing a proposal outline
• Mock review of specific aims and Q&A
  • Elliot Berkman, Psychology, Center for Translational Neuroscience
  • Karen Guillemin, Biology, IMB
  • Maureen Zalewski, Psychology
Background

Our prior session covered:

- Overview of NIH
- Funding opportunities
- Early Career Funding Mechanisms/ESI
- Peer Review Process
- Timeline for successful submission

Available at rds.uoregon.edu
Most common reasons behind unfunded proposals

- Lack of new or original ideas
- Diffuse, superficial or unfocused research plan
- Lack of knowledge of published relevant work
- Lack of experience in the essential methodology
- Uncertainty concerning the future directions
Most common reasons behind unfunded proposals

- Questionable reasoning in experimental approach
- Absence of acceptable scientific rationale
- Unrealistically large amount of work
- Lack of sufficient experimental detail
- Uncritical approach
Timeline for successful submission

**Months Prior**

- **8** mo.:
  - Brainstorm; research idea; call NIH staff

- **7** mo.:
  - Assess yourself, field, & resources

- **6** mo.:
  - Set up own review committee; determine human & animal subject requirements

- **5** mo.:
  - Outline application structure; write your application

- **4** mo.:
  - Get feedback; edit & proofread

- **3** mo.:
  - Meet institutional deadlines

- **2** mo.:
  - 1 mo.:
    - Receipt Date

**Research Development Services**

**University of Oregon**
Refining your idea

1. Define the niche you are systematically trying to develop
2. Collect and critically analyze background information
3. Generate a preliminary idea that is pertinent to your research problem
4. Assess your idea’s potential for success and modify as necessary
5. Seek constructive criticism
6. Refine idea to maximize potential impact
Heilmeier Catechism

• What are you trying to do? Articulate your objectives using absolutely no jargon.
• How is it done today, and what are the limits of current practice?
• What is new in your approach and why do you think it will be successful?
• Who cares? If you are successful, what difference will it make?
• What are the risks?
• How much will it cost?
• How long will it take?
• What are the mid-term and final “exams” to check for success?
## Grant Components: Ancillary

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>Modular vs. Detailed</td>
<td>DGA/SPS</td>
</tr>
<tr>
<td>Budget Justification</td>
<td>Modular vs. Detailed</td>
<td>RDS template</td>
</tr>
<tr>
<td>Biographical Sketches</td>
<td>5 pages</td>
<td>NIH template</td>
</tr>
<tr>
<td>Facilities &amp; Other Resources</td>
<td>No page limit</td>
<td>RDS templates and boilerplate</td>
</tr>
<tr>
<td>Equipment</td>
<td>No page limit; can be combined with Facilities</td>
<td>RDS templates and boilerplate</td>
</tr>
<tr>
<td>Letters of support</td>
<td>No page limit; must include for consultants and significant contributors</td>
<td>RDS can help draft</td>
</tr>
<tr>
<td>Assignment Request Form</td>
<td>Indicate institute and study section preference; key words; COI</td>
<td>NIH template</td>
</tr>
</tbody>
</table>
## Grant Components: Scientific

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Aims</td>
<td>1 page; MOST important component of the proposal</td>
</tr>
<tr>
<td>Research Strategy</td>
<td>6 or 12 pages for most R-series proposals</td>
</tr>
<tr>
<td>Project Summary</td>
<td>30 lines of text</td>
</tr>
<tr>
<td>Bibliography</td>
<td>Include PMCID numbers for your publications</td>
</tr>
<tr>
<td>Authentication of Key Biological and/or Chemical Resources</td>
<td>~1 page</td>
</tr>
<tr>
<td>Resource Sharing Plan</td>
<td>My DMP Tool</td>
</tr>
<tr>
<td>Human Subjects (clinical v. non-clinical v. justification for using human specimens data)</td>
<td>RDS template and examples</td>
</tr>
<tr>
<td>Vertebrate Animals</td>
<td>RDS template</td>
</tr>
<tr>
<td>Multiple PI Leadership Plan</td>
<td>RDS template and examples</td>
</tr>
</tbody>
</table>
Components of a grant: RDS resources

Welcome to RDS at UO

Research Development Services (RDS) aims to support and increase externally-funded research activity at the university. Our services are designed to meet the unique needs of faculty across disciplines and career stages. We help researchers identify funding opportunities and develop compelling, competitive proposals through a variety of resources, trainings, and customized assistance. RDS also manages the internal award programs funded by the Office of the Vice President for Research and Innovation, and serves as the central coordinator for external, limited submission competitions.

The following are our primary areas of activity to support the University of Oregon’s research endeavors:

Services

- Proposal Development
- Internal Funding
- Limited Submissions
- Funding Searches
- Proposal Resources
- Honors and Awards

If you would like to request services, please fill out the webform below, or contact RDS staff at rds@uoregon.edu
Developing a Proposal Outline

Gap in Knowledge/Lack of Something

Statement of Need

Overall Objective

Central Hypothesis

Specific Aims

Expected Outcomes
Specific Aims Outline

Paragraph 1: Introduction

Paragraph 2: What, Why, Who

Paragraph 3: Specific Aims

Paragraph 4: Pay Off
Paragraph 1: Introduction

- **Opening Sentence**: Capture attention and highlight NIH-relevant area your application will address; focus on something the reviewers will *not* know

- **Current Knowledge**: 4-6 sentences to frame why what you propose to do is needed; progression from older knowledge to what currently is the “edge” of the field

- **Gap in Knowledge/Lack of Something**: what is the next piece of knowledge to advance the field vertically

- **Statement of Need and Consequences of Not Meeting that Need**: Frame the gap in knowledge as a problem that demands a solution; what, explicitly, is needed?
Paragraph 2: What, Why, Who

Go from broadest to narrowest focus in terms of scope

• **Long-term goal:** establish the continuum of research that you will be pursuing over multiple periods of grant support.

• **Overall objective:** must meet the need you identify in P1; emphasize the product you aspired to provide— not the process that will produce it.

• **Central Hypothesis and How Formulated:** must relate directly to overall objective and your preliminary data.

• **Rationale:** what is possible at the completion of the research that is not possible now; the WHY of this paragraph.
Paragraph 3: Specific Aims

- Aims must test all parts of your central hypothesis
- Aims should flow logically, but not be dependent
- Brief, informative, attention getting “headlines” to convey why that part of the research is being proposed (not what is being done)
- Should be global and open-ended to allow for alternative strategies if necessary (working hypothesis focuses the aim)
Paragraph 4: Pay-Off

- Expected outcomes of the research
- Generality regarding positive impact (segue into significance section of the proposal)
Research Strategy Outline

• Significance
• Innovation
• Approach

Represent 40% of your score
Research Strategy Outline

Significance: extend and validate the assertions you make in the first paragraph of your aims
- Importance of the problem to be addressed
- Rigor of the prior research supporting the aims*
  - Aim 1 (literature & prelim data)
  - Aim 2 (literature & prelim data)
- Significance of expected research contribution

*Relatively recent shift to incorporate preliminary data within aims; not the only way to present your early results
Research Strategy Outline

**Innovation:** new and relevant departure from the status quo that addresses an important, NIH-relevant problem, thereby enabling new, NIH-pertinent horizons to be reached that otherwise would like have remained unattainable

- **Part 1:** diplomatically frame status quo
- **Part 2:** statement of innovation (in our opinion)
- **Part 3:** describe how what you are proposing will break down barriers that have prevented others from reaching the “new horizons” you envision
Research Strategy Outline

**Approach:** Make reviewers WANT to read the details

**Each Aim:** re-state verbatim

**Introduction:** objective, working hypothesis, approach, rationale, expectation (1/4-1/3 of page)

**Research Design:** Rigorous experimental design for robust and unbiased results; consideration of relevant biological variables;

**Expected Outcomes:** highlight ROI

**Potential Problems & Alternative Strategies**

**Timeline and Benchmarks for Success**

**Future Directions**
Specific Aims Review #1

Chronic Fatigue Syndrome
Specific Aims Review #2

Regulation of Appetitive Behavior
Specific Aims Review #3

Cell-Phone Based RCT
Specific Aims Review #4
Mechanics of biofilms in wound healing
Reviewer Panel: Q&A
Writing for Reviewers

- Hierarchical Formatting
- Persuasive, clear, direct language
  - Simple, declarative sentences
  - Brevity
  - Avoid:
    - Empty generalities (i.e., “State-of-the-art”)
    - Nouns as adjectives
    - Weak qualifying words
    - Whether (or not)
  - Repetition is good
Next Workshop

Identifying and Building Relationships with Industry Partners
  • Wednesday, January 29, 12pm-1pm, EMU Lease Crutcher Lewis

Managing Relationships with Industry Partners
  • Tuesday, February 5, 12pm-1pm, EMU Lease Crutcher Lewis
Work with RDS

Contact us for supporting the development of your proposals.

Research Development Services
www.rds.uoregon.edu
rds@uoregon.edu

Kate Petcosky-Kulkarni
kpetcos2@uoregon.edu
541-346-6239