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Writing Your First R-Series Proposal

November 19, 2019

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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



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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



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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



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Most common reasons behind unfunded proposals

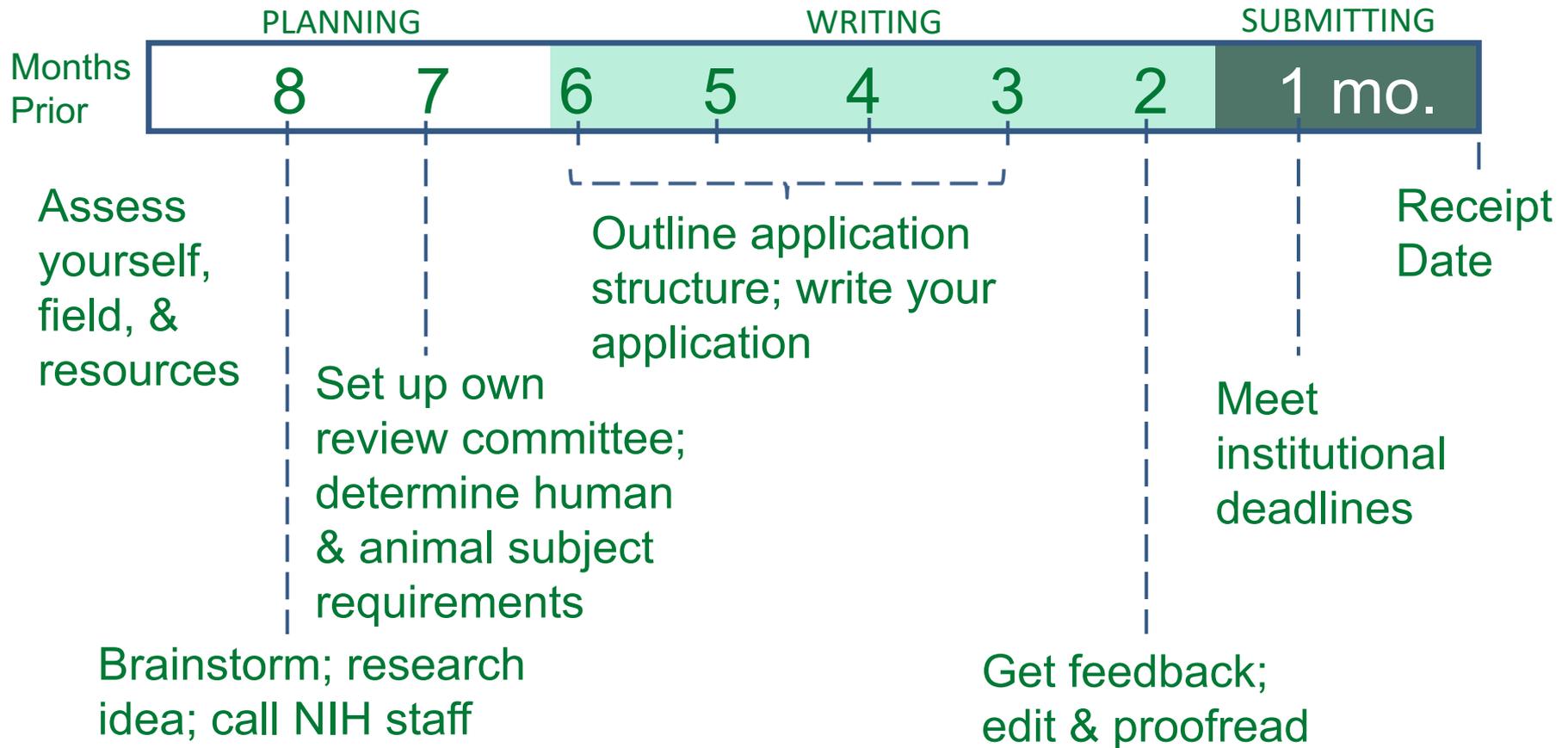
- Questionable reasoning in experimental approach
- Absence of acceptable scientific rationale
- Unrealistically large amount of work
- Lack of sufficient experimental detail
- Uncritical approach



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Timeline for successful submission



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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



Refining your idea

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?



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Grant Components: Ancillary

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



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Grant Components: Scientific

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



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Components of a grant: RDS resources

FUNDING & AWARDS

[Internal Funding Opportunities](#)

[External Funding Resources](#)

[Honors & Awards](#)

[Outstanding Research Awards](#)

SERVICES

[Proposal Development](#)

[Principal Investigator Status](#)

[Training](#)

RESOURCES

[Proposal Writing Resources](#)

- [Templates and Checklists](#)
- [Boilerplate Resources](#)
- [Data Management Plan Tool](#)

[Funding Opportunities Newsletter](#)

[NIH Salary Cap Policy](#)

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

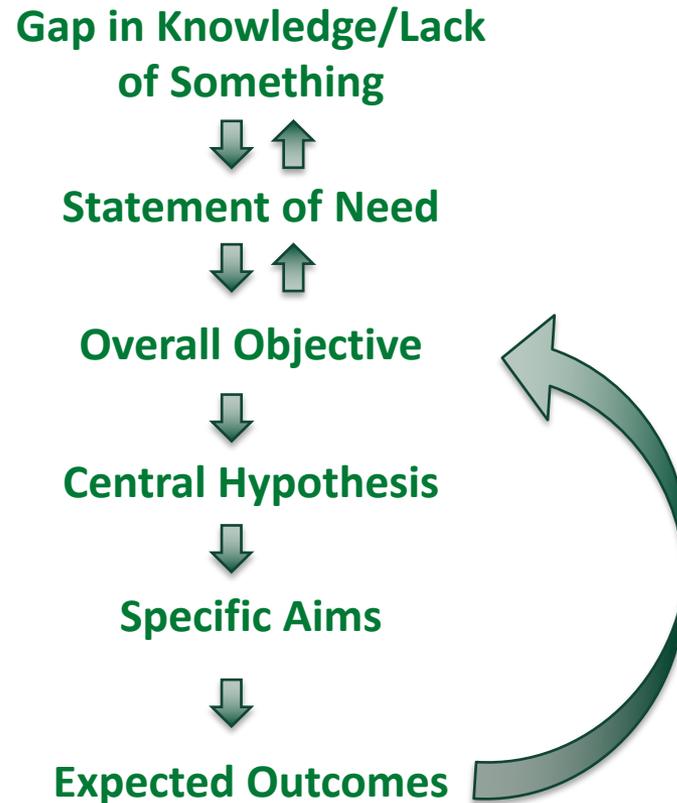
*If you would like to request services, please fill out the webform below,
or contact RDS staff at rds@uoregon.edu*



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Developing a Proposal Outline



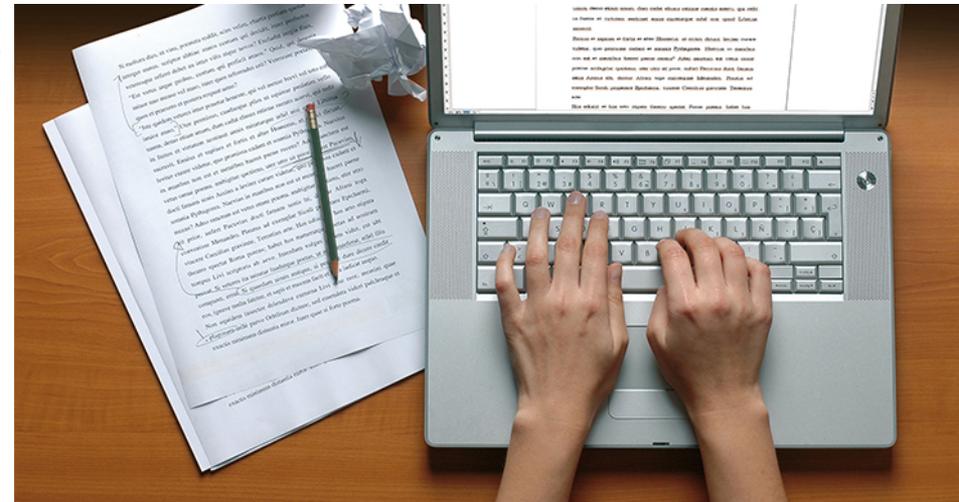
Specific Aims Outline

Paragraph 1: Introduction

Paragraph 2: What, Why, Who

Paragraph 3: Specific Aims

Paragraph 4: Pay Off



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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 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



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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)



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Research Strategy Outline

- Significance
 - Innovation
 - Approach
- Represent 40% of your score



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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*



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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



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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



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Specific Aims Review #1

Chronic Fatigue Syndrome



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Specific Aims Review #2

Regulation of Appetitive Behavior



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Specific Aims Review #3

Cell-Phone Based RCT



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Specific Aims Review #4

Mechanics of biofilms in wound healing



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Reviewer Panel: Q&A



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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



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Work with RDS

Contact us for supporting the development of your proposals.

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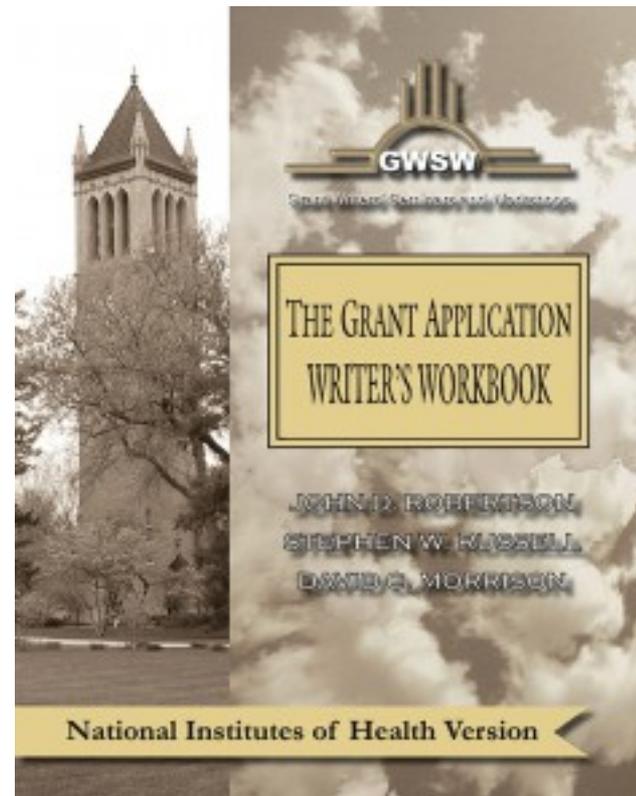
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