



BRIGHAM AND
WOMEN'S HOSPITAL

C E N T E R F O R

Faculty Development & Diversity

Sharing strategies. Supporting careers.



Insights for Investigators Series: Grant Writing Tips & Strategies

Robert C. Fuhlbrigge, MD, PhD

Slides prepared by Vijay Kuchroo, DVM, PhD

Monday, May 12, 2014



NIH Research Supplements to Promote Diversity

NIH Research Supplements to Promote Diversity in Health-Related Research

Deadline: Six per year

Amount: Direct costs for individual administrative supplements vary from less than \$5,000 to more than \$100,000 depending on the career level of the candidate.

The NIH encourages institutions to diversify their student and faculty populations and thus to increase the participation of individuals currently underrepresented in the biomedical, behavioral, clinical and social sciences such as: individuals from underrepresented racial and ethnic groups, individuals with disabilities, and individuals from socially, culturally, economically, or educationally disadvantaged backgrounds that have inhibited their ability to pursue a career in health-related research. Institutions are encouraged to identify candidates who will increase diversity on a national or institutional basis. NIH Diversity Supplements provide salary support for under-represented minority (URM) candidates from the high school through the investigator level. **Any R mechanism NIH grant with at least 2 years of funding can be eligible for the supplement, and the funding rate is very high.**

<http://grants.nih.gov/grants/guide/pa-files/PA-12-149.html>



CFDD Resources for Faculty & Fellows

A myriad of resources available on our website:

www.brighamandwomens.org/cfdd

- ☞ Fellowships and Awards
- ☞ Academic Advancement criteria, videos, templates
- ☞ Work/Life balance assistance
- ☞ CV and Career Consultations
- ☞ *NEW* Mentoring Toolkit



The Insights for Investigators Series consists of four panels/seminars and an online Toolkit.

SPRING 2014 SCHEDULE:

- Diversifying Your Funding Portfolio – 1/10
- Understanding NIH Study Sections – 3/10
- Developing Collaborations in Science – 4/8
- Grant Writing Tips & Strategies for NIH – 5/12

See IFI web page for details:

http://www.brighamandwomens.org/medical_professionals/career/cfdd/oprc/ifi.aspx

Insights for Investigators

Diversifying Your Funding Portfolio
January 10, 2014 • 12-1:30pm • OBC 4-0028
Panelists:
Robert Fuhrbrigge, MD, PhD
Matthew LaVie, PhD
Amir Lahav, ScD, PhD
Masanori Akawa, MD, PhD

Understanding NIH Study Sections
March 10, 2014 • 12-1:30pm • Carrie Hall
Panelists:
Robert Fuhrbrigge, MD, PhD
Olivia Olerette, MD
Guillermo Garcia-Cardeña, PhD
Stacey Mizser, ScD

Developing Collaborations in Science
April 8, 2014 • 12-1:30pm • OBC 4-0028
Panelists:
Robert Fuhrbrigge, MD, PhD
Lindsey Baden, MD
Philip De Jager MD, PhD
Jill Goldstein, PhD

Grant Writing Tips & Strategies for NIH R01s
May 12, 2014 • 12-1:30pm • Carrie Hall
Robert Fuhrbrigge, MD, PhD

PLEASE REGISTER ONLINE:
www.brighamandwomens.org/calendar

See the Insights for Investigators Toolkit:
http://www.brighamandwomens.org/medical_professionals/career/cfdd/oprc/ifi.aspx

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This seminar provides participants with a brief overview of clear and effective grant writing strategies, with an emphasis on the organization, planning and writing of the main components of the NIH R01 grant application. Participants will also hear a brief overview of the landscape of funding opportunities, explanation of NIH funding mechanisms, strategies for building a grant portfolio, and the grant submission process.

Additional Reading:

http://www.hhmi.org/sites/default/files/Educational%20Materials/Lab%20Management/Making%20the%20Right%20Moves/moves2_ch9.pdf

Grant Writing

Money: How to get it

Slides prepared by Dr. Vijay Kuchroo

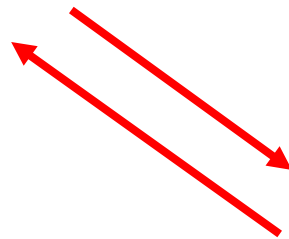
Pulse: grants and papers



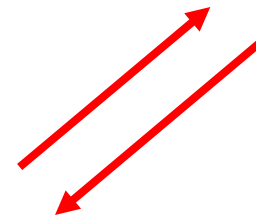
Grants



Papers



Research



Funding Sources

- **Foundations**
 - Disease directed (ACS, NMSS, JDRF)
 - Investigator directed (HHMI)
 - Global Health (Gates Foundation)
- **Federal agencies**
 - National Institutes of Health
 - National Science Foundation
- **Pharmaceutical Industry**
 - Scientific Research Agreements, Contract service, licensing
- **Philanthropy**

NIH funding mechanisms

- RO1 (investigator initiated)
- R21 (New, exploratory research grants)
- K series (mentored grant applications)
- PO1 (program projects)
- Program announcements (PA)
- Request for applications (RFAs)

comprehensive list of extramural grant and cooperative agreement activity codes

http://grants.nih.gov/grants/funding/ac_search_results.htm

Strategies for building a grant portfolio

- **First grant**
 - Foundation
 - R21/ K awards
(Need very little or no preliminary data)
- **Second grant**
 - RO1
(require a whole lot of preliminary data)
- **Third grant**
 - PO1
(with a group of investigators who are your collaborators)
- **Industry**
 - Funding and reagents

LIFE CYCLE OF A RESEARCH GRANT

- Develop a critical idea for a research proposal
- Respond to:
 - Program Announcement (PA)
 - Request for Applications (RFA)
 - Investigator Initiated Grant

Review Process for a Research Grant Application

Initiates
Research Idea



Submits
Application
to NIH

Allocates Funds

Center for Scientific Review

Assign to IRG/↓ Study Section

Study Section

Review for ↓ Scientific Merit

Institute

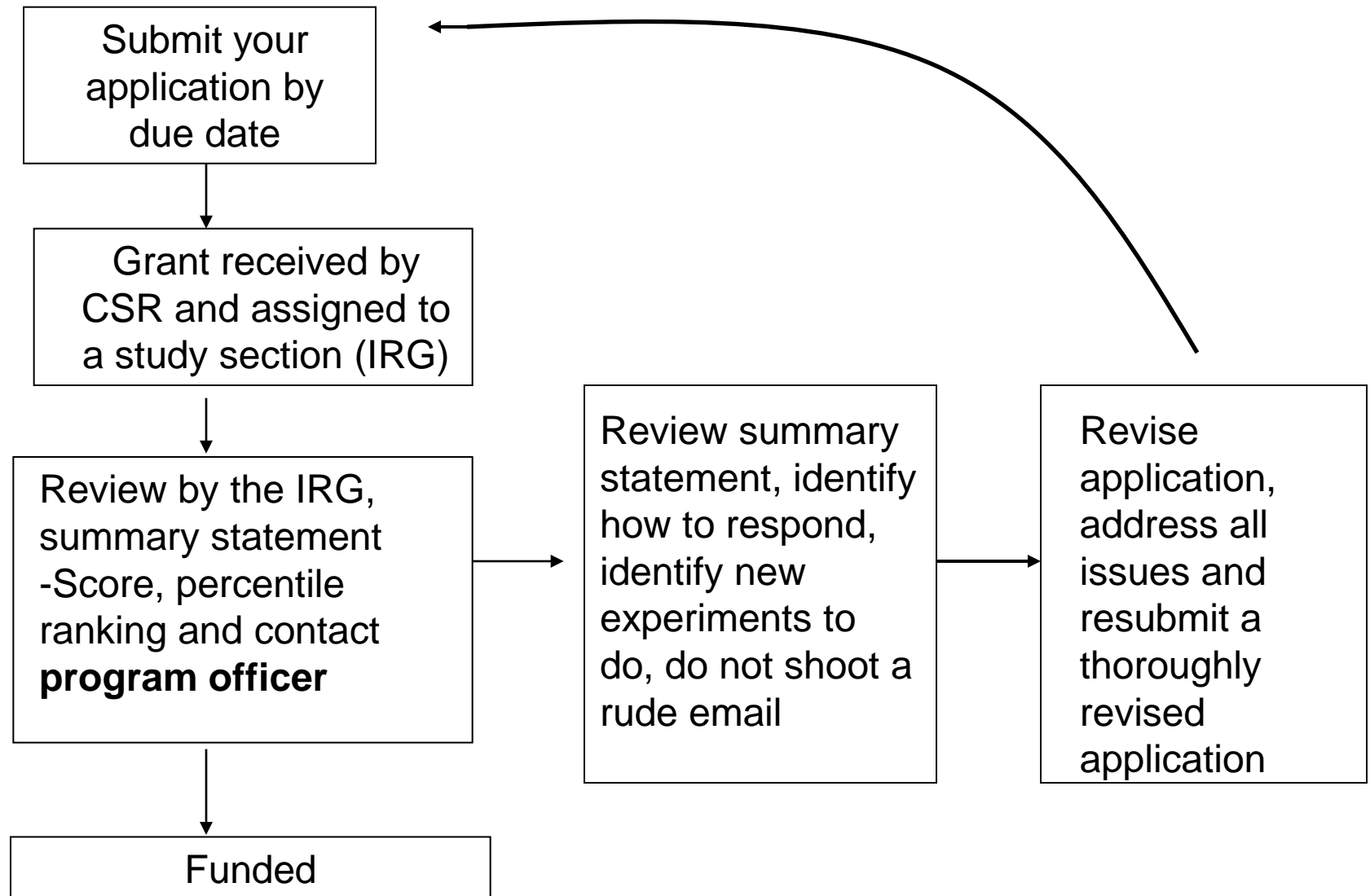
Evaluate for ↓ Relevance

Advisory Councils and Boards

Recommends ↓ Action

Institute Director

From submission to funding



LIFE CYCLE OF A RESEARCH GRANT

Timing

- Submission dates: October 1, February 1, June 1
- Reviewed in Feb/March, June/July, Oct/Nov
- Goes to Institute advisory Council May/June, Sept/Oct, Jan/Feb
- Earliest award: July, December, April
 - 9 months from submission

PREPARING AN APPLICATION

- read the instructions
- READ THE INSTRUCTIONS
- Read the CORRECT instructions, i.e., those pertaining to the grant for which you are applying
- Read ALL of the instructions and FOLLOW THE MOST CURRENT instructions

Components of an RO1

- **Administrative section**
 - Biosketch including publication list
 - Other support
 - Resources and Environment
 - IRB/ Animal protocol approval
- **Scientific section**
 - Abstract
 - Specific aims
 - Research plan

Organizing the application

- Identify the good idea
- New pieces of preliminary data
- Generated a new tool

- Give yourself plenty of time
- discuss aims and the application with a colleague

- Prepare first draft
- Submit with admin. pages for signature
- Obtain critique and discuss

3 weeks

- Polish application based on critique
- Cross check budget, budget justification and time lines
- Check spellings and Bibliography

1 week

Abstract /summary

- Big picture (simple words)
- Rationale
- Key piece of data/reagent/tool
- Hypothesis
- Aims
- Highlight key words

Abstract /summary

- Big picture (simple words)

Everybody on the study section including all administrators read your abstract

- Aims
- Highlight key words

Specific aims (1 page)

1. Brief Introduction and Long Range Goal

Importance of the proposed study

What knowledge gap will be addressed?

2. Central Hypothesis

Must be testable/ experimental outcome should select from among various possibilities

Should NOT confirm a predetermined conclusion

3. Rationale

Why now and why you? Unique tools/ preliminary data

4. Aims: limit application to 3 aims

5. Significance

Specific aims (1 page)

1. Brief Introduction and Long Range Goal
Importance of the proposed study

All committee members read
specific aims, listen to the discussion and vote
on your application

should NOT commit a predetermined conclusion

3. Rationale
Why now and why you? Unique tools/ preliminary data
4. Aims: limit application to 3 aims
5. Significance

SPECIFIC AIMS

- Should be brief, focused, and limited in scope.
- Each aim should logically flow into the next aim.
- BRIEFLY expanded upon each - how they will inform/test the central hypothesis.
- Be realistic: do not overestimate your abilities or capabilities for completing the work proposed in your application in the time requested.

Research Strategy (12 pages)

- Significance (Rationale)
 - Importance of the problem
 - How proposed studies will improve scientific knowledge
 - How concepts/methods will drive the field
- Innovation
 - Innovations, refinements or improvements
 - New methods, approaches or concepts
 - How application will change understanding in the field

Research Strategy (12 pages)

- Significance (Rationale)

- Importance of the problem
- How proposed studies will improve scientific knowledge

- **New applications do not have a background section, use significance and innovation sections to include essential pieces of background**

- How application will change understanding in the field

Research Strategy

Approach

- Preliminary studies (for new applications)
- Progress report (for competitive renewal)
- Overall strategy and methods
- Analysis
- Alternative strategies
- Pitfalls and Additional considerations

PRELIMINARY STUDIES

- Describe published studies in limited detail and include the most important figures and/or tables.
- Describe unpublished studies in more complete detail, including newer data.
- Do not duplicate the preliminary studies with the proposed studies.

THE RESEARCH DESIGN

This is the “heart and soul” of the application. In this section, state precisely

- What you propose to do
- How you plan to do it
- What the results will mean in terms of the overall project
- What pitfalls you might consider
- Alternative approaches to cope with the anticipated problems or pitfalls

RESEARCH DESIGN continued

Restate each Specific Aim and for each, provide:

- Introduction
- A methods of approach
- Anticipated findings or results
- Potential pitfalls/alternative approaches

Watch your words

- Be simple, precise and direct (60-100 applications reviewed per IRG meeting)
- Build interconnected aims directed to a single hypothesis
- Hypothesis driven - NOT a fishing expedition
- Keep it simple: Use only one or two systems
- Do not be sloppy (no spelling errors)!
- Give credit to others

Watch your words

- Be simple, precise and direct (60-100

ap

- B

h

- H

- K

- D

- Give credit to others

- Clarity
- Content
- Coherence
- Cutting edge

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ion

ms

Review Criteria

- Overall Impact
- Significance
- Investigator
- Innovation
- Approach
- Environment

- 1= Exceptional
- 2= Outstanding
- 3 = Excellent
- 4 = Very Good
- 5 = Good
- 6 = Satisfactory
- 7 = Fair
- 8 = Marginal
- 9 = Poor

NRFC = Not recommended for
further consideration
UN = Unscored

Strengths and weaknesses

Scoring Descriptions

Impact	Score
High Impact	1
	2
	3
Moderate Impact	4
	5
	6
Low Impact	7
	8
	9

How Could They?

NIH budget is flat

Funding paylines 6-12%

In the end, there is no substitute for:

1. Good science
2. Productivity



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Thank you



CFDD Contact Information



Center for Faculty Development & Diversity

BWHCFDD@partners.org

617-525-7646



Office for Research Careers

BWHORC@partners.org

617-525-9323



Office of Multicultural Faculty Careers

BWHOMC@partners.org

617-525-9324



Office for Women's Careers

OWC@partners.org

617-723-8595