Grant-Writing Bootcamp: Networking Opportunity for Academic Women in STEMM

Chatanika (Nika) Stoop, Ph.D.
What do you think of when you think of grant proposal writing?
Montana State University
Center for Faculty Excellence

http://www.montana.edu/facultyexcellence/research/helpfullinks.html
Learning Outcomes:

• Describe the content and structure of the MSU bootcamp
• Summarize the role of networking in the success of bootcamp
• Learn from the experience of others in room
• Outline the steps and challenges for having a bootcamp at your institution
Overview of the Workshop

Introductions

Overview of the MSU bootcamp

BREAK

Activity

Understanding Impact

Hello

Hello
Introductions

• Name
• Department
• School

Why did you pick the card you did?
OVERVIEW OF THE MONTANA STATE GRANT-WRITING BOOTCAMP
### Academic Writing versus Grant Writing: Contrasting Perspectives

<table>
<thead>
<tr>
<th>Academic Writing</th>
<th>Grant Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarly pursuit:</td>
<td>Sponsor goals:</td>
</tr>
<tr>
<td>Individual passion</td>
<td>Service attitude</td>
</tr>
<tr>
<td>Past oriented:</td>
<td>Future oriented:</td>
</tr>
<tr>
<td>Work that has been done</td>
<td>Work that should be done</td>
</tr>
<tr>
<td>Theme-centered:</td>
<td>Project-centered:</td>
</tr>
<tr>
<td>Theory and thesis</td>
<td>Objectives and activities</td>
</tr>
<tr>
<td>Expository rhetoric:</td>
<td>Persuasive rhetoric:</td>
</tr>
<tr>
<td>Explaining to reader</td>
<td>“Selling” the reader</td>
</tr>
<tr>
<td>Impersonal tone:</td>
<td>Personal tone:</td>
</tr>
<tr>
<td>Objective, dispassionate</td>
<td>Conveys excitement</td>
</tr>
<tr>
<td>Individualistic:</td>
<td>Team-focused:</td>
</tr>
<tr>
<td>Primarily a solo activity</td>
<td>Feedback needed</td>
</tr>
<tr>
<td>Few length constraints:</td>
<td>Strict length constraints:</td>
</tr>
<tr>
<td>Verbosity rewarded</td>
<td>Brevity rewarded</td>
</tr>
<tr>
<td>Specialized terminology:</td>
<td>Accessible language:</td>
</tr>
<tr>
<td>“Insider jargon”</td>
<td>Easily understood</td>
</tr>
</tbody>
</table>

Why design a bootcamp?

Everyone needs grant-writing support!

Women

- Less institutional startup resources (Sege et al. 2015)

Men

- Less credit for their contributions in team-based science collaborations (Torres 2016)
- Often face more service obligations so they have less time for research activities (Misra et al. 2011)

Women

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Why design a bootcamp?

• Women in STEM submit fewer proposals (Goldstein et al. 2016)
  – At MSU: since 2010, 26.2% of the grants were awarded to women when the overall percentage of women faculty ranged from 32.2% (in 2010) to 37.3% (in 2014)
  – 21% of grants that were funded at MSU in fiscal year 2014 had a woman faculty listed as PI

• Often receive less funding than men (Boyle et al. 2015)
  – At MSU: on average, women received ¼ of what men received
Project TRACS: Empirically Investigating Transformation through Relatedness, Autonomy, and Competence Support

Self-Determination Theory

National Science Foundation: 1208831.
6-week Grant Writing Bootcamp Intervention Designed to:

1. enhance **autonomy** of faculty to take creative approaches with topics, methods, and funding sources

2. enhance **competence** of the faculty with tools and templates for navigating the grant paperwork and submission process

3. enhance **relatedness** of the faculty by creating small groups of similarly situated people and connections to senior science mentors
Overview of Boot Camp

• Objectives
  – Introduce participants to the overall grant submission process
  – Provide time for peer feedback on parts of the proposal
  – Make connections to peers and area experts at MSU for mentoring opportunities
  – Help participants understand the MSU Office of Sponsored Programs procedures and services
Grant Proposal Writing Boot Camp for Faculty
September/October 2015

Start Here

Finding Funding:
Grant Proposal Writing Process
Fitting your Research to a Funding Source
  Identify a Funding Opportunity
  Register with funding agencies

Submission Process:
Complete Project Description/Research Plan for Review
Budgets
Submission Timeline

Starting the Process:
How to read an RFA
Consulting Mentors
Office of Sponsored Programs
  List of details of opportunity and resources, support needed
  Contact potential mentor

Proposal Narrative:
Telling Your Story
Understanding Review Criteria
Working with co-PIs/Other Institutions
  Draft main narrative
(5 pages)

Designing Your Project:
LOIs, Pre-proposals
Specific Aims/Summaries
Talking to Funding Agency Contacts
  Draft Project Summary/Specific Aims
  Develop questions for agency contact
  Reach out and make appointment with agency contact

Proposal Team:
Meet People at MSU that can help with your proposal

Revised Project Summary/Specific Aims
Discuss with agency contact

Diagram Instructions:

1. Start at the top left hexagon labeled "Finding Funding: Grant Proposal Writing Process Fitting your Research to a Funding Source."
2. Move clockwise to the next hexagon labeled "Starting the Process: How to read an RFA Consulting Mentors Office of Sponsored Programs."
3. Move clockwise to the next hexagon labeled "Proposal Narrative: Telling Your Story Understanding Review Criteria Working with co-PIs/Other Institutions."
4. Move clockwise to the next hexagon labeled "Proposal Team: Meet People at MSU that can help with your proposal."
5. Move clockwise to the next hexagon labeled "Designing Your Project: LOIs, Pre-proposals Specific Aims/Summaries Talking to Funding Agency Contacts."
7. Move clockwise back to the hexagon labeled "Finding Funding: Grant Proposal Writing Process Fitting your Research to a Funding Source."

End at the hexagon labeled "Start Here."
Session Framework

• Presentations/discussion around topic
• Activities that incorporate topic
• Groups/Partnerships
  - Giving feedback on parts of the proposal
  - Developing the first paragraph/summary
  - Use a shared drive
• In-Class Work
• Out-of-Class Work
• Materials on shared drive
# Writing Your Story – Session 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 – 9:40 AM</td>
<td>Homework Follow-up</td>
</tr>
<tr>
<td>9:40 – 10:40 AM</td>
<td>Understanding the Review Process</td>
</tr>
<tr>
<td>10:40 – 10:45 AM</td>
<td>Break</td>
</tr>
<tr>
<td>10:45 – 11:00 AM</td>
<td>Graphical Abstracts</td>
</tr>
<tr>
<td>11:00 AM – 11:45 AM</td>
<td>Telling your Story</td>
</tr>
<tr>
<td>11:15 AM – 12:00 PM</td>
<td>Group Exercise</td>
</tr>
</tbody>
</table>
Raina Plowright, NSF Dynamics of Coupled Natural and Human Systems Grant

We propose to examine the role of bats as vectors for the transmission of Hendra virus, which can be fatal to horses and humans, at multiple spatial scales across the Australian landscape. We will focus on three phenomena: changes in the moment of bats as forests are fragmented and converted to exurban development, the flow of virus and its transmission through bat populations as the diets and foraging patterns of bats change, and how the transmission of disease to livestock and humans can be mitigated by changes in human behavior.
Recruitment

FIVE FRIDAYS
from 9:30 am to 12:00 PM
Limited enrollment so apply for a spot by September 8th
APPLICATION REQUIRED: Go to http://www.montana.edu/facultyexcellence for more info and to apply

New to the grant-writing process?
The Center for faculty Excellence is offering a Grant-Writing Bootcamp this fall. Go through the process from beginning to end while working on your own grant proposal, including feedback from peers and experts.

Grant-Writing Bootcamp
Fridays - September 15th through October 13th

Fill out an application providing:
• Funding opportunity
• Sessions they will be able to attend
• Grant writing experience

Women in STEM and those who can attend all sessions are given priority

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Limited enrollment so apply for a spot by September 8th
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Networking

• Peers
• Grant-Successful Faculty
• MSU Grant Support Resources
Research Network at MSU

**DATA & COMPUTATIONAL**
- Office of Planning and Analysis (Godwin, Belo)<br>- Registrar’s Office (Langemier)<br>- Data Infrastructure and Scholarly Communication (DISC)

**CORE: (Primary Intake)**<br>Consists of Office of Sponsored Programs, Proposal Services and Center for Faculty Excellence

**OUTREACH & COMMUNICATION**
- MSU Web and Digital Communications<br>- MSU Extended University (Taylor, Comish)<br>- Montana INBRE (Bertagnolli, Sabo)

**REVIEW & DEVELOPMENT**
- MSU Alumni Foundation<br>- WTI (Little, May)<br>- ERI (Spangler)

**SPECIALTY AREAS**
- Institute on Ecosystems (Maswell)<br>- College of EHS (Bett)<br>- College of Nursing (Wilmans, Myers-Clancy)<br>- EHS Labs (Rains)<br>- Tech Inc. and TTO (Silver, Messina)<br>- Evaluation and Assessment (multiple)

**MSU Research Network: Resources for Investigators**
Evaluations and Feedback
What do you need?

- Facilitator
- Advisory Team
- Grant-Successful Faculty who are willing to be mentors
- Materials for each session
- Ways for people to collaborate – document sharing
- Budget for facilitator, materials, and refreshments - ~$7 K
- Evaluations and/or a way to gather feedback
- Faculty from different departments with a grant proposal to work on
BREAK
ACTIVITY
Implementing Bootcamp

• What similar grant-writing support activities are already ongoing?

• What are the challenges to starting a bootcamp?

• What are some ideas for overcoming those challenges?
UNDERSTANDING THE IMPACT
Study of the Impact

3 bootcamps over 18 months

~43 participants

20 women

STEM

Assessment Tools

- Self-reported general evaluation and psychological-need satisfaction of bootcamp by survey at the end of bootcamp
- Grant activity – looked one-year before bootcamp and one-year after bootcamp
- Comparison sample matched by gender, rank, and STEM field category
Self-Reported Surveys

The participants rated two items:

(1) “I think Bootcamp will have a positive impact on my career advancement” and
(2) “I would recommend Bootcamp to my colleagues”

Mean = 6.18
Self-Reported Surveys

Assessment using one-sample t-tests showed high levels of:

1) Autonomy: “I feel free to express my ideas and opinions in Bootcamp”

   Strongly Disagree  
   1  
   Strongly Agree  
   Mean = 6.4

2) Competence: “The Bootcamp increased my confidence in my ability to do well at grant writing”

   Strongly Disagree  
   1  
   Strongly Agree  
   Mean = 6.0

3) Relatedness: “I really like the people I worked with in Bootcamp”

   Strongly Disagree  
   1  
   Strongly Agree  
   Mean = 6.1
Success Rate

![Graph showing awards per submission before and after a bootcamp compared to a comparison group. The graph indicates a decrease in awards per submission in the Pre phase for both groups, with the Bootcamp group having a higher rate. In the Post phase, the Bootcamp group shows an increase in the rate of awards per submission.]
Number of Submission

**1a**
NUMBER OF GRANT SUBMISSIONS

**1b**
NUMBER OF PI GRANT SUBMISSIONS

- **Pre**
- **Post**

- **Bootcamp**
- **Comparison**
Funding Success

1c NUMBER OF GRANTS AWARDED

1d AMOUNT AWARDED

- Bootcamp
- Comparison

Pre | Post
---|---
0 | 2
0.5 | 1.5
1 | 1
1.5 | 0.5
2 | 0

Pre | Post
---|---
$ - | $250,000
$50,000 | $200,000
$100,000 | $150,000
$150,000 | $100,000
$200,000 | $250,000

Grant-Writing Bootcamp: An Intervention to Enhance the Research Capacity of Academic Women in STEM

JESSI L. SMITH, CHATANIKHA STOOP, MICALEA YOUNG, REBECCA BELOU, AND SUZANNE HELD

Broadening the participation of women in science, technology, engineering, and mathematical (STEM) fields is more than a social-justice issue. Enhancing the research capacity and opportunity of women faculty requires purposeful changes in university practice. Therefore, we designed an intervention, a grant-writing bootcamp informed by self-determination theory (Deci and Ryan 2012), to support the participants’ feelings of relatedness, autonomy, and competence. Three grant-writing bootcamps were run over an 18-month period. Using a pre- and post-test design, participants showed significant increases in the number of external grants submitted, the number of proposals led as principal investigator, the number of external grants awarded, and the amount of external funding dollars awarded.

Keywords: women in STEM, self-determination theory, intervention, grant writing, behavioral science

There is no doubt that women are numerically underrepresented as academic researchers in most science, technology, engineering, and mathematics (STEM) fields (NSF 2014, Corbett and Hill 2015) and that the working environment can feel unwelcoming to those women who do persist in academia (e.g., Holleran et al. 2011, Corbett and Hill 2015, Fox 2015). Broadening the participation of women faculty in STEM fields is more than a social-justice issue. This also focuses on supporting diverse talent by growing women faculty members’ research capacity and opportunity for securing external research funding. Within US academic STEM fields, merit evaluations for awards, recognition, promotion, and tenure typically reward research productivity and grant funding (Yost et al. 2015). Therefore, growing women’s externally funded research portfolio is an essential ingredient to broadening women’s participation in STEM research.

Networking/Connectedness

• We saw that there was an increase in multiple PI grant submissions

• We had anecdotal evidence of connecting with other participants

THANK YOU!