Tips from an Early Career Researcher

Jeremy Walsh (he/him)
Assistant Professor, Kinesiology

MIRA Grant Writing Workshop
Feb 14, 2023
Presentation Outline

Setting the Context
- My background & experiences
- Take the long view

Get Organized
- Know your audience
- Build your network
- Get the data!

Proposal Building
- Feasibility and the Art of Selling Yourself
- Logical Flow and the Problem Statement
The Grant Process Simplified (?)
TAKE THE LONG VIEW

Your Plan

Reality
Growth Through Rejection Iteration

Main Take Aways

1. Reviewer feedback is gold (even if it stings)
   - Highlights key areas that require attention
     - Proposed project details and feasibility
     - Need for pilot data
     - Proposal writing
     - Training, productivity, and expertise

2. Time between grant application cycles is an opportunity for growth and development

3. Don’t put all of your eggs in one basket (if possible)
   - Apply to multiple opportunities
   - Continually seek out ways to leverage & extend ideas
Get Organized

- Read, Read, and Re-Read Grant Instructions
  - Then Read Again…

- Connect with Mentors & Institutional Support

- Identify and Assemble your Team*

- Collect Pilot Data*

- Give Time for Signatures and Institutional Approvals

*if applicable
Grant Instructions: Read, Read, and Re-Read…
Then Read Again

All Require Different Strategic Approaches
<table>
<thead>
<tr>
<th>Merit Indicators</th>
<th>NSERC CRIS Grant</th>
<th>DISCOVERY GRANTS MERIT INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Know Your Audience</strong></td>
<td>[Image]</td>
<td>The Merit Indicators should be used in conjunction with the Peer Review Manual, which outlines how reviewers arrive at a rating.</td>
</tr>
<tr>
<td><strong>EXEMPLARY</strong></td>
<td><strong>OUTSTANDING</strong></td>
<td><strong>VERY STRONG</strong></td>
</tr>
<tr>
<td>Acknowledged as a leader in terms of research excellence, accomplishments, and service.</td>
<td>Research excellence, accomplishments, and service are superior to others.</td>
<td>Research excellence, accomplishments, and service are superior to others.</td>
</tr>
<tr>
<td>Contributions presented in the application are of the highest level of quality.</td>
<td>Contributions presented in the application are above average in quality.</td>
<td>Impact and importance of the work is clearly evident and influential.</td>
</tr>
<tr>
<td>The proposed research program is clearly presented, is original and innovative and is likely to have impact by leading to groundbreaking advances in the area and/or leading to a technology or policy that addresses socio-economic or environmental needs.</td>
<td>Long-term and short-term objectives are clearly defined.</td>
<td>Long-term and short-term objectives are well planned.</td>
</tr>
<tr>
<td>The methodology is clearly defined and appropriate.</td>
<td>The methodology is clearly described and appropriate.</td>
<td>The methodology is partially described and/or appropriate.</td>
</tr>
<tr>
<td>Past training is at the highest level in terms of the research training environment provided and HQP contributions to research.</td>
<td>Past training is superior to other applicants in terms of research training environment provided and HQP contributions to research.</td>
<td>Past training is competitive favourably with other applicants in terms of the research training environment provided and HQP contributions to research.</td>
</tr>
<tr>
<td>Most HQP move on to high-impact positions that require skills gained through the training received.</td>
<td>Most HQP move on to impactful positions that require skills gained through the training received.</td>
<td>HQP generally move on to positions that require skills gained through the training received.</td>
</tr>
<tr>
<td>Training philosophy and research training plans are at the highest quality highly appropriate, clearly defined and expected to produce top quality results in terms of the overall approach and specific projects for HQP.</td>
<td>Training philosophy and research training plans are superior; highly appropriate, clearly defined and expected to produce high quality results in terms of the overall approach and specific projects for HQP.</td>
<td>Training philosophy and research training plans are appropriate and clearly defined in terms of the overall approach and specific projects for HQP.</td>
</tr>
<tr>
<td>Challenges related to equity, diversity and inclusion specific to the institution and field of research are clearly described.</td>
<td>Challenges related to equity, diversity and inclusion specific to the institution and field of research are described.</td>
<td>Challenges related to equity, diversity and inclusion specific to the institution and field of research are described.</td>
</tr>
<tr>
<td>Specific actions to support the recruitment of a diverse group of HQP and an inclusive research training environment are clearly defined.</td>
<td>Specific actions to support the recruitment of a diverse group of HQP and an inclusive research training environment are defined.</td>
<td>Specific actions to support the recruitment of a diverse group of HQP and an inclusive research training environment are defined.</td>
</tr>
</tbody>
</table>

**NSERC CRIS Grant**

The NSERC CRIS Grant is a merit-based grant provided by the Natural Sciences and Engineering Research Council of Canada (NSERC) to support research projects in various fields of science and engineering. The grant is designed to support high-quality research projects that meet specific criteria set by the council. These criteria include the quality of the research, the qualifications of the researchers, and the adequacy of the research environment and training provided. The grant is awarded through a competitive peer review process, where proposals are evaluated based on their merit, relevance, and potential impact. The NSERC CRIS Grant is a significant source of support for researchers, providing funding to carry out research projects and to train the next generation of scientists and engineers.
Connect with Mentors & Institutional Support
Lean on your community

Identify content-expert & non-expert mentors
• Preferably mentors with experience (success) submitting to granting agency and/or reviewing for agency
  o Will know the important nuances

Institutional Support
• Many universities have office dedicated to research
  o @Mac → ROADs, MILO, HRS

• Will review grant for content, formatting, and ensure it complies with grant requirements

If you have the funds → external (paid) grant reviewer
Identify and Assemble your Team

Project Grants

Project grants require a team to undertake proposed objectives

• Experts in outcome assessment
  o Materials, expertise, & space

• Personnel to lead & support project
  o PhD, PDF, research staff

• Trialists and statisticians
  o Critical for feasibility**

• Community partners and stakeholders
  o Participant recruitment
  o KTE

Include letters of support from team members w/ grant application
Identify Pilot Data Needs
A figure is worth 1000 words (sometimes)

- Supports proposal hypotheses
- Demonstrates work in progress
  - Especially important as an Early Career Researcher (ECR)
- Supports applicant expertise & feasibility of project
Get Organized Early

• Collaborators’ time always limited

• Early discussions can lead to new, strategic collaborations

• Get feedback on your ideas ASAP

• Institutional signatures and approval
  • Do not leave to last minute
What are reviewers looking for anyways?

What makes a ‘good’ grant application?

Main Components

- Novelty and significance of project
- Methodological design
- Feasibility***

How do you achieve this?

- Clarity of writing
- Logical flow connecting ideas
- Consistency of terminology
- Selling yourself
- Establishing a clear timeline
Feasibility…
And the Art of Selling Yourself

Feasibility is CRITICAL
  • Can be a fatal flaw of otherwise well written grants

You should **always directly** address feasibility in your grant applications

Main Components of Feasibility:
  • Scope & Timeline of Study
  • Resources, Personnel, & Expertise
  • Methodological Design and Power Analyses

Gantt Chart Approach
Including a detailed timeline is key to establishing the feasibility of your proposal.

Walsh 2022 (HSFC NI Grant)
Feasibility…
And the Art of Selling Yourself

**Question to the Group**

How do you sell yourself in a grant or scholarship application?

**Integrate evidence of:**

- Experience & proficiencies using proposed techniques
- Uptake of your previous work by scientific community (aka *Brag Metrics*)
  - # publications, citations, H-index, media interviews, etc.
- Resources, infrastructure, & supports available at your institution
- History of knowledge transfer & exchange activities
Writing an Effective Proposal

The Problem Statement

Approach
The Problem Statement
An approach to framing a clear and concise research question

- 5 statements that anchor your proposal
- Establish logical flow of ideas
- Sets context for your entire project & methodological approaches
- Justifies the importance of your proposal

Dr. Brendon Gurd

Dr. Michael Tschakovsky
The Problem Statement
An approach to framing a clear and concise research question

Tells the reader the answers to the following questions:

- What do we know?
- What don’t we know?
- Why don’t we know?
- How do we find out?
- Why is it important?

The answers to these questions should convince reader that your research question is important…

And thus, worthy of funding!
Components of a Problem Statement

**Principal Proposition:** establishes a generally accepted idea that sets the context within which your research problem exists

**Interacting Proposition:** statement that challenges or contradicts the principle proposition (aka The Problem)

**Speculative Proposition:** proposes a solution to the problem identified in the interacting proposition

**Statement of Purpose & Hypothesis:** identifies specific objectives/research questions that are directly related to the solution proposed in the SP

**Significance of Study:** explains what will be gained once the problem identified is solved
All it takes is 3 beautiful paragraphs...

**Paragraph 1**
- First sentence = Principal Proposition
- Body = support for PP
- Last sentence = Interacting Proposition (the *Problem*)

**Paragraph 2+**
- Body = Speculating how can we solve the Problem
  - Include methodological approaches needed to solve problem
- Last sentence = Speculative Proposition (as a summary statement)

**Paragraph 3**
- Statement of Objectives & Hypotheses
- Statement of Significance
Example of a Problem Statement
Exercise, Smoking, and Lung Cancer

Principal Proposition: *Smoking causes lung cancer*
Body = evidence to support proposition

Interacting Proposition: *However, there are people who smoke who don’t get lung cancer*

Speculative Proposition: *Regular aerobic exercise may reduce inflammation and prevent lung cancer in smokers*
Body = evidence to support hypothesis. Including key outcome variables and methodological approaches

Objectives & Hypotheses: *To test the hypothesis that regular aerobic exercise may prevent lung cancer in smokers by reducing inflammation*

Significance: *Establishing protective effects of exercise may help develop strategies to mitigate the risk of developing cancer in smokers*
Problem Statement Approach

Take Home Points

- Problem statements are an effective approach to:
  - Convey the importance of your work
  - Focus your introduction
  - Establish a logical plan your study
  - Provides structure for clear, logical flow of ideas

- Key statements can be emphasized in your text to really drive home the main points
  - Can also use as a sub-heading to introduce paragraph

- Just remember… you will not save the world with a single proposal
  - Do not need to over-justify or oversell
- Establishing a clear problem that has a feasible solution is enough to warrant funding!
Tips from a Post-Doctoral Fellow

Dr. Geoff Coombs

- Big picture is important. Go beyond the granular detail when selling your idea
- Proposal needs to flow well
  - Main ideas need to be emphasized and jump off the page
- Getting feedback from someone experienced is critical
- The more you see, the more you can learn from others
  - Reviewing scholarships & grants
  - Ask for a copy of a grant from a mentor