

# Writing Proposals and Applying for Funding

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STUDENT LEARNING SUPPORT  
Graduate Student Support



RYERSON  
UNIVERSITY

*Ryerson University sits on the  
Traditional Territory of the  
Mississauga's of New Credit  
First Nation. We are  
honoured to be a part of this  
community of our Indigenous  
colleagues and students.*

*- Chi Miigwetch*



# Overview

Identify and describe the conceptual framework for the research question.

Review the relevant theoretical and empirical literature both for the system being studied and for related systems.

Describe the general research question in the context of the conceptual framework and the theoretical and empirical work that precedes the proposed work.

## Overview 2

Evaluate potential alternative outcomes that may be obtained from each part of a study, and consider where each of these alternatives may lead.

Combine these items in a coherent, precise, concise, exciting proposal.

Submit the proposal to the appropriate agency or evaluation committee.

Interpret and respond constructively to reviews of the proposal.

Friedland, A. and Folt, C. (2009). *Writing Successful Science Proposals*. (2nd ed.). New Haven: Yale U.P., pp. xiv-xv.)

# Suggested Approach

Define tasks associated with the proposal.

Develop a timeline or strategy for working on your proposal.

Accomplish something early.

Relax and be prepared for change.

# Preliminaries to Consider

## Know your audience

### Who is credited for:

- Identifying topics, problems, and questions?
- Formulating the theoretical foundations?
- Designing research protocols?
- Analyzing data?
- Writing the document?

## Authorship

- Define expectations at the outset.
- Who is the first author (principal applicant) and what does this person do?
- Sources versus collaborators



# Preliminaries to Consider (continued)

## Intellectual property:

- Who owns the study? Authors or institution?
- Determine ownership of all parts of the project as well as possible future publications before starting the project.

# Parts of the Proposal

Title

Summary

Table of contents

Project description

References

(Friedland, A. and Folt, C. (2009). *Writing Successful Science Proposals*. (2nd ed.). New Haven: Yale U.P., p. 33.)



# 1. Title

A title may make or break a proposal.

It should be clear, concise, and meaningful.

It should be free of jargon and overstatement.

It should be formal (not humorous or cute).

## 2. Elements of the Summary: Paragraph 1

Broad context of research

Research questions and hypotheses

Identify gaps in current knowledge and how your work will fill them. Stress the importance of your work.

Include preliminary results, if available.

Brief description of your actual work.

## 2. Elements of the Summary: Paragraph 2

Brief description of techniques, sites, terminology

Projected results or output

How your work will advance the research area

Broader significance of the work

# Example of a Summary

## TITLE

Role of Winter Water Relations in Determining the Upper Elevational Limits of Three New England Conifers

(Friedland, A. and Folt, C. (2009). *Writing Successful Science Proposals*. (2nd ed.). New Haven: Yale U.P., p. 33.)

## 2. Summary: Broad Context

Winter desiccation is recognized as an important stress factor in coniferous forests, and it may limit conifer distribution. Most research to date has focused on desiccation at alpine treeline, whereas little attention has been given to its role in establishing the upper elevational limit of low-elevation conifers.

## 2. Summary: Research Q's, Hypotheses, Objectives

Our objective is to test the hypothesis that winter water relations limit the upper elevational range of low elevation evergreen conifers in New England.



## 2. Summary: Gaps in Research

This will be the first study to examine desiccation stress in non-subalpine conifers. The winter water relations of three low-elevation conifers will be examined: white pine (*Pinus strobus* L.), eastern hemlock (*Tsuga canadensis* [L.] Carr.), and red pine (*P. resinosa* Ait.). Each of these three species differs in its habitat preference and growth strategy.

## 2. Summary: Preliminary Results

Preliminary results indicate that older foliage in each species can reach water levels expected to cause desiccation damage.

## 2. Summary: Actual Work

Our approach will use physiological measurements of trees (relative water content, water potential, and cuticular resistance) collected near the upper elevational limit of each species during the winter to assess desiccation stress. These data, along with micrometeorological data collected at field sites, will be used to predict winter water relations.

## 2. Summary: Actual Work (continued)

We will test the following hypotheses: (1) water levels in foliage near the upper elevational distribution of each species will approach or fall below lethal desiccation levels; and (2) cuticular resistance will decrease over the course of the winter. Even if this work does not support these hypotheses, the understanding of conifer response to winter climate will be greatly increased.

## 2. Summary: Value, Techniques, Sites & Terminology

This study will be of value to plant-stress physiologists and plant ecologists.

## 2. Summary: Projected Results or Output:

It is unique in that it will combine field assessments for desiccation with micrometeorological measurements in a model, allowing plant-water relations to be explicitly coupled to climate.



## 2. Summary:

### How this work will advance the field

Such an approach sets the stage for future studies of limitations by winter desiccation, using other species and under conditions imposed by a changing climate.

## 2. Summary: Broader Significance of Work

Broader impacts of this work: through the use of undergraduate field assistants, we will integrate field science into the education of diverse audiences, furthering their understanding of biological and environmental processes and helping to train young scientists.

# 3. Table of Contents

Compiled after all writing is completed

Placed after Summary

# 4. Project Description

4.1 Prior agency support

4.2 Problem and significance

4.3 Introduction

4.4 Research plan

## 4.1 Prior Support Agency

List any previous grants that you have received and briefly describe the project(s) and results.

Focus on projects that are similar to the current project or that form the basis for the current project.

## 4.2 Statement of Significance

View your work from both a broad and a narrow perspective.

What would be your greatest contribution according to experts in the field and outside of it?

What are the empirical and theoretical outcomes of your work?



## 4.2 Statement of Significance (Continued)

What are the uses of the data?

What are the long-term implications of the project?

Can you find any weaknesses in your claims?

## 4.3 Introduction: Background

4.3.1 Literature review

4.3.2 Preliminary results

4.3.3 Model (conceptual, empirical, or theoretical)

4.3.4 Justification of methodology

## 4.3.1 Literature Review

Select the most important papers that support your work.

Select the most important papers that come to contrary conclusions.

Thoroughly understand any controversy in the field.

Be certain of any gap that you try to establish.

Stay focussed and concise.

## 4.3.2 Preliminary Results

If you have any data at this early stage, build them into the proposal.

Use a figure or table if appropriate.

These results may be used as a foundation for the analysis of expected results (4.4.3.).

## 4.3.3 Model

Introduce an empirical or theoretical model, if appropriate.

Reviewers often consider a model to be impressive.

Support the model with a figure and/or table as needed.

Use headings and formatting to guide the reader.

## 4.3.4 Justification of Method

A well-known method must be referenced. Describing the method in general terms may be sufficient.

A novel or unknown method must be described in detail. If the method is not original, it must be referenced.

# 4.4 Research Plan

4.4.1. Overview of Research Design

4.4.2. Objectives, Hypotheses, and Methods

4.4.3. Analysis and Expected Results

4.4.4. Timetable



## 4.4.1 Overview of Research Design

Give a brief description of the design.

Give enough detail for evaluating the design, not for replicating the work.

## 4.4.2 Objectives

Broad, but not as general as significance statements

May begin with "to" plus a verb

Example: to further our understanding of the implications of global climate change in freshwater lake plankton communities.

## 4.4.2 Hypothesis

More specific than objectives

Few, focussed, and testable

Closely related to experimental methodology

Example: Channel roughness is greater, and velocity, stream power, and shear stress are lower, in restored reaches versus unrestored reaches.

## 4.4.2 Method

is the best for the current research

is proven and cited

is feasible and practical (time, funding, data analysis, investigator competence)

results in realistic and important output (based on the significance statements)

## 4.4.2 Specific Aims

Grow out of the hypotheses

Explain what is needed to realize the aim

Example: We will establish differences in temperature and humidity among sites over time.

## 4.4.2 General to Specific

Significance statement -> objectives -> hypotheses

These should all appear early in the proposal.

If a hypothesis is repeated, give more specific detail with each repetition.

## 4.4.2 Null Hypothesis

Some fields of study require that the hypotheses should be stated as null hypotheses.

Examples:

Null hypothesis: Long-term exposure to microwave radiation does not correlate with increased incidences of cancer.

Positive hypothesis: Long-term exposure to microwave radiation correlates with increased incidences of cancer.



## 4.4.3 Analysis and Expected Results

Use preliminary data, if available.

Take data from other studies if no preliminary data are available.

Use these data to show how you plan to analyse them.

Use table(s), diagram(s), and/or statistical test(s).

## 4.4.3 Unexpected Results

Plan for unexpected results.

Show how your hypotheses might change.

Show different directions that the research could follow.

## 4.4.3 Possible Section Titles

Expected Results and Their Broader Significance

Future Directions

Related Research

Model Limitation and Potentials

Model Verifications

## 4.4.4 Research Plan

### Time table:

- Give the beginning and end of each experimental period or session.
- Estimate time needed for construction or purchase of equipment, development of a technique, acquiring or developing needed materials
- Schedule time for the use of off-site equipment.
- Give start and finish dates for monitoring.
- Indicate when results will be published.

# 5. References

Poor referencing can cause a proposal to fail.

References should be directly related to your project.

Selection should be unbiased. All sides of the issue should be represented and discussed.

Use mostly recent papers.

Refer to your own work, but in moderation.

Cite mostly peer-reviewed sources.

Include only essential references.

Be sure all citations are accurate.

## 5. References: Common Problems

Too many references for a single point.

References support a vague statement.

References are not placed correctly in the text.

Incorrect reference: source not well understood.

# 6. Budgeting

## Preliminaries:

- Research the project to estimate accurate costs.
- Determine the procedure for submitting the budget. This may involve the signatures of various university officials.
- Understand the ethical requirements of asking for funding.

## Budgeting Categories:

- Salaries (indicate period to be worked)
- Equipment (usually defined by the granting agency)
- Supplies (expendable items)
- Travel (mileage, number of trips, lodging, food; justify these and destinations)
- Miscellaneous expenses (e.g. courier services, computer time, etc.)
- Indicate any cost-sharing arrangements that may exist.



# Integrity in Research

The individual scientist agrees to the following when he or she undertakes scientific inquiry:

- intellectual honesty in proposing, performing, and reporting research
- accuracy in representing the contributions of individuals to developing and writing research proposals and to subsequent reports and publications
- collegiality in scientific interactions, including oral and written communications and use of resources

# Integrity in Research Continued

- protection of human subjects, humane care of animals, and responsible treatment of the environment
- respect for the individual and collective responsibilities of investigators and their research groups

Source: Modified from “Integrity in Scientific Research,” National Research Council (2002), p. 5, quoted in Friedland, A. and Folt, C. (2009). *Writing Successful Science Proposals*. (2nd ed.). New Haven: Yale U.P., p. 193.

# Applying for Graduate Student Funding

Putting your proposal to work!

# What is Graduate Funding?

Many graduate students receive some kind of funding, but often it is up to you to find it

Types include scholarships, grants, bursaries, stipends, teaching/research assistantships, writing competitions

Talk to your professor, program director, and faculty of graduate studies

Having a strong research proposal will pave the way to obtaining graduate funding

# Before Applying

Are you eligible? Discipline, level of study (Master's, PhD), year of study, geographic region, financial need, minority, disability

When is the application due? What is the timeline?

What are the application requirements?

Do you have to be nominated? By a University or an individual?

# Writing your Application

Every funding application is a little different and will require different types of proposals

Application guidelines can be complicated – read carefully!

Is there a form to complete?

Do you have to create a user profile?

What are the necessary attachments?

# Writing your Application: The Elements

Research Outline

Personal Statement

Reference Letters

Other Potential Documents



# Research Outline

This is where you incorporate your proposal

Include your study's topic/context, state of current knowledge, research objectives/hypothesis, and significance

# Personal Statement

Now tell them about yourself - showcase yourself! Don't be shy, but be honest and don't over embellish

Include background, work experience, education, past accomplishments/awards, career/personal aspirations

Be specific and give examples

# Reference Letters

Ask your referees to write about specific skills and experience

Be crystal clear about letter format and submission instructions

Remember to contact referees early! They are busy and doing you a favour

# Other Potential Documents

Résumé or curriculum vitae (CV)

University transcripts

Proof of language sufficiency

Writing sample (e.g., previously published works)

# Funding Sources

## Federal government funding:

- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Social Sciences and Humanities Research Council (SSHRC)
- Canadian Institute of Health Research (CIHR)
- Vanier Canada Graduate Scholarship

## Ontario government funding:

- Ontario Graduate Scholarship
- Ontario Trillium Scholarships
- Ontario Graduate Fellowship
- Queen Elizabeth II Graduate Scholarships in Science and Technology

# Funding Sources 2

## Other funding sources:

- Fulbright Student Awards
- Pierre Elliot Trudeau Foundation Doctoral Scholarships
- Rhodes Scholarships
- Walter C. Sumner Memorial Fellowships
- SmartStart
- Mitacs

Also try scholarship listing websites (but watch for spam and scams):

- [www.scholarshipscanada.com](http://www.scholarshipscanada.com)
- [www.studentawards.com](http://www.studentawards.com)

# Funding Sources 3

And of course, check with Ryerson!

[Ryerson graduate funding](#)



# Graduate Student Support

- One-on-one tutorial sessions to help students with writing and referencing during any stage of the process.
- Two 50-minute appointments per week.
- Online workshops on a variety of graduate writing-related topics.
- Useful guides and resources on the website.
- Be sure to make an appointment on our website a week or two before your desired date as spots fill up quickly.

4<sup>th</sup> floor, Student Learning Centre

[Visit Student Learning Support website](#)

(416) 598-5978