Developing Research Proposals: Science

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Land Acknowledgement

The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which includes the **Blackfoot Confederacy** comprised of the **Siksika**, the **Piikani**, and the **Kainai First Nations**, the **Tsuut'ina First Nation**, and the **Stoney Nakoda** including **Chiniki**, **Bearspaw**, and **Goodstoney First Nations**. The City of Calgary is also home to **Métis Nation of Alberta, Region III**.

Moving from Acknowledgement to Action

- Land acknowledgements serve an important function in moving toward reconciliation with Indigenous peoples in Canada, but acknowledgement itself is not enough. How do we move beyond acknowledgement to being active participants in reconciliation?

- Scan the QR code for a list of additional resources and ways that you can support your own growth and contribution to reconciliation.

Agenda

- Introduction
- Defining "research proposals"
- Proposals that you've written or need to write
- Templates and how to find examples of successful proposals
- How (not) to write a research proposal
- Breakdown of a proposal and suggestions for each section
- Questions and discussion

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Introductions – Karen Quinn

- BSc (Hons) Pharmacy, University of Strathclyde, Glasgow, UK.
- PhD, Physiology and Pharmacology, University of Strathclyde, Glasgow UK.
- Postdoctoral Research Associate, University of Glasgow, 5 years.
- Novartis Foundation Fellow, University of Vermont (3 months).
- British Heart Foundation Intermediate Research Fellowship.
- Postdoctoral Research Associate, University of Calgary, 6 months.

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Introductions – Karen Quinn

- Research Proposals
  - 7 personal fellowship applications.
  - Co-wrote research grants with Primary Investigator.
  - Travel funding applications.

- Other:
  - Published 20 peer-reviewed research papers and reviews.
  - Conference abstracts.
  - Ad hoc referee: *Journal of Physiology* and *Toxicon*.

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What sort of research proposals have you had to write, or will you need to write in the future?

(What discipline/program are you in?)

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How did (or will) you go about writing your proposal?
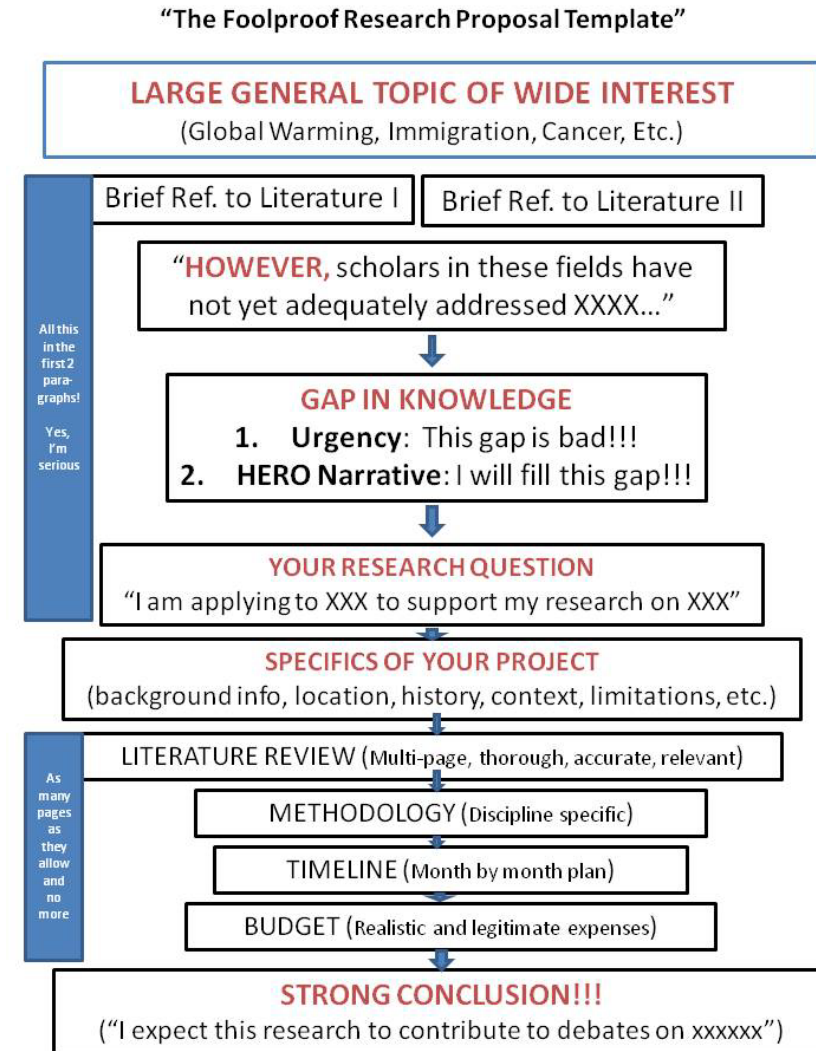
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Research Proposals

- Research proposals may be called many different things.

- Discipline-specific requirements.

- They may be more important in some fields than in others.

- Word counts and page limits will vary substantially.

- The instructions may also vary a lot, at least on the surface.

- Writing different versions of the same document is fundamental to life in academia.

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Templates and examples of successful proposals

- Karen Kelsky's foolproof research proposal template: http://theprofessorisin.com/2011/07/05/dr-karens-foolproof-grant-template/

- "effective grant-writing, like all other professional academic writing, is at its root completely formulaic."

"The Foolproof Research Proposal Template"

LARGE GENERAL TOPIC OF WIDE INTEREST
(Global Warming, Immigration, Cancer, Etc.)

All this in the first 2 para-graphs! Yes, I'm serious

Brief Ref. to Literature I   Brief Ref. to Literature II

"HOWEVER, scholars in these fields have not yet adequately addressed XXXX…"

GAP IN KNOWLEDGE
1. Urgency: This gap is bad!!!
2. HERO Narrative: I will fill this gap!!!

YOUR RESEARCH QUESTION
"I am applying to XXX to support my research on XXX"

SPECIFICS OF YOUR PROJECT
(background info, location, history, context, limitations, etc.)

As many pages as they allow and no more

LITERATURE REVIEW (Multi-page, thorough, accurate, relevant)

METHODOLOGY (Discipline specific)

TIMELINE (Month by month plan)

BUDGET (Realistic and legitimate expenses)

STRONG CONCLUSION!!!
("I expect this research to contribute to debates on xxxxxx")

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Read the instructions

- Fellowship application instructions:

- *The statement should address the importance of the student's work in the beginning two or three sentences. The statement should include the theoretical framework of the dissertation, its specific aims, methodologies (how the student is conducting the research), originality, and the significance and contribution of the project to the field. Fellowship committees place strong emphasis on this statement. The statement should be written with an interdisciplinary faculty review panel in mind; i.e., reviewers will NOT necessarily be familiar with the technical vocabulary of a specific field. (1,500 words)*

  - *https://rackham.umich.edu/funding/funding-types/rackham-predoctoral-fellowship-program/*

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Templates and examples of successful proposals

- Ask people you know to share successful proposals that they have written.
    - People ahead of you in your program, people at other institutions, post-docs, faculty members.

- Check the website of the professional association in your field.
    - They may post successful proposals and abstracts; they may also have instructions and guidelines about good proposals and abstracts.

- CIHR Awards Database (includes abstracts): http://webapps.cihr-irsc.gc.ca/funding/Search?p_language=E&p_version=CIHR

- NSERC Awards Database (include abstracts):http://www.nserc-crsng.gc.ca/ase-oro/index_eng.asp

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Template of a Research Proposal

- Basic components of a research proposal are pretty standard.

- Again, there may be differences in standards between fields.

- Be sure to follow specific instructions and guidelines.

- Complete the individual components, and then put what you've written together into a complete draft of the proposal.

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How (not) to write a research proposal

- Trying to write it in one go

- Trying to write it in order

- Trying to write the complete proposal or perfect it before you ask for feedback

- Hoping no one will criticize it and fearing or being upset about "negative" feedback

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Instead.......

- Talk to people – your supervisor/boss; post docs; dept. members – early and throughout process.

- Write an outline, or a flow chart or a logic model and talk it through with someone who is in your area and has written successful proposals.

- Talk to faculty members who review proposals and discuss it with them.

- Discuss your ideas with peers and colleagues in your discipline and other disciplines. Try to explain the main ideas of your proposal in non-technical language.

- Write small sections, don't worry about formality etc, just get feedback.

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Instead…….

- Don't have to start at the beginning – can start anywhere and work out of order.

- Be flexible. Be prepared to be very adaptable and open to trial and error.

- Give yourself lots of time.

- Thinking is really important.

- Feedback and criticism no matter how tough is your best friend. Don't take it personally.
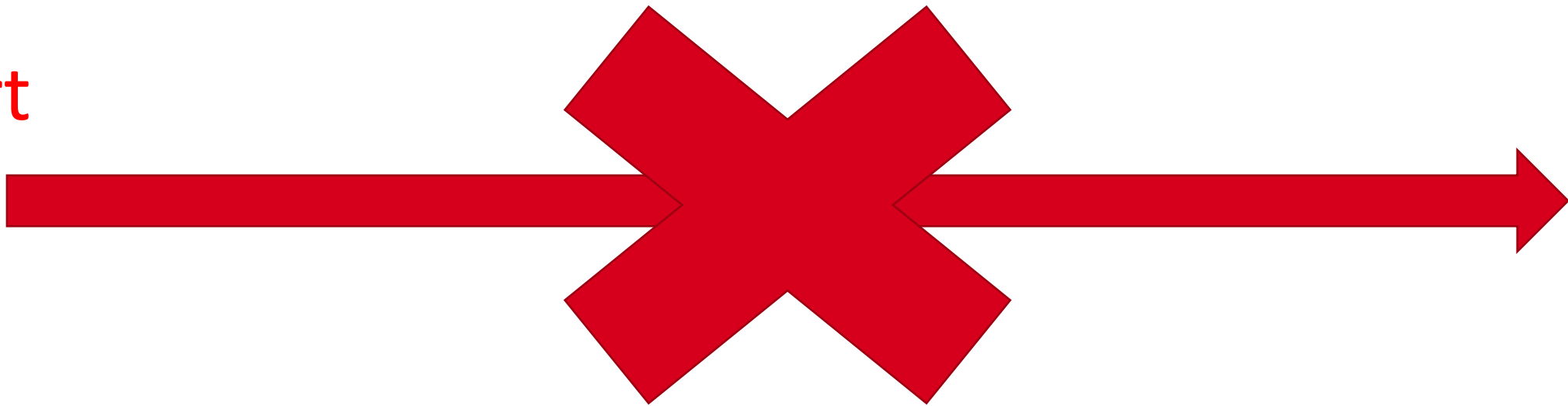
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My Experiences

- Starting to write a research proposal without adequate planning and discussion with colleagues/collaborators.
  - Excessive ambitions for the project, and the scope of a proposal.
  - Writing a proposal that required additional training and expertise that I didn't have.
  - Assuming, initially, that this wouldn't be an issue, and that a friend who worked in a different lab would be able to handle this part of the work.

- Grappling with multidisciplinarity
  - Dealing with collaborations.
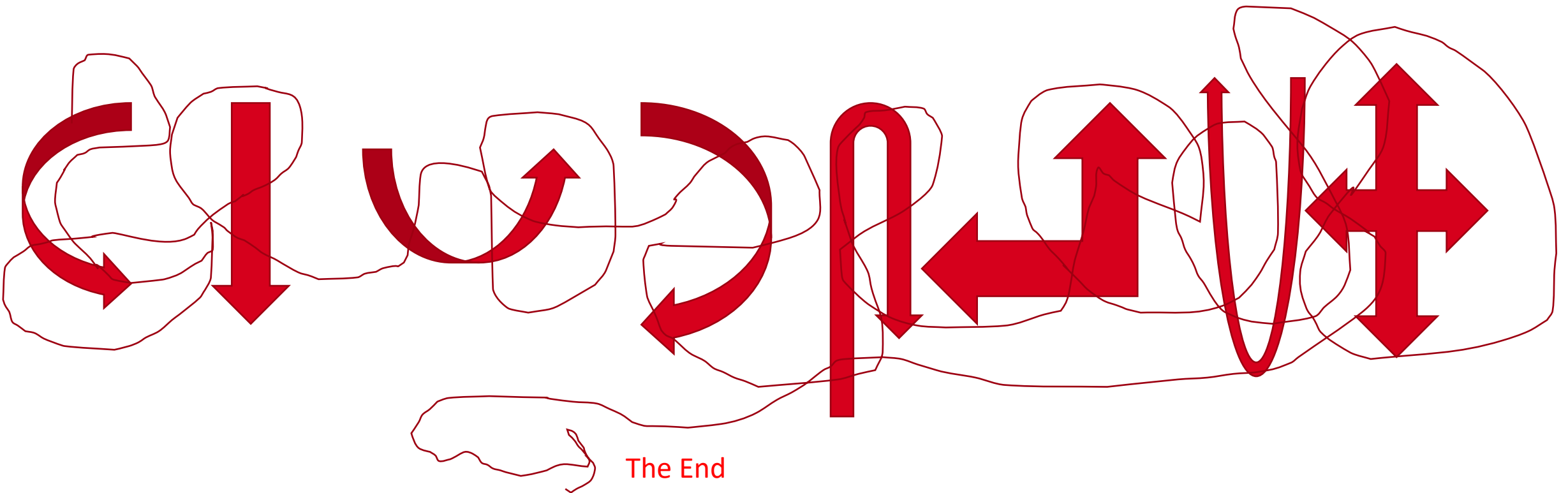 - Formal procedures and planning.

It's not linear and it takes practice

Start   Finish

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The End

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Get the essentials right first & be honest with yourself

- Think of your proposal like knitting a sweater. If you drop a stitch, you need to rip it all back, fix it and start again. Sometimes you have to go all the way back to the beginning. Do not keep going if you know it doesn't really hang together.

- If someone else giving you feedback notices a flaw, or inconsistency or over ambition or a lack of resources or any other issue – listen to them.

- If you can see the problem, the reviewer will see the problem. It is their job to find all the problems you haven't identified.

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Getting Started: Planning.

- Start well in advance – schedule time and use a calendar if you need to.
- Organize in advance to get feedback – so other people can plan their time.
- Get your template organized.
- Get your references/citations ready and your reference software.
- Analyze and organize your preliminary data.
- Keep old drafts.
- Keep track of EVERYTHING.

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Getting Started: Know Your Audience.

- A fundamental issue to consider before writing your proposal is the audience that will be reading and assessing it.
  - This will typically be clear from the instructions and guidelines that go with the proposal.

- Sometimes you will be writing for a general, educated audience, rather than for specialists in your field.
  - This will mean avoiding or explaining technical language and abbreviations that you will want to use.

- The less specialized your audience will be, the more you will need to demonstrate the significance of your project.

Different Audiences:

- Clinically related science

- Combined with Industry

- Basic Science

- Interdisciplinary

- Start ups

- Supervisor/Committee

- Who is the funding body – what is their agenda, goal or focus?
  - Government
  - Industry
  - Charity

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Defining the Research Question

- Figure out what matters in your field.

- Figure out what you are able to do – what expertise do you have? What resources do you have?

- If you find a 'Gap" – ask why is it there? How long has it been there? Why has no one else answered this question?

- What would you or someone else do with the results?

- Interest/relevance – too early, too late, just right?

- What's current in your field?

- If your friend proposed this question – what would you say?

- Keep your objectives clear.

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Defining the Research Question

- Good questions develop over time by working with your materials and evidence.
  - Literature, experimental data, interviews, observations, etc.

- Make a list of the ideas and questions, big and small, that occur to you as you work with your data/evidence/results.

- Does the question pass the "so what" test?
  - Why does it matter?
  - It's not enough simply to say that no one has answered the question before.

- Is the question one that you can plausibly hope to answer in the time that you have to spend on the research project?

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Preliminary Data

- Do you have any?

- Do you need any?

- Whose data is it, and can you use it?

- Do you need to collect more data or publish/present before you submit the proposal?

- Do you need to change the scope or topic of your proposal because of your preliminary data?

- How much do you include?

- Why are you including it – how does it support the rest of the proposal?

Preliminary Data

- If you are not including preliminary data you may still introduce some things you have done in the Literature Review or in other parts of the proposal.

- "Our group/We/I have recently shown......."

Literature Review

- Identifying the gap.

- Establish the importance of your work.

- Demonstrate its novelty and relevance.

- You really do need to read widely across scholarship on your topic.

- Focus mostly on a smaller body of recent scholarship that you deem most important but include older references if appropriate.

- Limit the number of papers you include. Keep to the most relevant.

- Novelty and relevance (of your proposed project) may be better reflected by citing more recent papers.

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The Literature Review

- Depending on your field, give yourself a cutoff date for the age of scholarship that you are going to discuss.

- If you have already published relevant work, it is often appropriate to cite and discuss this, but do not cite only your own work.

- Density and logic, not length.

- Figure out which journals and publishers matter most in your field.
  - Impact factors, citation counts, reputation.
  - Ask other people in your field if you're not sure.

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Methodology

- This section will not provide a full description of the research you are doing so someone can repeat the experiments you are doing, but to determine if it is feasible.

- It needs to be detailed – include challenges and how you will address them. If you can't address the challenges in the Methodology, you may need to go back and look at your objectives and research question.

- May include novel techniques and/or costings.

- It should show that you have a plan for what you are doing, that you have anticipated likely problems, and have the expertise to do the work.

- Use figures, with colour if appropriate

- Shows attention to detail.

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Abstract - IMPACT

- Write this last, after everything else is done.

- Read examples of successful proposal abstracts.
  - NSERC and CIHR websites; published abstracts in conference proceedings, journals.

- Template
  - Beginning: identify the problem/question that you are addressing, and the impact of your work.
  - Middle: explain your methods and/or the steps in your argumentation.
  - End: Return to the impact in the last sentence.

- Style
  - Short sentences, succinct and punchy.

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Use of Language

- Be careful about sensationalizing, absolute language.
  - Absolutes invite criticisms from reviewers
    - "we will show for the first time…"
    - "there is no evidence to suggest…"

- Think about word choice and how definite you should be.
  - "This study aims to show…"
  - "This study will show…"
  - "This study hopes to show…"

- Use of personal pronouns (I, we)
  - Field-specific conventions.
  - Know your audience and the conventions of your field.

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Use of Language

- Be careful about using the word SIGNIFICANT – think of alternatives

- Think about using the word discover – it implies no one else has done or seen this before

- Think about your use of words like novel, unique, groundbreaking, innovative, original

- Essentially try not to use language loosely – be sure that you can justify what you have written, but also balance scope, novelty, ambition and do-ability.

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Use of Language

- Keep a notebook or list of sentence frames and connecting/opening words that you can use and refer to. Quicker and can be easier for reviewers to read – formulaic.
  - "This research will demonstrate…"

- Look at how papers are written in your field, or other proposals. Follow the language and the style.

- Grammar, punctuation, and spelling don't need to be perfect in early drafts.
  - Organization and ideas matter more.
  - Get words written. Go back and fix them later.

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Accuracy and Sticking to the Rules

- Proofread and edit.
  - Get people you know to read your proposal and look for errors.
  - Sloppy writing makes a proposal less convincing and less successful.
  - Read it over and over again.
  - Accuracy in citations, spelling, grammar, word count.

- Stick with the word count and the page count.
  - Don't submit a document that is longer than what is asked for.
  - This will never impress readers and reviewers. It may often be an automatic deal breaker.

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No effort is a wasted effort

- Learn from previous proposals that you have submitted.
  - If a previous proposal was rejected, address the feedback and criticism that you received.
  - Keep copies of rejected proposals. You can often reuse substantial parts of them in future applications.
  - Sometimes proposals are rejected simply because of the nature of the competition, not because the proposal was poor.

  When you have to cut from your proposal – keep the "clippings" in a folder for another time.

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General Tips.

- Seek out advice and help from others.
  - Other students, faculty members, family and friends (where relevant).

- Writing Support Appointments.
  - Work one-on-one with a writing tutor.
  - https://ucalgary.ca/student-services/student-success/writing-support

- Graduate Writing Community

- Academic Support Appointments at Student Success Centre.
  - Book online at success.ucalgary.ca.

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Questions and Discussion

Grad Success Week feedback May 2nd

- Thank you for attending Grad Success Week!

- Please scan the QR code and fill out a short survey using the link in the chat telling us about your experience. We will use the feedback you provide to continue to improve Grad Success Week in the future!

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