Student Name
Section Number

TITLE: Proposal Template (use this organization and format for your proposal)

Background (0.5-1 page)

This is where you introduce your topic area, and discuss the research that has already been done related to your hypothesis. You should explain the basics of the topic, what has already been discovered in regards to your particular interest, and what the status of the field is currently.

We expect that this section will be between 1 and 3 paragraphs depending on your specific question and writing style.

When writing this section, keep it concise but intelligible to a non-specialist in your field. Remember that those of us reading this are scientists, but not necessarily familiar with your research question. It should ideally contain several (2-8) sources related to the hypothesis (using superscript), even if you are proposing something quite innovative.

You should also include the motivation, *i.e.* why it is important to carry out this research? This should be an additional 2-3 sentences that explain why someone should care about solving this problem.

Hypothesis/Aims (0.5 page)

The background and motivation should lead into the hypothesis/aims section. We expect that this section will be a reworked version of last week's assignment: see the rubric and suggested edits. A helpful formatting device is to underline or otherwise mark your hypothesis (*e.g.* put it in italics or bold type). Remember, we can't judge your assignment if we don't

understand what you are trying to do. Additionally, you should list and number your aims. This will make them stand out.

Don't be afraid to only propose two aims in order to better focus the assignment. Three aims are typical for a faculty grant proposal, but you can certainly have fewer. Four will probably be too many to fully explore in this assignment due to the page limit. We are looking for *specificity over broadness*. That is, the more specific you can be, the better the proposal will hold together. The more clearly your aims relate to and support/test your hypothesis the better. This is one of the key skills that good scientists and effective science writers need to master.

Methods (1-1.5 page)

Propose specific experiments that you would like to do to test your hypothesis/address the question.

Do your best to choose the right tests based on lectures, literature review, or discussion with the professors and/or TAs. Think: what are you testing, what are your variables, how will you perform controls to see if the variables you think matter actually do? What assumptions are you making? These type of questions can help guide your experimental plan/logic.

This section does not need to be more detailed than a SURF methods section. In other words, if you told us that you wanted to perform an NMR of some compound, you do not need to go through every step of an NMR; you would simply say, "I will use NMR to analyze the structural components of this [Chemical X]." More concrete examples are given in the grant proposals listed on the Writing Assignment section on the Bi1 website. Again, assume that your audience is composed of literate scientists, but not specialists in your field. Therefore some explanation of what you are testing and why is necessary.

There's often a variety of methods to tackle the same question. Just make it clear why you're choosing whatever test you do – one good reason to choose a method is that it was successfully employed by another group who published a relevant paper, for example.

Broader Impacts (0.5 page)

Discuss what you might learn and how this would add to the knowledge in the field . Why would doing this research matter both in the short term (what could be done next?) and in the longer term (how would the knowledge gained propell the field forward)? What would success look like, and how would it impact our society/research community?

References

Citation format: Author, A. and B. Author2 (YEAR) Title, Journal, Volume:Pages. Webpage (if applicable). Accessed date for webpage (if applicable).

Additional Important Information

Formatting:
- 4 pages MAX (if it's more or less for the rough draft, we can work with it)
- Double-spaced
- 11pt Arial font
- 1-inch borders
- Figures and tables NOT included in page requirement (1-2 max please!)
- reference list is also not included in the length measurement
- Cite via superscripts within the proposal using the numbers from the reference list.

Rubric (Points)

5 points for BG/Motivation
- Effectively develops the research question
- Soundly based on previous research (which is appropriately referenced and cited)
- Motivation is evident

5 points for Hypothesis
- Does the hypothesis fit the description given on the assignment? That is, does the statement encompass a single testable idea based on a current issue or need? (1-3 sentences ideal)
- Is the idea *specific* and *unique*?

5 points for Aims
- Is there a logical flow?
- Do they address the hypothesis in a meaningful way?
- Is it possible to discuss the idea and the testing that follows *in detail* within the suggested format of the proposal (4 pages double-spaced)? That is, are there excessive or irrelevant aims?

5 points for Methods
- Do they support the aims in a meaningful way?
- Can we understand why you chose the techniques?
- Do they contain the right amount of detail? (not too much, not too little)
- Is there some idea about what success would look like? (brief description OK)

3 points for Broader Impact
- What would be the effect of completing this proposal? Does its success benefit human society, update current research/designs, etc.?

2 points for Citations/Lit Review
- See suggested format.

5 points for Overall Writing
- Logical organization/flow?
- Correct grammar and spelling?
- Professional language?
- Clear, concise description? (vs. awkward run-ons)