**Today's Session**

Application Review & Funding Criteria
Planning & Writing
Grant Content & Organization
Telling the Story
Tone & Voice
Clarity
Revising

---

**Criteria for Funding**

*For NIH applications, the Peer Review Committee scores and critiques; they do not determine final funding.*

**Funding Is Based on...**
- Scientific Merit
- Program Considerations
- Availability of Funds

---

**Align Your Application with Review Criteria**

*Ex. NIH: 5 Core Criteria for Review...*

1. Significance … Research Strategy
2. Investigator … Biosketch, Personal Statement
3. Innovation … Research Strategy
4. Approach … Research Strategy
5. Environment … Resources

---

**Plan to answer the following questions:**

What do you intend to do?
Why is it important?
What has already been done?
How will you accomplish your goal?
What do you expect to have happen?
**Good Grantsmanship: Planning**

Quality of Your Idea …
- It addresses an important problem.
- It builds or expands current knowledge.
- It will advance the field of science.

**Good Grantsmanship: Writing**

- Select the appropriate agency.
- Read the instructions carefully.
- Brainstorm.
- Prepare an outline.
- Expand into an outline into sentences.
- Link ideas using transition words.
- Write and re-write.
- Get feedback.
- Edit.
- Proofread.

**Grant Content & Organization**

1. **Title**
2. **Abstract**
3. **Overview**
4. **Significance**
5. **Innovation**
6. **Approach**
   1. Aim 1
   2. Aim 2
5. Potential Problems & Alternative Strategies
6. **Timeline**
7. **Summary**

**Title and Abstract**

**Title**: Write a clear and descriptive title. Engage the reviewer.

**Abstract**: Create an overall picture. Keep simple and interesting.

If your abstract is not interesting, then the reviewer will not be as interested in the rest.
The Overview Section Contains:

1. An Introductory Paragraph
2. A ‘Who, What, Whom’ Paragraph
3. A Specific Aims Summary
4. A Payoff Paragraph

Overview Section: Introductory Paragraph

- Grab interest.
- Provide a broad, conceptual overview.
- Demonstrate known knowledge.
- Discuss the gap in knowledge base or unmet need.
- Discuss why it is important.

Don’t bury the reviewers with detail at the beginning.

Overview Section: Specific Aims Summary Paragraph

- Link central hypothesis to specific aims.
- Use catchy ‘Headlines’ for Aim titles.
- Write Aims to follow logical order.
- Aim should not be completely dependent of another.
- Convey why not what.

The goal of the specific aims is to test central hypothesis.

Overview Section: Payoff Paragraph

- Innovation
  - Relate to specific aims.
- Expected Outcomes
  - Be specific and credible.
- Positive Impact
  - Show advancement of both the field of science and the agency’s mission.

This paragraph is key in developing advocacy.

Overview Section: What, Why, Whom Paragraph

- Write a creative opening.
- Clearly state objective and central hypothesis.
- Convey why research is proposed.
- Discuss overall & long-term goals.
- Provide rationale.
- Distinguish your environment.

Research Strategy

Significance

Innovation

Approach

- Preliminary studies for new applications
- Progress report for renewal/revision
**Narrative Section: Significance & Innovation**

**Significance (1/2 page)**
- Part I: Provide critical analysis of the literature.
- Part II: Give statement of significance.
- Part III: Discuss expected benefits.

**Innovation (1/2 page)**
- Part I: Document what the norm has been.
- Part II: Provide your statement of innovation.
- Part III: Summarize the innovation’s positive impact.

---

**Innovation Pitfalls**

- Over ambitious
- Ideas are not novel
- Results are not clear
- Ideas are not conveyed
- Innovative features not identified

---

**Research Design and Methods**

**A. Aim 1**
- A. Introduction
- B. Justification & Feasibility
- C. Preliminary Studies
- D. Research Design
- E. Expected Outcomes
- F. Potential Problems & Alternative Strategies

**B. Aim 2…**

**C. Timeline**

**D. Summary**

---

**Specific Aim(s): Justification and Feasibility**

- Provide critical analysis of published studies.
- Review the literature.
- Use current and primary literature.
- Use citations.
- Focus on justifying need.

---

**Specific Aim(s): Research Design**

- Overview of the methods
- Essential reagents needed
- Critical equipment required
- Statistical analysis
- Controls
- Replicates
- Detailed expectations
- How results will be interpreted
- Time required to complete studies

---

**Specific Aim(s): Preliminary Studies**

- Different grants require different amounts of data.
- Use unpublished data primarily.
- Present data clearly and simply.
- Interpret data; guide reviewers.
- Convey one idea in figures/tables.
- Provide data supporting the project in your hands.
- Discuss the potential positive impact.
Specific Aim(s): Expected Outcomes
Demonstrate the return on investment.
Collect outcomes from the Research Design.
Convey how they achieve the Aim’s objective.
Summarize the expected outcomes.
Do not overstate your expectations.

Specific Aim(s) Potential Problems & Alternative Strategies

- Discuss the nature of the perceived problem.
- Explain the reason why it is unlikely.
- Describe the alternative approach.

Summary

- Take home message
- Why you can succeed

Making Your Ideas Clear

Use transition words to link ideas.
Define terms.
Communicate data and theories.
Avoid Long Sentences. Breakdown ideas.

Engaging the Reader - Transitions

For continuing a common line of reasoning
consequently, furthermore, additionally, also, and, in addition

To change line of reasoning
however, on the other hand, but, yet, nevertheless, despite

Contrast and Comparison
contrast, conversely, instead, likewise, on one hand, similarly

Emphasis
above all, chiefly, with attention to, especially, particularly, singularly

Exemplifying
chiefly, especially, for instance, in particular, markedly, namely, including

Exception
aside from, barring, beside, except, excepting, excluding, exclusive of, save
Engaging the Reader - Transitions

Consequence
accordingly, as a result, consequently, for this reason, hence

Generalizing
as a rule, as usual, for the most part, generally, generally, usually

Illustration
for example, for instance, for one thing, as an illustration, as an example,

Similarity
comparatively, coupled with, correspondingly, identically, likewise, similar

Restatement
in essence, in other words, namely, that is, that is to say, in short, in brief

Sequence
at first, first of all, to begin with, in the first place, at the same time, for now,

Phrases That You Can Omit

• Have a tendency to
• In the event that
• Manner
• In the process of
• All things considered
• Has the ability to
• As far as __ is concerned
• In light of the fact that
• By means of
• For all intents and purposes
• Type of
• It seems that
• In the nature of
• At the same time as

Eliminating Wordiness

Is aware of/has knowledge of …. knows

Is taking …. takes

Are indicative of … indicate

Are suggestive of … suggest

In the event … if

Avoiding Redundancy

• Past History
• Final outcome
• Repeat again
• Actual facts
• Refer back
• Absolutely essential
• Basic fundamentals
• Close proximity
• Desirable benefits
• Entirely eliminate
• Still persists

http://grammar.about.com/od/words/a/redundancies.htm

TONE & VOICE

Your paragraphs flow and tell a story.
Your sentences are dynamic, active, and changing.
Your sentences are linked using transitions.
Your proposal has logical organization.
Tense vs. Voice

**Tense** – Time. Past, Present, Future

**Voice** – Relationship Between Subject And Verb. Who Does What.

**Linking Verb** – neither active or passive (to be)

---

Let the Subject Do the Work

• **Keep subject and verb close.**
  DNA polymerase gamma complex, which is composed of a 140 kDa catalytic DNA polymerase encoded by the POLG gene and a 55 kDa accessory subunit encoded by the POLG2 gene, replicates Mitochondrial DNA. Mitochondrial DNA is replicated by the DNA polymerase gamma complex, which is... ~or~ The DNA polymerase gamma complex replicates ...

• **Use active verbs and activate sentences.**
  We will develop a cell line - rather than "a cell line will be developed" The ICP data show - rather than "It can be seen from the ICP data..."


---

Use Strong Action Words

**Examples:**
accelerate, compile, compose, delineate, describe, detect, determine, develop, elevate, evaluate, expand, formulate, generate, hypothesize, illustrate, implement, induce, inflict, instigate, interpret, isolate, maintain, manipulate, perform, placate, predict, prepare, prescribe, produce, promote, prompt, propel, protect, reduce, repair, research, support, synthesize, target, test, transfer, undertake, utilize, yield ...

---

Tone & Voice

**Active Voice**

Subject – Verb - Object

1. Emphasizes the performer/subject.
2. The subject is doing the action.
3. The sentence is clear and dynamic.

**Passive Voice**

Object – Verb – By Subject

1. Emphasizes the object or recipient.
2. Uses a form of the verb to be followed by a past participle.
3. Can be indirect, weak, awkward, and wordy.
4. Challenging to read.

---

Converting Passive to Active Voice

**Passive Sentence:**

• (Noun) (Verb phrase) By (Noun)
• The True Subject Is At The End

1. Find the true subject
2. Find the verb
3. Organize into subject-verb structure

*Ex: The data were examined by our group.*

Our group examined the data.

---

Converting Passive to Active Voice

The alcohol-dependent loss in many of the low molecular weight oxidative phosphorylation proteins was prevented by betaine supplementation.

Betaine supplementation prevented the alcohol-dependent loss in many of the low molecular weight oxidative phosphorylation proteins.
There were a number of points of discussion on the project and some concerns were pointed out by the reviewers.

The reviewers pointed out a number of points of discussion on the project and some concerns.

They are immunodominant proteins released by hookworms in their transition from free living to parasitism.

In their transition from free living to parasitism, hookworms release immunodominant proteins.

We will be testing our hypothesis using innovative methods to examine the data after we have analyzed it quantitatively.

Using innovative methods, we will thoroughly test our hypothesis, examine the data, and quantitatively analyze our results.

Ex. Methods Section - Passive Voice redirects attention to the action (or the recipient):

- The performer is unknown, irrelevant, or obvious
- The performer is less important than the action.
- The recipient is the main topic.

If, Try, Hope, May, Might, Should, Could, Believe, Possible use **EXPECT**.
Long Compound Noun Strings

Be cautious when using long strings of nouns. Noun Strings can form multiple meanings. Properly use hyphens. Use prepositions to break into modifying units. To unravel, read the phrase backwards.

Unraveling Noun Strings: Examples

- building radon source location method
- method for locating the source of radon in buildings
- predicted ambient total suspended particulate concentrations
- the predicted total concentration of ambient suspended

Hyphen: Punctuation Rules

Used for compound noun phrases

- Use between nouns of equal importance (eye-opener)
- Use between two numbers spelled out (e.g., twenty-four)
- Use to link two nouns or words that modify another noun (e.g., real-time experiment, well-run practices)
  - Note, modifiers ending in ‘ly’ are not typically hyphenated.

Unraveling Noun Strings

- hospital employee relations improvement program
- program to improve relations among hospital employees
- polluted mine drainage technique preliminary analysis
- a preliminary analysis of techniques for draining polluted mines

Prepositional Phrases

Prepositions how a relationship between a noun or a pronoun and some other word in the sentence. Modify.

99 %: with, at, by, to, in, for, from, of, on
e.g., with regard to, at random, by means of, to the detriment of, in comparison with, for the sake of, from experience, on account of

Overuse of prepositional phrases can wear on your reader because he or she must put material on hold while determining what the phrases modify.
Reducing Prepositions Per Sentence

Original: An understanding of these recurring cytogenetic changes has led to the molecular dissection of specific chromosomal regions and has resulted in the isolation and cloning of various proto-oncogenes.

Revision: Because we better understand these recurring cytogenetic changes, specific chromosomal regions have been molecularly dissected resulting in isolation and cloning of various proto-oncogenes.

Clarity

Which & That

Which follows commas. Introduces non-essential clauses

- The transmembrane protein CD22, which is a negative regulator of cellular signaling …

That does not follow commas. Introduces essential clauses

- By examining the pathway that negatively regulates cellular signaling, …

i.e. & e.g.

i.e. = id est. That is.

e.g. = exempli gratia. For example.

- Nucleic acids, i.e. DNA and RNA
- Macromolecules, e.g. nucleic acids

Comma Usage

- Can be used in place of parentheses.
  - Cytokines (small cell-signaling protein molecules) pair to these receptors.
  - Cytokines, which are small cell-signaling protein molecules, pair to these …
- Used before ‘which’
- Used before conjunction separating two complete statements. Note: ‘however’ is not a connection
- Used after transition words (e.g., Furthermore, next,)
- Used to separate strings of nouns (DNA, RNA, and tRNA)
- Before Including: each instance must be decided individually because a comma changes the meaning.

Revision Process

Checklist

- Read out loud.
- Replace long verb phrases.
- Is your train of thought clear?
- Check sentence variety.
- Check that you do not use the same words and phrases over and over.
- Precise word choices.

Editing and Proofreading Tips

- Edit and proofread in several short blocks of time.
- Put the paper aside for awhile.
- Try changing the look and formatting of your document.
- Use a highlighter to mark the changes that you made for printed edits.
- Watch ‘From’ v ‘Form’ (grammar check may not catch it).
- Ctrl F for double spaces.
**Formatting Tips**

Use 1" Margins  
Add line breaks between paragraphs  
Auto-hyphenate  
Use full justification  
Use single spaces after each period (Ctrl F)  
Use consistent heading and numbering systems  
Call out *important* information

---

**Melody Montgomery, B.S.**  
*Editorial Grants Specialist*  
Office of the Vice Chancellor for Research  
Research Editorial Office  
University of Nebraska Medical Center DRC I 4010  
985875 Nebraska Medical Center  
Omaha, NE 68198-5875

Office Hours: 9 a.m. – 5 p.m. M-F  
E-address: m.montgomery@unmc.edu  
Phone: 402.559.4132

[http://www.unmc.edu/research-editorial.htm](http://www.unmc.edu/research-editorial.htm)