

# Scientific Writing Skills Workshop

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### Titles

The title makes more of an impression than many writers realise. Research has shown that editors generally consider the quality of a title to reflect the quality of the main text. Most readers will read your abstract only if the title interests them. It has to convey the paper's relevance to the target audience.

It is therefore worth spending time and effort on creating your title, and making sure it complies with the guidelines for the particular journal in which it may be published.

A strong title is CLEAR, COMPLETE and COMPACT.

- **Key words** should adequately reflect the content of the article. Include and highlight the key items of the study.
- **Key words** should occur near the beginning.
- Obscure abbreviations and unnecessarily long, complicated terms are to be avoided.
- Phrases are generally preferred to complete grammatical sentences
- Use the fewest words possible to describe the work adequately.
- Your title should make your article stand out in some way from other articles in the field.

### Examples:

*Novel Cancer Biomarker* This is too vague. Which kind of cancer is being studied? Is it a new kind of biomarker or just a new example of one?

*A Study into the Relationship between the Number of Times a Queen Bee Mates and Disease within the Honeybee Colony.* This is too long and wordy. *A Study into* does not add anything to the meaning, and occupies the initial position, where key words should be. An improved title: *Multiple Mating by Queen Bee Lowers Disease within the Honeybee Colony*

The following effective two-part title informs readers about topic and study design:  
*Brain activation during perception of face-like stimuli: an fMRI study*

### Abstracts: Predictable patterns (or "moves")

Move #	Typical labels	Implied questions
Move 1	Background/problem	What do we know about the topic? Why is the topic important?
Move 2	Present research/purpose (answer to problem)	What is this study about?
Move 3	Methods/approach/data	How was it done?
Move 4	Results/findings	What was discovered?
Move 5	Implications/recommendations	What do the findings mean?

#### Common mistakes in abstracts:

- Question omitted in hypothesis-testing papers or a wrong type of abstract is used (e.g. descriptive abstract instead of a hypothesis-testing abstract)
- Lack of structure: the abstract is an untidy mixture of context, method, results and implications.
- Lack of clarity in the results regarding the author's specific contribution.
- Too many results provided, accompanied by irrelevant comments.
- The author does not explain what the study's findings add to existing knowledge.
- The explanation of the implications and benefits of the results is vague, general and unrelated to the innovative finding described by the author.

### Sketching an outline of your abstract

Sketch an outline for your first draft of an abstract using the guiding questions below.

Moves and guiding questions	Your answers:
<b>Move 1 (Background/justification):</b> What do we know about the topic? Why is the topic important?	
<b>Move 2 (Present research/problem):</b> What is this study about? What's the problem you're trying to solve?	
<b>Move 3 (Methods/approach/data):</b> How was it done?	
<b>Move 4 (Results/findings/argument):</b> What was discovered?	
<b>Move 5 (Implications/recommendations):</b> What do the findings mean?	

## Introductions: Recommendations

1. Tell a story
  - a. Show where your question came from
  - b. Walk the reader step by step from what is unknown or a problem to a question
  - c. Make sure the importance of your work is evident
2. State the question or a hypothesis as clearly and precisely as possible. Questions and hypothesis are usually not in the form of a question, but in statements such as: "We hypothesized that...", "We asked whether...".
3. Keep it short but aim to awake interest, not kill it off.

## Introductions: Funnel structure

1. Known/Background – broad and specific, information from previous research, narrow down quickly to the research topic and unknown
2. Unknown/Problem – problems of previous work and unknown factors in the area
3. Questions/purpose of the study – your answer to the unknown, what you will add to the field by doing your research (the heart of your study – everything else in the paper should align to it)

Common mistakes in introductions:

- Missing elements (unknown/problem/ questions)
- Problem not stated clearly
- Obscured elements
- Excessive length
- Context/background is too narrow

### Example of an introduction with too narrow background

FR2 is a member of the DExD/H-box family of proteins. DExD/H-box family proteins possess NTPase and often helicase activity. FR2 exhibits NTPase and helicase activity from its C-terminal helicase domain (FR2hel). FR2 also binds to HCV NS4A to form the complex FR23-4A. FR2-4A exhibits serine protease activity from its N-terminal protease domain and is localized to the surface of the endoplasmic reticulum via NS4A.

Improved:

Hepatitis C, which is caused by the Hepatitis C virus (HCV), infects an estimated 170 million people worldwide and 4 million in the United States. The virus replicates mainly in the hepatocytes of the liver and in peripheral blood mononuclear cells. An essential replicative component of HCV is FR2. FR2 is a member of the DExD/H-box family of proteins. Like other members of this family, FR2 exhibits NTPase. In addition, FR2 also displays helicase activity from its C-terminal helicase domain (FR2hel), an activity that is often seen in other DExD/H-box family members. Furthermore, FR2 binds to HCV NS4A to form the complex FR2-4A, which exhibits serine protease activity from its N-terminal protease domain and which is localized to the surface of the endoplasmic reticulum via NS4A.

### Discussions: Recommendations

1. **Do** state whether you confirmed your hypothesis. Start by stating your argument or conclusion: what you thought would happen, what did happen, and why you think it happened. Many will have skipped reading your methodology and your results, so it is good to reiterate your findings and hypothesis here. If you feel this beginning is too abrupt, you can restate the purpose of the study or provide a brief context before stating the answer.
2. **Do** claim significance for your work. Don't let readers walk away thinking 'So what?' Spell out the significance of the results for them.
3. **Do** relate your findings to previous research. Do they confirm or contradict existing knowledge? Provide explanations for your disagreements with previous research.
4. **Do** explain unexpected findings, or discrepancies with expected results. At the beginning of the paragraph, state that the finding was unexpected, or surprising, and then explain it as best you can.
5. **Do** repeat the interpretation of your key findings in a concluding paragraph. Two standard ways to end the Discussion are to restate the answer to the research

question, and to indicate the importance of the work by stating applications, recommendations, implications or speculations. A statement that further studies are needed is not a particularly strong ending.

6. **Do** discuss alternative interpretations for your results. Published writers are able to come up with cognitively challenging novel explanations; they can increase the 'news value' of their work by extending the narrow focus of their studies in this way.
7. **Don't** present new data that has not been mentioned in the Results section.
8. **Don't** just use third person and passive voice. Use first person and active voice to make your discussion more lively and interesting.
9. **Don't** brainstorm all the possible meanings of the data. Before writing the Discussion, spend some time categorizing and re-categorizing your data, then link the information in logical ways. It is usually recommended to organize the discussion of the findings from the most to the least important. Keep the focus on the question / purpose of the paper that was stated in the Introduction.
10. **Don't** use the same sentences you used in the Introduction. Vary the sentence structures, but keep the same key words. You aim to create an 'echo' that will remind the reader of what you said before
11. **Don't** restate methods.
12. **Don't** apologize for your study's limitations. All studies have some limitations. You should acknowledge the more important of these. Sometimes you can mention how you would do the study differently next time. Be careful not to overemphasize the study's limitations, as these should not be seen as a problem with your work. Your aim is to convince readers that what you are doing is important and that your methods are robust and valid.

Common mistakes in discussion sections:

- Too many results are discussed.
- Lack of structure: the reader is faced with a jumble of information that lacks a unifying theme.
- No clear explanation as to why the results are new, how they add value or how they are different to existing knowledge.
- The implications of the new results are not explained.
- There is little explanation of the general implications and benefits of the new results for society.



## References

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