

Scientific Writing - Getting your work published

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Surviving & Thriving During the
Research Years

Outline

1. Preparing to Write
2. Writing a Paper
3. At the Journal
4. Summary

1. Preparing to Write

Will I ever get “publishable” data?

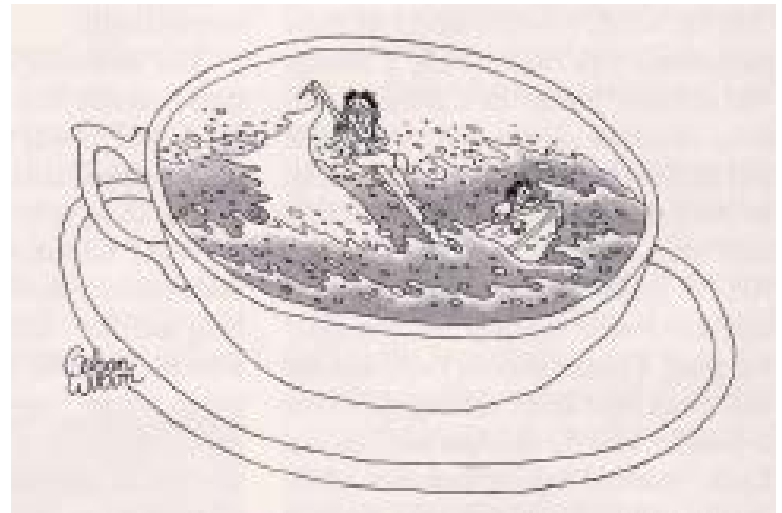
- Anticipate research “dark days”

- Navigate them

Focus vs diversity

Priorities—life & work

Career & project alternatives



Preparing to Write



Getting the Facts

- Gather data
- Decide whether & when to start writing

Preparing to Write



Identify: Idea Space
Writing Space

2. Writing a Paper

A possible sequence ...

1. Tables & Figures
2. Results
3. Methods
4. Discussion
5. Introduction
6. Abstract
7. Choose a journal

BAD NEWS ...

GOOD NEWS ...



James Joyce



Toni Morrison



David Foster Wallace



Nicole Krauss

Writing

You do not need to be a great literary writer

BUT: There is a lot of bad scientific writing

Science writing is teachable

Strive for clarity, brevity, substance

BUT: It takes hard work

Tables & Figures & Results

What are your primary observations?

1. Identify what experiments & analyses remain
2. Writing: Rough copy helps many
3. Data that doesn't fit
Embrace it “Interestingly”

INTRODUCTION



2. Writing a Paper

A. Introduction

1. Intro

A. Para 1: Broad background

B. Para 2-4: More specific

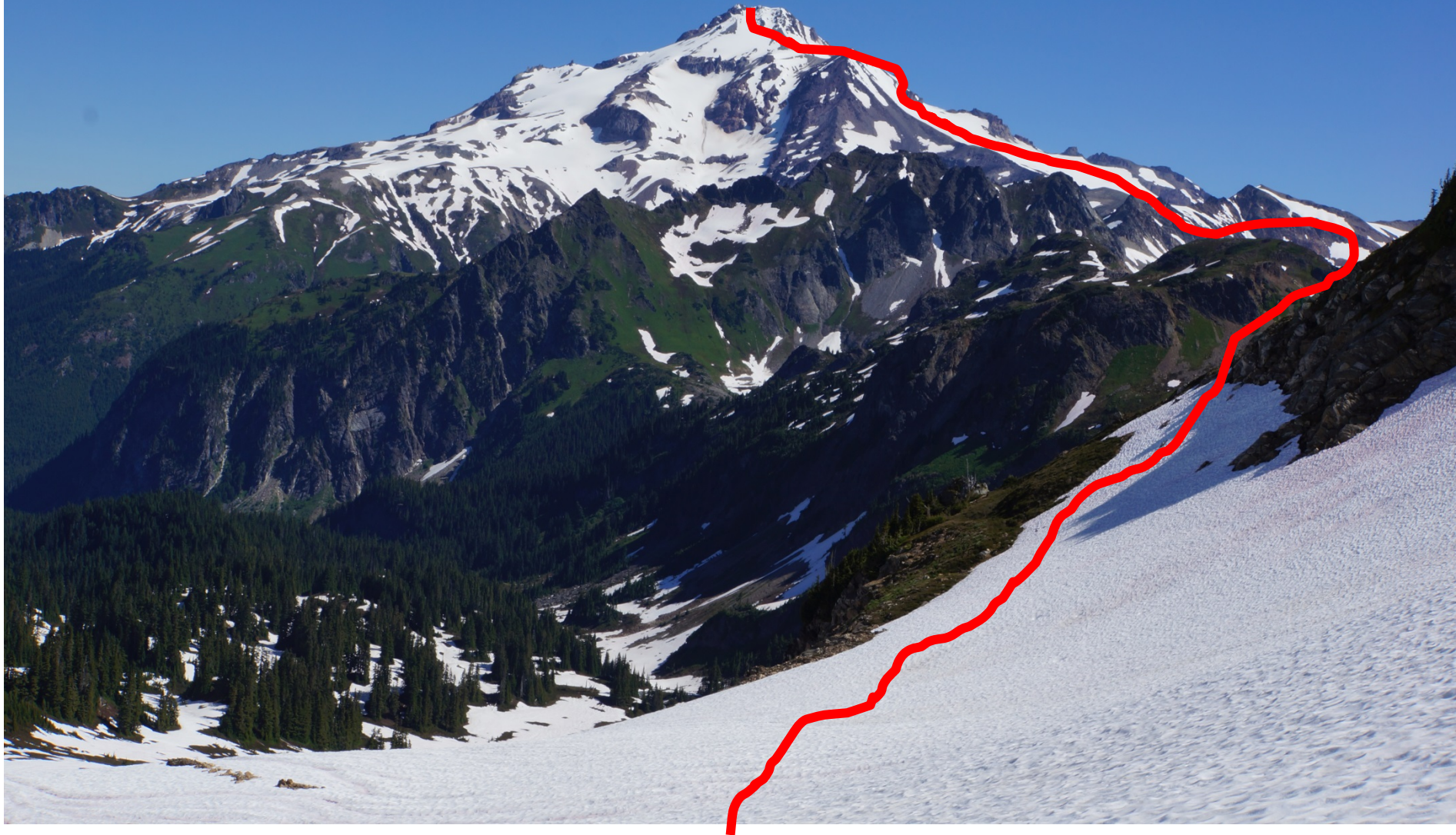
C. Last Para: Some describe main findings (optional style)

2. Each paragraph has a purpose and ends with an unknown

3. Avoid being encyclopedic—get to your points quickly

INTRODUCTION: SHOW THE PATH

DON'T BE A MYSTERY WRITER



Methods

1. Provide enough information to replicate expts
2. OK to refer to previous papers for methods—but don't make them dig too deep for essentials

DISCUSSION

1. Discuss the path
2. Add interpretation
3. Do not get lost in the forest



DISCUSSION

Begin by stating your primary observations

Answer the unknowns from your Intro

Each paragraph has a purpose

Often address a mechanism/causality

Include a limitation paragraph

End with forward looking implication

Abstract

Clearly state unknown or hypothesis

Provide pithy summary of data

Provide conclusion

Avoid overstatements

Polishing

The time to begin writing an article is when you have finished it to your satisfaction. By that time you begin to clearly and logically perceive what it is that you really want to say.

- *Mark Twain's Notebook, 1902-1903*

Crevasse Avoidance

- clarify the framing & idea flow
- improve grammar
- find typos
- find run-on sentences



Be pithy ...

Anybody can have ideas--the difficulty is to express them without squandering a quire of paper on an idea that ought to be reduced to one glittering paragraph.

Mark Twain Letter to Emeline Beach, 10 Feb 1868

But avoid paralysis...

I was working on the proof of one of my poems all morning , and took out a comma. In the afternoon, I put it back again.

--Oscar Wilde

Style

A number of things are indicated by these results including whether gene X modulates function Y.

Versus

These results indicate that gene X modulates function Y.

16 vs 9 words & active style

Beware of the passive voice

passive voice=

form of “to be” + past participle

e.g. “are indicated ...”

Can confuse the subject & object

Avoid making the object of an action into the subject of a sentence

Reduce word number

Look for the phrase “by the ...”

Slow Writers

- A. Writer's block
- B. Technical issues (final statistics, experiment)
- C. Competing Priorities
- D. Personal issues

PROBABLY NEED TO IDENTIFY
WHY BEFORE SOLVING

Mentor-Mentees & Writing

- How polished is the draft?
- Giving time to review
- When to solicit mentor input
- When to solicit beyond mentor



3. The Journal

Define goals & scope in relation to:

- A. Data
- B. Career stage
- C. Other projects/papers in your portfolio

Decide:

- A. Wait for more data or
- B. Choose impact & scope of journal accordingly

The Editorial Office

Initially, editor probably ...

Starts with cover letter & abstract

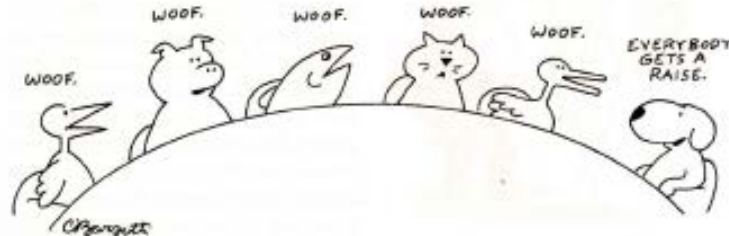
Scans figures & tables

Might read intro & results



Editor Peeves

1. Confusing abstract
2. No hypothesis/statement of purpose
3. Hyperbole
4. Grammar mistakes, run-on sentences, & typos



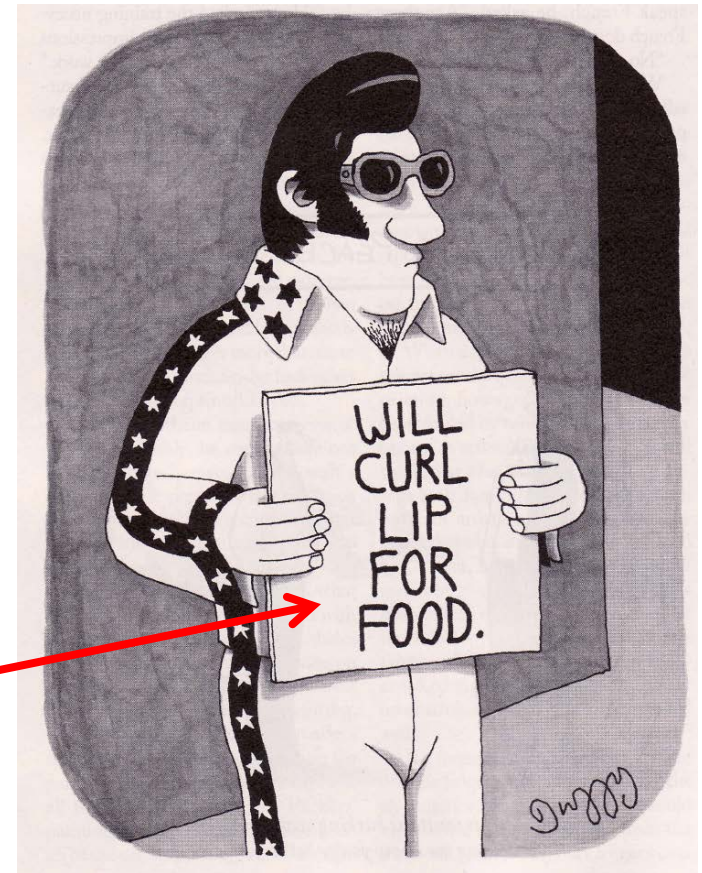
Revisions: the point by point reply

Be thorough

Be polite

Provide all easy answers

Sometimes



Know when & how to argue

Summary Points

1. Create space for your ideas & writing
2. Tell a simple story with a clear & connected path
3. Use active voice
4. Avoid writer paralysis—break it down
5. Do not strive to be a mystery writer