Scientific Writing
The Editorial Process
Peer Review

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Schedule for December

December 9: Tips on Selecting the Right Journal Writing and Submitting Your Paper

December 16: Principal Investigator Transfers (John Michnowicz, Office of Sponsored Research Services)
Who Am I?

- Since 2000: Editorial Manager of the American Journal of Physiology-Endocrinology and Metabolism

- Former manager of the biomedical journal editing division at Mosby, now Elsevier, one of the world’s largest publisher of medical and scientific books and journals

- More than 25 years of professional experience in journalism, public affairs and biomedical publishing
Objectives for Today’s Presentation

- Present a few writing tips to help you get your paper published in a biomedical journal
- Summarize the editorial process
- Review authorship guidelines
- Present guidelines for ethical publishing
- Explain the peer review process
The Very, Very Basics of Clear and Concise Scientific Writing
Scientific Writing with William Faulkner and Ernest Hemingway
“Loving all of it even while he had to hate some of it because he knows now that you don’t love because: you love despite; not for the virtues, but despite the faults.”
Hemingway: The Journalist

“All you have to do is write one true sentence. Write the truest sentence that you know.”
Hemingway: The Journalist

When challenged to write a full story in six words, he responded:

“For Sale: baby shoes, never worn.”

--Courtesy of Jay Piccirillo, MD
Don’t be Guilty of Using the “Squid Technique”
The Squid Technique

“The author is doubtful about the facts or reasoning and retreats behind a cloud of ink.”

(Doug Savile, Tableau, September 1972)
Scientific Writing

- Your manuscript tells a story.
- Write like Hemingway, not like Faulkner.
- Be clear and concise.
- Balance clarity and depth.
- Be succinct, yet thorough.
- Use correct grammar and punctuation.
- Proofread! Make a good first impression.
Word Choice

- Use common words outside of the scientific terminology.
- Define technical words early.
- Never assume that your reader will understand “jargon.”
- Always spell out abbreviations at first mention.
- Don’t trust spell check.
- Proofread, proofread, proofread!
Word Choice

Use the word that conveys your meaning most accurately. When deciding between two such words, choose the shorter word:

- Approximately vs. About
- Commence vs. Begin
- Finalize vs. Finish
- Prioritize vs. Rank
- Terminate vs. End
- Utilize vs. Use
Word Choice Problems

The problems that copyeditors see most frequently are *words carelessly interchanged*. This can affect scientific meaning.
Ability vs. Capacity

♦ **Ability** is the mental or physical power to do something, or the skill in doing it.

♦ **Capacity** is the full amount that something can hold, contain, or receive.
Continual vs. Continuous

♦ *Continual* means intermittent, occurring at repeated intervals.

♦ *Continuous* means uninterrupted, unbroken continuity.
Word Choice Problems

Affect/Effect:

Affect: (verb) influence or modify
Effect: (noun) result

Among/Between:

Among: used with more than two choices
Between: used with only two choices
Word Choice Problems

Compose/Comprise:

Compose: make up or create

Comprise: consist of, be composed of, be made up of

Decrease/Reduce:

Decrease: lessen in number

Reduce: lessen in amount
Sentence Structure

Sentences are clearest, most forceful, and easiest to understand if they are simple and direct.
Therefore, write short sentences like Hemingway, not long sentences like Faulkner.

Put parallel ideas in parallel form.

Simplify by using “active voice.”

Use strong verbs, not nouns.

Tighten your writing.
Put parallel ideas in parallel form.

To give a comfortable rhythm to your writing, use the same pattern for ideas that have the same logical function. Balance elements of the sentence. For example:

Instead of: “Tissue samples were weighed, then frozen, and analyses were performed.”

Write: “Tissue samples were weighed, frozen, and analyzed.”
Simplify by using active voice.

To simplify, use active, not passive, voice:

“The new drug caused a decrease in heart rate.”

Revised:

“The new drug decreased the heart rate.”
Use strong verbs, not nouns.

Make an adjustment        Adjust
Make a judgment           Judge
Make a decision           Decide
Perform an investigation  Investigate
Make a referral           Refer
Reach a conclusion        Conclude
Tighten your writing.

At the present time… Now
Due to the fact that… Because
It may be that… Perhaps
In the event that… If
Prior to the start of… Before
On two separate occasions… Twice
Sentence Structure

When two or more words are combined to form a compound adjective, a hyphen is usually required, e.g., disease-related sleepiness.
Sentence Structure with SpongeBob SquarePants
Sentence Structure

- Bob is a sponge, and he has square pants.
- **Square-pants** Bob has sponge-like qualities.
- Bob’s **sponge- and square-like** qualities make him a great cartoon character.
- Bob’s a **sponge-and-square-like** cartoon character who aspires to be famous.
The outcome of adults with acute lymphoblastic leukemia remains poor. While 90% of adult patients will achieve initial remission with chemotherapy, the majority will relapse and only 30-40% will achieve long-term disease-free survival.
Sentence Structure

Check your syntax:

♦ “After standing in boiling water, we examined the flask.”

♦ “Having completed the study, the bacteria were of no further interest.”
Paragraph Structure

Organization: Overview first, then details.

♦ Overview: topic sentence, keep it short and simple.

♦ Details: supporting sentences.
The Editorial Process
Completion of research

Preparation of manuscript

Submission of manuscript

Assignment and review

Decision

Rejection

Revision

Resubmission

Re-review

Acceptance

PUBLICATION!

Re-submission

Re-review

Rejection

Adapted from a figure by Dale Benos
What Constitutes a Publishable Paper?

- A scientific paper is a written and published report describing original research results.
- It is peer-reviewed.
- It meets the criteria for “first disclosure”.

What Constitutes a Publishable Paper: First Disclosure

- Council of Science Editors (http://www.councilscienceeditors.org/): “An acceptable primary scientific publication must be the first disclosure containing sufficient information to enable peers to
  ♦ (1) assess observations,
  ♦ (2) repeat experiments, and
  ♦ (3) evaluate intellectual processes…”

- Moreover, it must be
  ♦ (1) available to the scientific community without restriction and
  ♦ (2) be available for regular screening by major recognized secondary services (e.g., Index Medicus).”
Is There More Than One Paper?

- A single large study may be the “seedbed” for dozens of unique manuscripts, all of them based on the same subjects and measurements.

- Is there more than one paper? Possibly, if there are:
  - Several unique research questions
  - More than five or six key points
Before Your Submit Your Paper….

- Select the right journal by checking its scope statement
- Follow the author guidelines
- Ask a well-published colleague for a pre-review
- Write to the journal editor with questions
Authorship
Authorship

Before the writing begins, decide:

♦ Who will be responsible for writing?
♦ Who will serve as corresponding author?
♦ Who will manage revisions?
Criteria for Authorship

1. Authors must have generated at least part of the *intellectual* content, which means
   - Conception or design of the work
   - Data analysis and interpretation

2. Authors must draft, critically review, or revise the *intellectual* content

3. Authors must approve the final version to be submitted

All three criteria should be satisfied
Authorship: What Order?

- First author: Provides the greatest intellectual contribution. Responsible for collecting and analyzing data, writing draft of manuscript.
- Senior author, or last author: Has overall responsibility for the study. Provides mentorship (not just money) to the research project.
- Middle author(s): Placed in order of importance to the study.
Authorship: Not an Author

- Department Chairs do not automatically qualify as senior authors.

- Do not add your name to an author list because you paid someone’s salary, lent a computer or technician, allowed access to a database or laboratory, or reviewed the manuscript.
So.....Who’s an Author?

- The student who did the experiments and wrote the first draft of the manuscript?
- The technician who measured cytokine levels in 150 samples?
- The PI who had the idea in the first place, guided the student, and reviewed the manuscript?
- The Department Chair who provided space and resources for the study, dropped by the lab occasionally to chat, but knew little or nothing about the experiments?
Author or Contributor?

- All contributors who do not meet the criteria for authorship could be listed in the Acknowledgments section. Examples:
  - Person who provided technical help
  - Writing assistants
  - Department Chair who provided general support
Authorship: Changes

- Review your journal’s policy
- Change of authorship form (before publication)
- Corrigendum (after publication)
Journal Ethics
Authorship

Responsible Authorship:

Washington University

http://www.wustl.edu/policies/authorship.html

Program for the Ethical and Responsible Conduct of Science and Scholarship

http://PERCSS.wustl.edu

Authorship Module
Ethical Guidelines for Publishing in a Biomedical Journal

- Intellectual honesty
- Accurate assignment of credit
- Fairness in peer review
- Collegiality in scientific and clinical interactions
- Transparency in conflicts of interest
- Protection of human and animal subjects
How to Avoid an Ethical Review of Your Paper

❖ You should be knowledgeable about:

♦ Conflict of Interest
♦ Duplicate Publication, Plagiarism, Falsification
♦ Prior Publication
♦ Experiments Involving Humans or Animals
♦ Fraud
Ethics in Publishing

❖ Plagiarism

♦ **Definition**: Taking the work of another. Copying a figure, table, data, or even wording from a published or unpublished paper without attribution.

♦ **How to Avoid**: Provide citations to the work of others. Obtain copyright permission if needed. Do not copy exact wording from another’s paper to yours, even if referenced, unless in quotes.
Ethics in Publishing

Duplicate Publication

◆ **Definition**: Submission of or publication of the same paper or substantial parts of a paper in more than one place.

◆ **How to Avoid**: Do not submit the paper or parts of that paper to more than one journal at a time. Wait until your paper is rejected or withdraw it before submitting elsewhere.
Ethics in Publishing

❖ Redundant Publication

♦ Definition: Using text or data in a new paper from a paper that you have already published. Also called auto- or self-plagiarism.

♦ How to Avoid: Do not include material from a previous study in a new one, even for statistical analysis. Repeat control groups as needed.
Falsification and Fabrication

**Definition:** Changing or making up data in a manuscript, usually to improve the results of the experiment. Includes digital manipulation of images (blots, micrographs, etc.)

**How to Avoid:** Present the exact results obtained. Do not withhold data that don’t fit your hypothesis. Don’t try to beautify images with Photoshop—any manipulations must apply to the whole image.
Unacceptable Figure Manipulation

- Improper editing
- Improper grouping
- Improper adjustment

♦ Authors should not:
  ♦ Move
  ♦ Remove
  ♦ Introduce
  ♦ Obscure
  ♦ Enhance

any specific feature within an image. Images should appear as captured in the lab or clinical environment.
Ethics in Publishing

- Human/Animal Welfare Violations
  - **Definition**: Treatment of experimental subjects that does not conform with accepted standards and journal policy.
  - **How to Avoid**: Obtain prospective IRB/IACUC approval for the study protocol. Do not deviate from the protocol. Obtain approval for amendments as needed before altering the protocol.
Ethics in Publishing

Conflict of Interest

Definition: Real or perceived conflict due to employment, consulting, or investment in entities with an interest in the outcome of the research.

How to Avoid: Disclose all potential conflicts to the Editor of the journal and within the manuscript itself.
Ethics in Publishing

♦ Authorship Disputes

♦ **Definition**: Disputes arising from the addition, deletion, or change of order of authors.

♦ **How to Avoid**: Agree on authorship before writing begins, preferably at the start of the study. Ensure that all authors meet criteria for authorship. Sign publisher authorship forms.
Peer Review
What Editors Want to See
What Editors Want to See

- That you have done your homework and sent your work to the correct journal
- That you have included an informative and well-written Letter to the Editor describing the unique aspects and importance of your work and the reasons you selected your preferred and non-preferred reviewers (as well as other helpful information).
What Reviewers Want to See
The Review Process

- Varies by Journal
- Managed by Editorial Office staff
- Reviewers are typically Editorial Board members or selected from a guest reviewer database
- Editors and Associate Editors may function as reviewers
- Editors and Associate Editors make the final decisions
Who are the Reviewers?

- People like you
- Editors, Associate Editors
- Colleagues of the Editors and Associate Editors who build the Editorial Board.
- Guest reviewers who may not know anything about your work and have to draw their conclusions strictly from your paper
What They Need to Consider

From Dr. Amira Klip to members of the AJP-Endocrinology and Metabolism editorial board: “As a guide, you can ask yourself the following questions regarding submissions: Does the manuscript represent significant advances or is it incremental? Is the study functional and hypothesis-driven? Are the approaches valid and solid? Are the results of high quality in both presentation and significance? Are the conclusions congruent with the results?”
The Peer Review Process

- American Journal of Physiology-Endocrinology and Metabolism Editorial Board:
  - 116 members
  - One-year terms; responsible for reviewing 10-12 manuscripts a year
  - Invitation letter send with guidelines for reviewing, and they need to accept in writing
  - Send statistics to them twice a year
  - Remove them from board if they do not meet criteria
The Peer Review Process

- Star Reviewers
  - Timeliness of review
  - Number of manuscripts reviewed
  - Consistent willingness to accept invitations to review
The Peer Review Process

Possible Decisions:

♦ Editor Decision Reject (Expeditious Review)
♦ Review Editor Decision: Accept
♦ Review Editor Decision: Accept Letter to the Editor
♦ Review Editor Decision: Major Revisions
♦ Review Editor Decision: Minor Revision
♦ Review Editor Decision: Reject
Score Sheet

Overall Manuscript Rating (Required): LOWER 50%

Significance of Research Findings (Required): LOWER 50%

Novelty of Findings (Required): TOP 50%

Experimental Design and Quality of Data (Required): LOWER 50%

Recommendation (Required): Reject
Score Sheet

Has the author stated that they have IACUC, IRB, or equivalent approval, if the study involves animals or humans? (Required): Yes

Is there any question of violation of APS's Guiding Principles in the Care and Use of Animals? (Required): N/A

Is the manuscript the right length? (Required): No

Are all of the figures and tables necessary? (Required): Yes

Is the use of figure color scientifically necessary? (Required): N/A
The Peer Review Process

I am pleased to report that they found your work to be well-performed, interesting and highly appropriate for AJP - Endocrinology and Metabolism. However, they did raise a few minor concerns that you will need to address before a final decision can be made. Importantly, an experimental control that was previously requested still needs to be included. Accordingly, I invite you to respond to the reviewers’ comments and recommendations in a revised version that explicitly includes that proper experimental controls. Your revision will be due within 3 months of today's decision letter. If, due to exceptional circumstances, you wish to request an extension, please do so by writing
The observations, that exercise training decreases hepatic insulin uptake and causes excessive hyperglycemia during maximal exercise, is very interesting. However, the discussions and conclusion depend largely on published papers and accumulated knowledge that insulin has an inhibitory effect on hepatic glucose production and that insulin clearance is correlated with the binding of the hormone on its receptor in the liver. This study itself does not show any direct evidence that is addressing their conclusion. Therefore, the discussion is very descriptive. Even if I give consideration to human use, the results are just observation and do not extend our knowledge.
The Peer Review Process

Specific Comments to Editors:

This is a well conceived and designed study; however it is only of minor importance in advancing the field. Importantly however, the results do not support the conclusions, in part, because the number of subjects per group is insufficient. The authors rely on deleting "outliers" (data points) and non-statistical trends to make their argument. Though I agree with the conclusions, more subjects are required to pass the statistical threshold. The paper is too long (~20%) and lacks focus. This is particularly true of the Introduction which is too detailed and then reiterated in the Discussion.

No, I would not rank the overall quality/impact of this manuscript in the top 25% of manuscripts I have reviewed in the field.
The Peer Review Process

Specific Comments to Authors:

Abstract: the abbreviation AVF is not explained.

Results: Reference to Figure 1B is lacking in the text (page 10).

References: reference number is exceedingly high and should be reduced to the most significant and more recent previous studies (most of the references date before 2001).

Figures: figure number is very high and the Authors should try to reduce to the most essential ones.
Dealing with Rejection/Revision
Major Reasons for Rejection

- Inappropriate for the journal
  - Do your homework

- Merely confirmatory/incremental
  - Avoid Least Publishable Unit (LPUs)

- Describes poorly-designed or inconclusive studies
  - Focus on your hypothesis

- Poorly written
  - Great science in an ugly package can still be rejected
Revisions

- If your paper is returned for revision, you are in good company.
- It’s OK to get mad, but don’t act on it!
- Try to understand what the reviewers are really saying.
  - If the reviewers did not understand your work, is it because you didn’t present it clearly in the first place?
- Look for clues from the editor (the final arbiter) as to the extent of revision needed.
  - Re-writes only
  - More experiments
Responding to Reviewers

- Complete additional experiments if needed
- Address all comments in a point-by-point fashion
  - Resist the temptation to prepare an impassioned response to points with which you disagree
  - Stand firm (diplomatically) if that is truly the right thing to do
- Sincerely thank the editor and reviewers for helping you to improve your work
  - They have invested a lot of time, mostly on a voluntary basis
- Ask a neutral colleague to review your response
Resources and Acknowledgments

- Kim E. Barrett, Chair, American Physiological Society (APS) Publications Committee
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- Essentials of Writing Biomedical Research Papers (Mimi Zeiger)
- Jay Piccirillo, MD