

# How to Submit and Evaluate Scientific Papers

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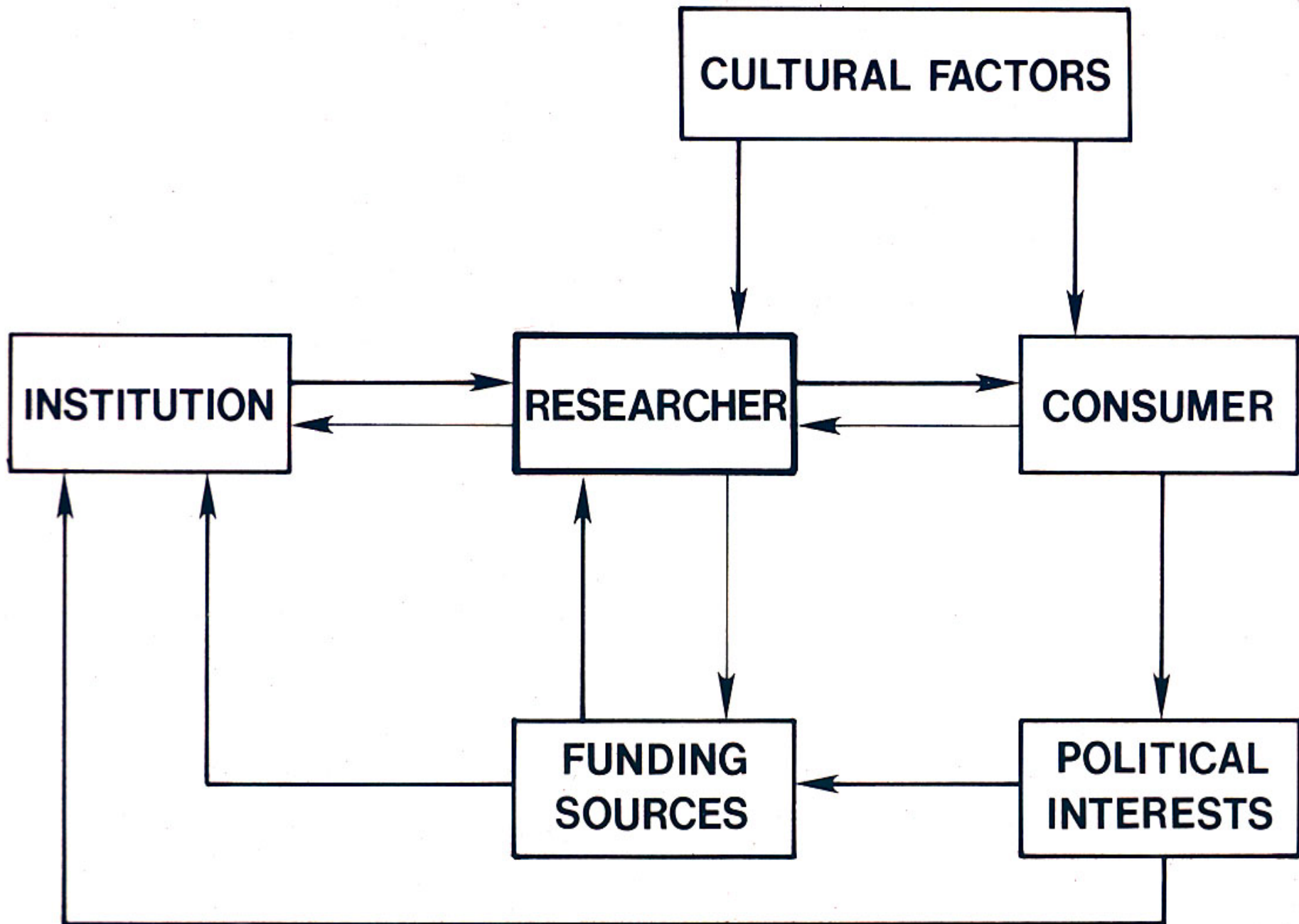
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# Areas to Be Covered

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- Communication in Research
- Sections of a Research Report
- The Review and Publication Process
- Evaluating a Published Paper



# Two Important Things to Remember

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- ❑ The scientific process is a subjective, human endeavor and is therefore subject to *bias* in conceptualizing, executing and interpreting research.
- ❑ As scientists, we have a responsibility to earn the trust of
  - Our colleagues
  - Our public

# Bottom Line

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*The scientific process can be fun and it can be exciting, but it also carries a great responsibility.*

# Peer Review in Research

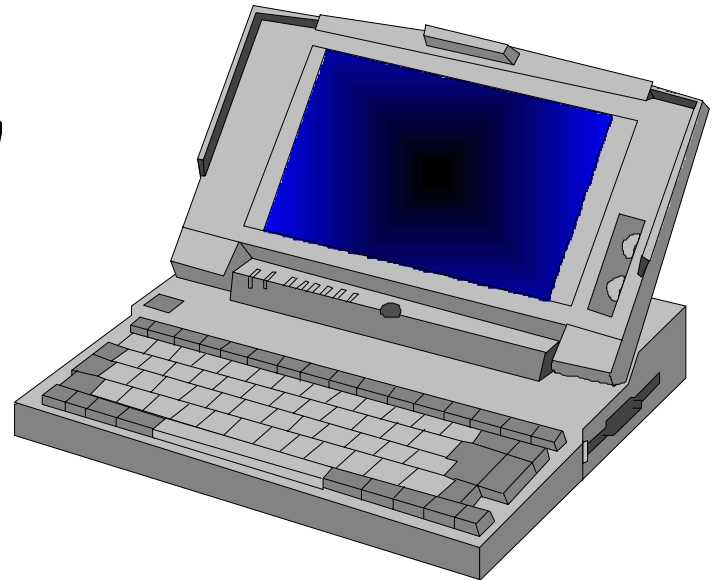
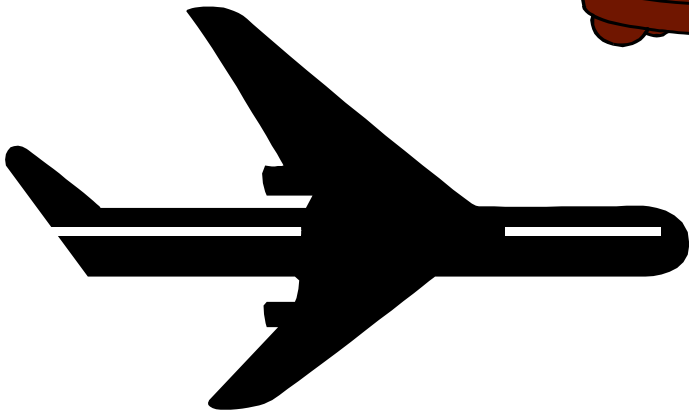
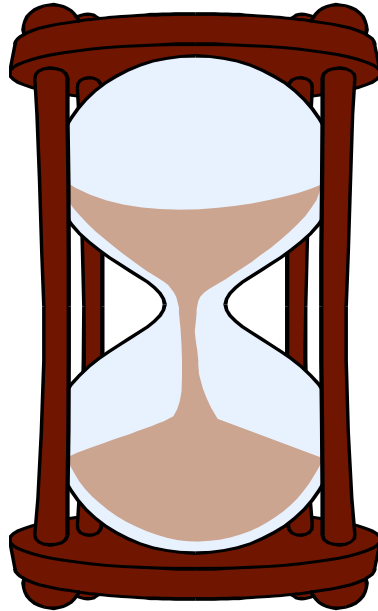
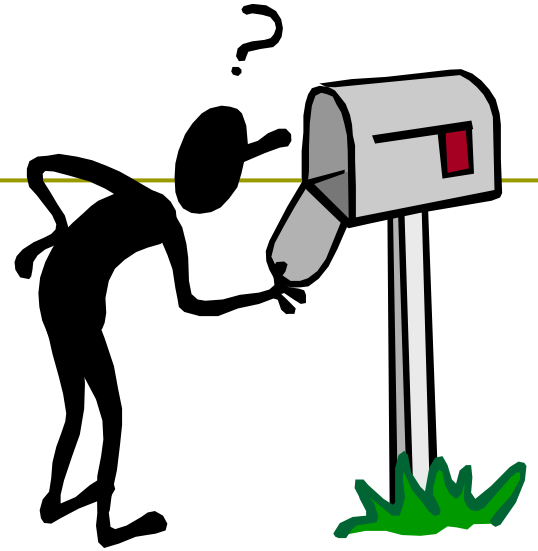
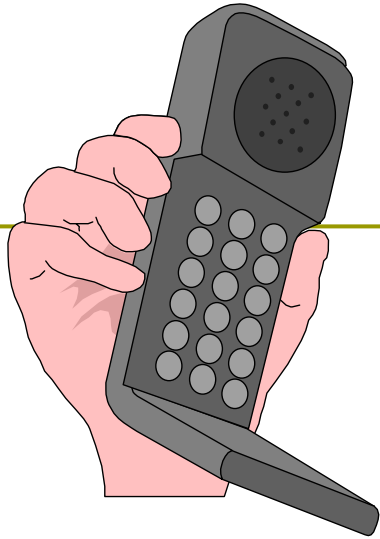
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- ❑ Institutional Review Boards (IRB)
- ❑ Study Sections
- ❑ Editorial Boards
- ❑ Internal (formal, informal)
- ❑ Ethics Committees

# Art vs. Science

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- Both look at the world in a new way
- Science deliberately builds on the past in order to accumulate knowledge
- Therefore, scientific knowledge must be communicated so that others may most effectively continue this process. This requires:
  - Honesty
  - Sufficiency
  - Accuracy
  - Selectivity



# Publication vs Presentation

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	Publication	Presentation
Conciseness		+
Timeliness		+
Personal, Informal		+
Completeness	+	
Peer-Reviewed	+	
Retrievable	+	

# Electronic vs. Print Journals

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## □ **Process**

- Peer Review
- Production

## □ **Product**

- Accessibility
  - Computer Literacy
  - Remote Access
- Permanence and Tangibility
- Copyright Protection

# Online Publication

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- ❑ The process of peer review remains important
- ❑ There may be an even greater tendency to rush things into print
- ❑ Articles not posted through peer reviewed journals may be more prone to:
  - Inaccuracies throughout publication
  - Jargon and colloquialism
  - Inadequate or incorrect documentation
  - Failure to include posting or revision date

# The Art of Writing a Scientific Paper

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“The report must be simple and clearly written. Anything overly elaborate, containing too many ideas, will be rejected by the top publications. The ideal is a paper of such pristine simplicity and crispness, that anyone -- even the dullest of technicians -- could use it to repeat the work and achieve the same results.”

Solomon H. Snyder, M.D.  
as cited by Candace Pert, Ph.D.  
in *Molecules of Emotion* (1997)

# Traditional Sections of a Research Report

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- Title
- Abstract
- Method
- Results
  - Statistical Analysis
- Discussion
- References

You might think about a...

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*phantom  
reader*



# Title

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## □ Functions

- Attract and inform the Reader
- Identify and Classify the Paper

## □ Suggestions

- Make it Substantive – a mini-abstract
- Stay within Space Limitations
- Avoid Jargon and “Waste words”

# Abstract

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- ❑ Brief statement of purpose
- ❑ General description of procedures
- ❑ Concise, specific summary of results
- ❑ If possible, a brief statement of relevant conclusions
- ❑ Avoid promises, undefined terms
- ❑ Stay within space limitations

# Introduction

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- ❑ The most important thing is to *justify why this particular study was done*.
- ❑ Show a clear, logical connection between hypothesis or questions and design and methods.
- ❑ Cite only the most relevant references.

# Methods

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## □ Publication

- Provide enough information to allow the reader to:
  - Replicate the study
  - Evaluate its value and relevance

## □ Presentation

- Highlight only the most important aspects
- Leave details for the discussion period

# Results

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- Be selective, emphasizing
  - Data that speak directly to the hypothesis or question
  - Relevant unexpected findings
  
- Use well-planned, *digestible* visual aids

# Statistical Analysis

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- Use tests that reflect the hypothesis or question
- Document any unusual tests or procedures
- Provide enough information so that the appropriateness of tests and procedures can be evaluated.

# Discussion

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- ❑ Restrict to what is relevant to the data obtained
- ❑ Include relevant limitations
- ❑ Avoid lengthy speculation
- ❑ Include suggestions for future research

# References

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- ❑ Use the appropriate format.
- ❑ Be sure that there is an exact correspondence between citations in the text and references at the end.
  - Do not use uncited references
  - Be sure that all references cited appear in the reference section.
- ❑ Proofread for accuracy.
- ❑ Proofread some more.

# Citing Online Publications

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- Use correct online referencing standards

Example, using American Psychological Association (1994) style:

Hambridge, S. (1995). *Netiquette Guidelines*. [Online]. Available: <http://www.cis.ohio-state.edu/htbin/rfc/rfc1855.html>

- If not dated, cite date accessed
- Respect copyright protection

# Manuscript

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- Put it aside for awhile
- Check carefully for technical errors
  - Data
  - References
  - Spelling – *Do not rely on Spell Check!!*
- Adhere to journal guidelines for length, format, etc.
- *Solicit peer review!*

# Proofreading Errors from Ads -- Reported by Readers of *Consumer Reports* (May 2006, p. 59).

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- **Buffet Restaurant:** *Over 100 items with altercations daily*
- **HMO:** *Impatient Hospital Care and Surgery*
- **Pub:** *All-You-Can-Eat Fist and Chips*
- **Golf Course Gardener:** *Irritation of Tees, Greens, Fairways, and Roughs*
- **Pizza Parlor:** *Picture of Beer or Soda*
- **House Cleaning Service:** *Spic N Spam*

# Types of “Internal” Review

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- Collaborator
- The Guy or Gal Down the Hall (or halfway around the world!)
- An English Major
- A “Significant Other”

# Style of Presentation

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- ❑ *STAY WITHIN THE PUBLISHED TIME LIMIT*
- ❑ Allow time for questions and discussion
- ❑ Try to use an informal conversational style
- ❑ Avoid jargon and undefined abbreviations
- ❑ Use visual aids that communicate easily
- ❑ Try to anticipate questions
- ❑ Admit your limitations and don't be defensive

# Functions of Editorial Review

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- Peer Review
- Gatekeeping
- Teaching

# Types of Editorial Structure

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- Editorial Staff (e.g., *Science, Academic Medicine*)
- Editorial Board (honorary vs. active)
- Individual Consultants
- Internal Referrals

# Initial Screening

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- Appropriateness of the paper for this journal
- Selection of reviewers
  - Areas of Expertise
  - General Standards

# Review by Consultants

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- Variety of Review Forms and level of Structure
- Narrative Review as Most Important Component
- Blind Review
- Time Lag

# Functioning as a Reviewer

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- Consideration of Paper vs. Study
- Posing Questions
- Problems with the manuscript may be considered symptomatic of problems with the study.

# Editorial Decision

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- Except, Modify without Review, Modify with Review, Reject
- “Arbitration” and opportunity for revision may depend on rejection ratio
- Feedback to authors and reviewers

# Editorial Decision

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- Accept, Modify without Review, Modify with Review, Reject
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**PEANUTS**

Dear Contributor,



We are returning your manuscript. It does not suit our present needs.



P.S. We note that you sent your story by first class mail.



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Junk mail may be sent third class.



# Revising the Manuscript

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- Respond to all editorial concerns.
- Be deferential; the editor has the gun!
- Reviewers are not infallible.

# Resubmission

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- ❑ Don't send it in looking like a resubmission.
- ❑ Remember that you could get the same reviewer!

# Pre-publication Procedures

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- Copyright statement, author review.
- Ordering of reprints.
- Review of proofs – two people recommended, especially for references.

# Major Reasons for Rejections of Papers

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- Fuzzy, uninformed, or biased thinking
- Premature publication (inconclusive findings).

# Evaluating Published Papers

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- ❑ Do not assume that a study is good because it was published
- ❑ Even at best, all studies have limitations
- ❑ Beware of the tendency to focus only on results and conclusions and to *trust* them!
- ❑ The most critical part of a research paper is the...

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# Method section!

# Questions to Ask

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- ❑ Does the study ask relevant questions based on the available literature?
- ❑ Are the study methods used appropriate, and are they consistent with the research questions or hypotheses?
- ❑ Were the data analyzed appropriately?
- ❑ Do the author's conclusions reflect the actual findings?

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**Trust**