



How to write a scientific paper

«كيفية كتابة الورقة العلمية»

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Useful Knowledge

Publishable
knowledge



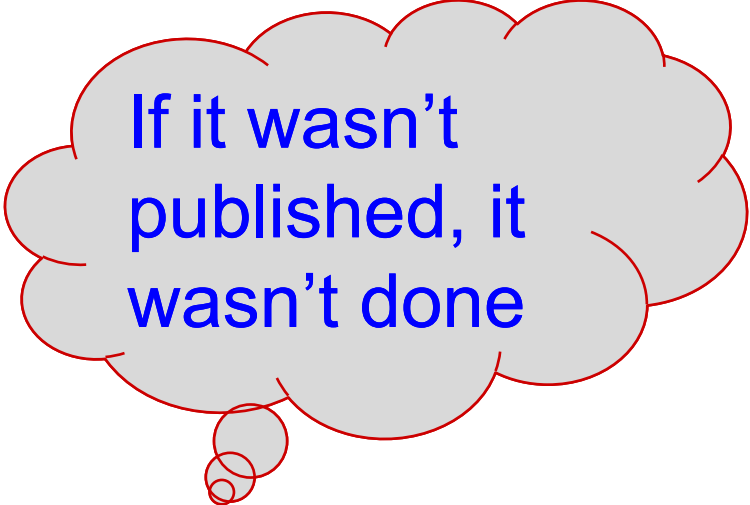
Scientific Knowledge

- ✓ The object of research is to extend human knowledge beyond what is already known.
- ✓ But an individual's knowledge enters the domain of science only after it is presented to others in such a fashion that they can independently judge its validity



Why Publish?

- ✓ A paper is an organized description of hypotheses, data and conclusions, intended to instruct the reader.
- ✓ If your research does not generate papers, it might just as well not have been done.



If it wasn't
published, it
wasn't done



Sharing Scientific Knowledge



“Science is a shared knowledge based on a common understanding of some aspect of the physical or social world”

Presentations

- Social conventions play an important role in establishing the reliability of scientific knowledge

Publications in peer reviewed journals

- Research results are privileged until they are published

Thesis



Sharing Scientific Knowledge

“Science is a shared knowledge based on a common understanding of some aspect of the physical or social world”



Presentations

**Publications in
peer reviewed
journals**

Thesis



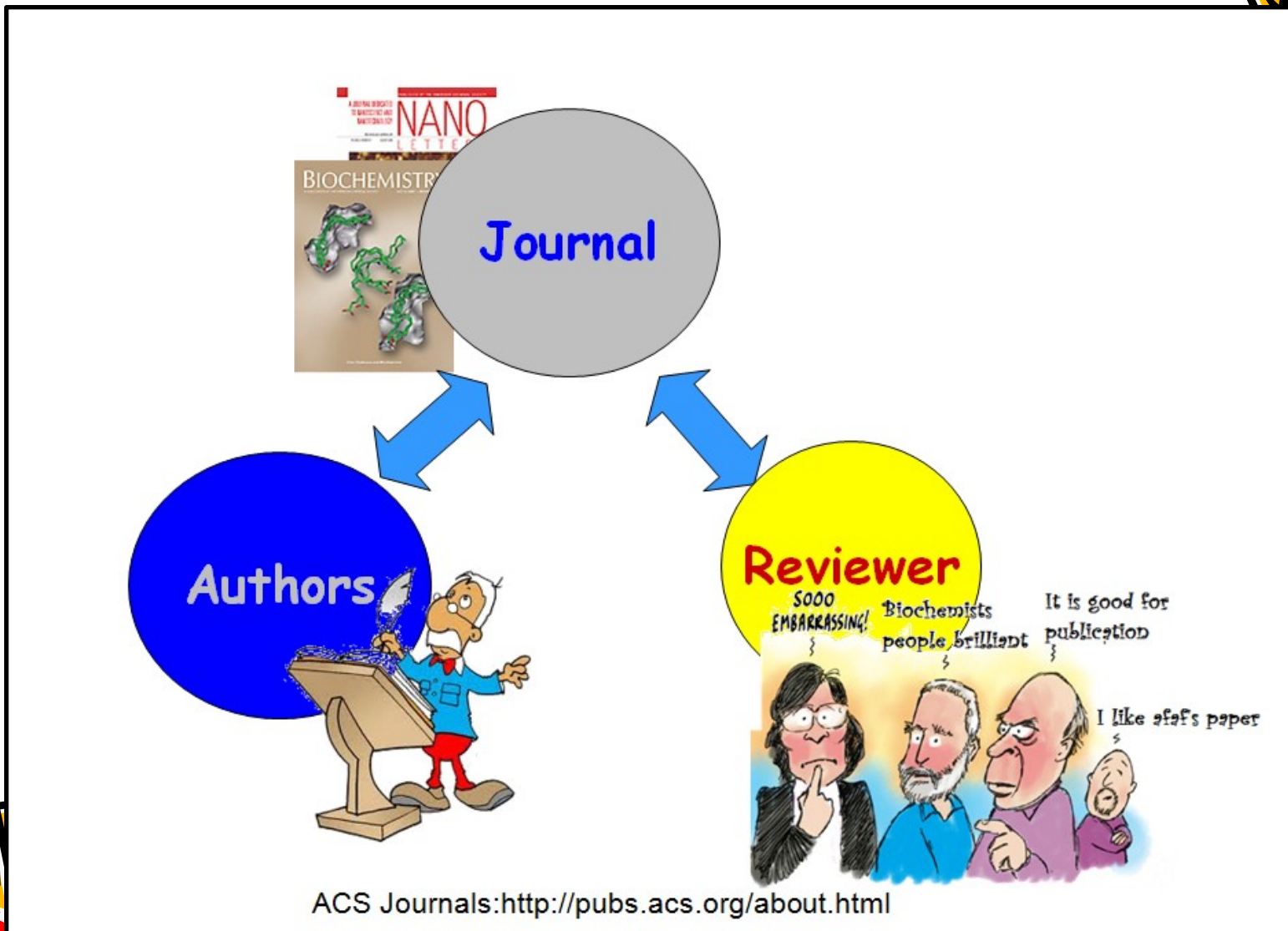
What is publishable?

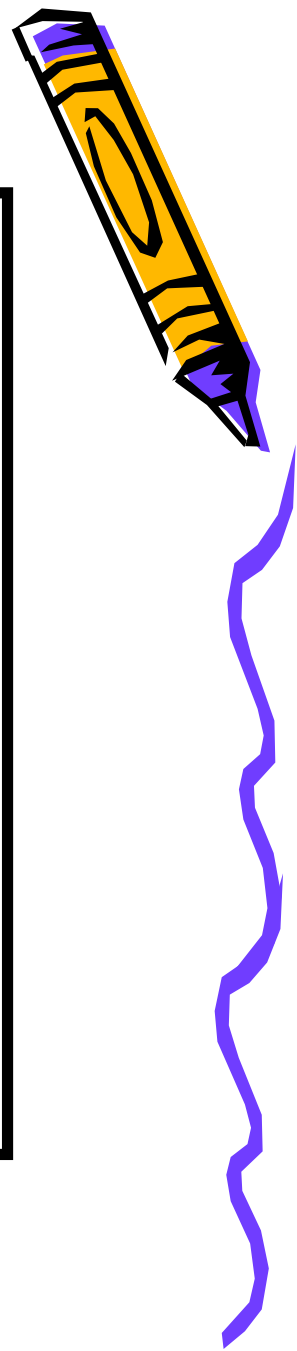
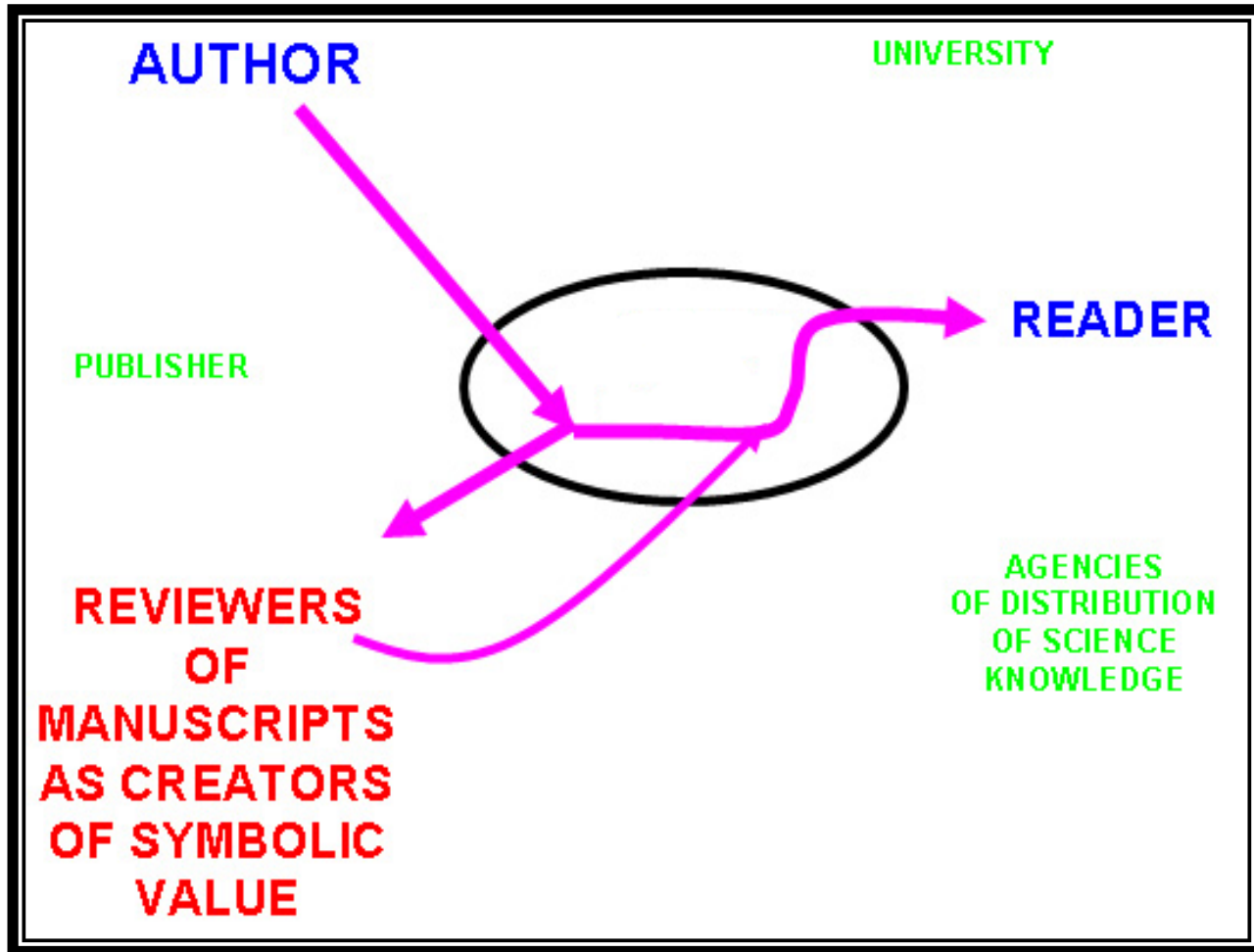


- Journals publish papers that are going to be widely read and useful to the readers.
- Papers that report " original and significant findings.
- Papers that well organized and well written.
- Papers that are concise and yet complete.



Scientific Publication is a Team Effort





Getting Your Research in Print: from Planning to Publication



- ✓ Publishing a paper in a journal is the most important way of communicating the results of your research to the scientific community.
- ✓ The sequence starts from the first draft, submission, referees' comments, publication and all steps in between.



Steps of publication process

- ✓ Choosing the journal
- ✓ Preparing the paper
 - Journal formats, submission
- ✓ The editorial process
 - Editors and reviewers
 - Responding to reviews, resubmission of the revised manuscript
- ✓ The final stages
 - Galley proofs and their correction
 - Co-authors agreement, copyright transfer, reprints.



The basics of writing a paper

The importance of structure

**Structure
is everything**



The basics of writing a paper

Before you begin



- ✓ What do I have to say?
- ✓ Is it worth saying?
- ✓ What is the right format for the message?
- ✓ What is the audience for the message?
- ✓ Where should I publish the message?
- ✓ How can I best use paper and the web?



Manuscript formatting tips



Determine the basic format

There are three basic formats for peer-reviewed research articles.

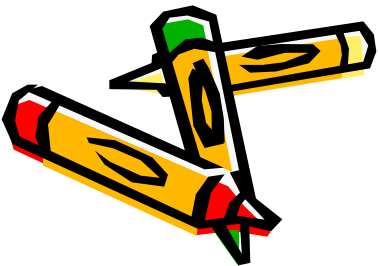
✓ Full-length research articles:

✓ Short (or brief) communications:

Unlike full papers, methods, results, and discussions may be combined into a single section.

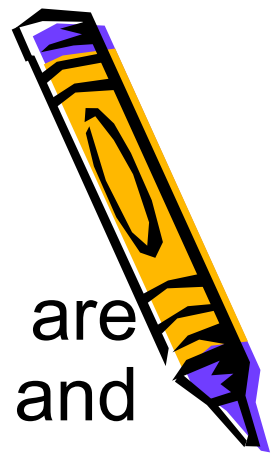
✓ Rapid communications:

Articles that have immediate implications for public health



Review articles

- ✓ Review articles (also called overviews) are formal approach to gathering, evaluating, and discussing previously published work.
- ✓ It quantitatively combine the results of previous studies to arrive at a summary estimate.
- ✓ It is particularly useful for designing future studies.



Select a Journal



- ✓ There is one essential feature that you should not compromise on....

“manuscripts must be peer reviewed for publication if they are to be considered research articles”.



- **Language:**

English has become the dominant form for international scientific communication.

- **Scope:**

What type of research does the journal publish?

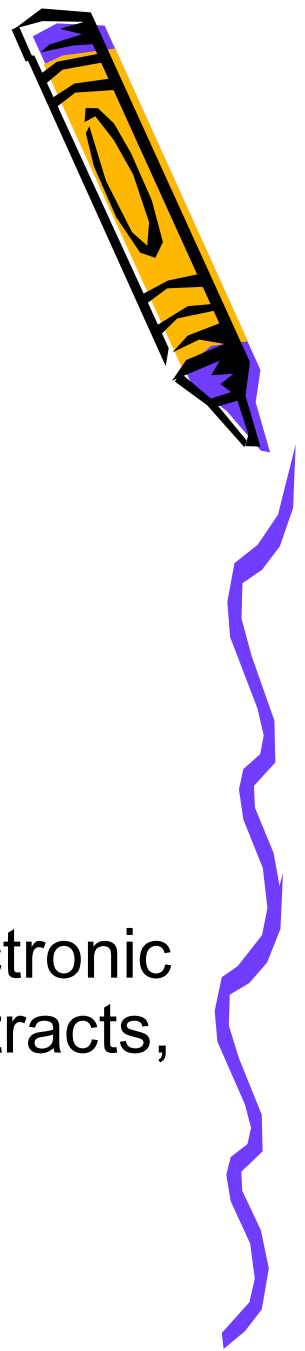
Is its focus broad or narrow?

Which disciplines are represented?

What is the journal's orientation ?

- **Indexing:**

Is the journal indexed in the major electronic databases such as Medline, Biological Abstracts, Chemical Abstracts.



- **Availability:**

- ✓ Is the journal broadly available?
- ✓ Is there an online version of the journal?
- ✓ Are papers provided in PDF format?

- **Figures:**

- ✓ Do figures published in the journal have the resolution that you need?

- **Time to Print:**

- ✓ Using the “date submitted” and a “date accepted” that are published on the article, along with the date of the issue.



- **Charges:**

Some journals bill the author for page charges, a cost per final printed page.



- **Impact factor:**

Is an annual measure of the extent to which articles in a given journal are cited.



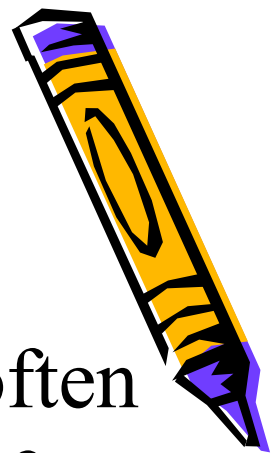
The basics of writing a paper



- ✓ Introduction --- Why did I do it?
- ✓ Methods --- What did I do?
- ✓ Results --- What did I find?
- ✓ Discussion ---
 - ⊙ What is our overall finding?
 - ⊙ What might it mean?
 - ⊙ What are the strengths and weaknesses of the study in relation to other studies?
 - ⊙ Why might we have got different results?
 - ⊙ What questions remain unanswered and what next?



Title



- The title of the paper is the most often encountered part of any paper and therefore has great importance in the success of the paper. Abstracting and indexing services will utilize the title, therefore, all words in the title should be chosen with great care and their association with other words in the title carefully managed.



Abstract

**Research
Rationale**

**Principle
conclusion**

The Abstract



- An abstract is a brief, comprehensive summary of the contents of the article;
- It allows readers to survey the content of an article.
- Like the title, is used by abstracting and information services to index the article.

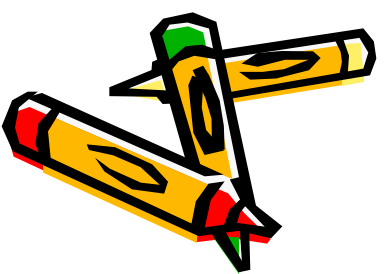


Introduction

Problem
nature

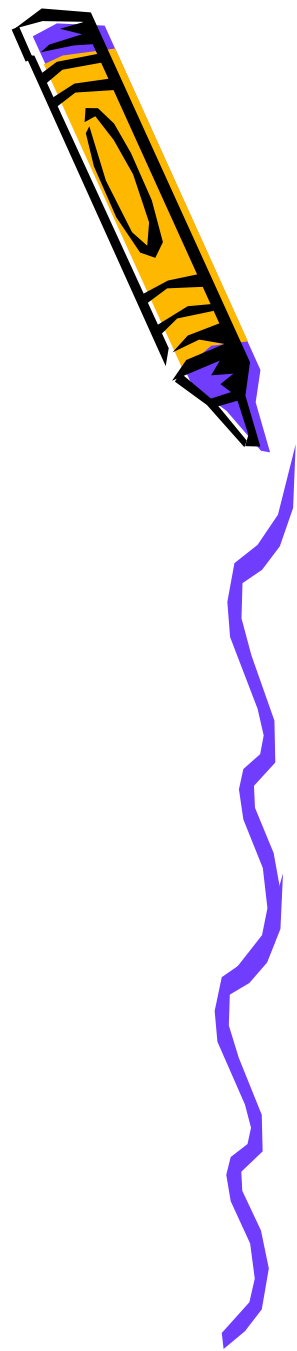
Pervious
knowledge

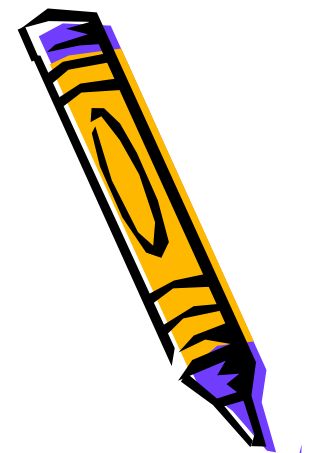
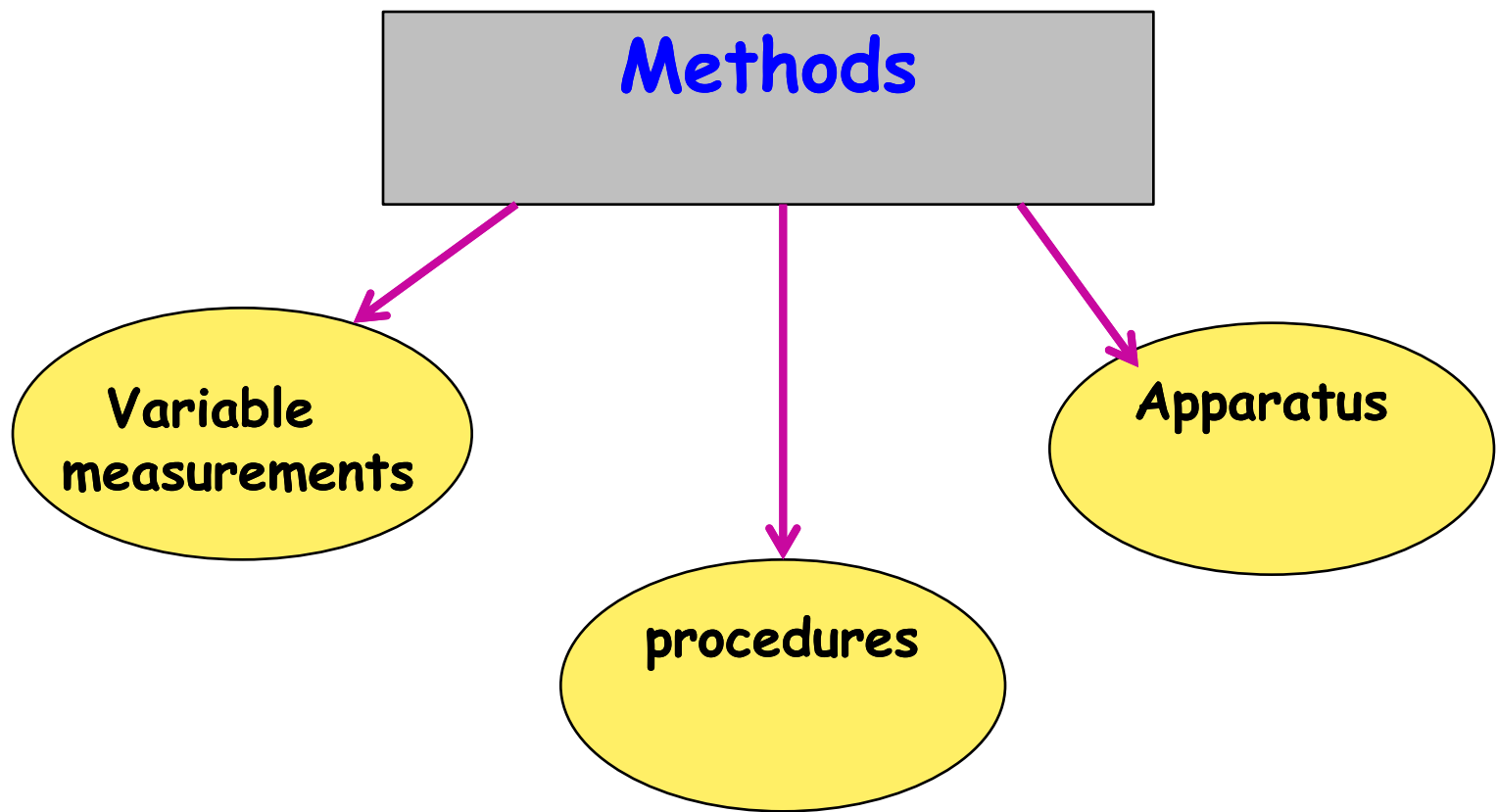
objective



Introduction

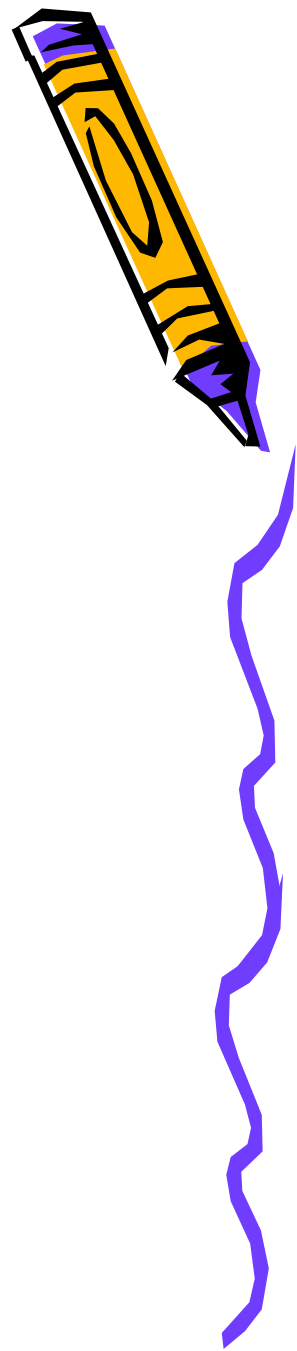
- Broad information on topic
 - Previous research
- Narrower background information
 - Need for study
- Focus of paper
 - Hypothesis
- Summary of problem (selling point)
- Overall 300-500 words





Materials and Methods

- Provides instruction on exactly how to repeat experiment
 - Subjects
 - Sample preparation techniques
 - Sample origins
 - Field site description
 - Data collection protocol
 - Data analysis techniques
 - Any computer programs used
 - Description of equipment and its use



Results



Data



Figures



Tables

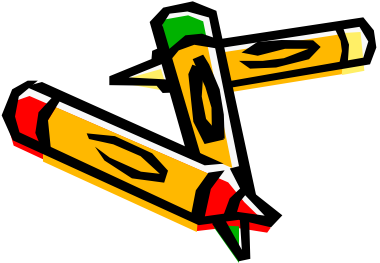




Table 1 Mean \pm S.D of plasma levels of acetic, valeric, hexanoic and stearidonic saturated fatty acids in autistic patients compared to age- matching controls

Fatty acid	Group	N	Mean \pm S.D.	Percentage change	P value
Acetic	Control	26	0.558 \pm 0.082	100.00	0.000
	Autistic	26	0.972 \pm 0.247	174.14	
Valeric	Control	26	0.100 \pm 0.015	100.00	0.000
	Autistic	26	0.510 \pm 0.229	509.27	
Hexanoic	Control	26	0.597 \pm 0.478	100.00	0.000
	Autistic	26	1.442 \pm 0.349	241.65	
Stearidonic	Control	26	0.363 \pm 0.122	100.00	0.009
	Autistic	26	0.455 \pm 0.120	125.17	

This table describes the independent t-test between the control and autistic groups regarding levels of acetic, valeric, hexanoic and stearidonic acids expressed in mmol/L plasma. Significant level at $p < 0.001$



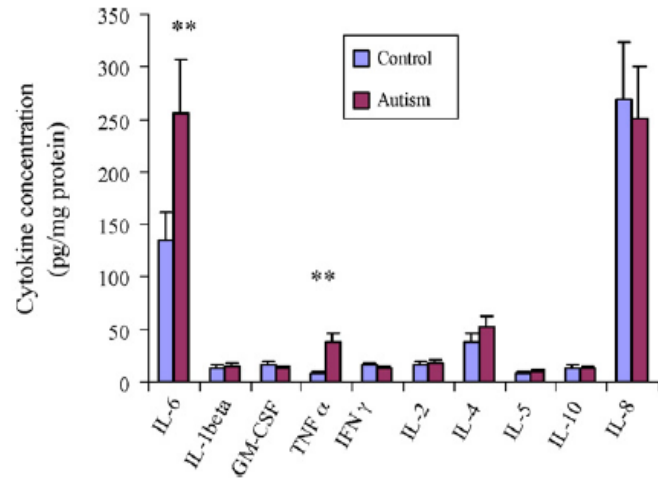
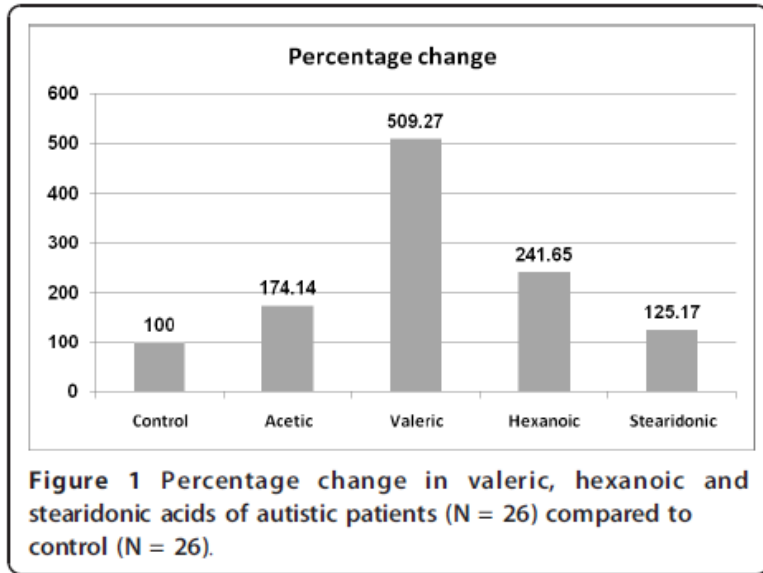


Fig. 1. Cytokine profiles in lymphoblasts of autistic subjects. Invitrogen's Multiplex Bead Immunoassays were used to detect the cytokine concentrations in lymphoblasts of autistic subjects and the control subjects $^{**}P < 0.01$, $n = 6$.





Discussion

New finding

Suggest mechanism

limitation



What to avoid?

- ✓ Data without scientific discussion.
- ✓ Review of the literature are not sufficient.
- ✓ Use of the phrase “**Novel**” or “**First –time**” in the title or abstract.
- ✓ The use of abbreviations without mentioning full names before.
- ✓ Make the article very long.



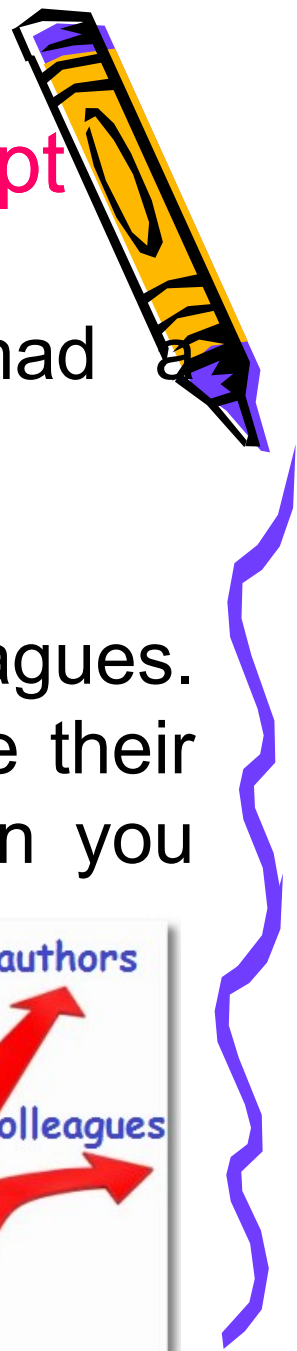
What is after journal selection?

- ✓ Outline the paper.
- ✓ Write the first draft.
- ✓ Revise the manuscript.
- ✓ Check the references.
- ✓ Write the final title and abstract.
- ✓ Re-read the journal's Instructions to Authors.
- ✓ Prepare the final illustration.



Feedback and revising the manuscript

- ✓ **First**, be sure your co-authors have had a chance to read and comment on the draft.
- ✓ **Then**, give the manuscript to some colleagues. Indicate to when you would like to receive their comments, and what levels of information you would like.



Submit the manuscript

Follow the Instructions to Authors to determine:

- ✓ What items you need to submit.
- ✓ How to submit them.
- ✓ To whom you should send them.
- ✓ List possible reviewers/ or individuals to be avoided).



Request for revision

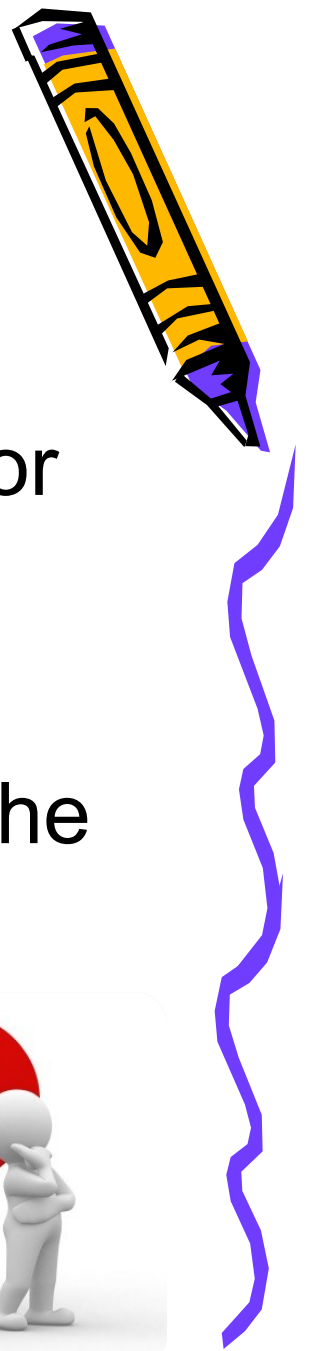
- Request for revision is not a guarantee that the paper will be accepted.



- Do not get discouraged if your paper was rejected.



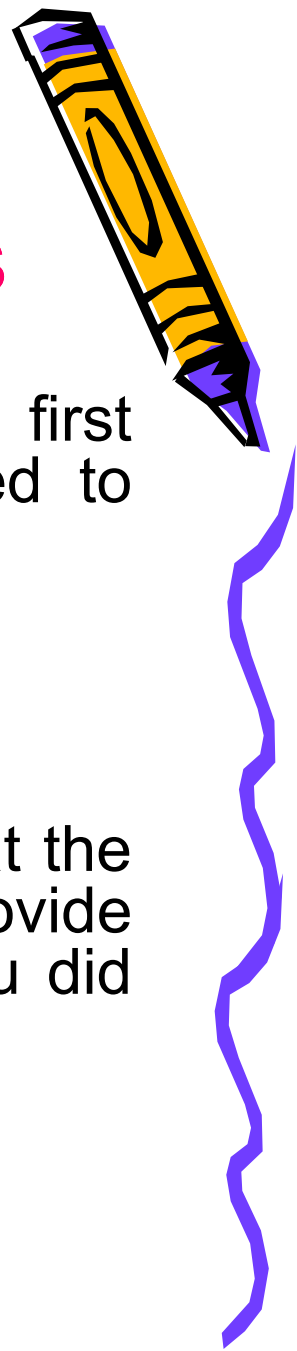
What to do?



- Read editorial comments with advisor or collaborator.
- Do not just turn around and submit the paper to another journal.

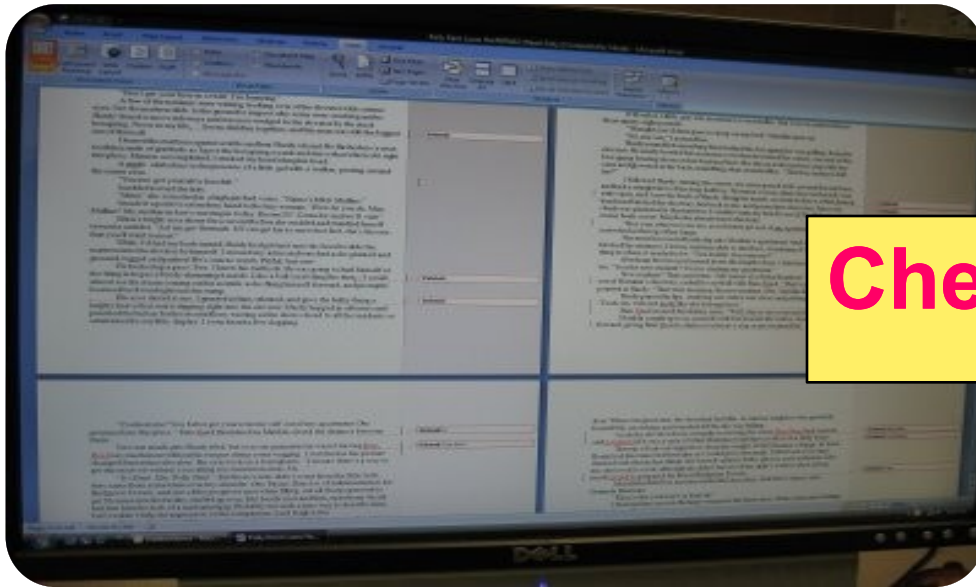
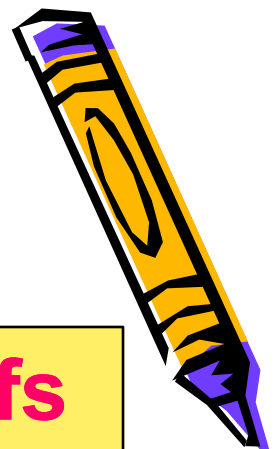


Deal with reviewers' comments



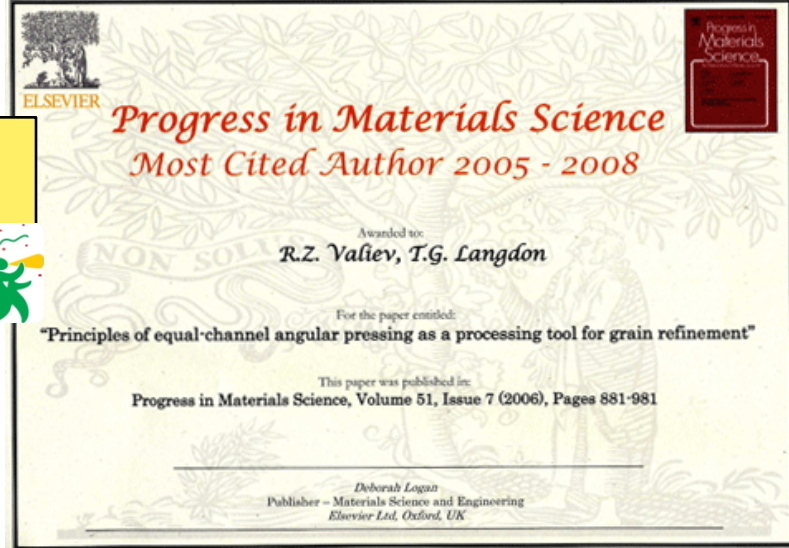
- Most manuscripts are not accepted on the first submission. However, you may well be invited to resubmit a revised manuscript.
- Do this with tact.
- You do not need to make all of the changes that the reviewer recommended, but you do need to provide a convincing rationale for any changes that you did not make.





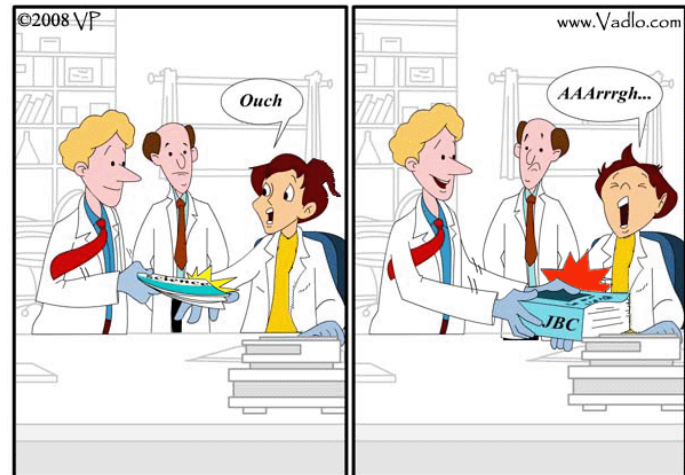
Check the proofs

Celebrate



Impact factor

- ✓ Journals use the numerical "Impact Factor" as an indirect quantitative measure of a journal's importance in the scientific literature.



Issue settled. JBC has it higher!



How is the impact factor calculated?

- ✓ The impact factor is a calculation of how frequent a journal's articles are cited in a 2-year period.

As an example, the 2009 impact factor for a journal would be:

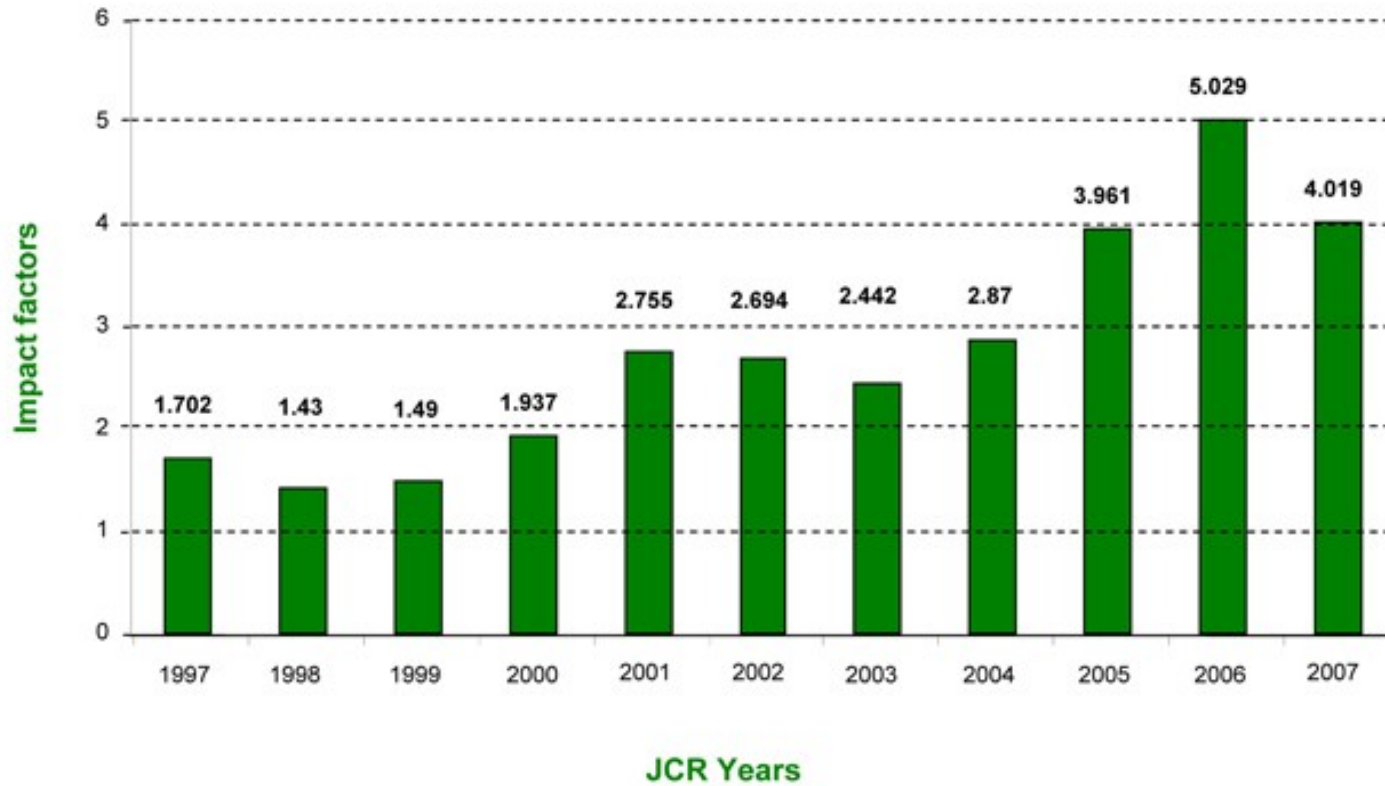
$$\text{Impact Factor} = A / B$$

- **A** = Number of times 2007-08 articles are cited from a given journal
- **B** = Number of total "citable items" published in given journal during 2007-08



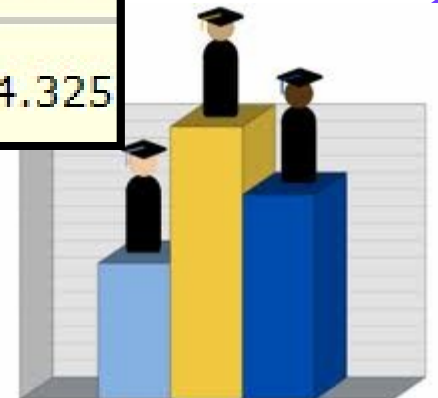
Bulletin of the World Health Organization

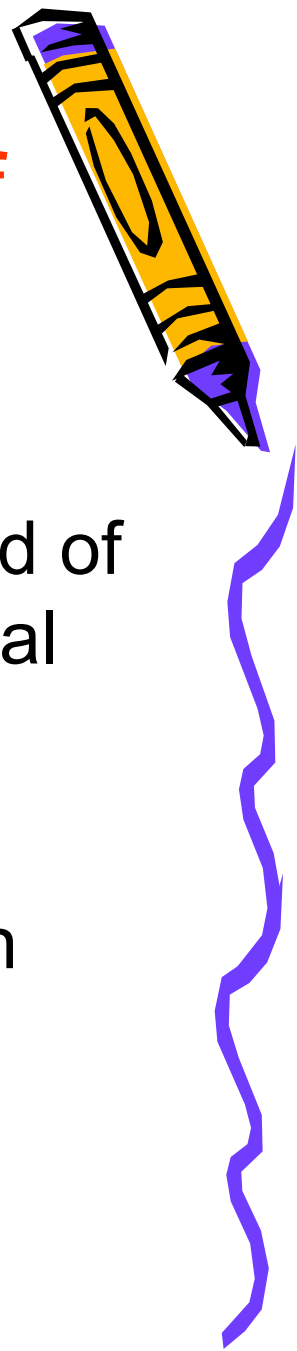
Impact factor trend graph



Ranking of journals

Rank	Abbreviated Journal Title <i>(linked to journal information)</i>	ISSN	Total Cites	Impact Factor
1	ANNU REV NEUROSCI	0147-006X	8563	24.184
2	NAT REV NEUROSCI	1471-0048	8447	20.951
3	NAT NEUROSCI	1097-6256	18853	15.456
4	TRENDS NEUROSCI	0166-2236	14537	14.325





Online publications as a source of scientific impact

- What Open Access is?
- ✓ The Open Access publishing is composed of free, online copies of peer-reviewed journal articles.
- ✓ In most cases there are no restrictions on their use by readers.



What Open Access is not?



There are various misunderstandings about Open Access.

- ✓ It is not self-publishing.
- ✓ nor a way to bypass peer-review and publication
- ✓ nor is it a kind of second-class publishing route.

“It is simply a means to make research results freely available online to the whole research community”.

available online to the whole research community”.

Why should Authors Provide Open Access to their Work ?



- ✓ Research articles that have been self-archived are cited more often than those that have not.
- ✓ Across most subject areas there is at least a two-fold increase in citation rate. In some subject areas it is even higher.
- ✓ This form of Open Access means that research has much more impact than before .



On line tracking of your manuscript status

How you can follow the publication procedure of your manuscript?



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