


How to write a good scientific paper

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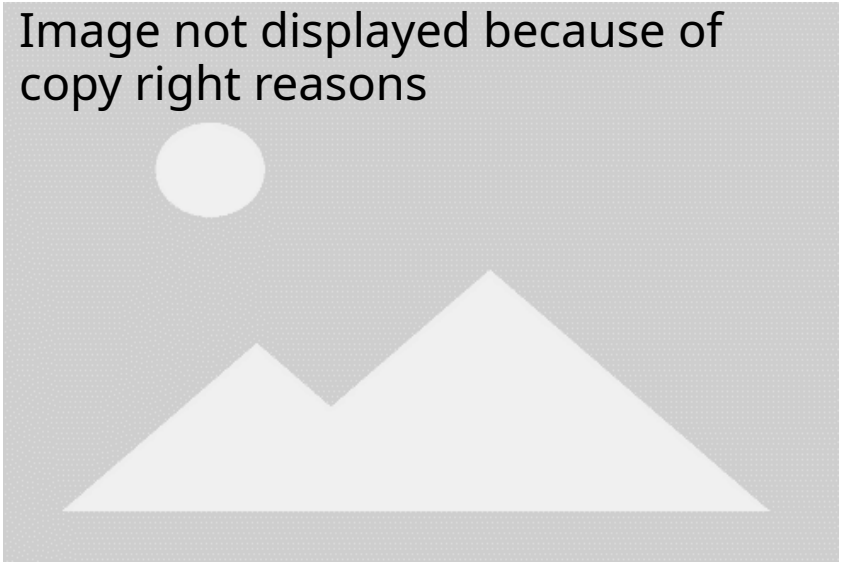
How to write and publish a good scientific paper

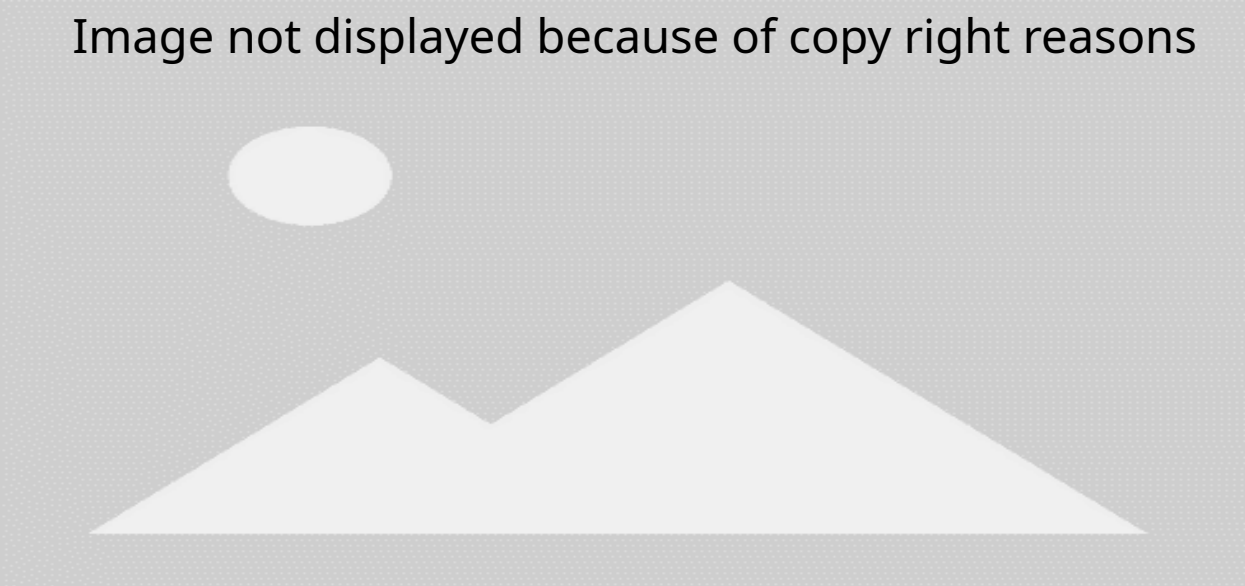
To publish a paper is as to win a soccer game



What you need **To Win** *the game*

- **T**ime
- **o**utstanding knowledge of the topic
- **W**ill and personal commitment
- **i**nspired critical thinking
- **n**ovel and solid data availability

A 16 step labour



First step: Why to publish a work (1a)

- Think carefully about why you want to publish your work and whether it is publishable or not.
- Ask yourself the following questions:
  - Have I done something new and interesting?
  - Is there anything challenging in my work?
  - Is my work directly related to a current hot topic?
  - Can I provid solutions to some difficult and real problem related to patients' care or public health?

First step: Why to publish a work (1b)

- Think carefully about why you want to publish your work and whether it's publishable or not.

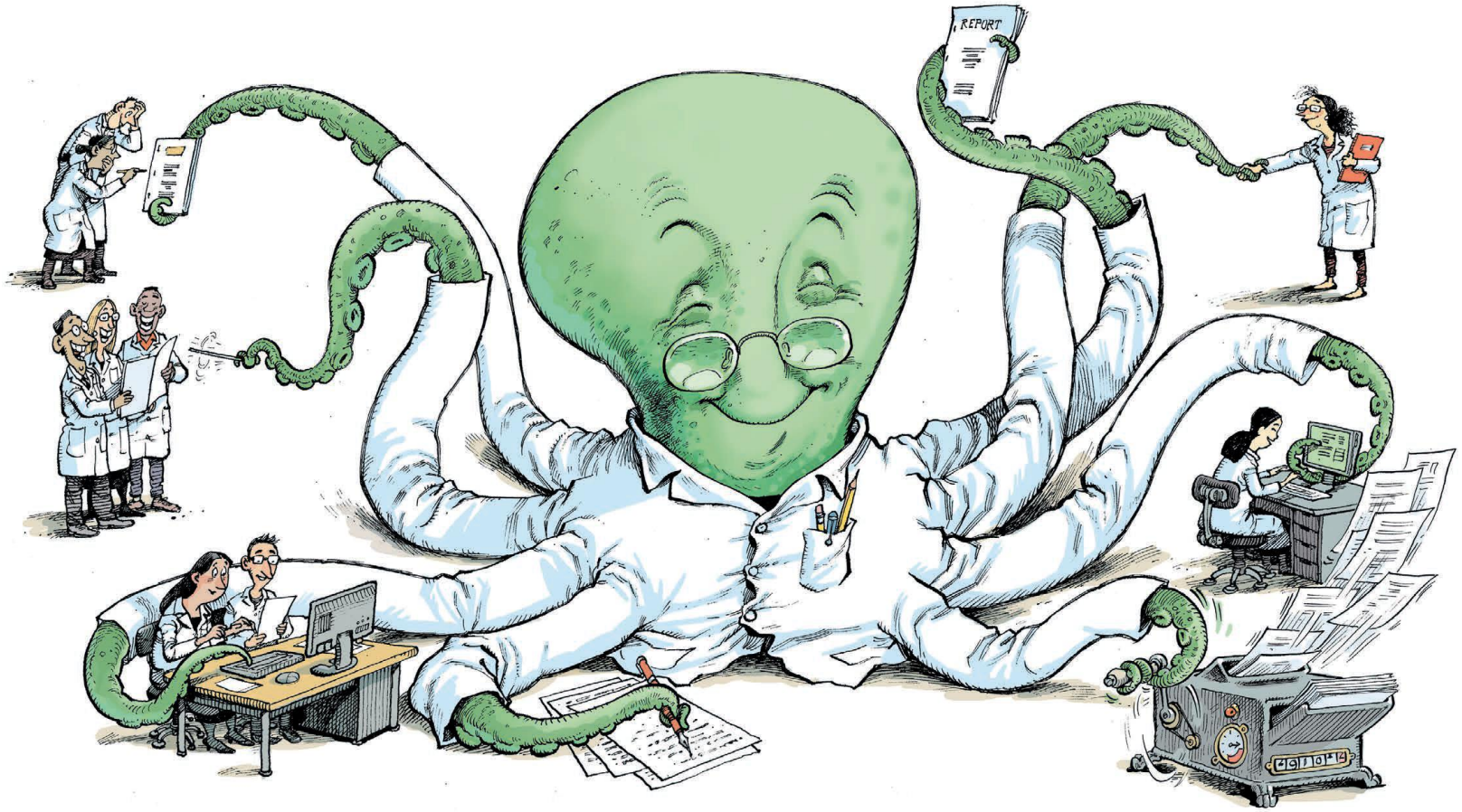
- Ask yourself the following questions:
  - Have I done something new and interesting?
  - Is there anything challenging in my work?
  - Is my work related directly to a current hot topic?
  - Have I provided solutions to some difficult and real problem related to patients' care or public health?

- If all the answers are "**yes**," then you can start preparing for your manuscript.

- If any of the responses are "**no**," it would be better not to submit your paper or to submit it to a Journal with a low Impact Factor.

- **Please do not make it only to get an extra-pubblication.**

Hyperprolific Authors



J.P.A. Ioannidis et al. Nature 2018 ; 561 : 167-169

Hyperprolific Authors (*)

*n° of Authors with more than 72 papers/year

One-third of the 81 authors identified as hyperprolific in 2016 replied when asked how often they met each of the 4 criteria established for authorship of medical studies. Nineteen out of the 27 responders admitted they had not met at least 1 criterion more than 25% of the time. Eleven wrote that they had not met two or more criteria 25% of the time and more.

J.P.A. Ioannidis et al. Nature 2018 ; 561 : 167-169

Second step: What type of manuscript to write (2a)

- When deciding what type of manuscript to write, you have at least three main options:
  - **Full articles, or original articles**, are the most important papers. They are often substantial completed pieces of research that are significant as original research.
  - **Letters/rapid or short communications** are usually published for the quick and early communication of significant and original advances. They are much shorter than full articles.
  - **Review papers or perspectives** summarize recent developments on a specific hot topic, highlighting important points that have previously been reported and introduced. They are normally submitted at the invitation of the Editors of the Journal.

Second step: What type of manuscript to write (2b)

- When looking at your available information, you must self-evaluate your work, asking yourself, a supervisor or a colleague:
  - Is it sufficient for a full article, or are your results so thrilling that they have to be shown as soon as possible?
  - Have I something that I should publish quite soon?
  - Have I sufficiently recognized expertise and prestige to propose myself as an Author for a review or positional paper?

Third step: to choose the target Journal (3a)

- Please avoid gambling by scattering your manuscript to different Journals at the same time.
- This is not correct and may be considered as academic misconduct if discovered.
- Bear in mind that this misconduct is frequently discovered since different Journals entrust the same Reviewers, and may imply an inquiry.

Third step: to choose the target Journal (3b)

- Please avoid gambling by scattering your manuscripts to different Journals at the same time. This is not correct and may be considered as misconduct if discovered. Bear in mind that this misconduct is frequently discovered since different Journals entrust the same Reviewers.

- The most common way of selecting the right journal is to look at the articles you have consulted to prepare your manuscript. Probably most of them are concentrated in few Journals.

- Read very recent publications in each candidate Journal (even in press), and find out the hot topics and the types of articles accepted.

Third step: To choose the target Journal (3c)

- Which is its rejection rate? Please note that Nature, Science, Lancet, Cell, JHEP are > 90 percent.
- If the rejection rate is high and your research is not very challenging, use umility, modesty, and concreteness and choose a Journal with a lower IF.

- Doing so, you will avoid:
  - time loss
  - failure in publishing

Fourth step: Check the Journal's Guide for Authors (4)

- After selecting the journal for submission, go to its web page and download the Guide for Authors, print it out and read the guidelines over and over again.
- Please check it at this time and not after having drafted the paper.
- Please apply carefully the Guide for Authors to your manuscript using the proper text layout, references citation, nomenclature, figures and tables.
- All of this will save your time and also that of Reviewers and Editors.
- You must know that all editors hate wasting time on poorly prepared manuscripts. Several Reviewers and Editors think that the Author shows no respect for their work and the prestige of the Journal.

Fifth step: Focus on the structure of the manuscript (5)

- The general structure of a full article follows the **IMRAD** format, introduced as a standard by the American National Standards Institute in 1979, which responds to the following questions:
  - **Introduction:** What did you/others do? Why did you do it?
  - **Methods:** How did you do it?
  - **Results:** What did you find?
  - **Discussion:** What does it all mean?

Sixth step: how to draft the manuscript (6a)

- While **IMRAD** is the publishing format of the manuscript, we suggest a different order while drafting it, moving from the **Results including Figures and Tables**. The reason for this is quite simple: if you don't know your results in detail how can you evaluate their scientific relevance?

- After the Results write up **Methods and Discussion** with clear **Conclusions.**

- After that you can write a compelling **Introduction** and an appealing **Abstract**. Then you can compose a coincise and descriptive **Title**, select the **Key words**, write the **Acknowledgments** and complete the list of **References**.

- While doing so you should have very clear in mind the topic on which you have investigated and you should know the literature related to this topic.

Sixth step: How drafting the manuscript (6b)

- Writing should be concise and focused on one clear question, remembering that " the shorter the better".
- Putting too much in one paper makes it diffuse and less compelling.
- Avoid salami science.

- Leave out intentionally something that, for sure, Reviewers or Editors will ask you.

Seventh step: Results (7a)

- This section responds to the question "What have you found?”
- The results should be essential for discussion.
- For the data, decide on a logical order that tells a clear story and makes it and easy to understand.
- Results should be organized around Tables/Figures.
- Use the past tense when describing your results writing in a passive voice (it was found…) or in an active voice (we found…)
- Give only the results without any interpretation; just the data.
- Don’t include references in this section; you are presenting your results, so you cannot refer to others here.

Eighth step: Figures and Tables (8)

- Please remember that ”an illustration is worth a thousand words." Therefore, Figures and Tables, are the most efficient way to present your results which are the driving force of the paper.

- Depending on your objectives, you can show your data either with a Table (if you wish to stress numbers) or with Figures (if you wish to compare gradients).

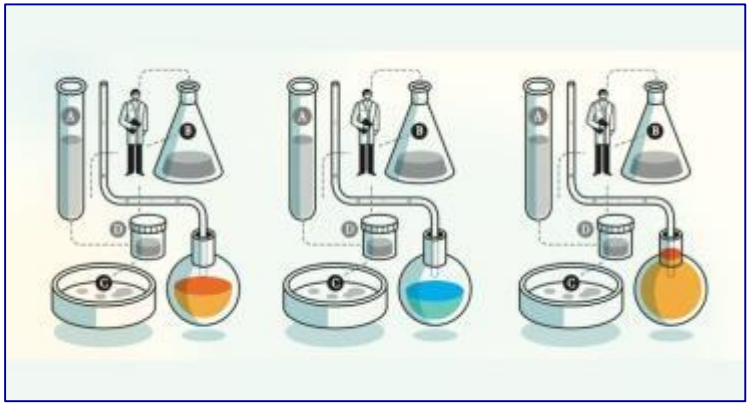
- Whatever your choice is, no illustrations should duplicate the information described elsewhere in the manuscript.

- Tables and Figures should stand on their own. Thus, their legends must be self-explanatory. Figures and Tables as well as the Abstract should be understandable without reading the whole paper.

- Please remember that the Reviewers and the Editors would not like to search for symbols, acronysms, or abbreviations in the text.

Step ninth: Methods (9a)

- This section responds to the question of how the problem was studied.
- If your paper is proposing a new method, you need to include detailed information so a knowledgeable reader can reproduce the experiment.



- Reviewers will criticize incomplete or incorrect methods description and may recommend rejection, because this section is critical.
- However, do not repeat the details of well established methods and provide broad summaries and key references.

Step tenth: Discussion (10a)

- Here you must respond to “what do the results mean?”.
- Probably it is the easiest section to write, but the hardest section to get right.
- This is because it is the most important section of your article. Here you get the chance to sell your data. Take into account that a huge numbers of manuscripts are rejected because the Discussion is weak.
- You need to make the Discussion corresponding to the Results, but do not reiterate the results. Here you need to compare the published results by your colleagues with yours.
- Never ignore work in disagreement with yours, in turn, you must confront it and convince the reader that you are correct or better.

Step tenth: Discussion (10b)

- 1st paragraph: answer question/hypothesis referring to your main results.
- Avoid statements that go beyond what the results can support.
- Speculations on possible interpretations are allowed, but these should be rooted in fact, rather than imagination.

- Avoid sudden introduction of terms or definitions or abbreviations never mentioned before, in the Introduction or Methods or Results.

Step tenth: Discussion (10c)

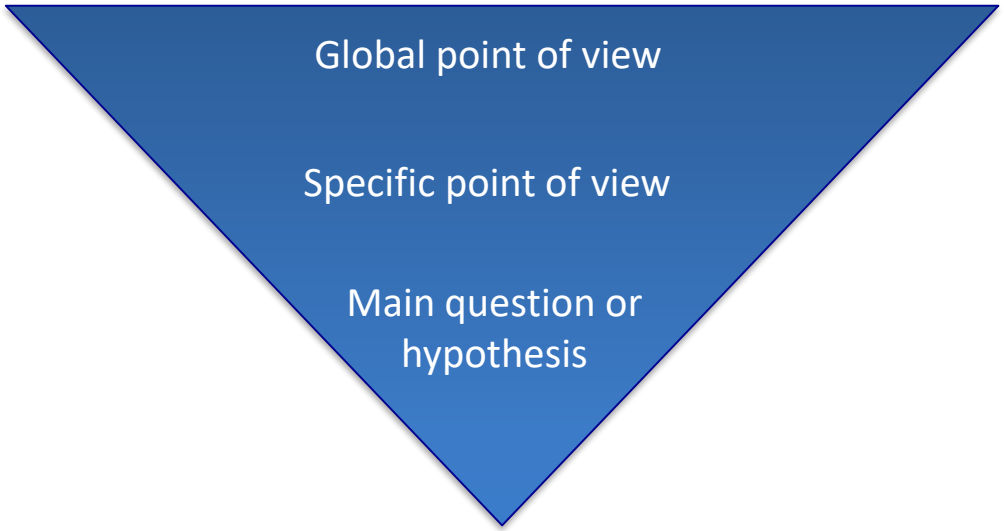
- Remember also the following:
  - When discussing your own results, refer to them in past tense.
  - When quoting previously published works, refer to them in present tense.
  - Strengths/limitations of your study
  - Implications of main findings (be conservative)
  - Other or secondary findings of your study

Step tenth: Conclusions (10d)

- In some journals, it's a separate section; in others, it's the last paragraph of the Discussion.
- Whatever the case, without a clear conclusion section, reviewers and readers will find it difficult to judge your work and whether it merits publication in the Journal.
- You can propose global and/or specific conclusions, in relation to the objectives included in the Introduction.
- A common error in this section is just listing the results or making a trivial statements of them.
- You should provide a clear scientific justification for your work in this section, and indicate uses and extensions if appropriate. Moreover, you can suggest future experiments and point out those that are underway.

Step eleventh: Introduction (11)

- Identify gaps in knowledge on the topic.



- You need to introduce the main scientific publications on which your work is based, citing a couple of original and important works, including recent review articles.
- However, editors hate improper citations or too many references. So avoid those who are irrelevant to the work.

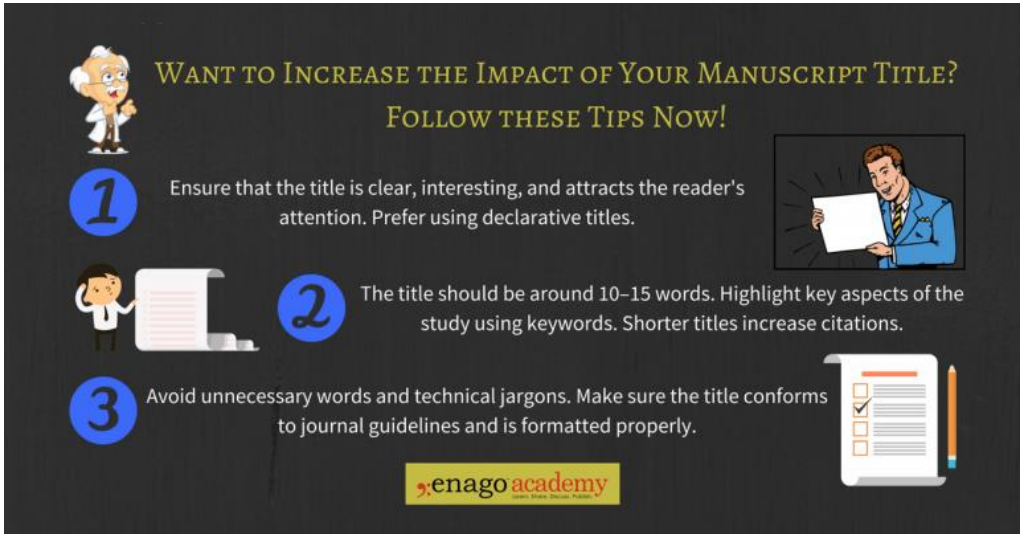
Step twelth: Abstract (12)

- The abstract together with the title, it's the advertisement of your article. Make it interesting and easily to understand without reading the whole article.
- Avoid using jargon, uncommon abbreviations and references. Needless to reiterate that the Abstract should be self-explaining.
- The abstract is a mini-paper providing a short description of:
  - the perspective and purpose of your paper.
  - key results minimizing experimental details
  - interpretation/conclusion.
- A clear and accurate abstract will strongly influence whether or not your work will be further considered by the reviewers and by the readers.
- Thus, usually it requires many drafts.

Step thirteenth: Title page (13a)

The title

- It must explain what the paper is broadly about. It is your first (and probably only) opportunity to attract the reader's attention.
- We are all flooded by publications, and readers don't have time to read all scientific production. They must be selective, and this selection often comes from the title.



Step thirteenth: Title page (13b)

Key words

- They are used for indexing your paper. They are the label of your manuscript. Avoid words with a broad meaning and words already included in the title.
- Only abbreviations firmly established in the field are eligible avoiding those which are not broadly used.
- Again, check the Guide for Authors and look at the number of keywords admitted.

Acknowledgements

- Here, you can thank people who have contributed to the manuscript but not to the extent where that would justify authorship.
- Probably, the most important thing is to thank your funding agency or the agency giving you a grant or fellowship.
- In the case of European projects, do not forget to include the grant number or reference.

Step fourteenth: References (14)

- They should be updated, citing all the scientific publications on which your work is based, avoiding to over-inflate the manuscript with too many references.

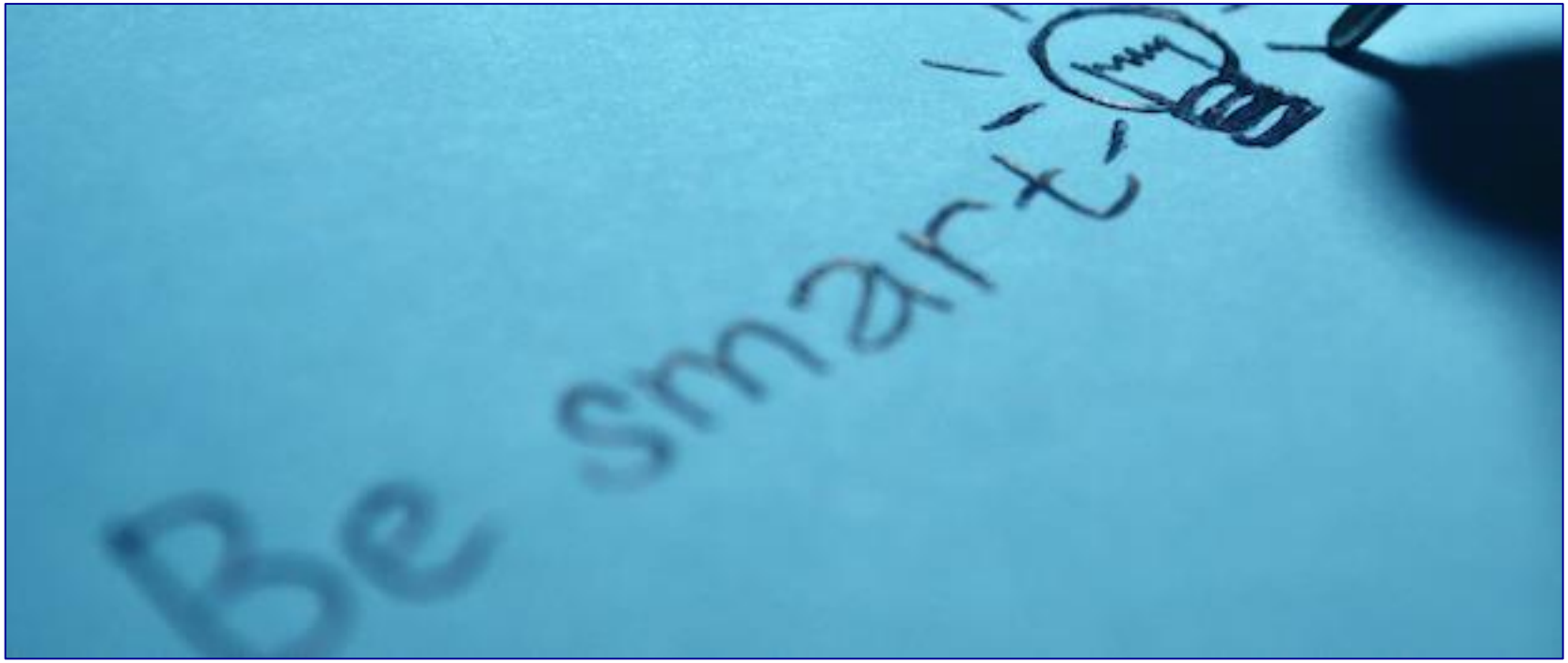
- Avoid excessive self-citations and excessive citations of publications from the same research group.

- It is easier now to avoid mistakes in the references, because you can use software, such as EndNote or Mendeley, to format and include your references in the paper. But, please check and their in-text citation strictly to the style given in the Guide for Authors.

- Remember that presentation of the references in the correct format is the responsibility of the authors, not of the editors. Checking the format is normally a large job for the Editors. Make their work easier and they will appreciate the effort.

Step fifteenth: Cover Letter (15a)

A strong introductory cover letter is your opportunity to highlight the significance of your research and “sell” its concept to journal.



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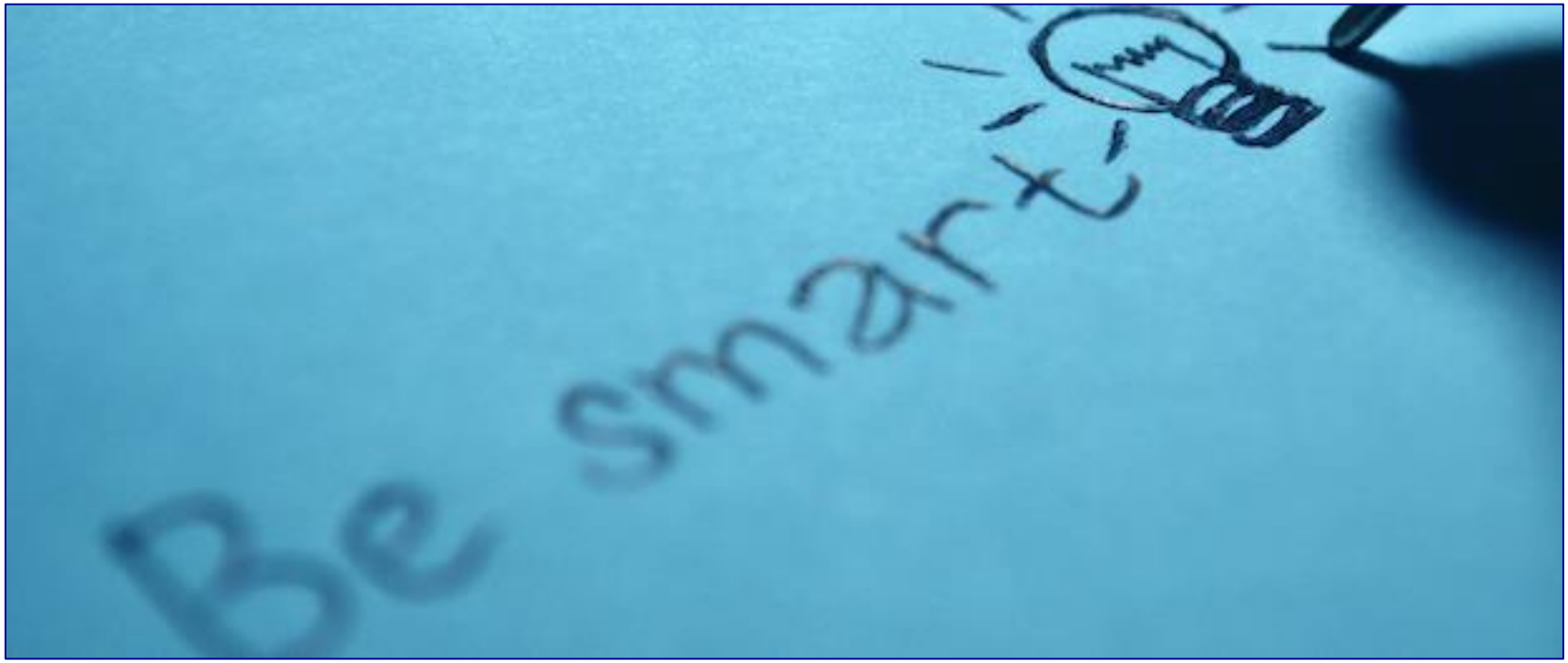
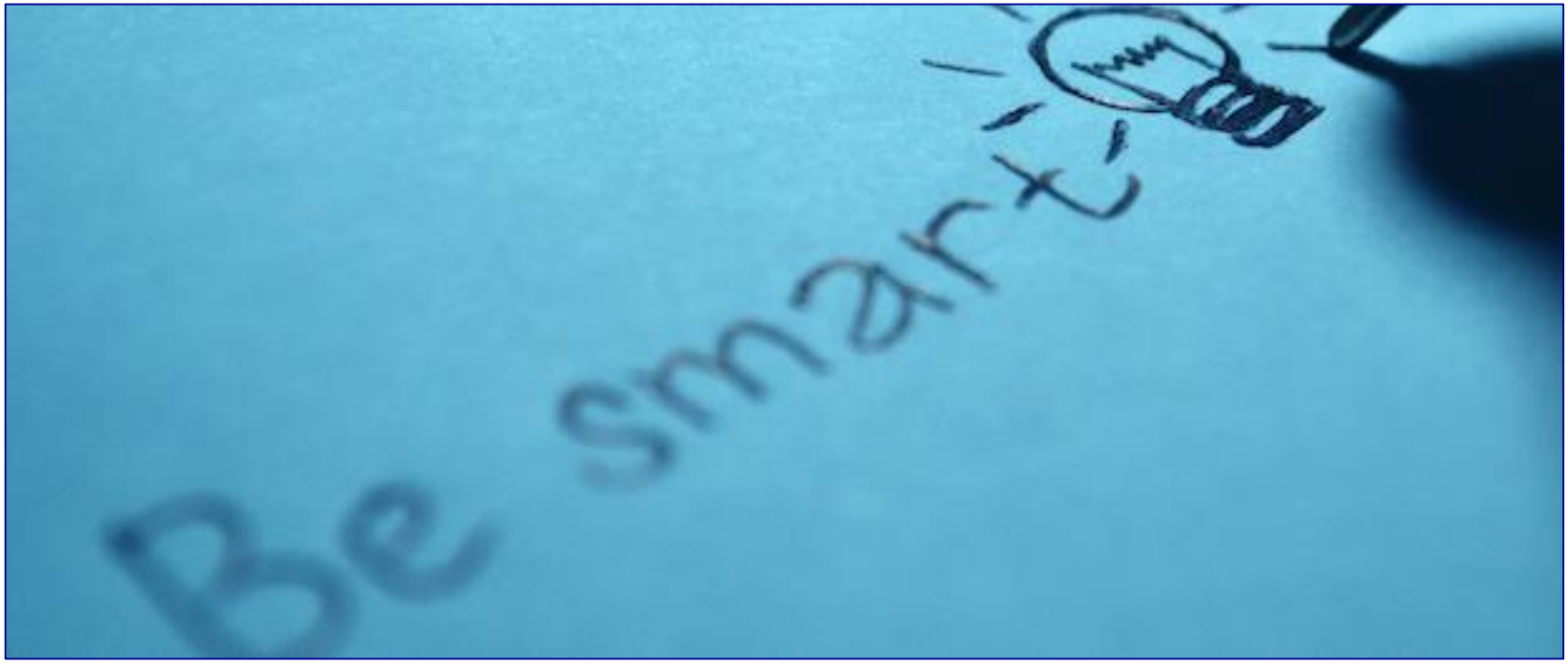


Step fifteenth: Cover Letter (15c)

While your research paper's role is to prove the merits of your research, a strong introductory cover letter is your opportunity to highlight the significance of your research and "sell" its concept to journal



Step sixteenth: Proofread before submitting (16)

- Are terms used consistently throughout?
- Do numbers in abstract match numbers in text and tables?
- Are references updated?
- Do citations in text match references?
- Are Syntax and Grammar acceptable?

To publish is as to win a soccer game