ANALYSE D'ARTICLES ANGLAIS SCIENTIFIQUE

L3 GENETIQUE

2023-2024

Part I

The core

Publish, why?

Science is only a transmissible science

Each author has his or her own motivations:

- Thesis?
- Rank, career?
- Scientific valorization?
- Pedagogical role?
- Imperative? (Publish or perish)
- Notability of the author and the institution (Impact factor)?
- Communicate…

Communicate What ?

What is my goal? What is the message to convey?

The information (methods and results) transmitted must be verifiable and reproducible.

- Communication is governed by standards to ensure the continuity of knowledge transmission.
- Only validated information can be used.

Publish for whom?

- **Scientific community:** Research articles, review articles, conference papers, monographs
- **Professional environments:** Patent (Invention Protection), Technical Article, Data Sheet, Manual
- **Academic:** Thesis, dissertation, didactic book
- **Administrative supervisors, political decision-makers:** Activity Report
- **Funders:** Research projects
- **The general public:** The poster, the newsletter

Publish Where?

To transmit and communicate information, work and research results with each other, scientists use several channels

1. A congress
2. A seminar
3. An internal meeting
4. Scientific article
5. An Overview
6. Briefs
7. Thesis
8. Books, etc.

- Oral communication
- Written communication

Form of Communication?

➢ Oral communication

This communication is usually established between scientists with common interests or in the same discipline. It can come in many forms:

- Conferences
- National or international congress
- Seminar
- Symposium
- Colloquium

NB: As long as the work is not published, it cannot acquire reference status.

Form of Communication?

➢ Written communication

- ✓ The production of knowledge always takes place in writing, whether the media is printed or electronic
- ✓ It serves as evidence and it is through it that the research work is approved.

From the point of view of function or objective, we find:

1) **Primary scientific writing** (which publishes the original results of the research and is written by the researchers for the researchers);
2) **Didactic writing** (student-oriented)
3) **Popular science writing** (aimed at the general public)

Publish, how?

- **Scientific rules**: presented by 1 to n author(s); present a reasearch result; present a new fact/information; original

- **Editorial rules**: standard structure (IMRED Plan + Guidance to Authors)

- **Publishing rules**: peer-validated; Published according to the rules of the journal publisher

What to write? (1)

- Clinical case report
- Revue
- Original article (large number, new technique)
- Technical Note

What to write? (2)

- Preliminary question: "What will your work contribute to current knowledge?"
- Knowledge of the subject matter
- Bibliographic research
- Search by keywordsPubMed
  http://www4.ncbi.nlm.nih.gov/entrez/query.fcgi

Where to publish?

- Journals of interest for own research
- Ideally, a “big review”
- Reputation of the Journal
- Significant impact factor
- Rapidity of reviewing
- Rapidity of publication (online first)
- Open access

Journal's reputation

- # years in publication
- Peer review status
- Acceptance/rejection rates (journals with lower acceptance rates are generally more prestigious)
- Quality of accepted articles and authors
- Audience of journal (readership)

Facteur d'Impact

Journal: ACADEMY OF MANAGEMENT JOURNAL

Mark	Journal Title	ISSN	Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	ACAD MANAGE J	0001-4273	15082	6.483	9.263	0.719	57	>10.0	>10.0

The impact factor is the ratio between the number of citations to this journal for a given year and the number of articles published by this journal in the two previous years.

$$\text{Facteur d'Impact} = \frac{\#\ \text{Citations in 2009 for articles published in 2007 or 2008}}{\#\ \text{Articles published in 2007 or 2008}}$$

Journal Impact Factor ⓘ

Cites in 2009 to items published in: 2008 = 124
2007 = 654
Sum: 778

Number of items published in: 2008 = 55
2007 = 65
Sum: 120

Calculation: $\frac{\text{Cites to recent items}}{\text{Number of recent items}} = \frac{778}{120} = \mathbf{6.483}$

Journal Impact Factor

Sl. No.	Journal Name	Impact Factor
1	CA-A CANCER JOURNAL FOR CLINICIANS	286.13
2	LANCET	202.731
3	NEW ENGLAND JOURNAL OF MEDICINE	176.079
4	NATURE REVIEWS MOLECULAR CELL BIOLOGY	113.915
5	NATURE REVIEWS DRUG DISCOVERY	112.288
6	NATURE REVIEWS IMMUNOLOGY	108.555
7	Lancet Respiratory Medicine	102.642
8	BMJ-British Medical Journal	93.333
9	NATURE MEDICINE	87.241
10	Lancet Microbe	86.208
11	World Psychiatry	79.683
12	NATURE REVIEWS MICROBIOLOGY	78.297
13	Lancet Psychiatry	77.056
19	NATURE REVIEWS CANCER	69.8
29	NATURE REVIEWS GENETICS	59.581

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Open Access (OA) is the practice of providing the public with unrestricted online access to scholarly journal articles.

- **Advantages:**
  - Free access = wider audience
  - Author often retains copyright
- **Disadvantages:**
  - Author Fees
  - Some predatory journals
  - Concerns about quality control and authenticity

A-rank journals

- International journals with innovative themes
- Updated literature review
- Rigorous research plan and methodology
- Difficult and long evaluation and revision process
- Minimum two referees per manuscript, rejection (80%).
- International distribution (language).
- Recognized by the scientific community
- Presence in academic libraries
- Publication of fundamental research articles
- Strong contribution to the development of the discipline

B-rank journals

- Demanding international journals
- The evaluation process faster than for A-rank journals
- Lower rejection rate.
- International distribution.
- They are more open to critical analyzes and reflections, to the empirical replication of classic themes and to exploratory research.
- The recognition of these journals may vary depending on the scientific policy of the moment.

C-rank journals

- Easier access journals for non-scientists
- Less rigorous selection criteria and process
- Magazines intended for sectors of activity or limited geographical areas.
- Journals with less international presence and less academic recognition.
- Dissemination of descriptive studies, technical studies.
- Important contribution to applied research and the popularization of research results.
- Frequent participation of non-academic authors.

How to write a scientific article?

Part II

The Form

Rules of medical and scientific writing

- Be legible to be read and above all understood
- Content and form are inseparable
- Short sentences
- Announce the main fact
- Respect of conjugation tenses
- Appropriate connections (logic, fluidity)
- Conciseness (the reviewer is overwhelmed!)
- Clarity and precision of style

Different categories of articles

- Original article
- General review and updates
- Clinical facts, case reports
- Technical notes
- Editorials

Different categories of articles

- **Original article**
  - Main objective: to report a new fact, not yet published, or to shed new light
  - In all areas there are unexploited subjects (specific techniques, local expertise)
  - Know-how: show (or make people believe) how the work is innovative (get "bold"), find a particular angle, a niche
  - Results based on a large series

Different categories of articles

- **General review "updates"**
  - Fixes the state of the art on a subject but should ideally suggest new directions
  - Gathers critical arguments published in the literature, discusses their relevance and adds comments suggested by one's own experience (state of the art)
  - Requires significant experience on the subject, often requested by the editorial committee

Different categories of articles

- **Clinical facts (Case report)**
  - Acceptable if and only if it brings original elements
  - Intense competition
  - Few journals accept them
  - Ideally, gather similar cases from several centers to transform clinical facts into small series that are more easily accepted.

Different categories of articles

- **Technical notes**
  - Briefly describes a new technique, the modification of an existing technique or new equipment
  - Less demanding scientific approach
  - Innovation comes first

Different categories of articles

- **Editorial**
  - Briefly addresses a specific issue to focus and critique it
  - Brief and often written by one of the members of the editorial committee of the journal
  - Sheds particular light on one of the articles published in the journal

How to write an original article?

Original article
Basic plan

- The title, the authors
- Summary and key words
- The introduction
- Material and method
- Results
- Discussion
- Conclusion
- Bibliographic references
- Tables
- Figures

Original article
Title and authors

- **Title**
  - Clearly translates the purpose of the research
  - Open, short and attractive

- **Authors and Order of Authors**

- Those who contributed to the research (data acquisition, reading, statistics, writing)
- First Author: The One Who Writes
- Last author: initiator (in theory)
- Depending on the importance of their contribution (ideally)
- Strategic choice

Original article
Introduction

- Introduction
  - **Content**
    - Briefly describes the status of the problem, the questions asked, and the problem to be solved
    - Asks the question and announces the means used to answer it (The aim of our study was therefore to …)
  - **Form**
    - Major role (hook, the reviewer is overwhelmed! You have to put him in a good mood :)
    - Short, logical rationale (why did you do this study?)
    - Appropriate References

Original article

Materials & Methods

- **Materials et Methods**
  - Describe in logical and/or chronological order the course of the study
  - The details allow reviewers to appreciate the rigor of the work (there is no such thing as too much detail)
  - Inform reviewers about the methods used to assess outcomes, measurement techniques, outcomes
  - Valid statistics
  - Ethics Committee, Patient Consent, Condition of Use Animals

Original article
Results

- Brief and clear
- Tables and graphs are often essential but should not be redundant with the text
- We don't argue! (no discussion)

Original article
Discussion

- What's new ?
- Compares the results of the study with those of the literature (convergent and divergent, and gives explanations)
- Limitations of the study (bias, weaknesses, small number). Pull the rug out from under the reviewers who are there to dissect or even "break" your work
- Conclusions based on results and only results

Original article
Conclusion

- Short, to the point, concise
- We will avoid "our study shows that" but instead write "our study suggests that"
- Repeat the question posed and give the answer but pointing out the limitations
- Dont be arrogant, be modest !
- Dont speculate !

Original article
Abstract

- 200 to 250 words (depending on the journal)
- Objectives (as in the article)
- Materials and methods
- Results (raw)
- Conclusion (as in the article)

The abstract

Must answer 4 questions :

- What for? (purpose of work)
- How, where, when? (conditions under which the work was conducted)
- What? (What did you find?)
- It must include the essential element of discussion that one wishes to assert (commentary, interpretation, comparison, limitation, future development, etc.)

➢ **The abstract must be comprehensible as such, detached from the article**

An abstract should not :

- give information or conclusions that are not set out in the article
- include references (except in exceptional cases)
- Contain abbreviations (unless they are used multiple times in the abstract)
- Contain phrases such as "the implications of this work are discussed by the authors"

References

- Comply with the recommendations of the journal (do not copy and paste PubMed)
- Limited in number (30 for some journals)
- Beware of errors (authors, abbreviations, year, pages)
- Cite if existing previous work

Tables

- Meets recommendations
- Detail the results
- Clear title and in-text calls
- Bring readability
- Must not duplicate text
- Do not put vertical lines
- Explain abbreviations (notes)

Figures

- Illustrate the text and give weight to the study
- Rigorous selection, may result in rejection of an article
- Imaging, Anapath, Microscopy
- Minimum quality required (TIFF, grayscale, 300 pixels/inch, 13 cm)
- Arrows limited in number and size
- Clear Captions

Writing timeline

1) Choosing the most suitable journal (the one that will best "sell" the result)
2) materials and methods, starting with the tables in this section
3) The results, starting with the tables and figures
4) The Discussion
5) The introduction at the end after the discussion, because the intro is the mirror image of the discussion: they must be coherent (it would be stupid to ask questions that are not answered or to answer questions that are not asked).
6) Abstract and title (from the message)
7) Bibliography

The tense

- Introduction: Present and Past
- Materials & Methods: in the past tense
- Results: in the past tense
- Discussion: Rather in the present tense

The title

Why it's important:

- A large number of people will read the title, fewer will read the abstract, and relatively few will read the article;
- It is always the title that determines if the reader will read or not the article (i.e., to look for the corresponding newspaper or not). Every word of the title must be weighed
- Must draw attention to originality and importance

The title (continued)

- Not too long, not too short (12 words or 82 because. Max, including spaces)
- Be specific (must not fit another item)
- Goes from most important to least important
- Focuses on results (no methods)
- No abbreviation

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Research Paper

Stress inhibits tryptophan hydroxylase expression in a rat model of depression

Yi Chen[1,2,*], Haixia Xu[1,2,*], Mingyue Zhu[1,2], Kun Liu[1,2], Bo Lin[1,2], Ruxian Luo[3], Chuanbai Chen[3] and Mengsen Li[1,2]

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http://dx.doi.org/10.1124/jpet.113.207639
J Pharmacol Exp Ther 347:225–234, October 2013

Nicotinic Receptor Agonists Reduce L-DOPA–Induced Dyskinesias in a Monkey Model of Parkinson's Disease

Danhui Zhang, Archana Mallela, David Sohn, F. Ivy Carroll, Merouane Bencherif, Sharon Letchworth, and Maryka Quik

ORIGINAL ARTICLE

GluN2D-containing NMDA receptors inhibit neurotransmission in the mouse striatum through a cholinergic mechanism: implication for Parkinson's disease

Key words

- Important Words That Define Your Item
- 50% concrete (relating to the strict subject);
- 50% wide (to be found on the Internet when looking for more general issues)

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ABSTRACT

Serotonin (5-hydroxytryptamine, 5-HT) dysfunction is associated with the pathophysiology of depression. Tryptophan hydroxylase (TPH), the rate-limiting enzyme in 5-HT biosynthesis, is believed to have essential role in many mental disorders, including depression. In the present study, we generated a rat model of depression by exposing the animals to stress, and the rats were then treated with paroxetine. The results indicated that the concentration of 5-HT in the brain and liver tissues were significantly lower in the rat model of depression than in healthy or treated rats. Immunohistochemical analyses of TPH1/2 showed less TPH1 and TPH2 expression, specifically TPH2, in the brain, liver and kidney of the depressive rats than in the healthy rats; In addition, the two TPH isoforms, TPH1 and TPH2, had different spatial distributions,the mRNAs of the TPH1/2 genes were significantly decreased and TPH1/2 were highly methylated in the depressive model rat, but treatment with paroxetine ameliorated the expression and methylation of TPH1/2. All together, stress was able to inhibit expression of TPH1/2 in brain tissue and decrease concentration of 5-HT, the mechanism maybe involve in increasing the methylation of *TPH2* genes promoter. Paroxetine has a role in confronting the effect of stress in depressive rat model.

In conclusion

- Good methodology
- Comply with recommendations
- Take care of the presentation
- Don't get discouraged
- Be modest
- Don't be paranoid, even if sometimes there are good reasons to be paranoid

Scientific English

English has many positive characteristics that make it suitable for scientific writing.

However, some negative ones also make it less than ideal.

The positive characteristics include

- A relatively straightforward grammar
- Enormously rich vocabulary

The negative ones include

- the irregular pronunciation
- inconsistent spelling

The straightforward grammar makes it relatively simple to construct sentences.

- The order of words is uncomplicated and there is no need to worry about the gender of nouns or about the appropriate ending of an adjective.

  The car is **red** —-> The cars are **red**

- Changes in the verb endings are also *limited*.

English's richness of vocabulary gives writers a tremendous flexibility in the words they can choose.

One source lies in English's French, German and Scandinavian roots. As a consequence, English often has both French- and German-based word for the same thing or concept

e.g: words "**infancy**" and "**childhood**"; "**judicious**" and "**wise**"; "**malady**" and "**sickness**"; "**transmit**" and "**send**"

What to choose American or British english to write a scientific manuscript?

The answer is that it is not important which variant of English you choose.

It is far more important that your English is clear, comprehensible and concise.

An editor of a journal will not reject a manuscript because the spelling, vocabulary and punctuation are from an English-speaking person situated on another continent.

Writing "**sulphate**" instead of "**sulfate**" will not affect the fate of your manuscript.

Once a journal accepts a scientific manuscript for publication, the production department will use its own spellchecker and software to put the manuscript into the style of the journal.

Easier to use American English to write scientific manuscripts.

Why?

Two characteristics make it easier to learn and to use.

•First, spelling in American English is simpler and less perverse than in British English.

British	American
Aesthetic	esthetic
almanack	almanac
anaemia	anemia
anaesthesia	anesthesia

•Second, American English is younger than British English.

- *In summary,* do not waste time thinking about your choice of English.
- Concentrate *instead* on the quality of your manuscript than your choice of English.
- Readers will remember the quality of your manuscript and its advance in knowledge.
- They will not remember whether your manuscript contained American or British English.

Formal English, the language of science

•Formal English is quite different from the English found in **novels**, **newspapers**, **emails** and **text messages**.

•In formal English, words are chosen to fit a *certain* style and are written out in full.

•All sentences are complete, linked together and properly punctuated.

What is a complete sentence?

- A complete sentence relates a finished thought or action.

- An incomplete sentence leaves the reader searching for the full meaning or with the impression that something vital has been omitted.

Scientific manuscripts may, however, contain incomplete sentences as part of their title.

- Titles such as "Measurement of the speed of the expansion of the Universe" or "Discovery of a new gene linked to Alzheimer's disease" are quite common.

- *Similarly*, the titles of the figures showing the data are often incomplete sentences.

Punctuation marks

The question mark

Question marks are used frequently in scientific manuscripts because asking questions is a fundamental scientific activity.

The exclamation mark

Exclamation marks, expressing surprise or an order, are almost completely absent from scientific writing.

Quotation marks

Quotation marks are used in scientific English to indicate that you have taken a phrase or sentence from a piece of work and have used it directly without any modification. Direct quotes from written work by another author should always contain a reference to that work.

Brackets

- Brackets are the best way of marking text that is not *essential* to understanding the meaning of a sentence.
- A very useful *application* of brackets is to contain lists of examples preceded by "**e. g.**" or explanations preceded by "**i. e.**". This strategy avoids using the abbreviations as part of a sentence.

NB: e.g. Latin for *exempli gratia*; i.e. Latin for *id est*

Write out all verb forms

There are no shortened forms of verbs (e. g. "it's", "isn't", "can't", "don't") in formal English. Remember that "it's" is short for "it is" and has nothing to do with a possessive form of "it". The following three sentences illustrate the difference.

"**The powder is red. It's a red powder. Its color is red.**" If you always write out the forms of verbs, this problem will disappear.

Avoid starting sentences with "and", "but", "because" or "so"

Starting sentences with these words is considered to be poor style and not formal English.

Words for linking sentences in scientific writing

Do you want to add further information to that contained in the *previous* sentence?

•Use words such as: "in addition", "additionally", "further", "furthermore", "indeed" or "moreover".
These words will enable you to avoid starting sentences with "and".

Do you want to introduce contrasting or *contradictory* information to that contained in the previous sentence?

•Use words such as "however", "in contrast", "instead", "nevertheless", "occasionally", "of course", "on the contrary" or "otherwise".
These words will enable you to avoid starting sentences with "but".

Do you want to start a sentence with because?

Do not do so. *Instead*, combine this sentence with the previous one so that the word "because" leads into the second half of the sentence.

Do you want to introduce information that follows from the previous sentence?

- Then use words such as: "accordingly", "as a result", "consequently", "hence", "in short", "subsequently", "therefore", "thus" or "to this end". These words enable you to avoid starting sentences with "so".

Other important linking words:

- Giving examples: "for example", "for instance"
- Finishing up: "in summary", "in short", "in conclusion", "taken together"

Avoid ending sentences with "too", "also", "though" or "yet"

Using such words at the end of sentences is again considered to be poor style and not formal English.

- Formal English does not contain the word "get".

There are two reasons.

•First, "get" is considered poor style in a scientific manuscript.

•Second, the clarity of a sentence will always be improved by omitting "get" or by replacing it with more suitable words such as "**have**", "**receive**", "**obtain**", "**possess**" or "**become**".

Similarly, phrases containing "**get**" can usually be replaced by a single word that more ***exactly*** expresses the idea.

For example, there are several alternatives to "**get rid of**" (delete, eliminate, omit, remove) and to "**get better**" (ameliorate, improve, recover).

Here are two sentences that illustrate the problem:

"My supervisor **got** excited when I **got** some results using samples **I got** from Africa. However, she **got** angry when she **got** to know that I had **got hold** of them illegally."

The improved format will be:

"My supervisor **became** excited when I **obtained** some results using samples from Africa. However, she **grew** angry when she **found out** that I had **acquired** them illegally."

Avoid vagueness, sensationalism and exaggeration

- Scientific writing should be accurate, appropriate and measured.
- To achieve greater accuracy, eliminate words such as "a lot", "a bit" and "a little" in scientific writing. They have no value.

Alternatives for "a lot" include: "several", "many", "certain", "numerous", "considerable", "a plethora", "a panoply".

- Make your scientific writing appropriate by avoiding adjectives such as "**amazing**", "**incredible**", "**unbelievable**", "**stunning**" or "**spectacular**".
- *In addition*, do not use absolute statements (e. g. "This hypothesis will never be falsified.") and exaggerated accuracy (e. g. "Our results provide 100% proof of our theory.").