SUMMARIZING SCIENTIFIC ARTICLES

SCIENTIFIC ENGLISH
University of Abou Bakr Belkaid Tlemcen

Djahida HADJ MERABET

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MOLECULAR BIOLOGY LICENSE

Légende

 Entrée du glossaire

 Abréviation

 Référence Bibliographique

 Référence générale

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Objectifs

At the end of this Chapter , students will be able to ..

- Analyze short and long material (paragraph, text, article and dissertation);
- Synthesize main ideas to make a long production (sentence, paragraph, text);
- Summarize a Scientific paper
- Produce publishable material of a professional standard in English

Introduction

A *scientific article* is a publication that is based on empirical evidence. It can support a hypothesis with original research, describe existing research or comment on current trends in a specific field. Types of scientific research include:

- Original Research

Descriptive

Analytic

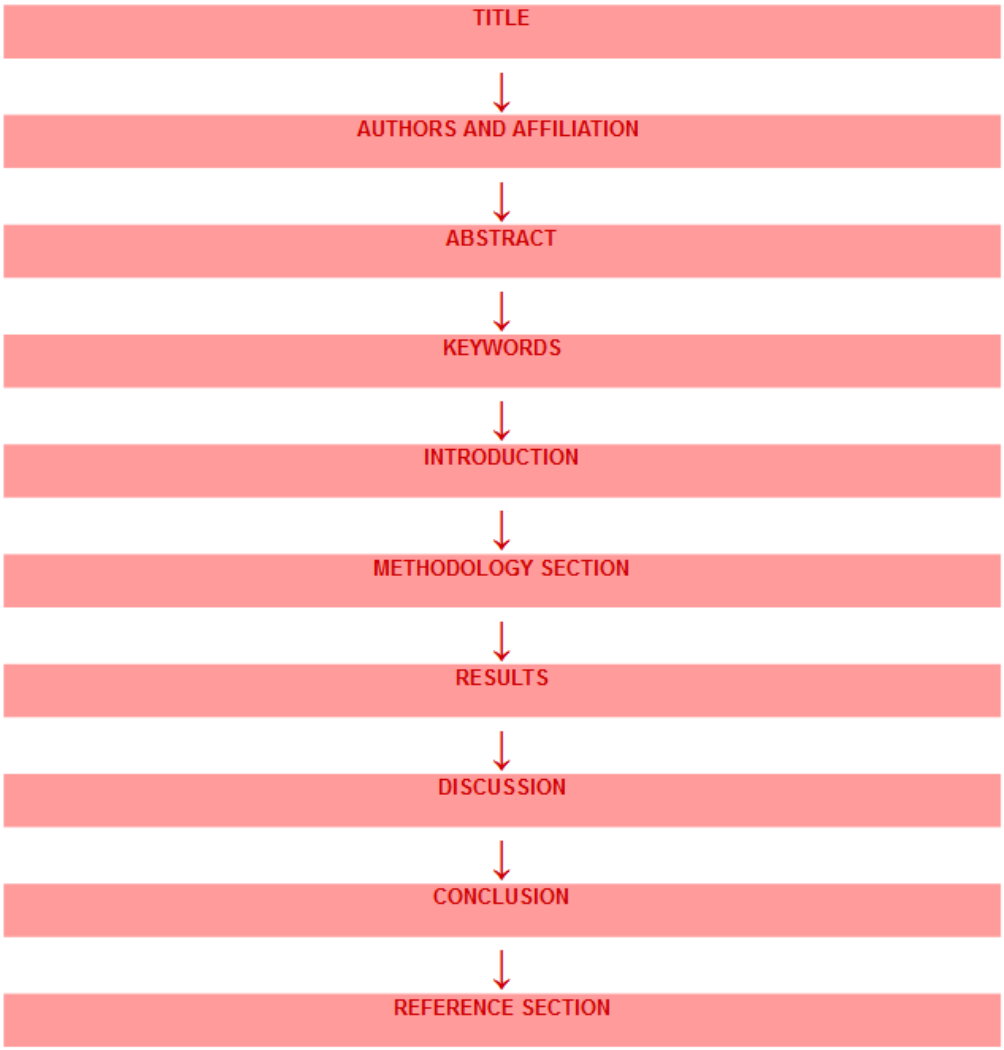
- Methods Papers
- Meta-analysis
- Commentary

STRUCTURE OF SCIENTIFIC PAPER

A scientific paper is a written report describing original research results whose format has been defined by centuries of developing tradition, editorial practice, scientific ethics and the interplay with printing and publishing services.

« A SCIENTIFC PAPER IS STRUCTURED IN A WAY THAT HELPS YOU UNDERSTAND WHAT WAS DONE ,WHY IT WAS DONE AND HOW IT WAS DONE. »

Most journal-style scientific papers are subdivided into the following sections :



STRUCTURE OF A SCIENTIFIC PAPER

TO ACCESS THE VIDEO : STRUCTURE OF A RESEARCH PAPER CLICK *HERE*

1. TITLE

TITLE

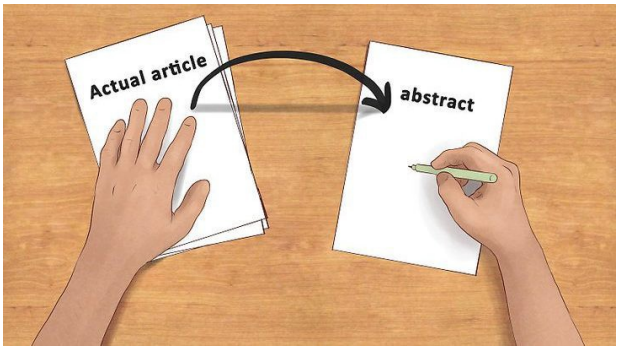
Descriptive title that gives the reader a sense of the topic and possibly the results

2. AUTHORS AND AFFILIATION

AUTHORS AND AFFILIATION

It is common to mention the name of the author(s) after the title of the research, followed in the line below by the name of the university or institute that each of the authors works with.

3. ABSTRACT



ABSTRACT

A well structured abstract that provides context and findings. An abstract summarizes the main contents of the paper and should give the reader a well-defined idea of what the paper is about.

The reader should not need to read the entire paper to learn about results findings and conclusion

4. KEYWORDS

KEYWORDS

A series of keywords that are used to associate the paper with specific topics, methods and tools

It is common to write keywords at the end of the abstract. In this way, after reading the abstract and getting familiar with the process of the research, the reader will understand what the main concepts and themes of the research are.

Conseil

Depending on the length and content of the article, between 5 and 7 keywords are needed.

5. INTRODUCTION

INTRODUCTION

An introduction that provides the relevant research and puts the paper in context of what has been done before .

Fondamental

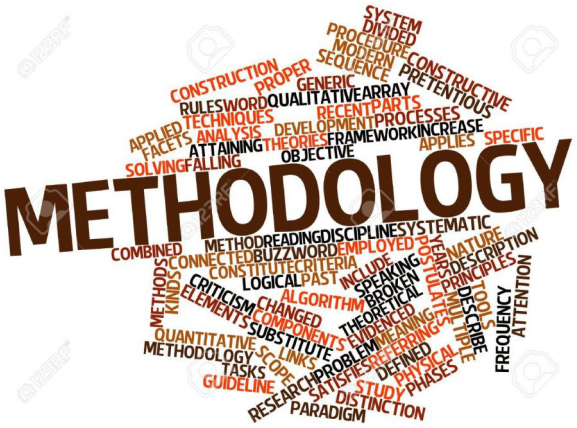
Introduction serves two purposes

- *Stimulating interest in the subject*
- *Putting the article in a larger context*

  Generally introductions do this by leading readers from the general (what is already known by

the topic) to the specific (what is not yet known) to the focused question the authors are asking. Thus, authors describe previous work and how their work relates to it .

6. METHODOLOGY



METHODOLOGY

A methodology section (sometimes called the Materials and Method section OR population and Method section) describes the data, methods and tools that were used. It describes how the results were generated.

This section tells the reader what experiments were done to answer the question stated in the introduction.

Remarque

Methods can be difficult to read for students because the technical language and a level of detail sufficient for another trained scientist to repeat the experiments

7. RESULTS

RESULTS

This section states what the authors found.

The results of a paper are simply a presentation of the results obtained corresponding to the methods described in the previous section, organized to make them accessible to the reader. Often these results are presented in tables and/or graphs. Well crafted tables and figures require very little in terms of supporting text in the body of the paper.

8. DISCUSSION

DISCUSSION

This section provides a clear answer to the question posed in the introduction and explains how their results support their conclusions.

The purpose of the Discussion section is to explain the results and show how they help to answer the research questions posed in the Introduction. This discussion generally passes through the stages of summarizing the results, discussing whether results are expected or unexpected, comparing these results to previous work, interpreting and explaining the results (often by comparison to a theory or model), and hypothesizing about their generality.

Conseil

Once you have read this section think about whether you understand and believe the author's p.21 *Claims* p.21 p.21

9. CONCLUSION

CONCLUSION

The Conclusion is intended to help the reader understand why your research should matter to them after they have finished reading the paper. A conclusion is not Merely [p.21] a summary of the main topics covered or a re-statement of your research problem, but a synthesis of key points and, if applicable, where you recommend new areas for future research.

Fondamental

A well-written conclusion provides you with important opportunities to demonstrate to the reader your understanding of the research problem.

10. REFERENCE SECTION

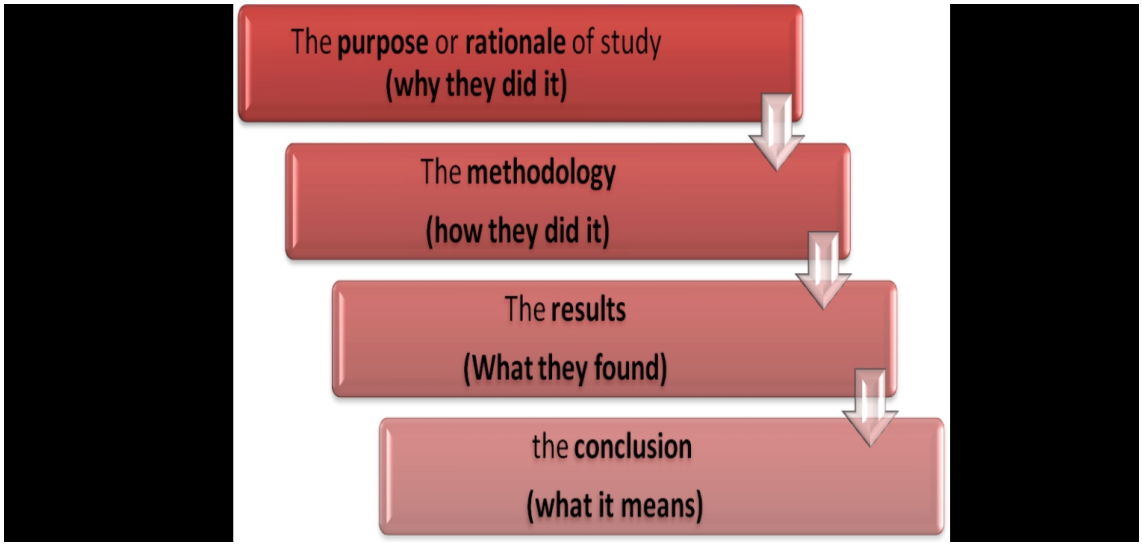
REFERENCE SECTION

This Section Highlights [p.21] the relevant papers that have been used cited and how this paper builds upon those previous one .

SUMMARIZE A SCIENTIFIC PAPER

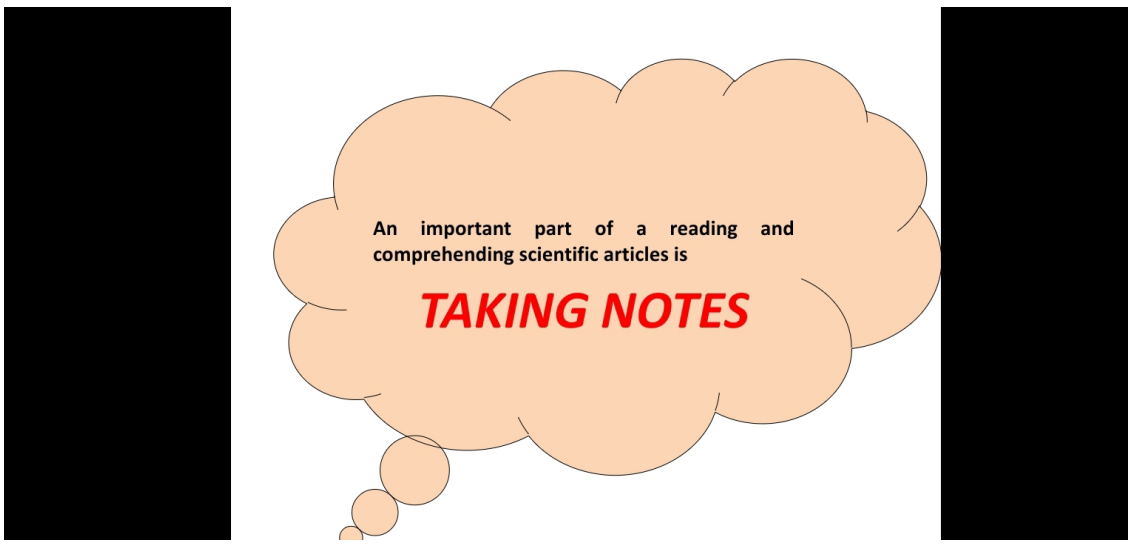
II

Abstracts usually contains four kinds of information



Four kinds of information in an Abstract

AN ABSTRACT SHOULD GIVE AN OVERVIEW p.21 *OF THE AUTHOR'S ARTICLE, AND ITS MAIN IDEAS.*



1. READ THE ARTICLE

1.1. Read the article two or three times

Read the article two or three times to get it right. Read it slowly to make sure you absorb the information. If you have any questions, stop and write them in the margins. On your second reading, try to find the answers to your questions to improve your understanding of the text. Finally, read the article a third time so you can write notes or summaries.

If possible, read them aloud to help you process the information.

Remarque

By reading the article several times, you will help yourself gain a better understanding of the ideas being discussed. It is difficult to fully understand an article on first reading.

1.2. Write notes in the margins in your own words

Think about what the passage says or what you think the author means. Then write your thoughts and interpretation of the text in the margins of the article. Be sure to use your own words. Don't just rearrange the words of the text or paragraph. You can write short sentences or fragments instead of full sentences.

Conseil

By writing notes in your own words, you will avoid plagiarism when writing your summary

1.3. Write a one-sentence summary for each section of the article

Read each section of the article, then stop and think about what the author meant. Identify the main point and the points that support each section. Summarize them in one sentence.

2. WRITE A DRAFT

2.1. Start the introduction with an overview

Tell your reader who wrote the article, what their qualifications are, and what the title of the article is. Then quickly explain what the article is about and why it is important .

2.2. Summarize each main point in one sentence

The short one-line note you wrote in the margins of the article. Take the main point out of it, then write a sentence that summarizes what the author is saying. Do this for each section of article .

An abstract should be one page or less. For a short summary, you will write a long paragraph or an

introduction, a main paragraph and a conclusion.

2.3. Give two or three examples

Give two or three examples that support each main point. The details that will support your thesis are examples that the author presents to support their ideas. Identify two or three of these examples for each main idea. Then write one or two sentences for a summary or two to four sentences for a longer summary

2.4. Explain the research methods

Research methods are steps that the author uses to conduct his study. Describe the structure of the research, the process and how the results are measured. If the research involves subjects, identify them and the activities they had to perform. Be specific about how the author obtained their data.

2.5. Describe the results and conclusions

The results include data or information that the author learned during his research, and the conclusions include the ideas he has drawn from his research. Explain the research results, the analysis provided by the author and the conclusions drawn. In addition, also explain the author's call to action, if there is one.

2.6. Conclude the summary

Conclude the summary by reaffirming the thesis and its meaning. Write a two to three sentence conclusion for your summary. In the first sentence, reaffirm the thesis you announced at the end of the introduction. Then, quickly state that the author's ideas are important in this area.

3. FINALIZE THE SUMMARY

3.1. Correct mistakes and improve your summary

Correct mistakes and improve your summary. Make changes based on the feedback you received and the directions given to you. Rewrite the passages you need to improve. In addition, correct any grammatical errors, typos, and spelling mistakes that you found during your proofreading.

3.2. Compare your abstract to the original article

Compare your abstract to the original article. Reread the article again, then reread your summary. Make sure the latter is an accurate reflection of what the author says in their article. In addition, check that your abstract covers the thesis, main points and ideas of the article. Finally, delete the sentences that reflect your own analysis or your personal opinions.

Conseil

Do not include your own ideas, analysis or opinions in the summary. Focus only on the author's ideas.

Exercice

[solution n°1 p.20]

WHY THE ABSTRACT IS THE IMPORTANT PART IN ANY ARTICLE ?

TEST DE SORTIE SUMMARIZE THIS SCIENTIFIC PAPER

IV

The DNA regions in our brain that contribute to make us human

To explain what sets human apart from their ape relatives, researchers have long hypothesized that it is not so much the DNA sequence, but rather the regulation of the genes (i.e. when, where and how strongly the gene is expressed), that plays the key role. However, precisely pinpointing the regulatory elements which act as 'gene dimmers' and are positively selected is a challenging task that has thus far defeated researchers (see box).

Marc Robinson-Rechavi, Group Leader at SIB and study co-author says: "To be able to answer such tantalizing questions, one has to be able identify the parts in the genome that have been under so called 'positive' selection [see box]. The answer is of great interest in addressing evolutionary questions, but also, ultimately, could help biomedical research as it offers a mechanistic view of how genes function."

A high proportion of the regulatory elements in the human brain have been positively selected

Researchers at SIB and the University of Lausanne have developed a new method which has enabled them to identify a large set of gene regulatory regions in the brain, selected throughout human evolution. Jialin Liu, Postdoctoral researcher and lead author of the study explains: "We show for the first time that the human brain has experienced a particularly high level of positive selection, as compared to the stomach or heart for instance. This is exciting, because we now have a way to identify genomic regions that might have contributed to the evolution of our cognitive abilities!"

To reach their conclusions, the two researchers combined machine learning models with experimental data on how strongly proteins involved in gene regulation bind to their regulatory sequences in different tissues, and then performed evolutionary comparisons between human, chimpanzee and gorilla. "We now know which are the positively selected regions controlling gene expression in the human brain. And the more we learn about the genes they are controlling, the more complete our understanding of cognition and evolution, and the more scope there will be to act on that understanding," concludes Marc Robinson-Rechavi.

Positive selection: a hint of the functional relevance of a mutation

Most random genetic mutations neither benefit nor harm an organism: they accumulate at a steady rate that reflects the amount of time that has passed since two living species had a common ancestor. In contrast, an acceleration in that rate in a particular part of the genome can reflect a positive selection for a mutation that helps an organism to survive and reproduce, which makes the mutation more likely to be passed on to future generations. Gene regulatory elements are often only a few nucleotides long, which makes estimating their acceleration rate particularly difficult from a statistical point of view.

Question

SUMMARIZE EACH SECTION SEPARATELY

FIND THE KEYWORDS OF THE TEXT

Solutions des exercices

> **Solution** n°1

Exercice p. 17

WHY THE ABSTRACT IS THE IMPORTANT PART IN ANY ARTICLE ?

Abstracts are designed to highlight key points from major sections of the paper and to explain what the paper includes.

Glossaire

Claims

Claims are, essentially, the evidence that writers or speakers use to prove their point.

Highlights

Attract attention to or emphasize something important

Merely

merely used to emphasize that you mean exactly what you are saying and nothing more:.

OVERVIEW

An overview is a general summary of something. An overview gives the big picture, while leaving out the minor details.

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