

# How to Read a Scientific Paper

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# General tips

## Highlight the main points

- Use different colors (e.g., blue for new things you learn, pink for the main points, green for terms you do not understand yet, yellow for things to try in your own research, red for things you doubt or disagree with, etc.) This can help you map out the paper when you revisit it.

## Take notes!

- Handwritten notes may help you remember the content better.
- Making a slide of the most important findings for each paper in a PPP may help you later on with citations in the writing process.

# Read the Abstract

This should be a brief summary of the whole paper.

Identify the main question(s) they are trying to answer.

Identify the technique they used to answer the question(s).

Finally, decide if this paper will be useful to read.

# Read the Introduction

When starting a new project, this is essential. Write down new things you learned from reading this paper and note cited works for further reading.

Even if you have been working in that field for a while, introductions may be sources for new references.

Note what distinguishes this work from previous literature.

# Look at the Figures

Go through the figures in order to get an idea of the structure of the paper and their results, and to further confirm their analysis is of your interest.

*Do not stop here.*

# Read the Methods

Depending on what you want from the paper you should skim or carefully read the methods.

However, **always** note the following:

- What are the assumptions the authors make? How well justified are they?
- What are the limitations of their modeling/procedure/analysis?

If you want to use one of their results (e.g., a prescription for a parameter in your study) make sure the set up and methods they used to derive it are congruent with your own study.

# Read the Results

Note their main results (following the figures) and the questions they answer.

If you are taking notes, sketching an important plot may be useful.

Try to interpret the results on your own before moving on to the discussion.

# Read the Discussion

Read how the authors interpret their results and decide whether you agree with their interpretation or not. Write a conclusion about this.

If you have read other similar studies, it may be useful to compare their results and their interpretation briefly (a few sentences).

Write down any unanswered questions that you have and go over the paper again to try to answer them. If this does not help, search the literature again (see Introduction for references) or discuss them with a person within the field.



# Revisit your notes often

Reread your notes every once in a while to better retain information.

# Resources

<https://libguides.csun.edu/phys/how-to-read-scientific-articles>

<https://resources.nu.edu/researchprocess/readingscientificarticle>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7392212/>