

# How to Read and Understand a Scientific Paper

BioInformagic



“Be skeptical. But when you  
get proof, accept proof”

- Michael Specter

# General Advice

- Different process than reading an article / blog / newspaper
  - Read sections in a different order
  - Should take notes (have a highlighter & pen ready)
  - Read it multiple times
  - Should follow up with more research
- 
- May take longer than you think!

# Steps

1. SKIM the abstract
2. Read the INTRODUCTION
3. Summarize the background
  - a. Identify the BIG QUESTION / purpose
4. Read the RESULTS
  - a. Focus on the figures → you can get a lot of information from them
5. Read the CONCLUSION / discussion
6. Read the methods & materials
7. NOW read the abstract
8. Read similar papers



# SKIM the Abstract

- **Purpose:** Make sure this is the paper is relevant to your research, answers your questions etc.
- Very dense
- Gives you the entire overview but will make it difficult to understand without first reading the introduction + conclusion
- Generally read half of it
  
- **May be inadvertently biased by authors' interpretation of results**

# Read the Introduction & Summarize

- Identify the problem the paper is trying to solve
  - What is the BIG QUESTION?
- Summarize the background
  - Be CONCISE!
  - 5 sentences max
- What are the authors' hypotheses?
- Ask yourself questions!





# Read the Conclusion / Discussion

- What do the authors think the results mean?
- Do you agree with them? Do you disagree?
- Can you come up with an alternative way of interpreting the data?
- What are the limitations of the study? Did they identify all of them?
- What are the future steps of this paper? Do you agree?

# Read the Methods & Materials

- Skim over this section (very specific)
- Look more into detail if reproducing the results!



# Go FURTHER!

- Look at the authors' and the university / company they are associated with
- Look at the other publications they referenced
  - Read up on a couple of them!



# High-Level Approach

- For main points:
  - Abstract
  - Conclusion
  - Figures