How to Read a Scientific Article*

Scientific papers report new results/theories and relate these finding to previous knowledge in the field. Since papers are the primary way scientists communicate with one another it is important to be able to understand and critique these reports.

Reading scientific papers is partly a matter of experience and familiarity with the field. If you are unfamiliar with the field you can still learn a tremendous amount from an article if you take the time to read it carefully focusing on the main concepts and conclusions.

Yes, this will be critical as you sift & winnow your list of search results down to the 'finalists'

You may find the following steps helpful.

This is a great list of information to gather and include in your Lit Notes for each paper you read.

1. Read the title and abstract first. The abstract should concisely state why the research was done, how it was done, and what was found. It is often helpful to make a list of the research question, approach, and findings.
2. Next skim the article, spending most time on the introduction and discussion sections. (If you are unfamiliar with the field, it is best to gain an understanding of the main concepts before tackling the specific methodologies.)

It's a great idea to begin by skimming the article. But, after the title & abstract, the next thing I look at is the figures (key findings)!

3. Then go back to the beginning and carefully read the introduction. The introduction should explain why this research is important and place it in the context of previous work.
    a. Is the research descriptive, comparative, or analytical?
    b. What questions are being addressed?
    c. Are the hypotheses reasonable?
    d. Why is this research important?
4. The materials and methods section is often more detailed than the average reader requires. Try to get a general sense of the procedures (experimental or statistical). If you are more familiar with the field you should be able to determine :
    a. Are the procedures appropriate?
    b. Where the statistical analyses correctly applied?
    c. Were any interactions or confounding variables overlooked?

You may need to pay a bit more attention to the Methods if tools/techniques/design is your focus.

5. Read the results and examine the figures and tables. Try to summarize what each figure/table conveys.
6. The discussion contains the conclusions that the author(s) would like to draw from the data. When reading the discussion it is important to recognize that there may not be a right or wrong answer. You should ask yourself:
    a. Did the author(s) interpret the findings appropriately?
    b. Is the interpretation free of bias?
    c. Are alternative interpretation acknowledged?
    d. Can you think of any alternative interpretations?

Considering alternative interpretations may lead to new questions / hypotheses that YOU can test.

Note: If you are unfamiliar with vocabulary used in the article lookup these words in your textbook or dictionary.

Yes, definitely! I can't stress this enough. Some things you can figure out by context, but get in the habit of looking up what you don't understand, and making notes in the margin -- definitions, questions, etc.

**Courtesy of Nat Wheelwright, Bowdoin College*

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