

Four-step guide to reading (and comprehending!) the primary literature in biology (adapted from A. McNeal, Hampshire College, by Brigid O'Donnell, Plymouth State University, and further adapted for EEB2214)

1) SKIMMING

- Read the Abstract (think of it as a dense roadmap of the entire paper)
- Skim the entire article (pay attention to headings & captions) to get an overview of the entire paper.

2) VOCABULARY

- Circle/highlight words you do not know, and consult a biological dictionary for help.

3) COMPREHENSION, SECTION BY SECTION

- Intro: What is hypothesis/hypotheses of the study? How will they be tested? What is the bigger picture of the question that is being explored in the paper?
- Materials & Methods: What was measured? How was the data collected? Sample sizes, etc?
- Don't get hung up on specific methods or statistics. Focus on the basics (what data did they collect), and, for the purposes of this course, assume that the analyses are well done.
- Results: Focus first on the figures—they should tell a fairly complete story. You do not fully comprehend a figure/graph in this section unless you can redraw and explain it to someone! Then read the text part of the results for major conclusions (but again, don't worry about the statistics.)
- Discussion: How are the data interpreted? What does this study add to the greater understanding of the subject area? Are any old ideas challenged or supported, or are new ideas brought to light?

4) REFLECTION & CRITICISM

Some questions to get you thinking:

What are the major findings?

Does the way in which hypotheses were tested make sense?

Were the measurements appropriate for the particular questions?

Did the authors succeed in putting their research into a broader context?

Do you see broader implications of their data that weren't discussed?

Don't despair if it takes a while to get through papers at first. We know that reading the primary literature is hard! These articles are written by scientists for other scientists, so we don't expect that you'll be able to understand every detail. We promise that reading the primary literature will get easier with practice.