How to navigate a scientific paper with time constraints: A graphic approach

**Using the Guide:** Start at the top, decide your motivation and/or time constraints and follow the arrows. They’ll direct you to the important paper sections as well as the key information you should extract at each level.

1. **What is your motivation?**
   - Get the basics, is this paper worth reading or passing along?
   - Understand if the researcher’s work is relevant to your project
   - Understand the significance and broader impacts of the work
   - Read the paper for a class discussion
   - Present the paper at Journal Club
   - Gather information to replicate the research findings
   - Review a paper for journal submission

2. **How much time?**
   - 30 minutes
   - 3 hours
   - 3 days

3. **What do you read?**

4. **What should you learn from each section?**

**TITLE**

**ABSTRACT**
- What question(s) are the authors addressing?
- What is the major finding or scientific contribution?
- What is the work’s significance?

**MATERIALS AND METHODS**
- What are their experimental assays and reagents?
- If there are alternative approaches, how did they select this system?
- Would you do anything differently?

**RESULTS**
- What are the conclusions they draw from the data?
- How do these results answer the greater question identified in the abstract?
- Do the results ‘add-up’ to the final claims of the paper?

**FIGURES, TABLES, AND DATA**
- Can you identify the results in the images/charts/graphs?
- Can you circle specific results (i.e. two-fold change in response, effect of treatment vs. control)?
- What are the controls in the experiment and have they presented them properly?

**CONCLUSIONS/DISCUSSION**
- What do the results mean?
- What are the next steps?
- Can you think of other interpretations of their results?
- If you were writing a story with their results, how would you interpret the data?
- What are other implications for the work, besides what the author(s) identified?

**SUPPLEMENTAL INFO AND REFERENCES**
- What are the controls and supporting data?
- What other supporting data would you like to see?
- Are there additional references that would deepen your understanding of their work?
- Which references would also be pertinent to your work?