BME/BIOL 178: Scientific research article reports
Answer the following questions for each assigned research paper. The first research report is for Smith-Berdan et al, due in class January 24. Max one page. Please number your answers for each corresponding question.

1. What was the overall goal of the paper? What biological question was addressed?

2. Summarize the general approach/strategy. For example: Gene X was knocked out to determine its role in mouse heart development.

3. Identify three key experiments and briefly describe their significance. For example: Generation of transgenic reporter mice to screen for infected cells (drug resistance) that activated an ESC-like program (GFP reporter driven by an ESC-specific promoter was necessary to make this study feasible.

4. Are the data consistent with the conclusions? Consider this question for each experiment and for the overall conclusions; report only the overall. Justify your answer.

5. Suggest an alternative explanation for either one specific experiment or for the overall conclusion. There is always at least one alternative explanation!

6. Was the overall goal of the study accomplished? Why or why not?

7. Suggest one specific experiment to build upon this work. Do not suggest a control experiment, unless you believe it’s necessary for the conclusion of the overall interpretation of the paper.

Tips for reading and understanding scientific reports
It can sometimes be hard, even for experts, to understand scientific articles. Here are some tips that may help.

- A typical article is divided into these sections:
  - **Abstract**: briefly summarizes the purpose, approach, results and significance of the findings
  - **Introduction**: gives a brief overview of the field to provide context for the current study, explains the rationale and the hypothesis to be tested
  - **Methods**: provides the details of how the experiments were performed
  - **Results**: provides the primary data as text combined with figures, figure legends and tables; usually provides a brief conclusion for each experiment and a rationale for the next experiment.
  - **Discussion**: discusses the overall conclusions based on all the data in the report; considers whether the data support the hypothesis; judges the potential limitations of the experimental design or system; explores the implications of the findings and may suggest future experiments.

- Read the whole article from beginning to end, even if you don’t understand everything.

- Go through the article a second time. Take notes on what you do understand, then deal with the parts that you don’t understand. Break the paper down in smaller sections (maybe by figure) and work on understanding each part. Use the questions above to help you.

- Rephrase important points using your own words.

- The figures are the “meat” of the paper. If you understand the results of the figures, you are doing well. Sometimes different scientists will draw different conclusions from the same data.

- Read the whole paper again.