Class Topics (assigned reading in the textbook) and *assigned article*

1. Jan 8 - Introduction and Background (pp1-61=60)
    a. *1-How to read and understand a scientific paper*
2. Jan 10 - The Human Genome Project (pp62-96=34)
    a. *2-The Human Genome Project Lessons*
3. Jan 15 - Mapping, Sequencing, Annotation, and Databases (pp97-142=45)
4. Jan 17 - Evolution and Genomic Change (pp143-178=35)
    a. *3-DNA sequencing at 40*
5. Jan 22 - Genomes of Prokaryotes and Viruses (pp179-210=31)
6. Jan 24 - Genomes of Eukaryotes 1 (pp211-232=21)
    a. *4-Creation of a bacterial cell controlled by a chemically synthesized genome*
7. Jan 29 - Genomes of Eukaryotes 2
8. Jan 31 - Comparative Genomics (pp233-263=30)
    a. *5-Natural Variation in ABA*
9. Feb 5 - Impact of Genome Sequences on Human Health and Disease (pp264-294=30)
10. Feb 7 - Mid-term exam
11. Feb 12 - Genomics and Anthropology 1 (pp295-328=33)
    a. *6-DAVID*
12. Feb 14 - Genomics and Anthropology 2
13. Feb 19 - Transcriptomics 1 (pp329-362=33)
    a. *7-Reprogramming of DNA Methylation in Pollen*
14. Feb 21 - Transcriptomics 2
15. Feb 26 - Proteomics 1 (pp363-418=55)
    a. *8-Integration of omic networks in a developmental atlas of maize*
16. Feb 28 - Proteomics 2
17. Mar 5 - Metabolomics 1 (pp419-442=23)
    a. *9-Dolabradiene-Derived Defenses in Maize*
18. Mar 7 - Metabolomics 2
19. Mar 12 - Systems Biology 1 (pp443-482=39)
    a. *10-Enhancer activities for gene expression*
20. Mar 14 - Systems Biology 2
21. Final exam

Grades

Class quizzes = 50%. Quizzes will be focused on the assigned articles, not the textbook or lecture material.

Mid-term exam = 25%. The mid-term will cover information provided in the lectures, textbook, and articles.

Final exam = 25%. The final will be comprehensive.

Extra credit opportunities = +20%. These OPTIONAL assignments must be turned in to Daniela as an email attachment not later than March 12. They must be in Word format unless you get written permission from Prof. Briggs to use another format. Two opportunities are possible:

1. The Genome as an Organizing Principle = +10%

- Take an assigned human gene and report on key information from internet sources including but not limited to:
  - NCBI PubMed (topic papers listed by most recent publication)
  - Google Scholar (topic papers listed by number of citations)
  - NCBI Genetics Home Reference (https://ghr.nlm.nih.gov/)
  - NCBI Gene (several sections of information about the queried gene)
  - OMIM (Johns Hopkins University)
  - NCBI Human Genome Resources (https://www.ncbi.nlm.nih.gov/projects/genome/guide/human/)
- Describe the kind of information you are reporting, the web page section it is from, and then explain why it's significant for understanding your gene
  - Describe the most important specific information about your gene and state why it's important
  - All text must be original (no copying)
  - No figures or tables allowed
  - Must be 1800-2000 words (literature cited section does not count)
  - Use topic sentences at the beginning of each paragraph

2. Human Protein-Coding Genes = +10%

- Using all available resources, determine the number of protein-coding genes in the human genome
    - Consider the numbers proposed by previous investigators and explain how they chose their numbers and why you agree or disagree with them
- Describe the experimental evidence and your scientific reasoning for your number
    - All text must be original (no copying)
    - No figures or tables allowed
    - Must be 1800-2000 words (literature cited section does not count)
    - Use topic sentences at the beginning of each paragraph
    - All of your claims must be supported by references to
        - original research published in peer-reviewed journal articles
        - and government-sponsored web sites

Grading Scale

A = 90-100% **B** = 80-89% **C** = 70-79% **D** = 60-69% **F** = 59%-below