

AP Biology Summer Work 2022
Contact: Ms. Rogers, jrogers@stpaulsmd.org

Hello to you all! I hope you are having a restful and fun summer!
I am excited to begin planning and getting ready for AP Bio 2022-2023!

This document will help you plan for completing your assignments for the first week of school.

You have 3 assignments to complete:

1. Send me a letter.
2. Complete the readings and assigned questions from your book and write a reflection.
3. Create a Mastering Biology account and complete the assignments.

Assignment 1: Your letter: email to jrogers@stpaulsmd.org

Please email me a letter of introduction by mid-July, but no later than August 15.

Your letter should be approximately 1 page, and include the following elements:

- a. A brief description of you and some of your interests
- b. What do you hope to get from AP Biology? (Personal and/or academic)
- c. What do you think you will need help with and how can I help you?
- d. Do you have college or career interests in medicine, biology, nursing, veterinary or sports medicine or something like this?
- e. One fun or embarrassing moment!

Assignment 2: Read the following from your summer reading book and complete the assignment. Purchase the Book: *The Gene, an intimate History*, Siddhartha Mukherjee, Scribner, New York, 2016.

Complete this assignment:

Read each of the following chapters listed below and complete the corresponding assignment by answering the questions in your notebook:

1. Prologue
 - a. Describe the disease that inspired the writing of this book.
 - b. What is the genome and how does the author think that our understanding of it will affect our future? Be specific and give an example from the prologue
 - c. Why does he honor his grandmother?

2. The Walled Garden, pages 17-27.
 - a. Briefly describe Mendel's educational experiences.
 - b. What question had preoccupied scientists and philosophers for centuries?
 - c. Where did scientists and philosophers think "likeness" was carried and how did it end up in a child? What was Pythagoras' theory of reproduction?
 - d. Where else have you heard of Pythagoras? What was his triangular theory of reproduction? How did he and Plato think you could obtain the "perfect children"?

- e. How did Aristotle refute this idea? What did he say the male's vs Female's contribution was?
 - f. What was a homunculus and where did it come from? What was inside a homunculus?
 - g. Explain the idea of "vis essentialis corporis". Who proposed this idea?
 - h. Briefly describe your reactions and thoughts to the idea of trying to create the perfect person. Is there anyone else in history that tried to propose an idea like this? What characteristics did they say the perfect person had to have?
 - i. What are some of the problems with ideas like these?
3. "The Mystery of Mysteries" pages 28-40
- a. Capture the essence of Charles Darwin as a person in 2-3 sentences.
 - b. Briefly describe the study of Natural History.
 - c. Who was William Paley and what were his views on how the natural world came into being? What was the title of his book?
 - d. Who was Sir John Herschel and what were his views on how the natural world came into being (differentiate the two component ideas)? How are his views different from Paley?
 - e. What was the conflict between religion and Natural history? Who were the Parson-naturalists? Why did this trouble Darwin?
 - f. How were Darwin's questions and views and Mendel's questions similar but different from each other?
 - g. Who was Lyell and what did geology have to do with any of this?
 - h. Why was Darwin collecting fossils on his journey on the HMS Beagle? Why was he interested in patterns?
 - i. What was the "dangerous" question Darwin was asking that "no biologist dared to explore"?
 - j. What was the importance of variation to his growing hypothesis?
 - k. Who was Malthus and how did his idea of the struggle with limited resources intersect with Darwin's developing hypothesis?
 - l. Who was Alfred Russel Wallace and what did he have in common with Darwin?
 - m. How were their two papers received at the Linnean Society? Explain why.
 - n. From pages 41-46, what was the missing piece in Darwin's ideas? Who was studying that answer?
4. "The Flowers He loved" pages 47-55
- a. List the 7 true breeding traits Mendel was studying. What does true breeding mean?
 - b. What did Mendel learn about dominant and recessive traits?
 - c. What did Mendel say about what heredity was? (see page 52!) What happened to his work after that?
5. "Eugenics" pages 64-77

- a. Who was Galton and what did he propose? What was his presupposition for doing this?
 - b. What was this gemmule idea of Darwin's that interested Galton? How did he try and accomplish this?
 - c. How did Galton measure the characteristics he was observing in humans? When that did not work what did he do then?
 - d. What was Galton's Ancestral law of Heredity? How did he calculate it?
 - e. Bateson responded to Galton how?
 - f. How did the word "gene" originate? How was the word gene defined at that time?
 - g. What was Galton's goal now? How did he change the word gene to reflect his thinking?
 - h. Bateson made an argument that "the real power of genetics lay in the manipulation of genes not in the selection of features." What did he mean by this?
 - i. What was the sterilization of failures?
6. "Genetic therapies: post human" pages 463-483
- a. In the middle of page 464 it states: "this was the rebirth of Eugenics". What is the author referring to?
 - b. What are the two distinct forms of gene therapy?
 - c. Look up Jesse Gelsinger mentioned on page 465. What happened to him?
 - d. What was the success rate for gene therapy used to treat Hemophilia?
 - e. What are post-humans or trans-humans? How are embryonic stem cells used?
 - f. What is the difference between today's eugenics and eugenics as described in the beginning chapters of the book?
 - g. Keep reading and when you get to page 476 it says "issued a joint statement seeking a moratorium on the use of gene editing and gene altering technologies in the clinical setting and particularly on human embryonic stem cells" why did they issue this statement?
 - h. On page 479 "we need a manifesto -or at least a hitchhiker's guide for a post genomic world". Carefully Read the 13 points on pages 480-483. What have you learned from this?
7. We have come full circle from the beginning of the book to the end. From the naming of the gene and the first thoughts on Eugenics, to the end involving gene therapy, Crispr and the resurgence of "eugenics and trans or post humans". Feel free to read any other chapters as you will learn much from them that will benefit your understanding in AP biology.
8. **Write a 2-3-page reflection** covering 3-4 of the topics from the book. Use examples as evidence from the readings to support your thoughts about the topics you were interested in. Your summary should be 2-3 single spaced pages, introduction, 3-4

paragraphs of evidence and a conclusion. I will collect a hard copy of your reflection on the first day of class.

Assignment 3: This will be coming later as the accounts are still being created. Check your email in early June for further instructions.

You are required to set up an account with Mastering Biology and complete some assignments posted there. Closely follow the instructions for setting up your account and let me know if you have any problems. Once you have your account set up and can access the site, go to the assignments or calendar tab and complete the assignments displayed there. **The Introductory and Chem review assignments should be completed by Sept 9 2022.**

Use your school email: _____@stpaulsmd.org

Access code: **TBD**

Course code: **TBD**

Course online textbook: **Campbell Biology etext AP edition 12e**