

CHAPTER 10

*Approximately 75% of this assignment is due in class on Tuesday, December 13, 2016
The completed assignment, in its entirety, is due Wednesday, December 14, 2016*

Read Hillis Chapter 10 and answer in complete sentences: the first three questions in concept 10.1, the first two questions in concept 10.2, ALL questions in concept 10.3, the first question in concept 10.4, and the first two questions in concept 10.5.

Hint: The third question in Concept 10.1 refers to figure 10.1.

CHAPTER 11

*Approximately 75% of this assignment is due in class on Monday, December 19, 2016
The completed assignment, in its entirety, is due Tuesday, December 20, 2016*

Read Hillis Chapter 11 and answer ALL concept questions (11.1–11.4) in complete sentences EXCEPT for the last two questions in concept 11.4.

ESSAY 6

Due Thursday, December 22, 2016

Answers must be written out in paragraph form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but a diagram without a written explanation will not receive credit. You must cite the source of all information you mention. Include the page number of information from the textbook or the web address of information found online.

During the early- and mid-twentieth century, a number of experiments were conducted to investigate the structure of DNA and how it replicated.

- (a) For each of the following pieces of experimental evidence, use the evidence to **make a claim** about DNA. For each experiment, **provide reasoning** to explain how the evidence supports your claim.
- In 1928, Frederick Griffith found that a combination of live nonvirulent bacteria and heat-killed virulent bacteria yielded live virulent bacteria.
 - In 1947, Erwin Chargoff observed that the percent composition of adenine nucleotides in a strand of DNA was nearly identical to the percent composition of thymine nucleotides in a strand of DNA.
 - In 1952, Alfred Hershey and Martha Chase used radioactive phosphorus and sulfur to selectively label the DNA and proteins of bacteriophage T2. Radioactive phosphorus was found inside infected cells, while radioactive sulfur was found outside the cells.
 - In 1958, Matthew Meselson and Franklin Stahl cultured bacteria in a medium containing a heavy isotope of nitrogen (^{15}N), then moved the bacteria to a medium containing the more common lighter isotope of nitrogen (^{14}N). After two rounds of replication, they found that some DNA was made entirely of light nitrogen and some DNA consisted of a combination of both heavy and light nitrogen.
- (b) Viruses rely on the cells they infect to provide the enzymes necessary to replicate viral DNA. **Explain** why replication would NOT occur in each of the following situations.
- A virus enters a cell with a malfunctioning DNA polymerase-coding gene.
 - A virus enters a cell with a malfunctioning ligase-coding gene.

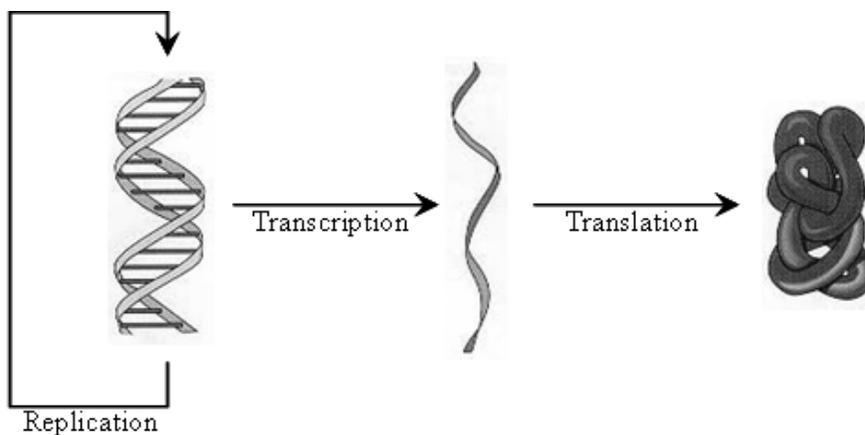
CHAPTER 12

The completed assignment, in its entirety, is due Tuesday, January 3, 2017

Read Hillis Chapter 12 and answer in complete sentences: the third question in concept 12.1, ALL questions in concept 12.3 EXCEPT for the first question, and the first question in concept 12.4.

ESSAY 7*Due Wednesday, January 4, 2017*

Answers must be written out in paragraph form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but a diagram without a written explanation will not receive credit. You must cite the source of all information you mention. Include the page number of information from the textbook or the web address of information found online.



The diagram above represents a model for the flow of information from DNA to protein. The labeled arrows represent three critical processes of the model.

- For EACH of the three labeled arrows, **describe** ONE way the process is regulated in eukaryotes. **Explain** how the regulation of each process provides an evolutionary advantage for the eukaryote.
- For ONE of the labeled arrows, **describe** ONE way regulation of the process differs between prokaryotes and eukaryotes.
- Propose** a modification to the model above to account for evidence that the flow of information in some viruses deviates from that of both prokaryotes and eukaryotes.
- Describe** TWO features of a model that represents what might happen to the protein after translation.

CHAPTERS 13–14

*Approximately 75% of this assignment is due in class on Monday, January 9, 2017
The completed assignment, in its entirety, is due Tuesday, January 10, 2017*

Read Hillis Chapters 13 and 14. Answer the following concept questions in complete sentences:
Concept 13.1 (questions 1 & 2); Concept 13.4 (all questions); Concept 14.1 (questions 1 & 3);
Concept 14.2 (questions 2 & 3); Concept 14.4 (choose ANY TWO of the four questions to answer)

CHAPTER 15

*Approximately 75% of this assignment is due in class on Tuesday, January 17, 2017
The completed assignment, in its entirety, is due Wednesday, January 18, 2017*

Read Hillis Chapter 15. Answer the following concept questions in complete sentences:
Concept 15.2 (questions 1, 2, & 3); Concept 15.3 (question 3); Concept 15.4 (ALL questions);
Concept 15.5 (question 3); Concept 15.6 (question 3)

Note:

- Chapter 15 is one of the most important chapters in the textbook. It is extremely important that you thoroughly read ALL sections of Chapter 15, including those that do not have assigned questions.
- When population frequencies differ from those predicted by Hardy-Weinberg, it is because the assumptions of Hardy-Weinberg have been violated. You should address the assumptions of the equation (pp. 298–299) in your response to question 3 in Concept 15.3.