



High School Science Virtual Learning

College Biology

Chapter 11 Recap Part 1

April 30, 2020



High School College Biology
Lesson: April 30, 2020

Objective/Learning Target:

Students will be able to discuss how genes are controlled.



Let's Get Started:

1. If your blood cells and skin cells have the same genes, how can they be so different?
2. What are the nitrogen bases in DNA. Classify them as either purines or pyrimidines.

Answers:

1. Each cell type expresses different genes than the other cell type.
2. Adenine- Purine
Thymine- Pyrimidine
Cytosine- Pyrimidine
Guanine- Purine



Lesson Activity:

1. Read over pages 1-16 of the Chapter 20 Notes. ([Linked Here](#))
2. Watch this Bozeman Science video on [Gene Regulation](#)

Practice:

1. If your blood and skin cells have the same genes, how can they be so different?
2. How does the presence or absence of lactose influence the activity of the genes that code for the lactose enzyme?
3. What are homeotic genes and how do they differ from other genes?



Practice Answers:

1. Gene regulation which is a mechanism that turns some genes on while others are turned off.
2. When lactose is not present the lac operon is in the “off” position. The repressor blocks the attachment of the RNA polymerase. When lactose is present the operon is switched to the “on” position.
3. Homeotic genes are the “master control genes”. They regulate groups of genes that determine what body parts will develop in which locations.

More Practice:

1. Your bone cells, muscle cells, and skin cells look different because
 - a. different kinds of genes are present in each kind of cell
 - b. they are present in different organs.
 - c. different genes are active in each kind of cell
 - d. different mutations have occurred in each kind of cell.
2. A group of prokaryotic genes with related functions that are regulated as a single unit, along with the control sequences that perform this regulation, is called a(n) _____.

More Practice:

3. The regulation of gene expression must be more complex in multicellular eukaryotes than in prokaryotes because
 - a. eukaryotic cells are much larger.
 - b. in a multicellular eukaryote, different cells are specialized
 - c. prokaryotes are restricted to table environments
 - d. eukaryotes have fewer genes, so each gene must do several jobs



More Practice:

4. How does DNA packing in chromosomes prevent gene expression?

5. What evidence demonstrates that differentiated cells in a plant or animal retain their full genetic potential?



More Practice Answers:

1. C
2. Operon
3. B
4. DNA polymerase and other proteins required for transcription do not have access to tightly packed DNA.
5. The ability of these cells to produce entire organisms through cloning.



Review Tools:

-[Kahoot 1](#)

-Amoeba Sisters video about about [gene regulation](#).