

Ghost in Your Genes: Why Genes Aren't Destiny

Name: _____

Class period: _____

Part 1 Instructions: Please follow along with the video to answer questions on Part 1 of this video guide.

Epigenome Background

1. What is the goal of the human genome project?
2. How does the number of genes found on a human genome compare to the number of genes on the genome of a fish or a mouse?
3. What percentage of the genome is common to both humans and chimpanzees?
4. What does the term "epigenetics" mean?
5. How does an epigenetic "tag" or "marker" work?
6. Does your genome change over time?
7. Does your epigenome change over time?
8. What is the connection between the epigenetic "tags" and the genes that regulate the cell cycle (ex: tumor suppressors)?

Part 2 Instructions: For this part of the video, just pay close attention and try to understand the concept behind epigenetics and future generations. Tonight's homework will include the attached Time magazine article about this scientist so you can understand his work better. The questions for Part 2 can be answered from reading the Time article.

An Epigenetic Study: The Effects of Famine on Life Expectancy of Future Generations.

Why Genes Aren't Destiny

1. What is the article's definition of epigenetics?
2. What is some bad news about epigenetics?
3. What is some good news about epigenetics?

4. What is DNA methylation?
5. What is the connection between epigenetics and the agouti mice?
6. Can epigenetics cause permanent genetic change? Explain why or why not.
7. What period of time do most epigenetic changes occur in males? Females? WHY?

Part 3 Instructions: Please watch this short piece on Michael Skinner's pesticide study and answer the analysis questions below.

What We Do Today Might Affect Our Grandchildren

1. What did Dr. Skinner determine is the relationship between pesticide exposure and future generations?
2. How could what you do today as a teenager (For example, some of you might do one or more of the following: smoke, eat poorly, not exercise, expose yourself to unhealthy amount of UV radiation, drink excessive alcohol) affect the health of your future children and grandchildren?