AP Biology Name:

“Ghost In Your Genes”-Epigenetics

“Why your DNA is not necessarily your destiny?”

Directions: You will be watching the video, “Ghost In Your Genes.” You will be asked to respond to a variety of questions and consider a variety of perspectives.

**Part 1: Ghost In Your Genes Video Questions: As you follow the video, answer the questions below.**

1. What is the Human Genome Project? What is the goal of this project?

2. How does the number of genes in the human genome compare to the number of genes in the genome of a fish or a mouse? What does this mean?

3. What does the term “epigenetics” mean?

4. Epigenetic effects often involve “tags” or “markers.” What type of molecule(s) are these markers most often? Explain how an epigenetic “tag” or “marker” works?

5. Explain how both your genome and your epigenome changes over time.

6. Two different disorders both result when there is a deletion in chromosome #15 one is called Prader-Willi Syndrome and the other is called Angelman Syndrome. Describe the symptoms of each syndrome and explain how these two very different syndromes can result from the same genetic defect.

**Part 2: Read the article entitled “Why Your DNA Isn’t Your Destiny”**

1. Describe what Dr. Bygren discovered in the historical data from Overkalix. What conclusions did he draw from this?

2. How does this article define “epigenetics”?

 A. What is the “good news” about epigenetics?

 B. What is the “bad news” about epigenetics?

3. Describe how methyl groups and methylation is related to Dr. Jirtle’s research on prenatal nutrition.

4. Why aren’t epigenetic changes considered evolution? However, why are they powerful?

5. What insights have come form the Avon Longitudinal Study of Parents and Children (ALSPAC)?

 A. What has the ALSPAC study shown about critical periods for “epigenetic” changes in men? When is the most

 sensitive time? What about for women, what is the most sensitive time?

6. Given what you now know about the epigenome, describe some health and wellness habits you need to consider now and explain why you must do so.