**Grade 11 Biopsychology Worksheet: Understanding Epigenetics**

**Introduction to Epigenetics:**

* Define epigenetics in your own words.
* Explain the difference between genetics and epigenetics.

**Epigenetic Mechanisms:**

* List and describe at least three epigenetic mechanisms that regulate gene expression.
* How do DNA methylation and histone modification affect gene expression?

**Environmental Influence on Epigenetics:**

* Discuss how environmental factors such as diet, stress, and exposure to toxins can influence epigenetic changes.
* Provide an example of an environmental factor that can lead to epigenetic modifications and explain its impact on gene expression.

**Epigenetics and Human Health:**

* Explain how epigenetic changes can contribute to the development of diseases such as cancer, diabetes, and mental disorders.
* Discuss the potential role of epigenetics in personalized medicine and treatment strategies.

**Epigenetics and Behavior:**

* How might epigenetic changes influence behaviour and personality traits?
* Provide an example of a study or research finding that supports the link between epigenetics and behaviour.

**Critical Thinking and Application:**

**Choose only one of these questions to answer**

* Imagine you are a researcher studying the impact of early childhood experiences on epigenetic changes. Design an experiment to investigate this topic.
* Reflect on the ethical implications of epigenetic research and discuss the importance of responsible scientific inquiry in this field.