I'm not sure if/Can the environment really affect my genetics?

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Name:_____ Pd:____ Date:_____

How do your genes and the environment interact?

Most common diseases are a result of both your genes and your environment. Your environment can include personal choices, such as what foods you eat and how much you exercise, and external factors, such as stress, clean water, and air quality. Only a small number of diseases are a result of just a single mutation in a gene. Examples of these single-gene disorders are Huntington disease and Tay Sachs. Most diseases, especially common diseases, are a combination of your genetic risk and your environment. It is becoming difficult to group diseases into either purely 'genetic' or 'environmental' because most diseases are a little bit of both. For example, emphysema can be the result of both smoking and a disorder called alpha-1-AT deficiency. The field of research looking at gene-environment interactions (GxE) is growing.

lifestyle

environmental

what is this

what does this mean

reminds me of the Ninja Turtles.

Is this where people have a hole in their throat?

wow! This means a new field of science. Does this mean creation of new jobs?

What is this?

How do your genes and the environment interact?

It is important to understand that most times your genes do not determine your health. Small differences in your genetic makeup mean that two people can respond differently to the same environmental exposure. Here are some ways that your genes and your environment can interact:

- **Mutagens** – Mutagens are pollutants in the environment that enter the body and directly change your DNA sequence. Example: The chemicals in cigarette smoke can cause cancer.

- **Gene-gene interactions** – Gene-gene interactions occur when pollutants in the environment do not change your DNA sequence, but rather cause a chain reaction that affects the functioning of one gene that then affects the functioning of another gene. Example: Regularly drinking way too much alcohol can cause a specific gene, TACE, not to produce enough of its protein. TACE protein is supposed to help the MTHFR gene make enough of its protein. Too little MTHFR protein changes the level of folate (another protein) in our blood, and low folate levels may cause depression.