Cancer Inheritance Patterns

By: Elyse

Introduction

- Cancer is the leading cause of death for people under the age of 85.
- This year alone, cancer will kill 570,280 Americans; more than 1,500 people a day.
- Lung cancer is caused by a malignant tumor. Each tumor embodies a clone of cells capable of reproduction in an unregulated manner.
- Cancer is inherited through genes, as well as acquired through cigarette smoking, dietary imbalances (lack of fruit, vegetables, fiber, calcium, and excess fat) and chronic infections which lead to chronic inflammation. These infections include the hepatitis B virus and Helicobacter pylori infection, amongst others.
- Amongst women, breast cancer is one of the most common types. It is the second leading cause of death for women diagnosed with cancer. In the United States alone, more than 204,000 women are diagnosed with breast cancer every year.
- The BRCA genes, who are diagnosed with breast cancer, also carry a gene called the 'Breast Cancer Gene' (BCRA). This is a genetic mutation in two genes, BRCA1 and BRCA2. It is inherited and can increase a woman's risk for developing breast and ovarian cancer.

Methods

- I met with two members of my family, my mother and my great-uncle.
- I asked them questions about their siblings and cousins.
- The questions included information about their medical histories and the medical histories of the other family members diagnosed with cancer.
- I then created a pedigree chart with the information given to me and analyzed it.
**Conclusion and Interpretation**

- So far, the only clear patterns are that most of the people who have been diagnosed with cancer are from the 4th generation (F3), and were older—40’s, 50’s, 60’s, and 70’s. The 6th generation (F5) was not included because if I follow the pattern, they are too young to have cancer.
- I predict that the members of my generation, who will be diagnosed with cancer, will be between the ages of 40 and 80, like their parents, and I expect the number of Stines with cancer to increase.

**Future Studies**

- There were probably more people from the older generations (F0 and F1) who had cancer, but it was never reported or talked about. This is because looking at the pedigree chart, it does not add up. It seems as if the cancer just popped up in the 3rd generation (F2).
- The reason why my mom and her siblings had more cancer cases than my mom’s cousins, is because my grandfather and my grandmother were cousins (they did not know this when they met). So, because our family already possessed the genes for cancer, they multiplied when my grandparents reproduced.

**C and I 2**

- This study could help families detect certain disease patterns (not only cancer). They would be able to prepare themselves and live healthier lives.
- This study could be extended if groups of scientists and historians were to get together and generate patterns for people.
- However, this could be dangerous, because it’s “not letting nature take its course.” If people started finding out the age at which they would be diagnosed with certain diseases, they would try to avoid this. This would lead to less people dying and overpopulation.