

What is genetically inherited cancer biology essay

[Science](#), [Biology](#)



Tayla Lambert Life Sciences Grade 12 "Genetically Inherited Cancers" Is there any hope for someone who has inherited the gene for a particular cancer?"

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where abnormal cells divide without control and can invade other tissues.

Cancer cells can spread to other parts of the body through the blood and

lymph systems. [http://www.cancer.gov/cancertopics/cancerlibrary/what-is-](http://www.cancer.gov/cancertopics/cancerlibrary/what-is-cancer)

[cancer](http://www.cancer.gov/cancertopics/cancerlibrary/what-is-cancer) What is genetically inherited cancer? All cancers are genetic, but not

all of them are inherited. All cancer cells have mutations in their DNA. The

mutation causes a cell that was once normal to divide uncontrollably and

doesn't respond to checks on cell growth. Somatic mutations, they occur

only inside the cancer tumour itself, and they are not passed down from a

parent to a child. Germline mutations, they are found in all the cells of the

body, these can be passed down from a parent to a child. Only the mutations

that are found in the egg and sperm cell can be passed down through a

family. [http://www.netwellness.org/healthtopics/cgenetics/inheritedcancers.](http://www.netwellness.org/healthtopics/cgenetics/inheritedcancers.cfm)

[cfm](http://www.netwellness.org/healthtopics/cgenetics/inheritedcancers.cfm) 2. 1 Give an example of a genetically inherited cancer Pancreatic

Cancer Pancreatic cancer occurs when the uncontrolled cell growth begins in

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the pancreas. The cancer cells continue to divide and form tumours, and then they interfere with the main function of the pancreas. If a tumour stays in one place, it is generally considered as benign. Malignant cancer is when cancer cells move to other parts of the body through the blood or lymph systems. A process called metastasis is when the tumour spreads to other parts of the body, destroying and invading healthy tissue. <http://www.medicalnewstoday.com/info/pancreatic-cancer/2>. 3 Frequency in populations Around 279,000 people were diagnosed with pancreatic cancer around the world in 2008. 8 in 10 cases of pancreatic cancer occur in people over the age of 60 years old. 3. 1 Why does this disease occur? Pancreatic cancer is caused by damage to the DNA. These mutations can be inherited from the mother or father or they can just develop as someone ages. You have two copies of each gene, one we get from our mother and one from our father. People with an inherited cancer inherit one mutant copy (let's say from the mom) and one normal one (let's say from the dad). As they age some of these people damage the normal good copy of the gene. Then that cell in the pancreas will have two mutant copies of the gene and as this is then the cell in the pancreas will develop into cancer. This doesn't mean that everyone who has inherited this predisposition will get cancer, they are just more likely to get it. We can damage our DNA with the way we behave; the carcinogens in cigarettes can damage our DNA. We can also damage our DNA by chance; every time a cell divides it has to copy all of that DNA. Sometimes mistakes are made during this process, which can cause pancreatic cancer. Smoking cigarettes double the chance of you getting pancreatic cancer. Over 80% of pancreatic cancer patients are between the

ages of 60 and 80. <http://pathology.jhu.edu/pc/BasicCauses.php>³. 3 Who is at risk? Almost all patients are over the age of 45. The average age of diagnosis is 71. Men are 30% more likely to develop pancreatic cancer than women are. Other risk factors: Race, cigarette smoking, obesity, diabetes, chronic pancreatitis, cirrhosis of the liver and family history. <http://www.cancer.org/cancer/pancreaticcancer/detailedguide/pancreatic-cancer-risk-factors>³. 3. 1 How is it diagnosed? If one or more symptoms are present, examinations and tests can be done to determine whether the person has pancreatic cancer or has another disease. <http://www.cancer.org/cancer/pancreaticcancer/detailedguide/pancreatic-cancer-diagnosis>⁴.

Symptoms The symptoms of pancreatic cancer are as follows: Pain in the upper abdomen which is from the tumour pushing against the nerves. Yellowing of the skin and the eyes which is not painful, and darkening of the urine, this is called jaundice, this is because the cancer is interfering with the liver and bile duct. You have a loss of appetite, feel nauseas, and vomiting. Back pain. Weight loss and weakness Grey stool. These symptoms have many other causes, and this makes it difficult to diagnose the disease before it is in its advanced stages. http://en.wikipedia.org/wiki/Pancreatic_cancer⁴. 1

Prognosis http://en.wikipedia.org/wiki/Pancreatic_cancer Pancreatic cancer has a poor prognosis because this cancer has no symptoms earlier on, by the time it is diagnosed it is already in the later stages. For all the stages of pancreatic cancer combined the 1 year survival rate is 25% and the 5 year survival rate is less than 5%. In 2010 there were 43,000 people in the US that were diagnosed with the disease, almost 37,000 died. This disease has one of the highest fatality rates of all of the cancers. 5. How was it treated in

the past? The first document of cancer was from 1500 B. C in Egypt. It said that there was 8 tumours on a women's breast. It was treated by a process called cauterization; they used to destroy the tissue with a hot instrument called a fire drill. In 1728-1793 a famous Scottish surgeon, John Hunter said that some cancers could be cured by surgery and said which cancers they could operate on. If the tumour had not invaded into the tissue next to it, then he said it was able to be removed. A century later anaesthesia allowed surgery to become easier and operations such as radical mastectomy were developed. [http://www. cancer.](http://www.cancer.org/cancer/cancerbasics/thehistoryofcancer/the-history-of-cancer-sixteenth-to-eighteenth-centuries6)

[org/cancer/cancerbasics/thehistoryofcancer/the-history-of-cancer-sixteenth-to-eighteenth-centuries6](http://www.cancer.org/cancer/cancerbasics/thehistoryofcancer/the-history-of-cancer-sixteenth-to-eighteenth-centuries6). Advantages and disadvantages of the various treatments. Types of cancer treatments: Chemotherapy Radiation

Therapy Advantages of chemotherapy are that it slows down and controls the spread of cancer, it kills cancer cells that have spread, and it relieves symptoms caused by cancer. [http://www. livestrong. com/article/195230-advantages-of-chemotherapy/](http://www.livestrong.com/article/195230-advantages-of-chemotherapy/) Disadvantages of chemotherapy are that you have hair loss, loss of appetite, mouth sores, nausea, vomiting, loose stools or constipation, fatigue, and you don't have the ability to fight infections, and the treatment is time consuming. Depending on what type of cancer you had and where the treatment was done it could cause you to be infertile, have heart problems, damage to your central nervous system or damage to your organs. Chemotherapy is also very expensive, and most health insurance companies won't pay for the whole treatment. [http://www. ehow.](http://www.ehow.com/about_4707268_disadvantages-of-chemotherapy.html)

[com/about_4707268_disadvantages-of-chemotherapy. html](http://www.ehow.com/about_4707268_disadvantages-of-chemotherapy.html) Advantages of radiation therapy are that it can treat almost any type of cancer anywhere in

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the body. Radiation can be used by itself to treat the cancer or with other treatments too. It can be used before surgery to make the cancer smaller; it can also be used after surgery to treat any residue of the disease.

<http://www.livestrong.com/article/513783-advantages-disadvantages-of-radiation-therapy/>Disadvantages of radiation therapy are that while radiation therapy damages cancer cells it can also damage normal cells, the damage to the normal cells is what causes the side effects, which are fatigue and inflammation of the treated area. <http://www.roboticoncology.com/radiation-therapy-faqs/7>.

Should karyotyping and gene mapping of individuals be compulsory? In my own opinion I don't think that karyotyping should be compulsory, a person should be free to do the test if they want to, they shouldn't be forced into doing it as it should be your own personal decision. It is done by taking a blood test and taking it to the laboratory.

<http://www.webmd.com/baby/karyotype-test>There are two types of gene mapping; there is genetic mapping and physical mapping. Gene mapping is the determination of the sequences of genes and their relative distances from each other on a chromosome. <http://medical-dictionary.thefreedictionary.com/gene+mapping>

I don't think gene mapping shouldn't be compulsory because there are many ethical issues involved, and it is again your personal choice on whether you would want to do a gene mapping test or not as it is not completely necessary for gene mapping to be done.

8. Is there hope for someone who has inherited the gene for a particular cancer? In my own opinion I do think there is hope for someone who has inherited a cancer gene, because it is not 100% sure that the person will get cancer because they have the gene, if that person looks after

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themselves and doesn't expose themselves to substances such as cigarette smoke or radiation. Cancers that are inherited usually occur earlier in life.

<http://www.cancer.org/cancer/cancercauses/geneticsandcancer/heredity-and-cancer9>. Factors that influenced my view point. Factors that influenced my view point are that there are many advantages and disadvantages to the different types of treatments for cancer, it really depends on what type of cancer you have a how serious it is. You should base your decisions about cancer from a professional point of view, as that is probably the best. 10.

Conclusion My conclusion is that there is hope for anyone that has the gene for a particular type of cancer, as there is a survival rate for cancer patients, and they should be positive because anything is possible, and everyone has their different views and opinions on cancer. Cancer is a very serious topic and has affected many people.