

Essay 9

Business



**ASSIGN
BUSTER**

Chandler Madray 1 Prompt: Genes are located on chromosomes and are the basic unit of heredity that is passed from parent to offspring, through generations. (a) Explain how a chromosome mutation could occur and why mutations are detrimental to the organism in which they take place. (b) Explain why it is that- although there are few genes located on the Y chromosome - human males may suffer from having just one copy of the X chromosome, whereas females have two. How do females compensate for two X chromosomes? A.) A chromosome mutation is a permanent change in the DNA sequence that makes up a gene. These range in size from a single DNA base to a large segment of a chromosome.

Mutations occur in two ways. They are either inherited from a parent or acquired during a person's lifetime. Mutations can be caused by several different things. Non-disjunction is the failure of spindle fibers to separate during Meiosis. The result is gametes with one extra chromosome and some gametes with one less.

Deletion is the loss of segments of the gene sequence. And duplication is the copying of segments of the gene sequence. These mutations can be detrimental to the organism, because of some of the effects/symptoms of the disorder. An example of this is Trisomy 21, which is the non-disjunction of the 21st chromosome. The result is distorted facial features, and mental retardation.

This is how mutations can occur in an organism and how the mutation can be detrimental to the organism. B.) Human males are born with an X and a Y chromosome. The X chromosome is longer than the Y, resulting in some

genes on the X not having a corresponding gene on the Y. Because males only have one of the X, if a section is mutated it is apparent immediately. Human females are born with two X chromosomes.

This means that if a section of the X is mutated, then it is usually suppressed by the corresponding gene on the other X. This results in the female being a carrier of the disorder, which is usually passed on to a male child.