

NOTES: 13.3 - MUTATIONS

- **MUTATIONS** = _____ that affect genetic information

**any change in the DNA sequence can also _____

Mutations in Reproductive Cells:

- if a mutation occurs in a gene in a sperm or egg cell, the altered gene would become part of the genetic makeup of the offspring
- the result could be:
 - _____ (beneficial or harmful);
 - a protein that does not work correctly;
 - _____

Mutations in Body Cells:

- if a mutation occurs in a nonreproductive cell (such as skin or muscle cell), it will not be passed to offspring
- the result could be:
 - impaired functioning of the cell;
 - loss of control of _____;
 - _____.

Types of GENE MUTATIONS:

- **Point Mutation:** a change in a _____

3 types of POINT MUTATIONS:

1) SUBSTITUTION

-One base pair is _____

-**Might** result in the wrong amino acid (*why only "might"?*)

→ Redundancy of the genetic code!

2) BASE PAIR INSERTION

= _____ into a gene

3) BASE PAIR DELETION

= _____ from the gene

Frameshift mutations:

- Both base pair deletions and base pair insertions can result in a _____
- That can cause the wrong protein to be made!

• ex: THE CAT ATE THE RAT

what happens if we delete the "C"? → _____...

- ***nearly every amino acid in the protein after the mutation is changed!***

SUMMARY: Types of Mutations

- Gene mutations

- Base pair substitution
- Base pair insertion
- Base pair deletion



FRAMESHIFT MUTATIONS

- Chromosomal Mutations:

- _____
- _____

- _____
- _____

- DELETION: _____

ABC-DEF



AC-DEF

- DUPLICATION: _____

ABC-DEF



ABBC-DEF

- INVERSION: chromosome segment becomes oriented in reverse direction

ABC-DEF



ABE-DCF

- TRANSLOCATION: _____ & attaches to another non-homologous chromosome (segment is usually exchanged)

****Chromosomal mutations could also involve having the incorrect # of chromosomes...**

-ex: 47 human chromosomes instead of 46

-we will discuss this in chapter 14

- NONDISJUNCTION: the failure of the chromosomes _____ during cell division

(specifically, MEIOSIS, the type of cell division that produces the gametes)

Causes of Mutations:

- MUTAGEN: _____

1) HIGH ENERGY RADIATION:

> _____

> _____

> _____

> _____

2) CHEMICALS:

> _____

> _____

> _____

> _____

> _____