Bellringer: Get a clicker!

- What is DNA replication?
- Look at the strand of DNA nucleotides below and write down the correct complementary strand:

GTG ACT TAG CGA

CAC TGA ATC GCT

Standard: Students will analyze how biological traits are passed on to successive generations.

Element: Describe the relationships between changes in DNA and potential appearance of new traits including:

Alterations during replication:
- Insertions
- Deletions
- Substitutions

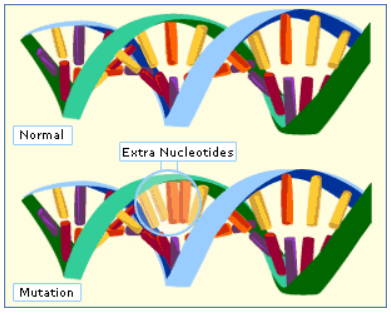
Mutagenic factors that can alter DNA:
- High energy radiation (x-rays and ultraviolet)
- Chemical

EQ: What are the types of DNA mutations and how are they different?

A **mutation** is a change in the structure or amount of the genetic material of an organism.

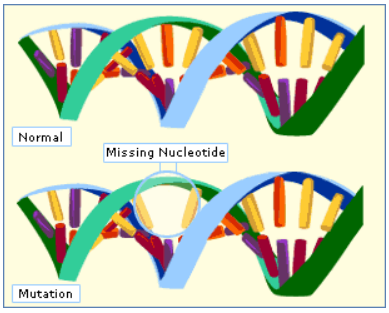
Types of mutations:

Insertion- occurs when errors during replication cause the insertion or addition of one or more nucleotides in a sequence.



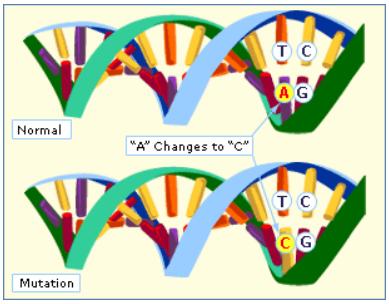
Types of mutations:

Deletion- occurs when errors during replication cause the removal of one or more nucleotides in a sequence.



Types of mutations:

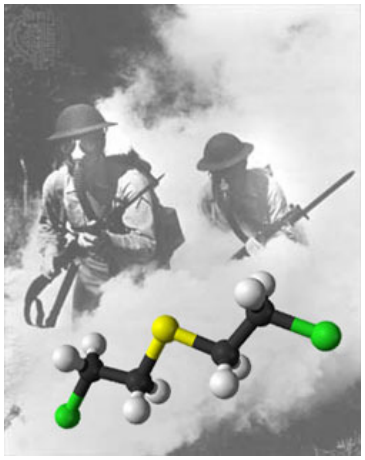
Substitution- occurs when errors during replication cause one nucleotide to be switched out for a different nucleotide.

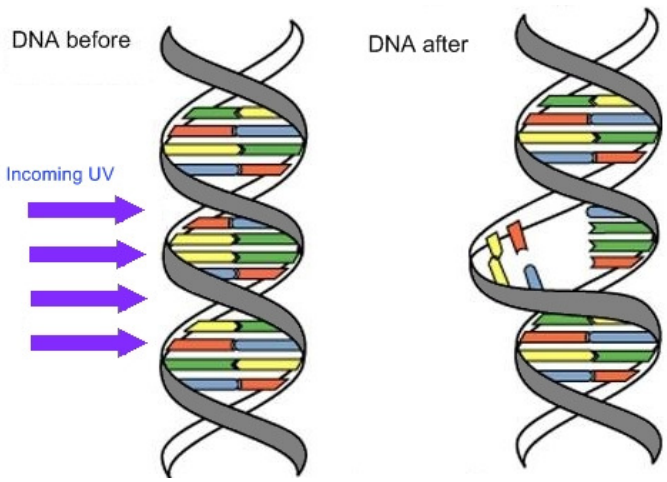


Mutagenic factors that can alter DNA:

<u>High energy radiation</u> (x-rays and ultraviolet)

<u>Chemical</u>





Now You Try!

DNA Sequence: THE DOG AND FOX DID NOT EAT THE FAT CAT

Insertion: THE DOG SAW DFO XDI DNO TEA TTH EFA TCA T

Insert a nitrogen base

Deletion: THE DOG AND OXD IDN OTE ATT HEF ATC AT

Delete a nitrogen base

Substitution: THE DOG AND FOX DAD NOT EAT THE FAT CAT

Substitute a nitrogen base

Frameshift mutation: type of mutation that causes the reading of nucleotides to be shifted, therefore usually making unusable DNA

Let's answer the EQ...

EQ: What are the types of DNA mutations and how are they different?

insertion: extra nucleotide is added

deletion: loss of one (or more) nucleotides

substitution: one nucleotide is replaced with another