

Mutation Notes

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: copying

- Insertion
- Deletion
- Substitution

→ changes

Mutagenic factors that can alter DNA:

- High energy radiation (x-rays and ultraviolet)
- Chemical

(UV)

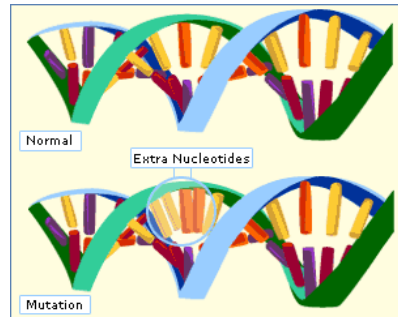
EQ: What are the types of DNA mutations and how are they different

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

Mutation Notes

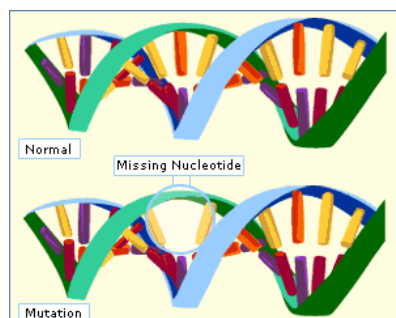
Types of mutations

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



Types of mutations:

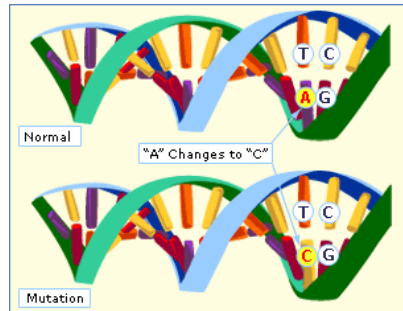
Deletion - occurs when errors during replication cause the removal of one or more nucleotides in a sequence.



Mutation Notes

Types of mutations

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

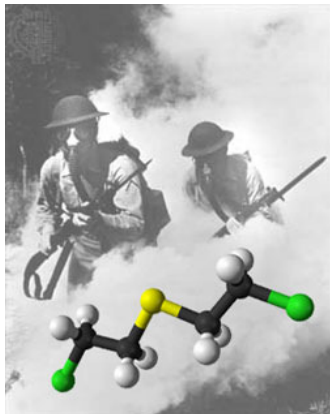


Mutagenic factors that can alter DNA:

cause of mutation

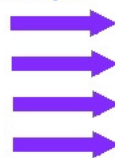
High energy radiation (x-rays and ultraviolet)

Chemical



DNA before

Incoming UV



DNA after



Mutation Notes

Now You Try!

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

Insertion: THE DOG aan DFO XDi DNO Tea TTh efa Tca
↑

Insert a nitrogen base

Deletion: THE DOG AND OXD idN otE att HfF AtC AT
↑
Delete a nitrogen base

Substitution: THE DOG AND FOX DOD NOT EAT THE FAT CAT
↑
Substitute a nitrogen base



Let's answer the EQ...

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

insertion: a base is **added**

deletion: a base is **taken away**

substitution: one base is **replaced**
with another