

MUTATIONS

- ◆ **Mutations** are changes in genes or _____
- ◆ Mutations may be **spontaneous** (i.e. arise naturally as random errors in DNA) or **induced** (i.e. deliberately or accidentally produced by _____ or radiation).
- ◆ **Mutagens** are chemicals or forms of radiation that cause _____ (e.g. Agent Orange)

2 TYPES OF GENE MUTATIONS

1. **Replacement of one nucleotide by another (also called Point Mutation)** may lead to :
 - ◆ No change in the _____ formed
 - ◆ Change in an amino _____ and protein
 - ◆ Non-functional protein or incomplete protein if a stop _____ is formed
2. **Addition or deletion of a nucleotide** will probably cause a non-functional protein.

TYPES OF CHROMOSOME MUTATIONS

1. **Changes in the Number of Chromosomes** can be of two types:
 - ◆ **Polyploidy** – is a condition of having _____ sets of chromosomes to make organisms such as plants tetraploid (___n).
 - ◆ **Aneuploidy** – is a condition of the gain or _____ of individual chromosomes. Examples include Down's Syndrome (extra No. _____ chromosome), Turner Syndrome (extra X chromosome in a female), and Klinefelter Syndrome (extra X chromosome in a male).
2. **Change in the Structure of Chromosomes**