

# 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**