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MUTAGENS AND MUTAGENESIS

MUTAGENS

- Naturally occurring mutations are referred to as spontaneous mutations and are thought to arise through chance errors in chromosomal division or DNA replication.
- Environmental agents which cause mutations are known as mutagens
- These include natural or artificial ionizing radiation and chemical or physical mutagens

Mutation can be ...

- **Inherited.**
- **Induced.** _____ → Increase rat of Mutation
 - ▶ Chemical
 - ▶ Physical
 - ▶ Biological
- **Naturally Occurring** (Spontaneous)
 - ▶ Errors in chromosomal division
 - ▶ Errors in DNA replication
 - ▶ Faulty in DNA repair

CHEMICAL MUTAGENS

- Mutagenic **chemicals in food** contribute to **35% of cancers** Agents altering bases (nitrous oxide)

NATURAL OR ENVIRONMENTAL AGENT

Agent	Effect
Carcinogen	Causes Cancer
Clastogen	Causes fragmentation of chromosomes
Mutagen	Causes mutations
Oncogen	Induces tumor formation
Teratogen	Results in developmental abnormalities

PHYSICAL MUTAGENS

- ➔ Can be **Natural** & **Artificial** sources
- Radiation
- Non-ionizing
- Ionizing

CAUSES OF SPONTANEOUS MUTATIONS

- Error in DNA replication
- Faulty DNA repair e.g. mismatch
- Natural mutagens