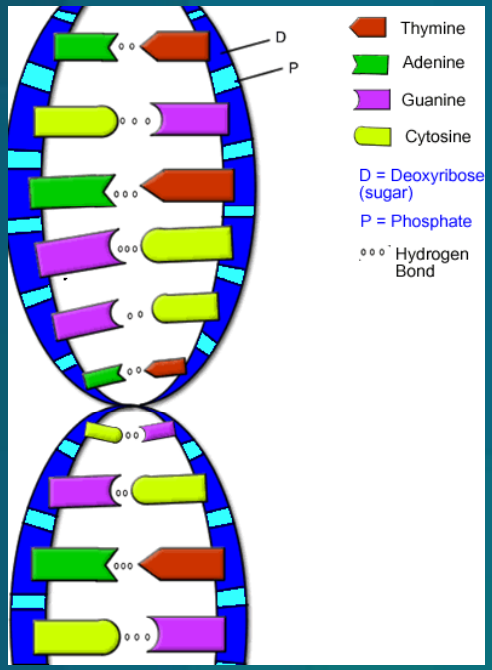
Mutation and cancer

- DNA→ RNA→ protein→trait
- Genes contain the instructions necessary for a cell to work. If some of the instructions to the cell are wrong, then the cell may not know what to do!
- Mutated DNA→ → → ?

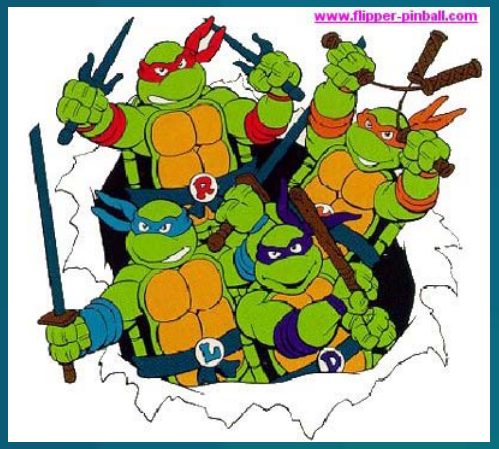
Mutations



- Permanent change in the DNA sequence of a gene
- Inherited or acquired during lifetime
- Single mutations are often harmless but multiple mutations can results in cancer
- What causes mutations in DNA?

Carcinogens = Mutagens

- Physical or chemical agent that cause mutation in DNA
- Examples: UV light, tobacco, chemicals, x-rays



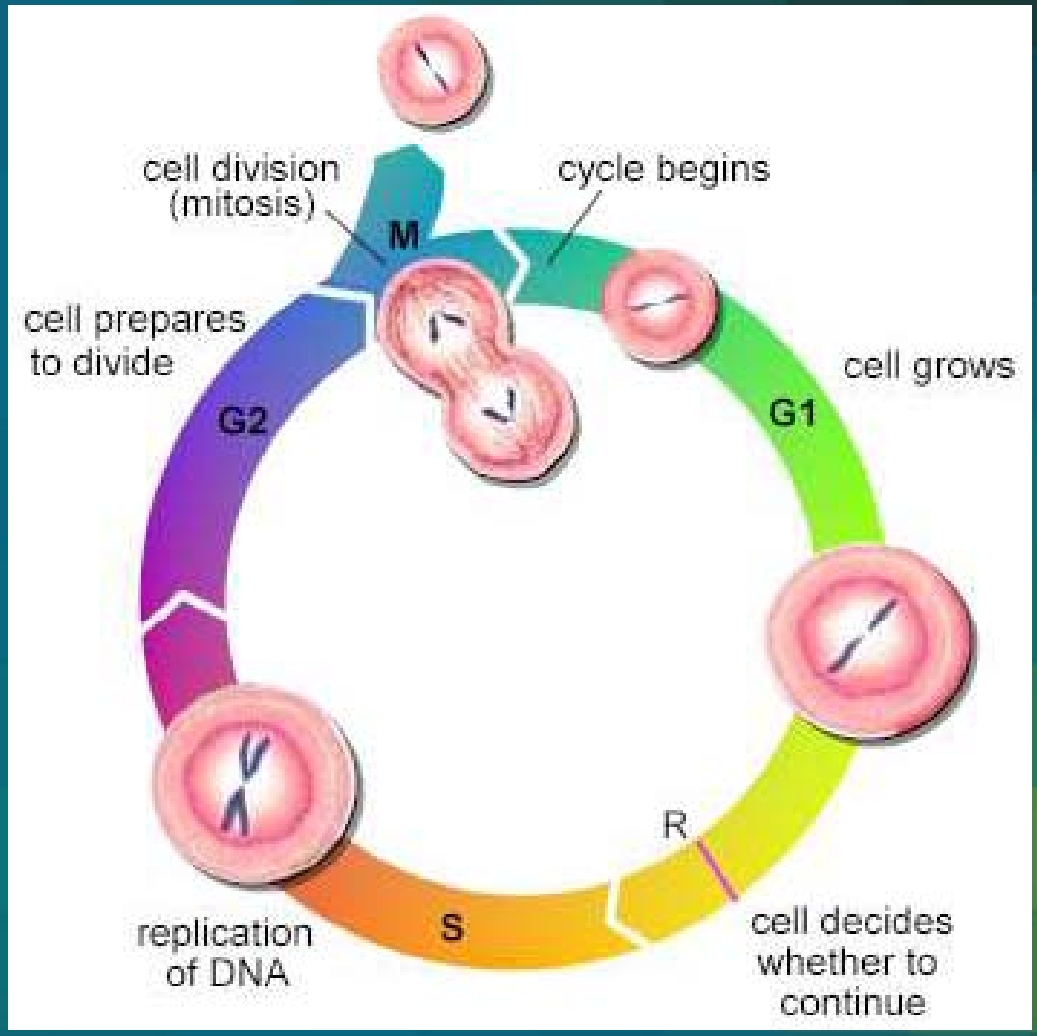
The Teenage Mutant Ninja Turtles were supposedly created by means of mutagens, as well as their master Splinter

In the Halo series the Flood parasite produces a powerful mutagen, turning its hosts into either a "combat form" or "carrier form"

How do mutations cause cancer?

- DNA→ RNA→ protein
- Mutated DNA→ mutated RNA→ mutated protein
- Many mutations accumulated over time can result in harmful changes in the cells instructions
- These mutations in genes result in mutations in proteins that control the cell cycle

Cell cycle



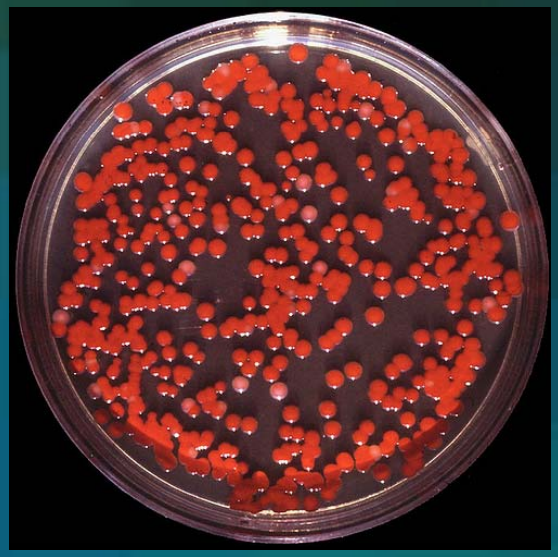
- Uncontrolled cell cycle = uncontrolled cell growth = tumor

Cancer

- Cancer can affect almost anyone at anytime in their lives
- Cancer can occur in almost any place in the body: Lung, skin, breast, prostate, colon, and even the blood (Leukemia)

We will investigate the effects of a carcinogen on bacteria

Serratia



- Red bacteria
- Exposure to carcinogens/mutagens such as UV light and tobacco can cause changes in bacterial DNA
- Changes in DNA result in changes in a protein

Mutations in Serratia cause a mutation in pigment protein

carcinogen

Mutated bacteria grow white