

- Cancer is caused due to damage to the genes that control the cell cycle
- Leads to uncontrollable growth and division of cells
- A group of **abnormal cells develops and constantly expands in size**
- A tumour is cancerous if it becomes malignant

TREATMENT OF CANCER

- Often involved **killing dividing cells by blocking part of the cell cycle**
- Cell is disrupted, cell division and cancer growth ceases
- Drugs used to treat cancer normally achieve this by:
 - **Preventing DNA from replicating**
 - **Inhibiting the metaphase stage of mitosis by interfering with spindle formation**
- Drugs also disrupt normal cells, but have more effect on cancerous ones because they divide more rapidly
- Rapidly dividing normal cells are also at high risk however
 - Hair-producing cells, hair loss

PROKARYOTIC CELL DIVISION

- Takes place via process called **binary fission**
 - Circular DNA molecule (nucleoid) replicates and both copies attach to cell membrane
 - Plasmids also replicate
 - Cell membrane begins to grow between two molecules of DNA and begins to pinch inwards, dividing cytoplasm in two
 - New cell wall forms between the two molecules of DNA, dividing original cell into two identical daughter cells
 - Each with copy of circular DNA
 - But **varying number of copies of plasmids**

REPLICATION OF VIRUSES

- Non-living, cannot undergo cell division
- Instead they replicate via:
 - Attaching to their host cells with attachment proteins on their surface
 - Injecting their nucleic acid into the host cell
 - The genetic info on the injected nucleic acid provides **instructions for the host cells metabolic processes to start producing the viral components, nucleic acids, enzymes and structural proteins**
 - These are then assembled into new viruses ~