The cell cycle

Once the cell reaches its limit, it stops growing and starts dividing because it is necessary for

- growth
- healing
- development

This process is called the cell cycle, consists of **Interphase and Mitosis**

- Cells can only be duplicated, the cell split is the same as the other cell

Cellular Interphase

- The cell grows, carries out cellular functions, makes copies of its DNA
- Split into 3 stages
- G stands for gap, S stands for synthesis

Steps of Cellular Interphase

1. G_1 - Gap 1
    - Cell grows, carries out normal functions
    - Prepares to replicate DNA
    - Some cells may exit at this stage and never replicate (nerve cells and muscle cells...)
    - Centrioles move to opposites of the cell
2. S - Synthesis
    - DNA synthesis
    - Call copies DNA in proeparation for cell devision
    - Chromatin is replicated
3. G_2 - Gap 2
    - Cell prepares for nuclear division
    - Makes microtubules needed for division
    - Ensures everything is ready to divide

Cellular Mitotic Phase

Steps of the Mitotic Phase

1. Mitosis

- cell's nucleus and nuclear materal divides
- divided into atleast 4 sub-stages

2. Cytokinesis
    - Division of the cell's cytoplasm

Mitosis

Steps (PMAT)

1. **Prophase**
    1. Nucleus is still there
    2. Chromosomes are condensing from the DNA
    3. DNA gets **shorter** and **thicker**
2. **Prometaphase (sometimes considered part of the metaphase)**
    1. Nucleus membrance disappears
    2. Formation of microtubules
        1. Attach to the chromosomes (centrometer of it)
3. **Metaphase (Middle)**
    1. Chromosomes line up to the middle of the cell
4. **Anaphase (Away)**
    1. Chromosomes split (chromatins separate)
    2. The chromosomes move away from the center to the edges of the cell
    3. The spindles (microtubules) help pull them to the edges
5. **Telophase (Two)**
    1. Chromosomes reach the poles
    2. Two new neuclei are formed
    3. Microtubules disappears

Cytokinesis

- The cytoplasm splits and two cells are separated.
- This part is **not** considered part of Mitosis