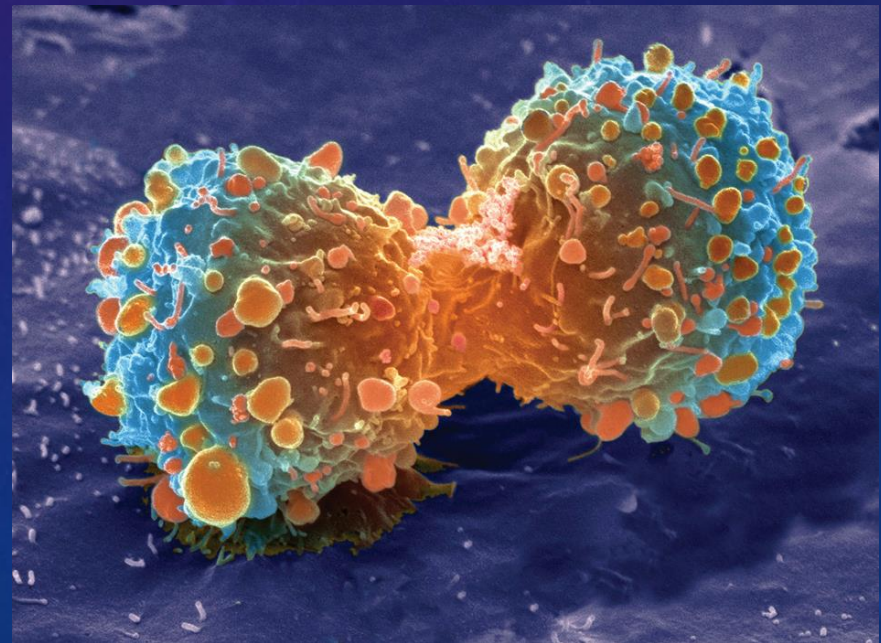


The background features a dark blue gradient with faint, light blue circular patterns and a scale. The scale is a large arc on the left side, with numerical markings from 140 to 260 in increments of 10. Several smaller circles with arrows are scattered across the background, suggesting a cycle or process. The overall aesthetic is technical and scientific.

CANCER AND THE CELL CYCLE

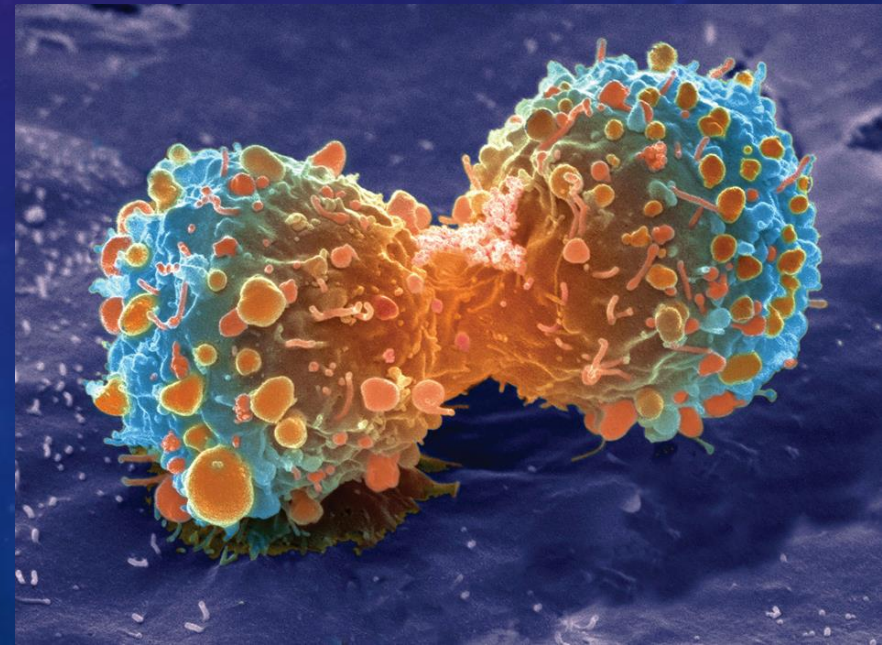
WHY DO CELLS DIVIDE?

- Growth – adding cells to the multicellular organism.
- Replace – replace worn out or broken down cells.
(ex: skin cells).
- Repair – replacing damaged cells or repairing damage to organs within the body.



TRIGGERING CELL DIVISION

WHEN THE CELL GROWS SO MUCH THAT IT CANNOT ABSORB ENOUGH NUTRIENTS TO SUPPLY THE INSIDE OF THE CELL OR IT CANNOT GET RID OF CELL WASTE FROM THE INSIDE, THE CELL WILL TRIGGER CELL DIVISION.



RATES OF CELL DIVISION

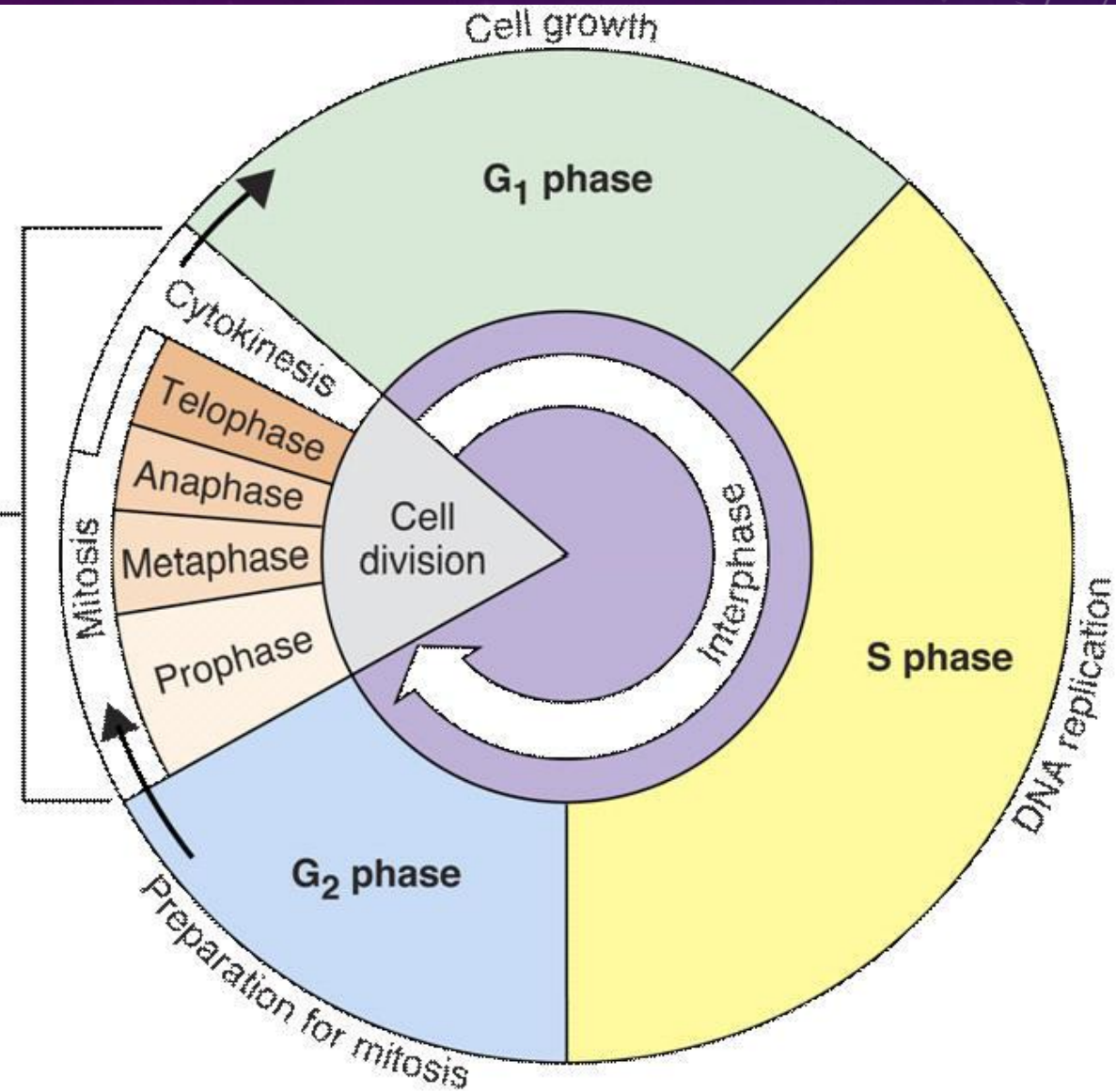
- *Rapid cell division*

- Skin
- Digestive tract
- Bone marrow

- *Rarely dividing cells*

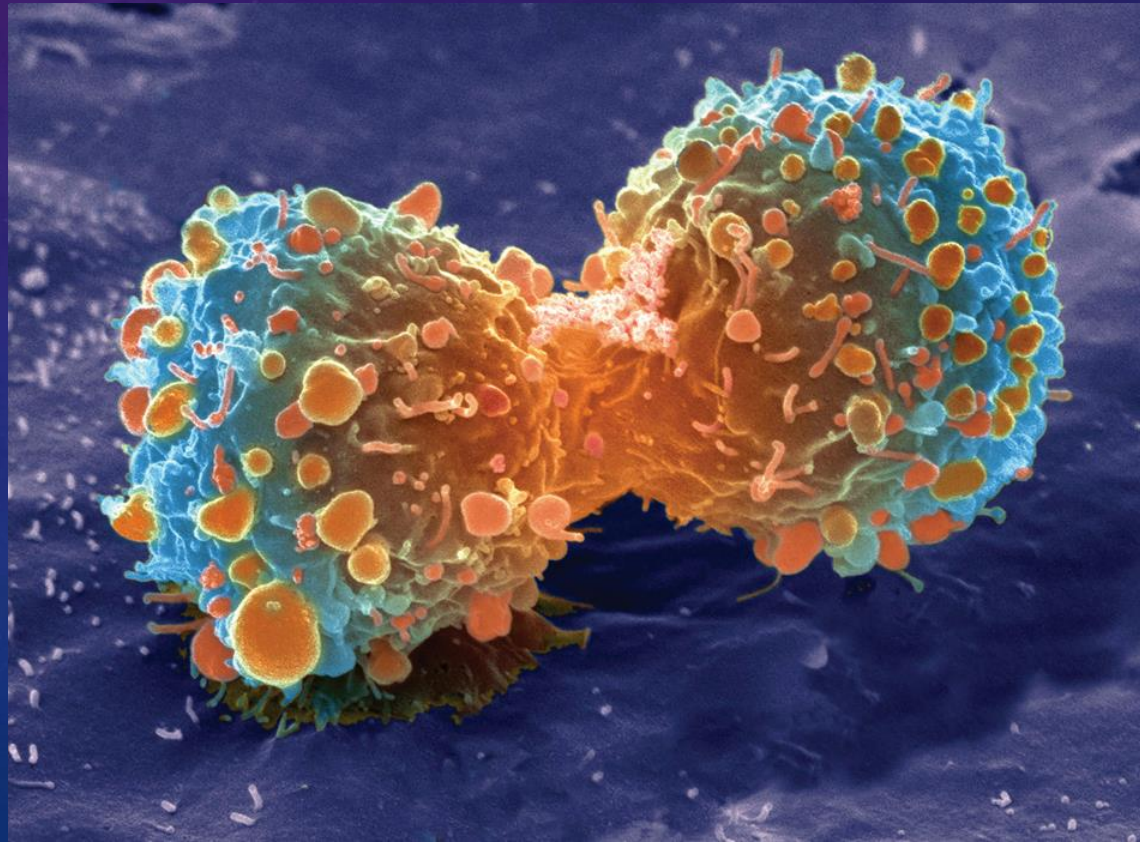
- Muscle
- Nerve (slowest)

Cell Division

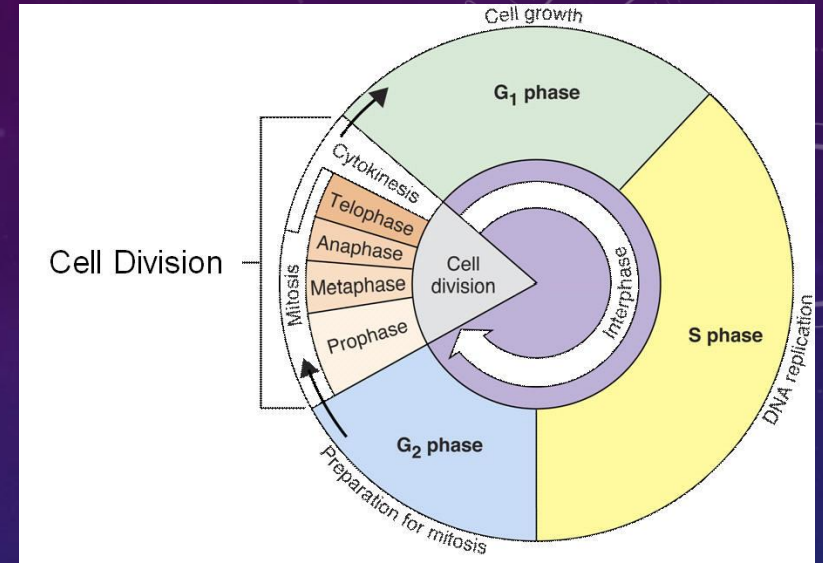


Phases of the Cell Cycle (production of new cells)

1. Interphase
2. Mitosis
3. Cytokinesis



INTERPHASE



- G₁ - cell growth (organelles are replicating)
- S – DNA is replicated
- G₂ – more cell growth and preps for division

CHROMOSOME



- Chromosome
- Single stranded Chromosome
- Single Copy of DNA

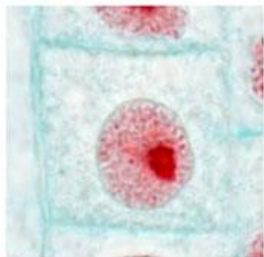
When referring to individual sides,
they are called sister chromatids.



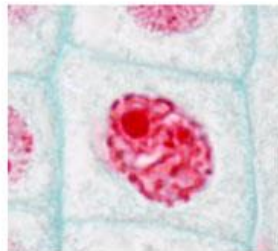
Centromere-
hold copies
together

- Chromosome
- Double stranded Chromosome (sister Chromatids)
- Double Copies of DNA
- Has gone through DNA Replication – so that each cell gets a complete set of 46.

Mitosis - *Allium* Root Tip



Interpahase



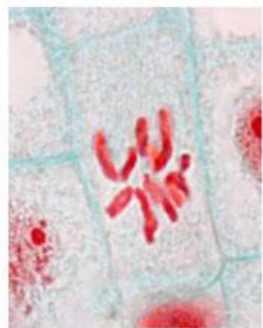
Prophase



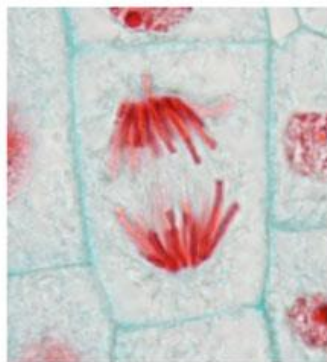
Later
Phrophase



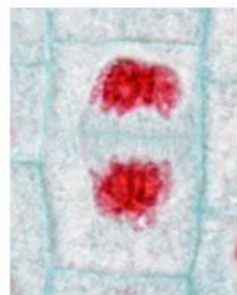
Metaphase



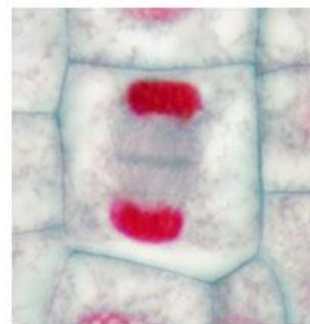
Early Anaphase



Anaphase

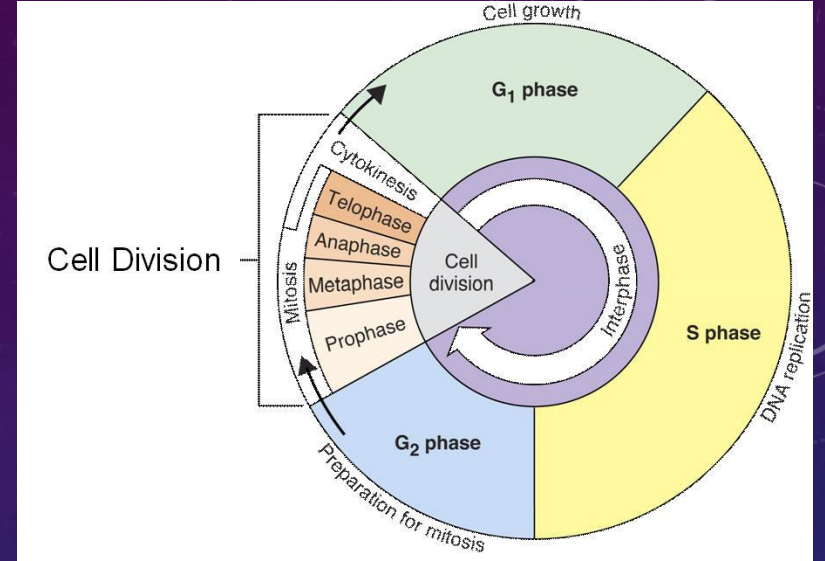


Telophase



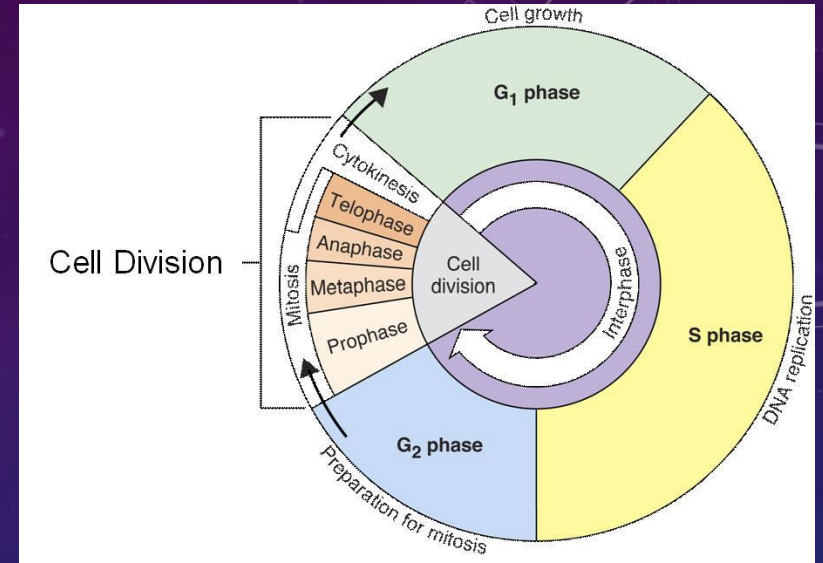
Later Telophase

MITOSIS



- Prophase – chromosomes coil up and condense.
- Metaphase – chromosomes line up at the equator
- Anaphase – separation of the sister chromatids
- Telophase – cell divides in two

CYTOKINESIS



- Division of the cytoplasm (cytosol and organelles) into the two daughter cells.

CONTROLLING CELL DIVISION

- Controlled Division–
- A cell will stop dividing once it feels other cells surrounding it.

- Uncontrolled Division–
- When a cell does not respond to cell proximity and continues to divide forming large masses.
- In many instances forming cancer cells.
- <https://www.youtube.com/watch?v=leUANxFVXKc>

- Prior to watching the video, read video questions for the “2nd youtube video” (below) to be prepared to answer.

VIDEO:

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=8LHQQLLH46YI](https://www.youtube.com/watch?v=8LHQQLLH46YI)