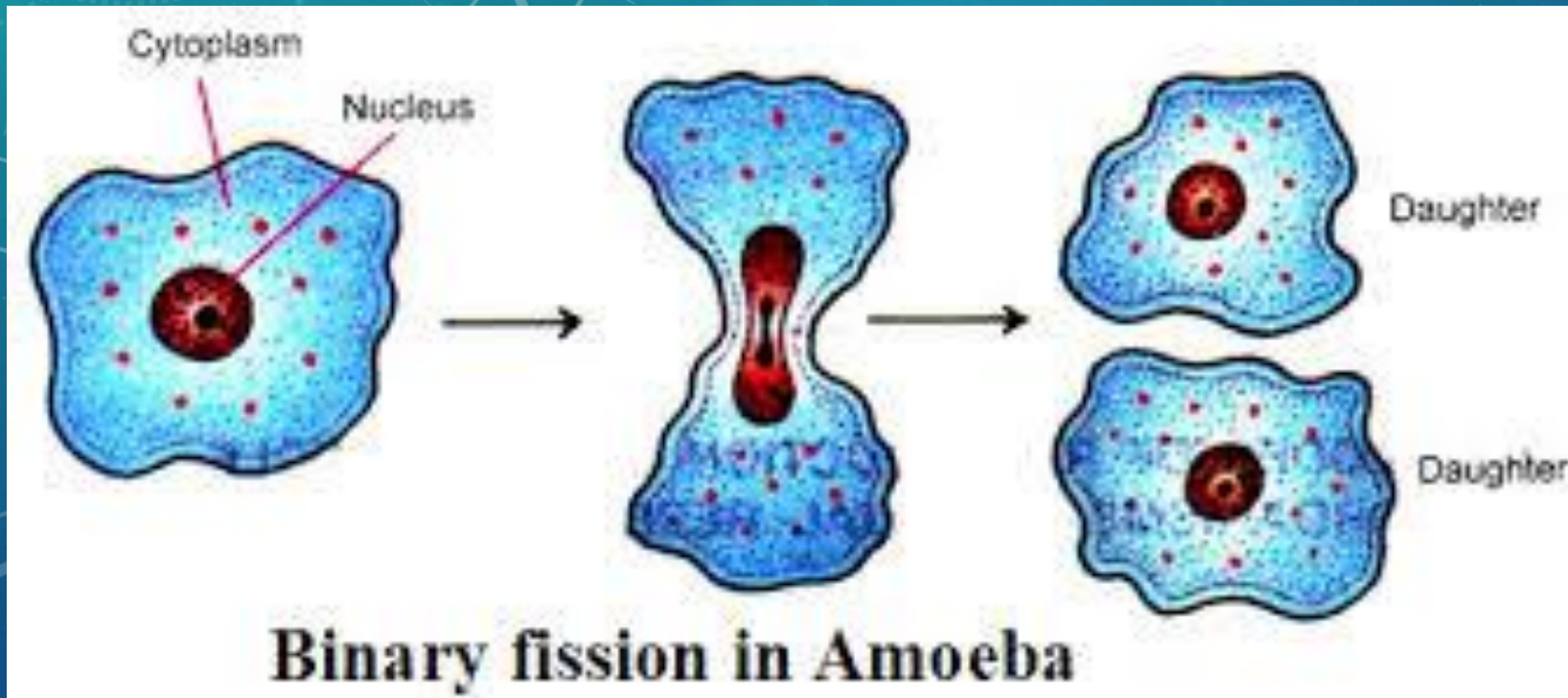


# TYPES OF ASEXUAL REPRODUCTION



PART 1

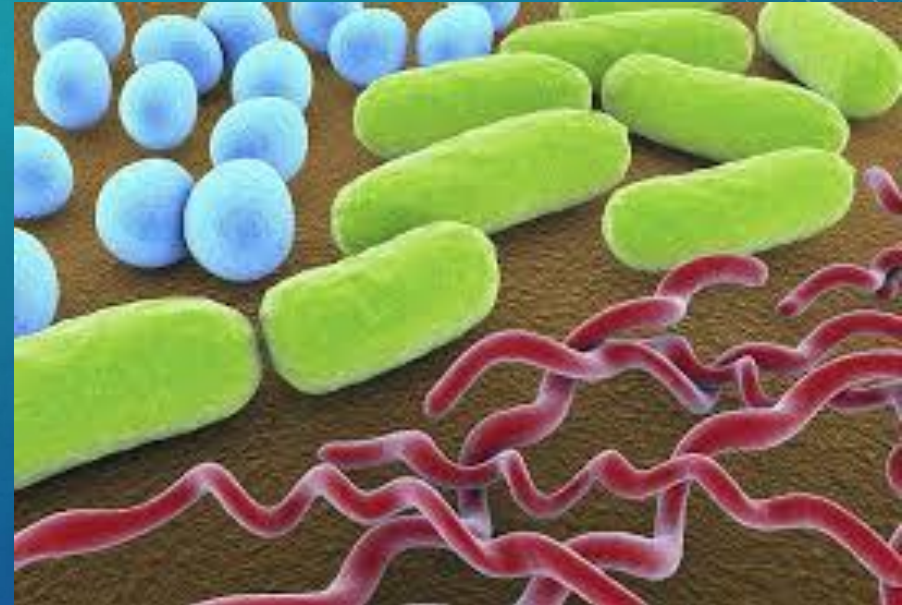
# 4 PICTURES 1 WORD





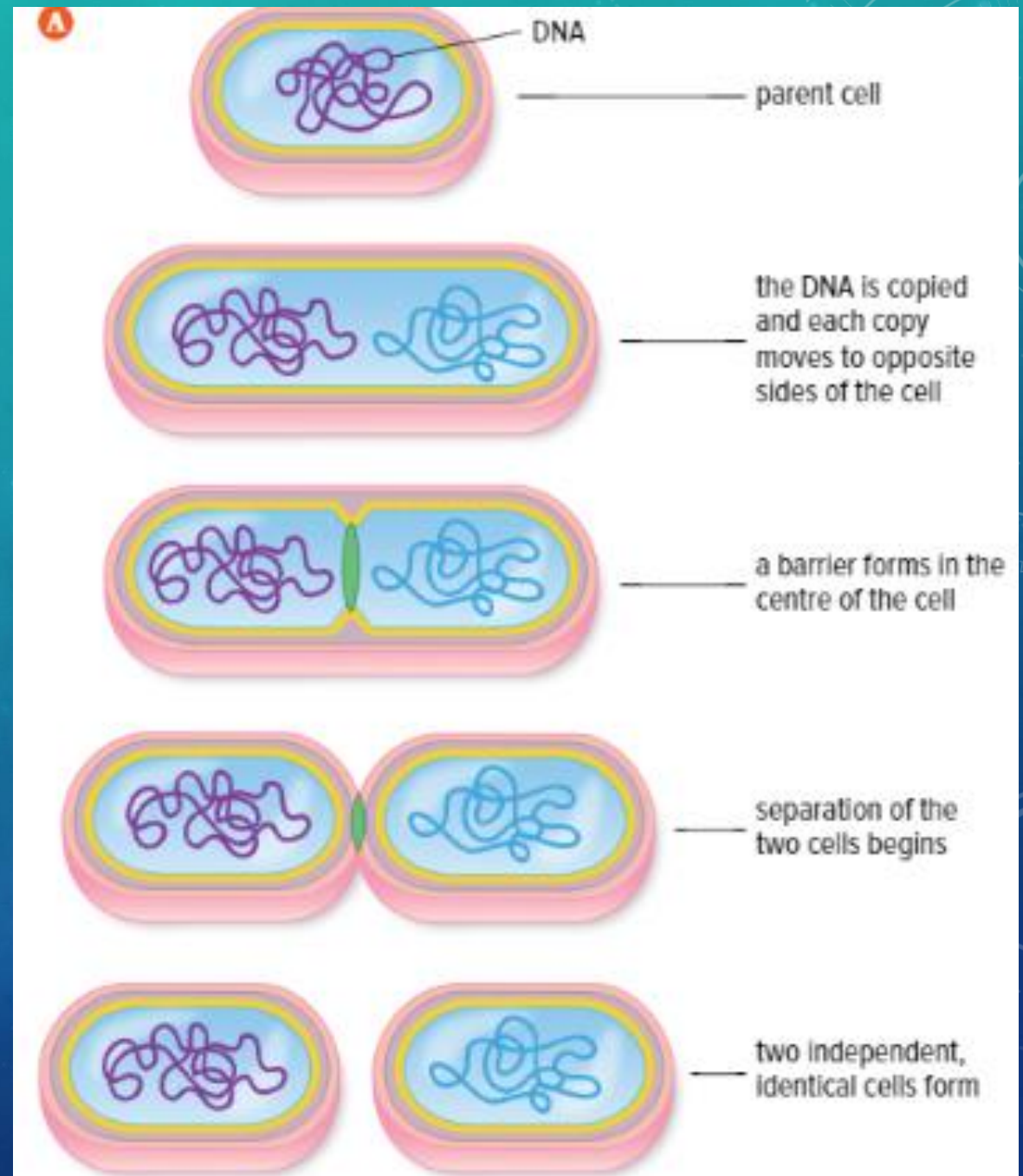
# BACTERIA!

- Exist all around us
- Microorganisms that exist as a single prokaryotic cell
- Reproduces via Binary Fission
  - Type of Asexual reproduction



# BINARY FISSION

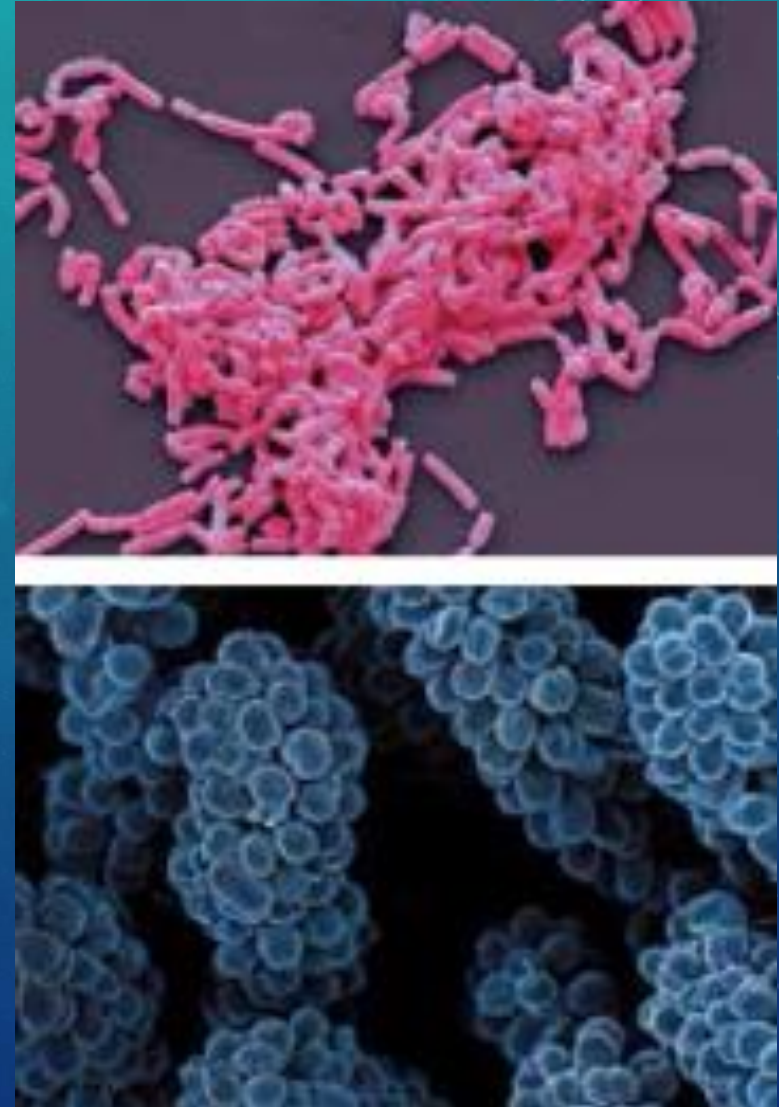
- A parent cell splits into two individual, identical cells (daughter cells)
- Daughter cells have identical genetic information (DNA)
- Colour code the DNA on your diagram



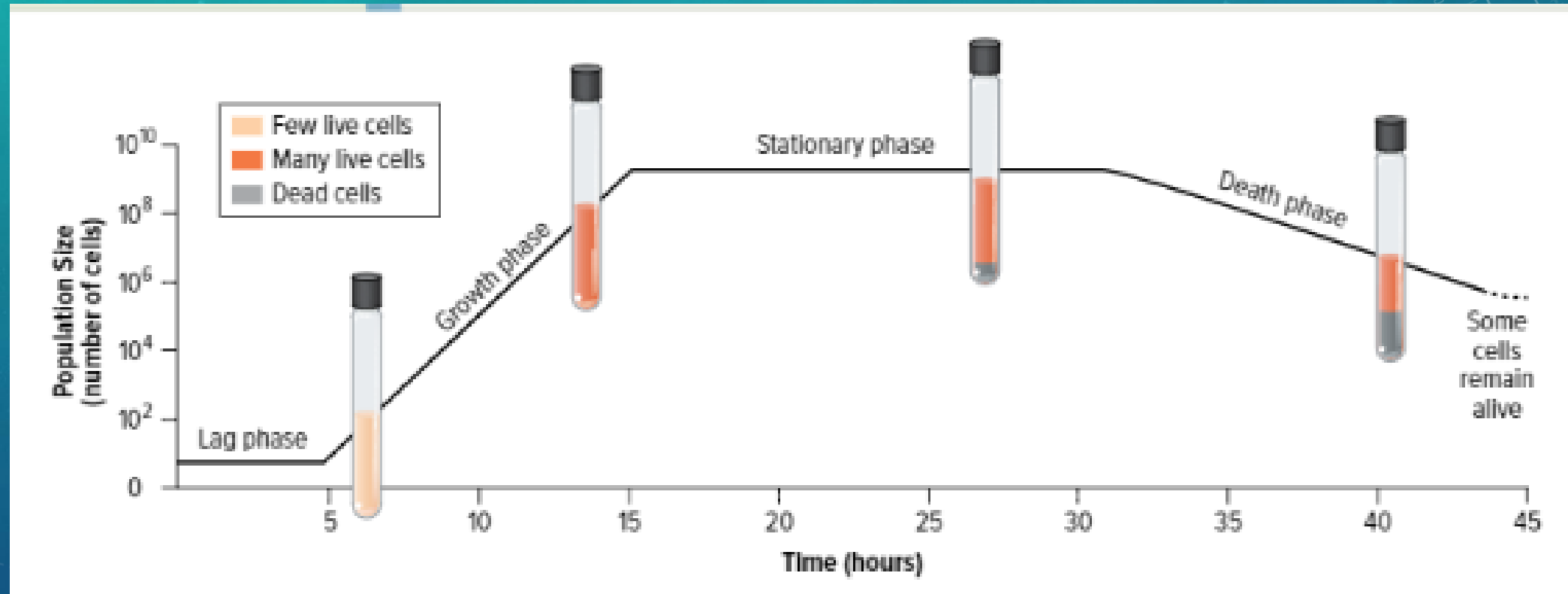


# GROWTH

- After each cycle of binary fission, the number of cells doubles. The time it takes for many bacteria to double (doubling time) is 20 to 30 minutes
- So under the right conditions, a small colony can grow to millions in short amount of time
- What conditions affect bacterial growth?



# ACTIVITY 1-D ON PAGE 36 IN TEXTBOOK



# QUESTION?

- Do any of your body cells reproduce asexually? If so, how often? Why would this occur?

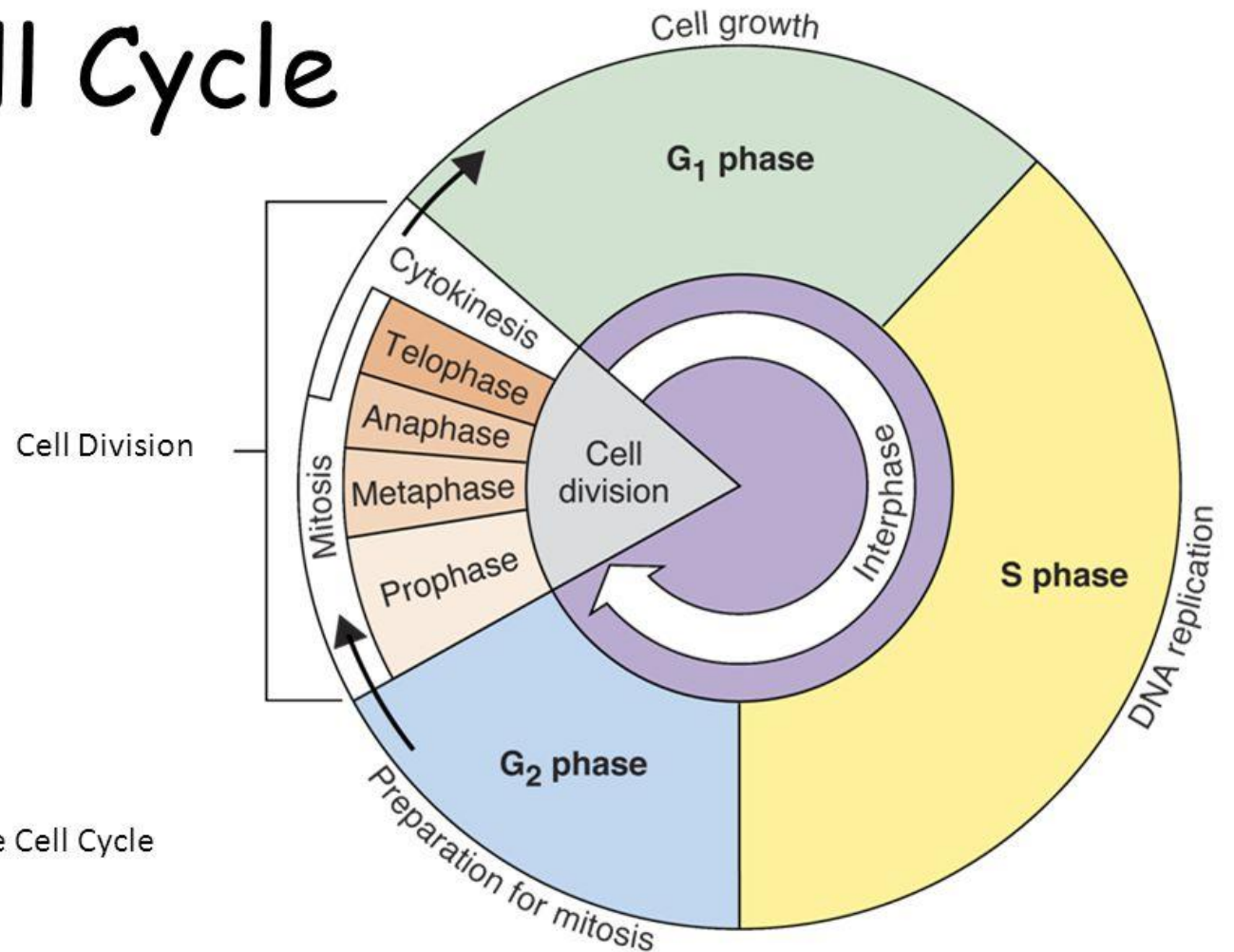




# ALL EUKARYOTIC CELLS REPRODUCE BY THE CELL CYCLE.

- Complete Activity Page 25 in your textbook

## Cell Cycle





# CELL CYCLE

- Currently cells in your body are reproducing
- Skin cells, stomach cells and many more are being made to replace older cells
- Cell reproduction is needed for the body to heal.
  - Imagine you scrape your knee
  - The wound heals because of the ability of your skin cells to replace the ones that were damaged

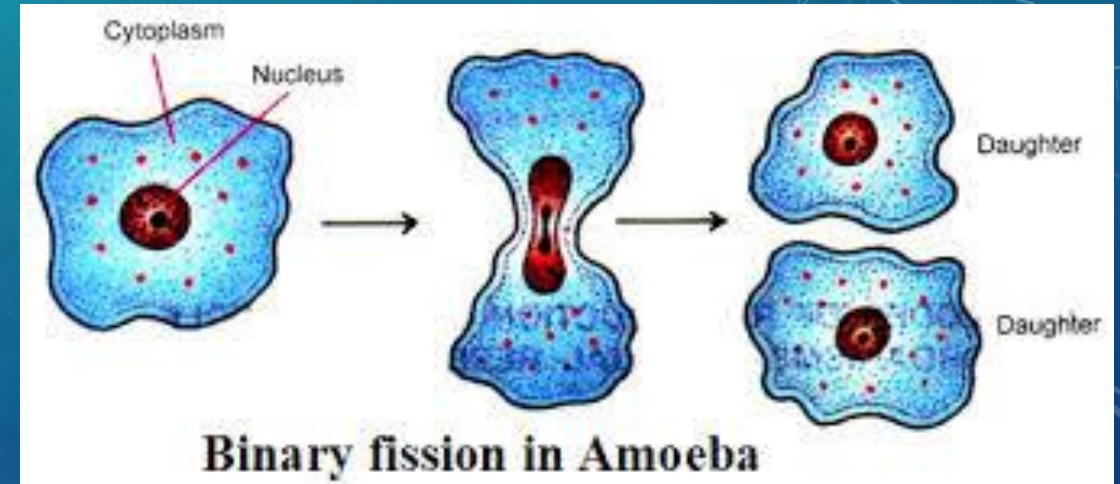


# REPRODUCTION AND THE CELL CYCLE

- Replacing damaged cells is only one reason that eukaryotic cells

Functions of eukaryotic cell reproduction:

- Replace older cells
- Replace damaged cells
- Produce new offspring in single-celled organisms (amoebas)



# REPRODUCTION AND THE CELL CYCLE

- Eukaryotic cells reproduce by a series of events called the **cell cycle**
- The cell cycle has two stages with different events:
  - Growth and development
    - Interphase
  - Cell division
    - Mitosis
    - Cytokinesis

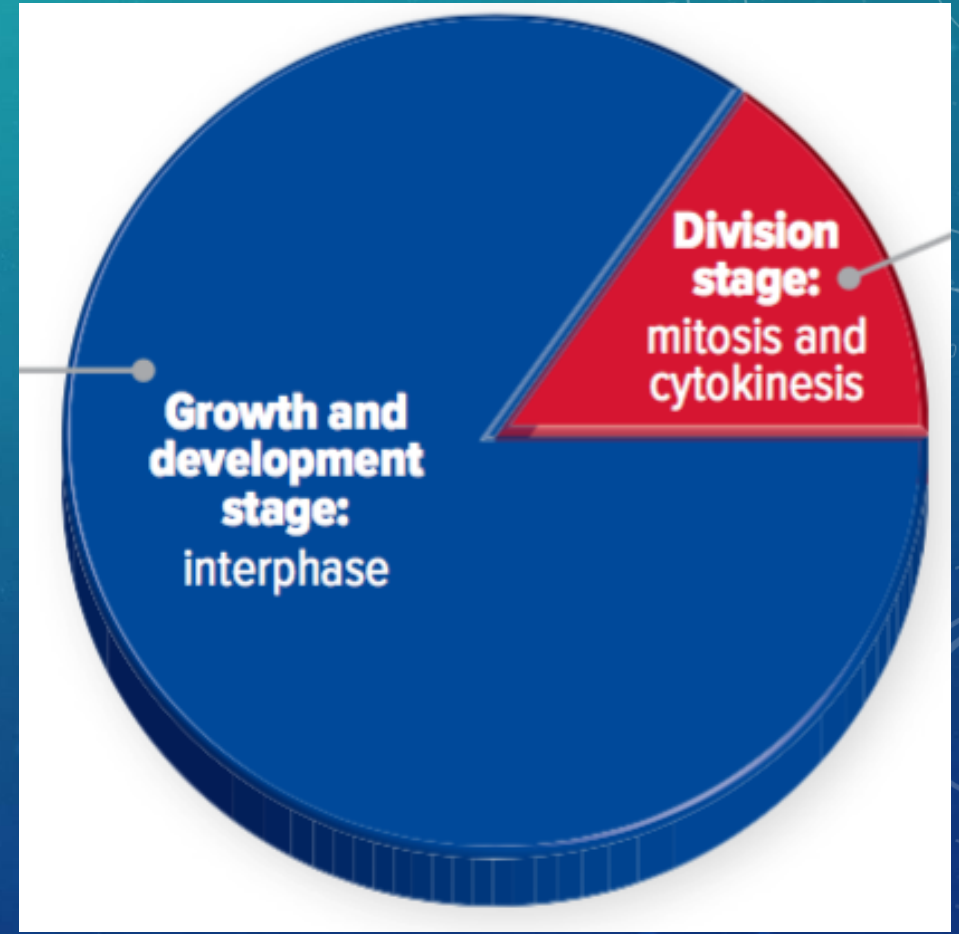
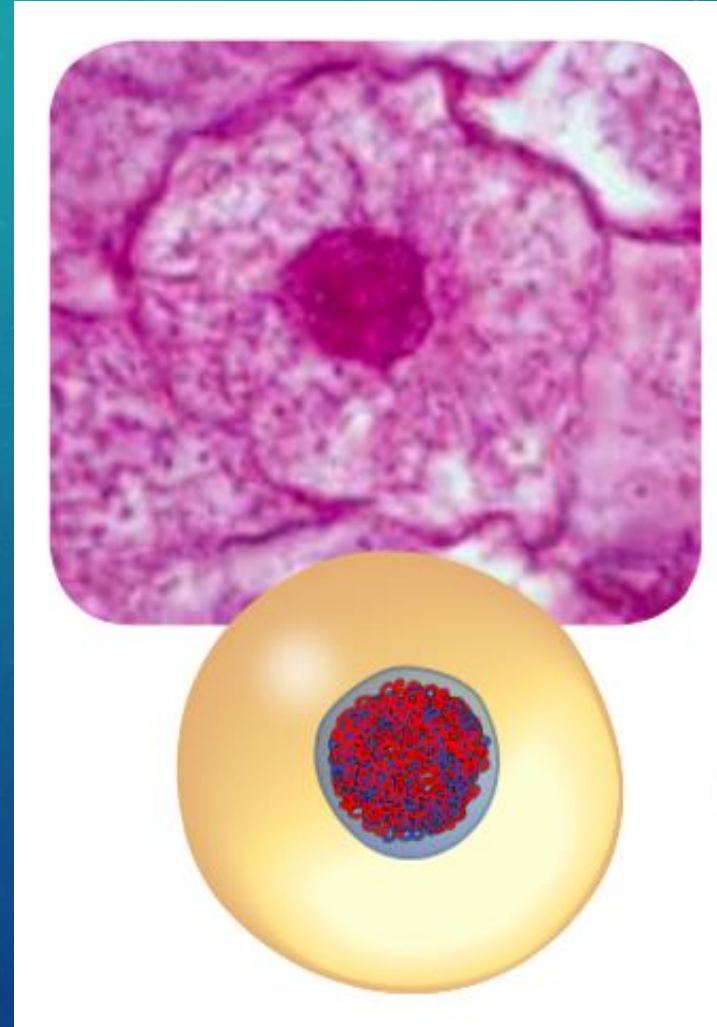


Figure 1.10: The cell cycle.



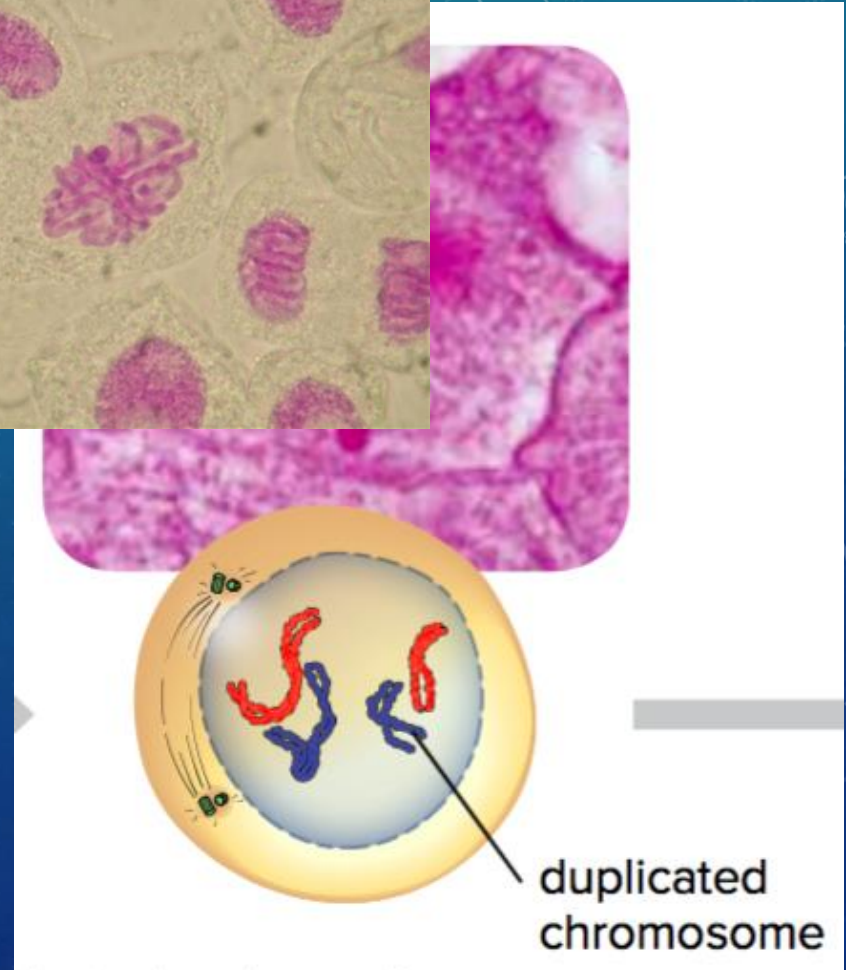
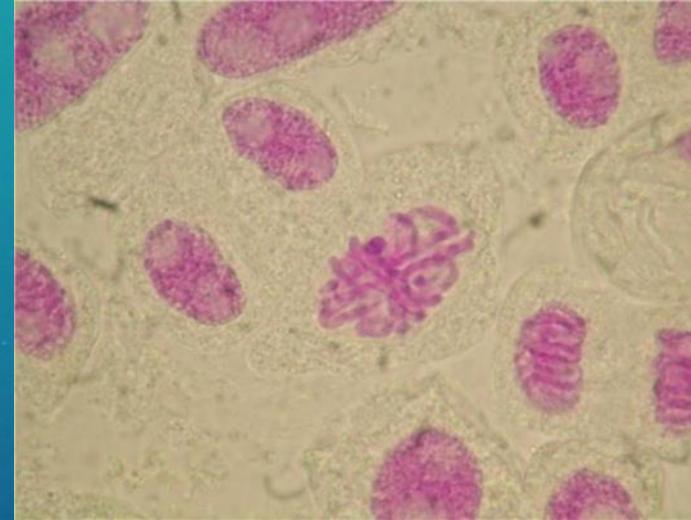
# GROWTH AND DEVELOPMENT: INTERPHASE

- The phase of growing and working
- 90% of the total time of the cell cycle
- During this time the cell makes copies of all of its organelles
- Once large enough it will replicate its chromosomes (DNA)
- When the chromosome replicates it is known as sister chromatids



# CELL DIVISION: PHASE 1 OF MITOSIS (PROPHASE)

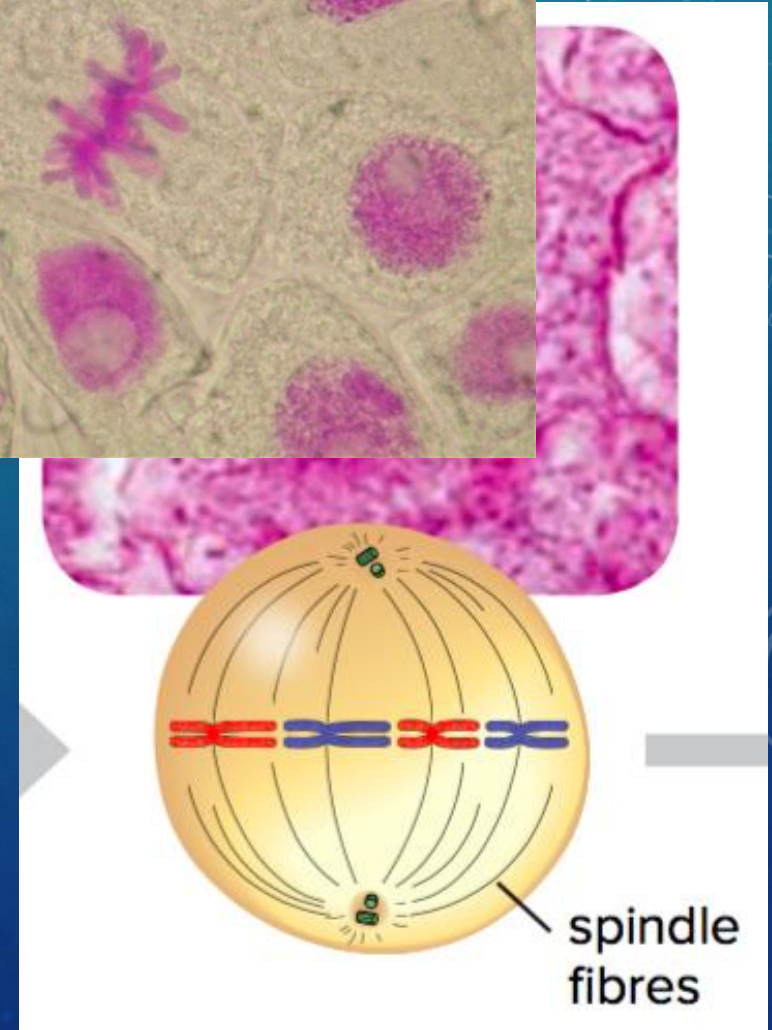
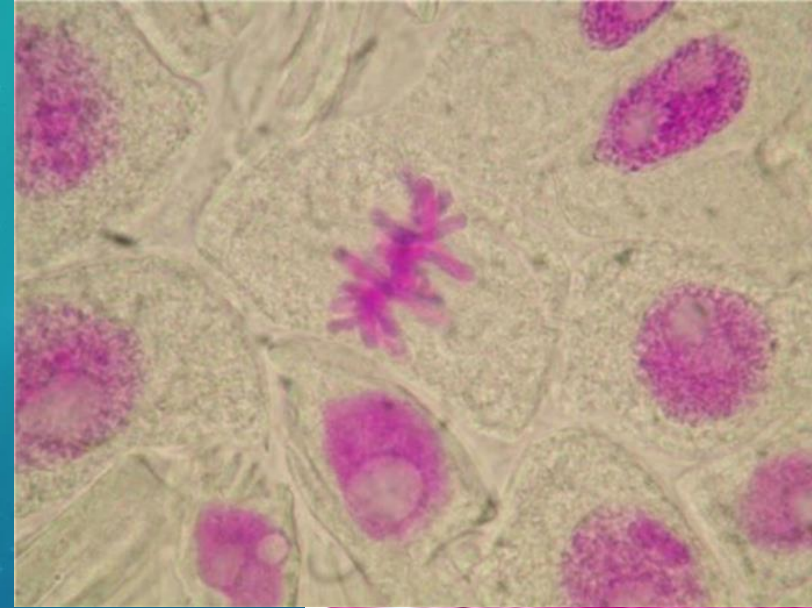
- Sister chromatids formed during Interphase shorten and thicken
  - Each chromosome contains two copies of the same DNA
  - Sister chromatids have joined at the center and now look like an X
  - Nuclear membrane breaks down to allow chromosomes to spread out
  - Centrioles move to opposite poles of the cell
    - Form spindle fibres which will later move the chromosomes





## CELL DIVISION: PHASE 2 OF MITOSIS (METAPHASE)

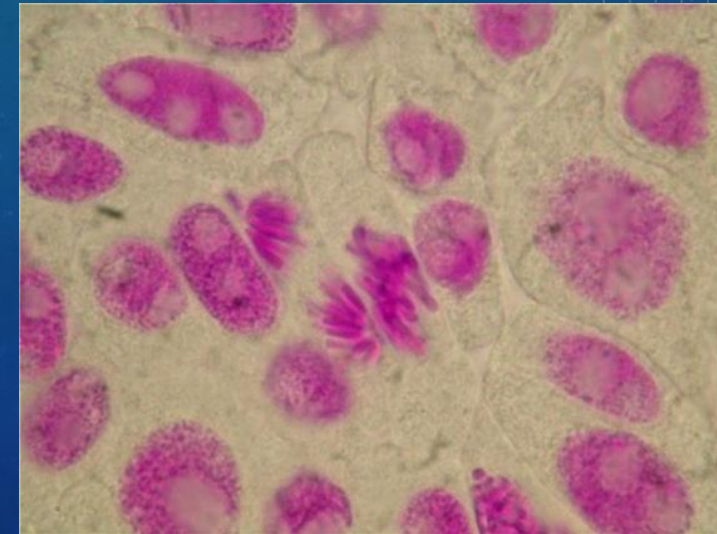
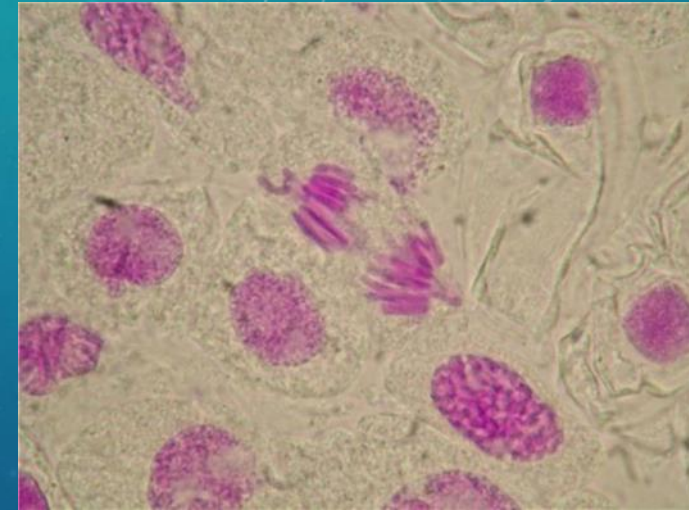
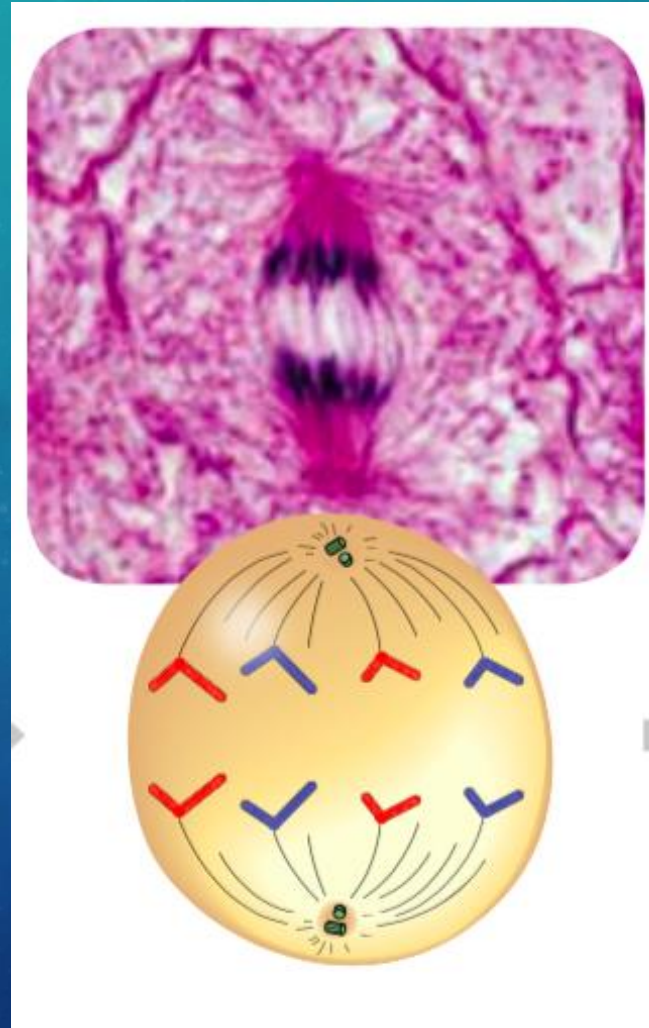
- Sister chromatids attach to the spindle fibers and line up along the “middle plate”
- Spindle fibers guide chromosome movement
- Chromosomes line up along the middle of the cell





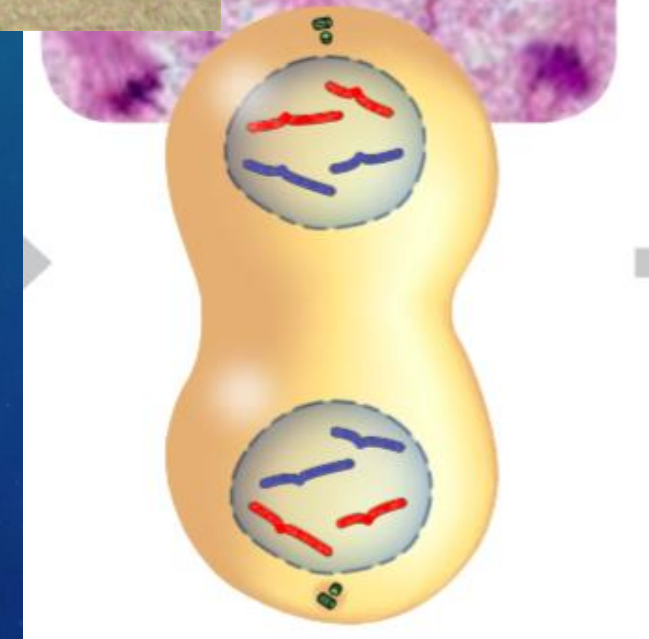
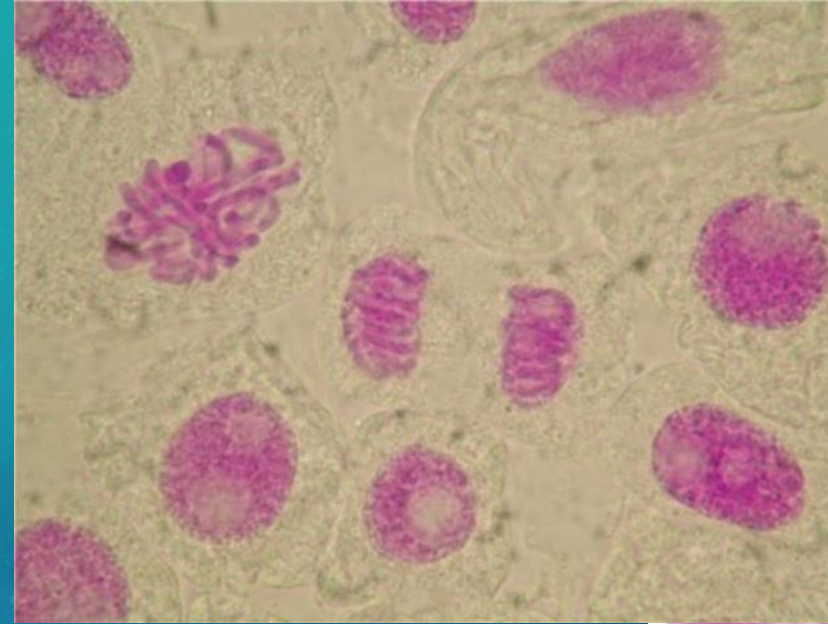
# CELL DIVISION: PHASE 3 OF MITOSIS (ANAPHASE)

- Sister chromatids are pulled apart
- Now called chromosomes



# CELL DIVISION: PHASE 4 OF MITOSIS (TELOPHASE)

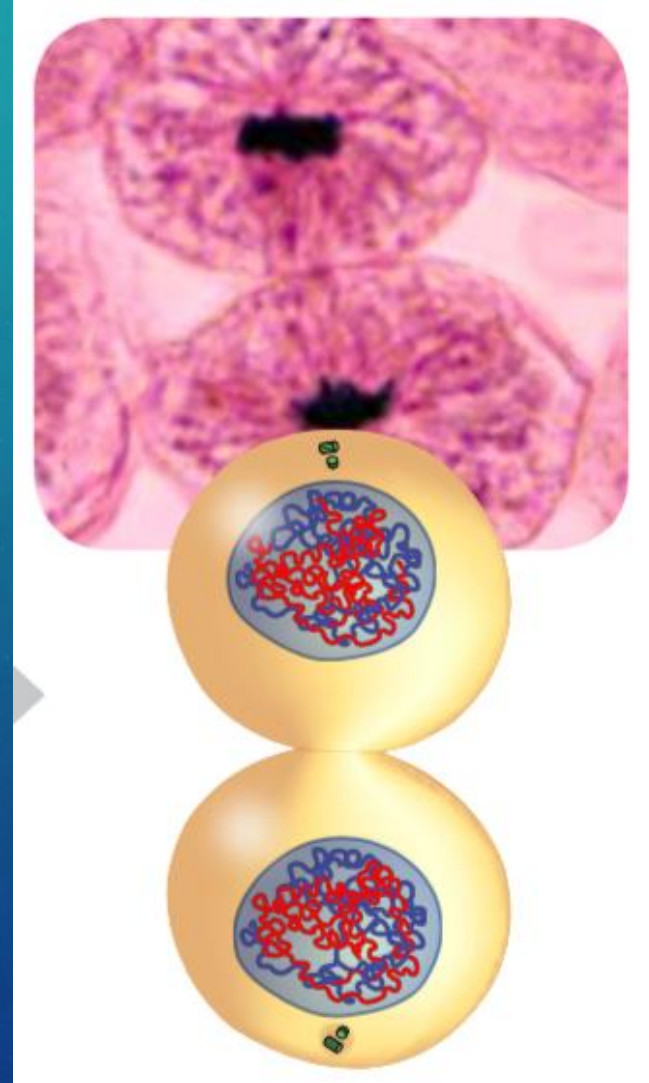
- 2 nuclear membranes form
- Spindle disappears
- Chromosomes lengthen and thin
- Each nucleus contains a complete copy of the cell's DNA





# CELL DIVISION: CYTOKINESIS

- Cytoplasm and organelles are divided
- Two separate cells form
- The cells then begin interphase

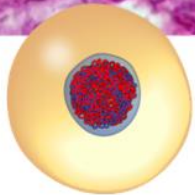
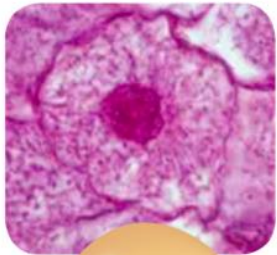




# MITOSIS: SUMMARY

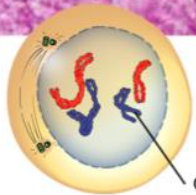
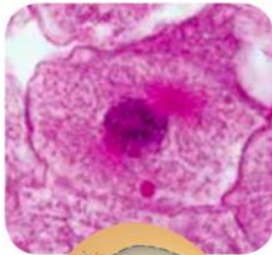
## 1 Interphase

- The cell grows and the number of organelles increases.
- The DNA in the nucleus is copied.



## 2 Phase 1 of mitosis (prophase)

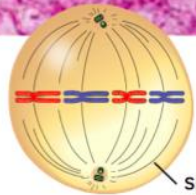
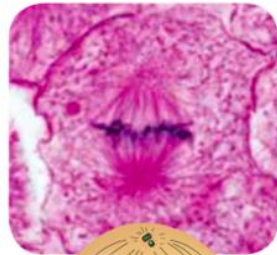
- The nuclear membrane begins to disappear.
- DNA condenses into duplicated chromosomes. Each contains two copies of the same DNA.



duplicated chromosome

## 3 Phase 2 of mitosis (metaphase)

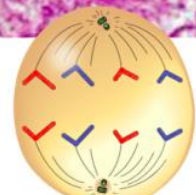
- Structures called spindle fibres guide chromosome movement.
- Chromosomes line up along the middle of the cell.



spindle fibres

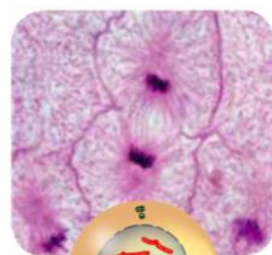
## 4 Phase 3 of mitosis (anaphase)

- The copies of DNA are separated and go to each end of the cell.



## 5 Phase 4 of mitosis (telophase)

- Two nuclei form and each nucleus contains a complete copy of the cell's DNA.



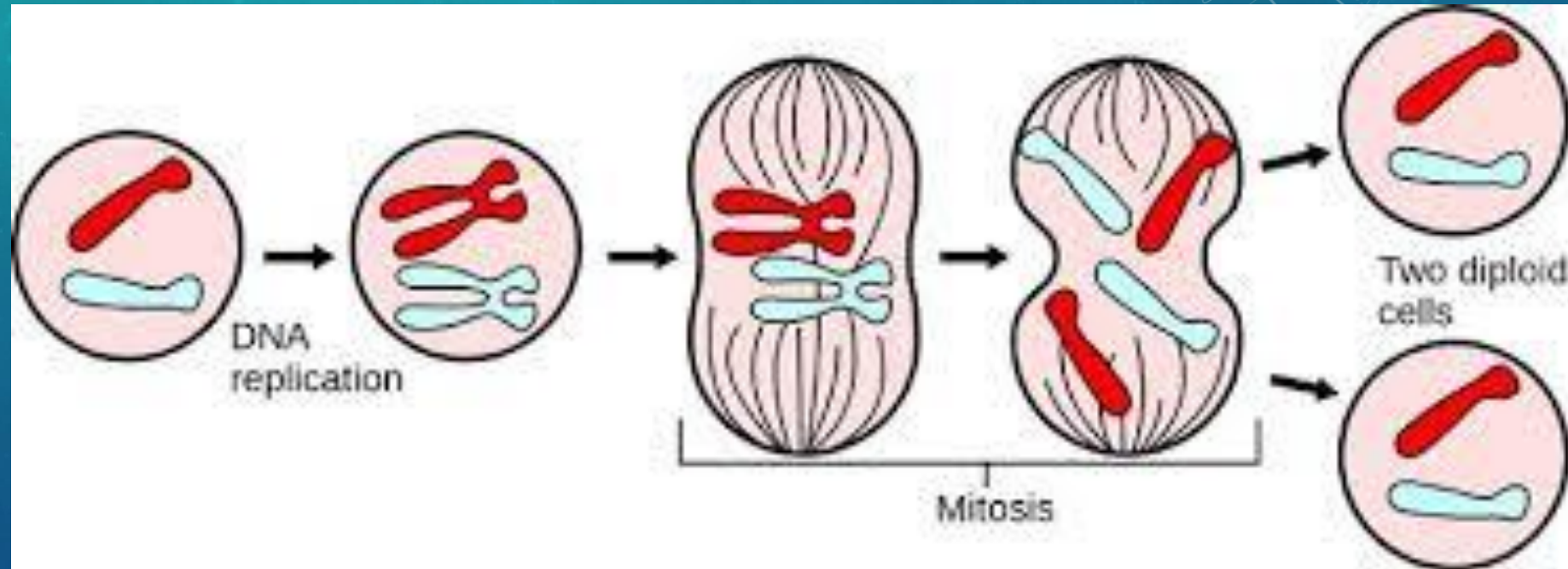
## 6 Cytokinesis

- The cytoplasm and organelles are divided, and two separate cells form.
- The cells then begin interphase.



# RESULTS OF MITOSIS

- 1 parent cell produces Two identical daughter cells





# MITOSIS FLIPBOOK





# OBSERVING MITOSIS

- Microscope Lab

# WHAT HAPPENS WHEN CELL DIVISION IS OUT OF CONTROL?

- Cancer Research Project