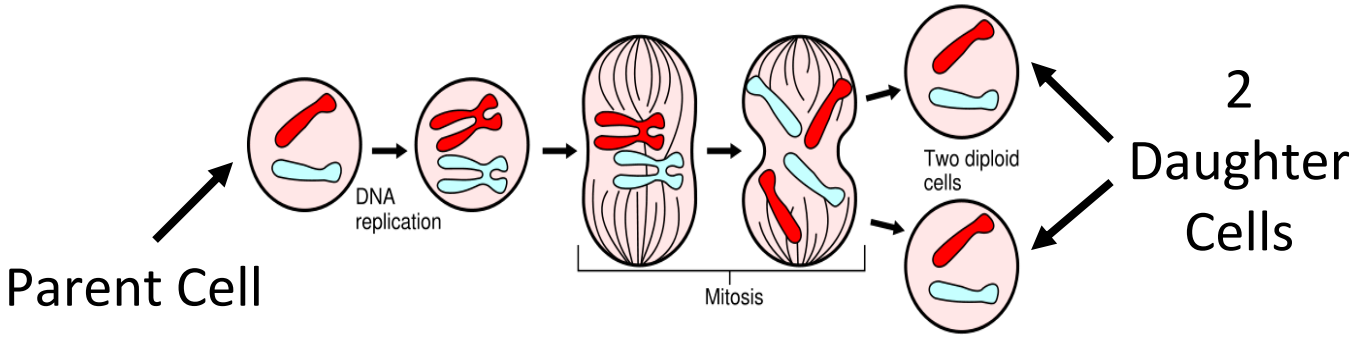
Cell Division—Mitosis Notes

Cell Division — process by which a cell divides into ___ _____ _____

- Why do cells need to divide?
  1. Living things _____ by producing _____ _____, NOT because each cell increases in size
  2. _____ of damaged tissue
  3. If cell gets too big, it _____ get enough _____ into the cell and _____ out of the cell
- The _____ cell is called the _____ cell; 2 _____cells are called _____ cells
- Before cell division occurs , the cell _____ (copies) all of its _____, so each daughter cell gets complete set of _____ _____ from parent cell
- Each daughter cell is _____ like the parent cell – _____ kind and number of _____ as the original cell

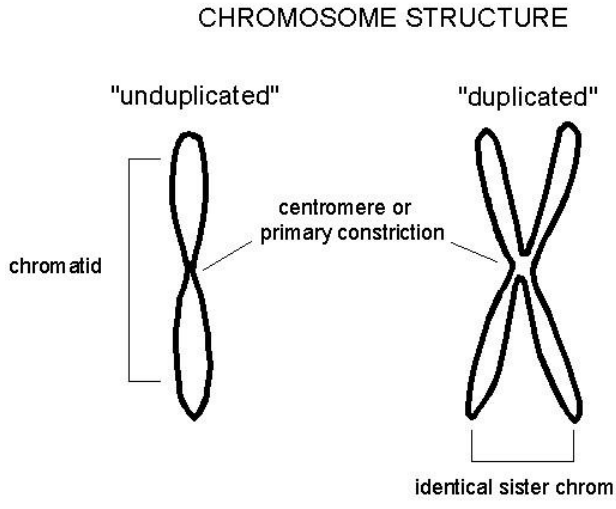


- Many organisms, especially _____ organisms, reproduce by means of cell division – called _____ _____ – Ex: bacteria

DNA

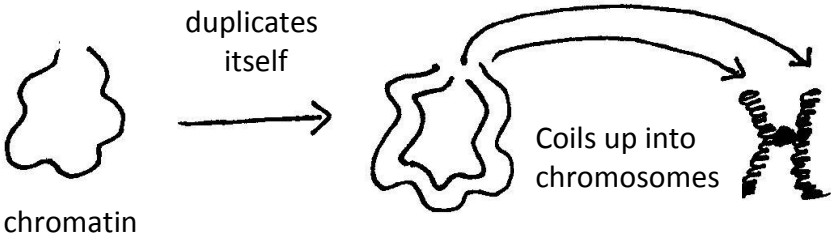
- DNA is located in the _____ and controls all cell _____ including cell division
- Long and _____ DNA in a _____ cell is called _____
- _____, _____, short DNA in a _____ cell is called _____

  Consists of 2 parts: _____ and _____



- 2 identical "sister" chromatids attached at an area in the middle called a _____
- When cells divide, "sister" _____ separate and 1 goes to each new cell

- Chromatin to chromosomes illustration:



Why does DNA need to change from chromatin to chromosome? More _____ division

Chromosome number

- Every organism has its own _____ _____ of chromosomes

  Examples: Human = ____ chromosomes or ____ _____

  Dog = ____ chromosomes or ____ _____

  Goldfish = ____ chromosomes or ____ _____

  Lettuce = ____ chromosomes or ____ _____

- All _____ (body) cells in an organism have the _____ kind and _____ of chromosomes

  Examples: Human = ____ chromosomes

  Human skin cell = ____ chromosomes

  Human heart cell = ____ chromosomes

  Human muscle cell = ____ chromosomes

  Fruit fly = 8 chromosomes

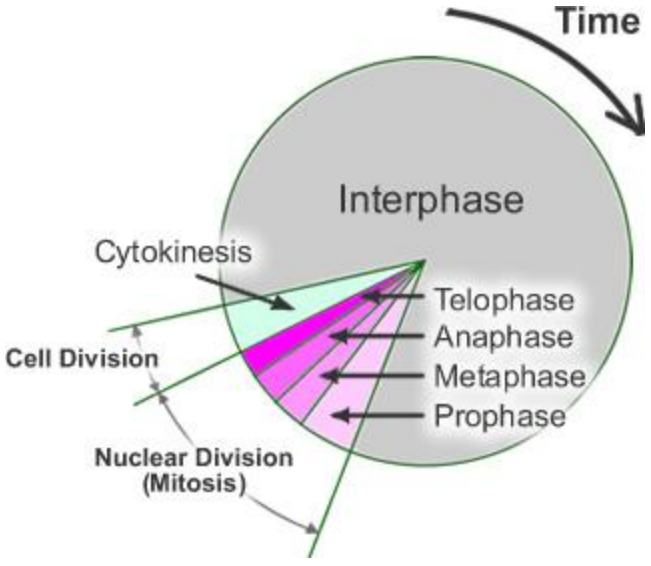
  Fruit fly skin cell = ____ chromosomes

  Fruit fly heart cell = ____ chromosomes

  Fruit fly muscle cell = ____ chromosomes

Cell Cycle -- series of events cells go through as they _____ and _____

- Cell _____, prepares for division, then _____ to form 2 _____ cells – each of which then begins the cycle again



Interphase—period of cell _____ and _____

- DNA _____ (copying) occurs during Interphase
- During Interphase the cell also _____, carries out normal _____ _____, replicates all other _____
- The cell spends most of its life cycle in _____

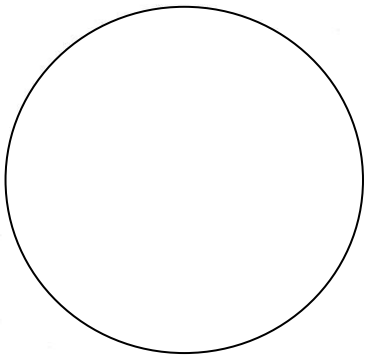
Mitosis – division of the _____ into 2 nuclei, each with the same number of _____

- Mitosis occurs in _____ the _____ (body) cells

Why does mitosis occur? So _____ new _____ cell has _____ with a complete set of _____

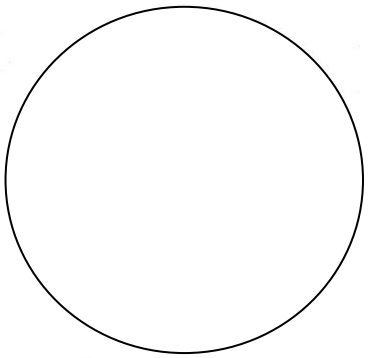
- 4 phases of nuclear division (mitosis), directed by the cell's DNA (**PMAT**)

1. _____



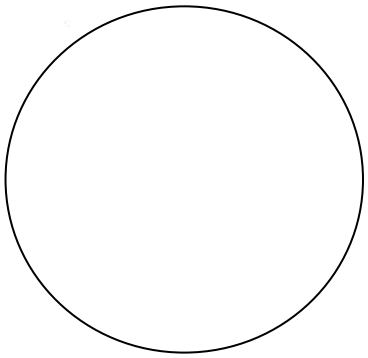
- Chromosomes _____ ____
- Nuclear envelope _____
- _____ _____ form

2. _____—(Middle)



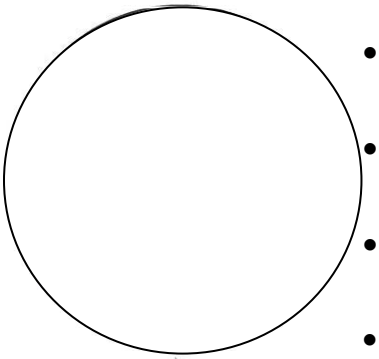
- Chromosomes line up in _____ of cell
- Spindle fibers _____ to chromosomes

3. _____—(Apart)



- Chromosome copies _____
- Spindle fibers pull chromosomes to _____ _____

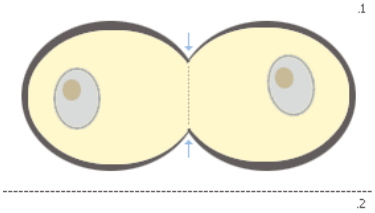
4. _____—(Two)



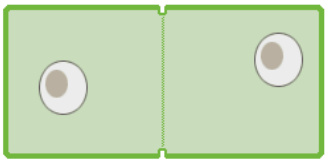
- Chromosomes _____
- Nuclear envelopes _____
- ___ ____ _____ are formed
- Spindle fibers _____

Cytokinesis — the _____ of the rest of the cell (_____ and organelles) after the nucleus divides

- In _____ cells the cytoplasm pinches in →



- In _____ cells a cell plate forms →



- After mitosis and cytokinesis, the cell returns to _____ to continue to grow and perform regular cell activities

Summary: Cell Cycle

- When cells become old or damaged, they _____ and are replaced with _____ cells

Cell Division Control

- _____ controls _____ cell activities including cell _____
- Some cells _____ their ability to _____ their _____ ___ _____ _____ – the DNA of these cells has become _____ or changed (_____)
- These _____ cells form masses called _____
- _____ tumors are ____ _____ – these cells ___ _____ _____ to other parts of the body
- _____ tumors are _____– these cells break loose and can invade and _____ _____ _____ in other parts of the body (called _____)
- Cancer is not just one disease, but _____ _____ – over _____ _____ types of cancers