

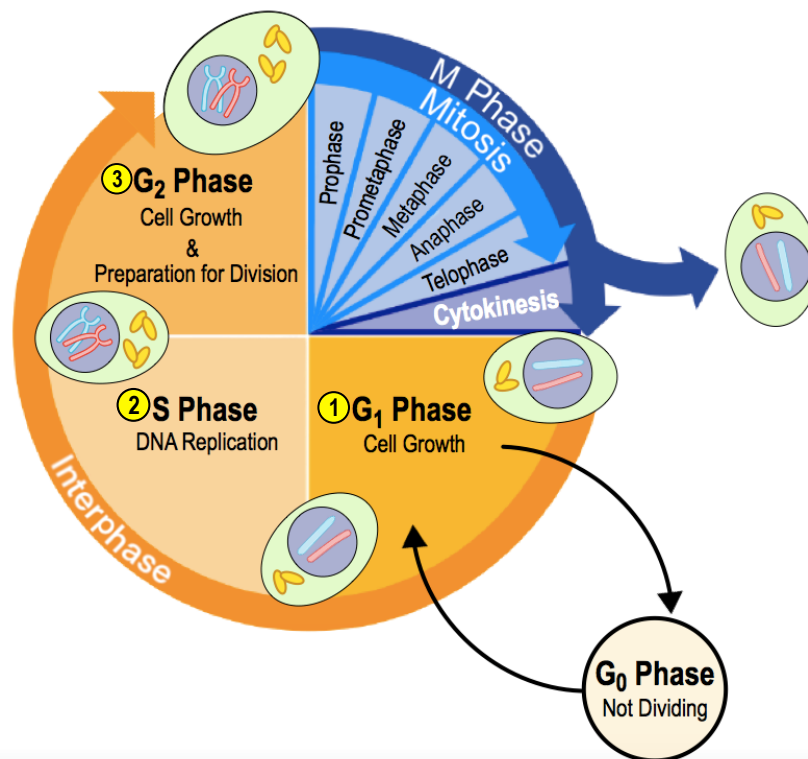
## CONCEPT: INTERPHASE

- Recall: *Interphase* is a \_\_\_\_\_-dividing stage of cell growth & organelle/enzyme production in preparation for cell division.
  - Makes-up majority of the *cell cycle* (interphase take a *long* time), while the M-phase is relatively \_\_\_\_\_.

### Sub-phases of Interphase

- Interphase is separated into \_\_\_\_\_ sub-phases based on specific events occurring inside the cell:

- ① \_\_\_\_\_ (**Growth**): cell performs its normal functions, growing & producing organelles/enzymes/proteins
- ② \_\_\_\_\_ (**Synthesis**): DNA \_\_\_\_\_ynthesis/replication producing *replicated chromosomes* with 2 *sister chromatids*.
  - A cytoplasmic protein called the **centrosome** is also replicated in the S phase.
- ③ \_\_\_\_\_ (**Growth**): cell continues growth & produces new proteins required for \_\_\_\_\_ phase.



- \_\_\_\_\_ **Sub-phase**: a *non-dividing* phase where cells do \_\_\_\_\_ replicate their DNA nor prepare for division.

**PRACTICE:** Cells spend the majority of their time in which one of the following phases of the cell cycle?

- a) Interphase.                      b) Prometaphase.                      c) Metaphase.                      d) Anaphase.

**PRACTICE:** The first phase in the cell cycle (G<sub>1</sub>) corresponds to \_\_\_\_\_.

- a) The phase between DNA replication and the M phase.                      c) The phase in which DNA is being replicated.  
b) The beginning of mitosis.                      d) Normal growth and cell function.

## CONCEPT: INTERPHASE

**PRACTICE:** Which pair includes a phase of the cell cycle and a cellular process that occurs during that phase?

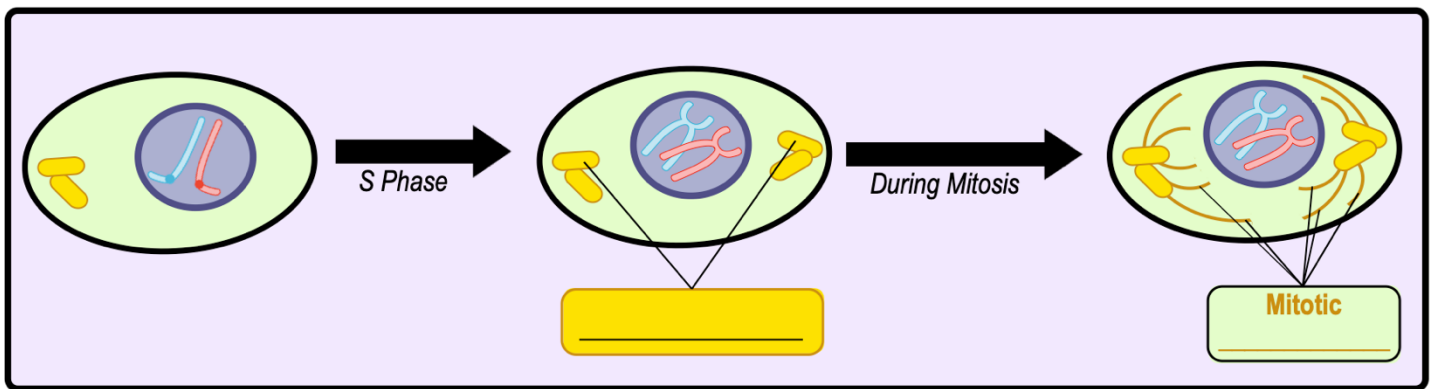
- a) G1 phase, DNA replication.
- b) G2 phase, preparation for mitosis.
- c) S phase, cell division.
- d) M phase, cell growth.

## Centrosomes & Mitotic Spindles

● **Recall:** During S Phase, cells replicate their DNA & the \_\_\_\_\_.

- **Centrosome:** a cytoplasmic protein complex that forms/organizes the \_\_\_\_\_ *spindle* during *Mitosis*.
- **Mitotic Spindle:** *microtubule* proteins of the cytoskeleton that coordinates division of \_\_\_\_\_.

**EXAMPLE:** Centrosome is Replicated in the S Phase & Forms the Mitotic Spindle during Mitosis.



**PRACTICE:** What is the name of the microtubule-organizing center found in animal cells as an identifiable structure present during all phases of the cell cycle?

- a) Spindle.
- b) Centromere.
- c) Centrosome.
- d) Kinetochore.

**PRACTICE:** What is the role of the spindle fibers during mitosis?

- a) They separate the chromosomes.
- b) They break down the nuclear envelope.
- c) They replicate the DNA.
- d) They condense the chromosomes.