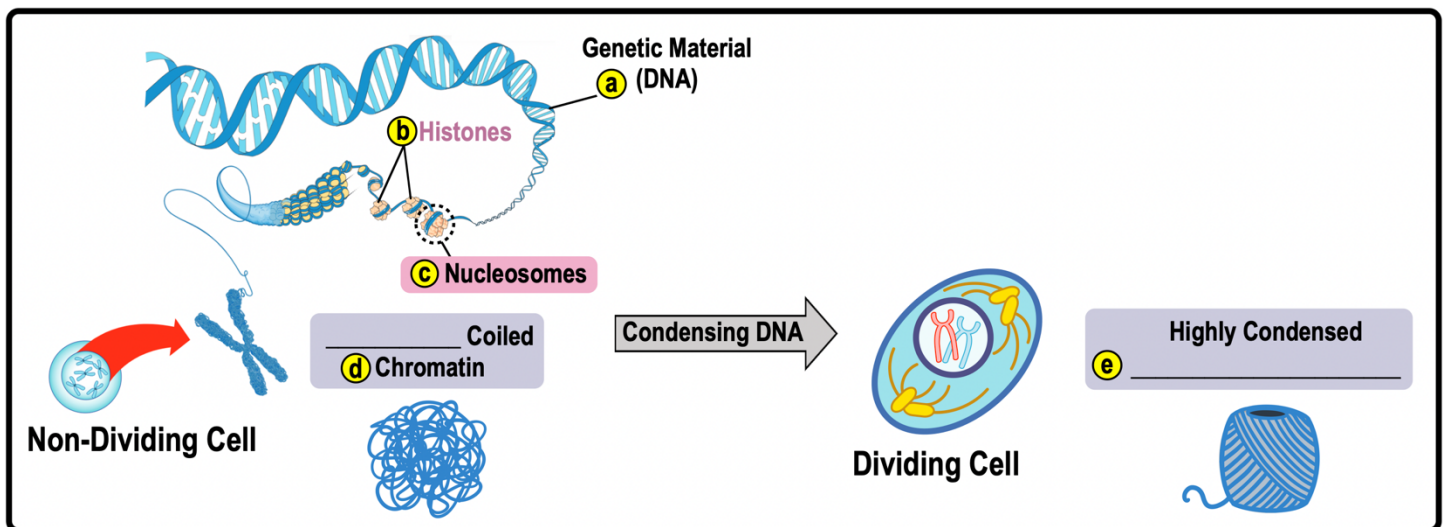


## CONCEPT: ORGANIZATION OF DNA IN THE CELL

- **Genome:** the complete set of \_\_\_\_\_ of the cell's DNA.
  - **Genetic Material:** molecules that determine the inherited traits of an organism (usually **a** \_\_\_\_\_).
  - DNA associates with proteins called **b** \_\_\_\_\_ to form units called *nucleosomes*.
  - **c Nucleosomes:** units of \_\_\_\_\_ *histone proteins* at the core with DNA wrapped around it.
- *Nucleosomes* in a cell take different *forms* depending on if the cell is \_\_\_\_\_-dividing or \_\_\_\_\_.
  - **d Chromatin:** \_\_\_\_\_ packed/coiled nucleosomes in *non-dividing* cells.
  - **e Chromosomes:** \_\_\_\_\_ packed, highly condensed, nucleosomes in a *dividing* cell.

**EXAMPLE:** Organization of DNA in the Cell.



**PRACTICE:** A collection of DNA and associated proteins in a cell defines the term:

- a) Sister Chromatids.
- b) Centromere.
- c) Chromatin.
- d) Chromosome.

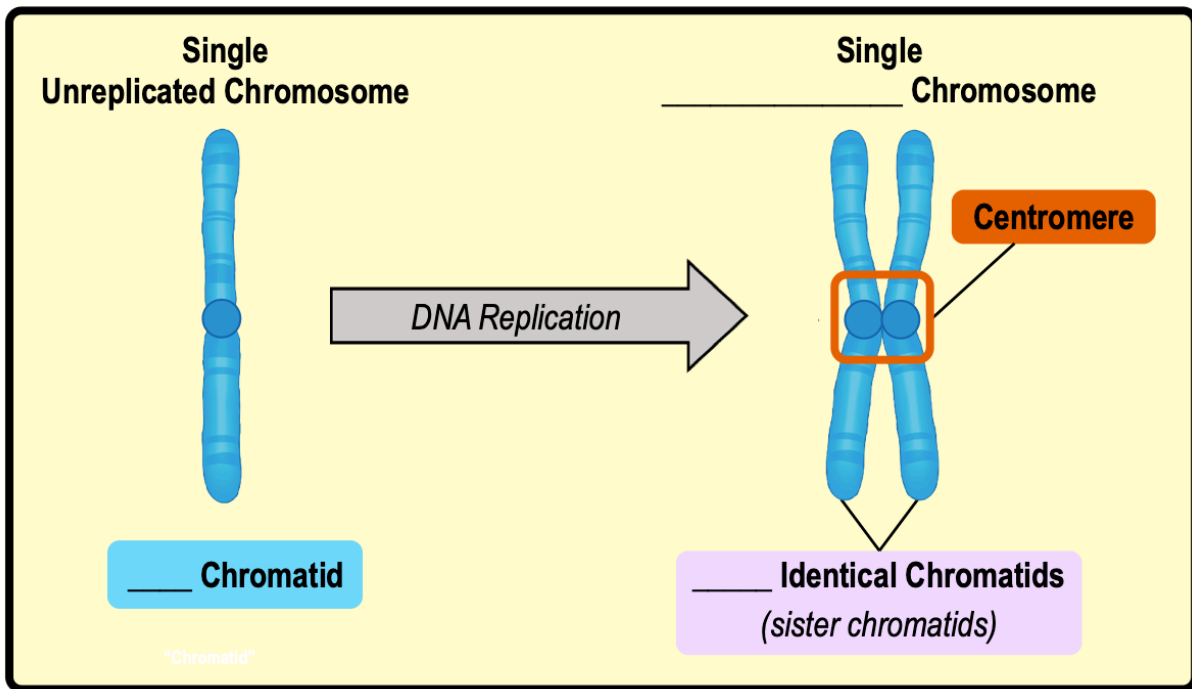
**PRACTICE:** Choose the option that correctly lists the following genetic material in a dividing cell from smallest to largest.

- a) DNA, Chromatin, Nucleosomes, Chromosomes.
- b) Chromatin, Nucleosomes, Chromosomes, DNA.
- c) DNA, Nucleosomes, Chromatin, Chromosomes.
- d) Chromosomes, Chromatin, Nucleosomes, DNA.

## CONCEPT: ORGANIZATION OF DNA IN THE CELL

## DNA Replication Produces Replicated Chromosomes

- **Recall:** Before a cell can divide, the DNA must be \_\_\_\_\_ (synthesized/duplicated).
  - **DNA Replication:** produces an exact \_\_\_\_\_ of all the DNA in a cell.
  - Converts \_\_\_\_\_ replicated chromosomes → replicated chromosomes with \_\_\_\_\_ identical "sister" chromatids.
  - **Chromatid:** \_\_\_\_\_ of a replicated chromosome joined to another chromatid at the \_\_\_\_\_.



**PRACTICE:** "Sister chromatids" are:

- a) Genetically identical & attached by a centromere.
- b) Genetically different & attached by a centromere.
- c) Genetically different & attached at the genome.
- d) Genetically identical & attached at the chromosome.

**PRACTICE:** The structures labeled Y in the image below are called:

- a) Centromeres.
- b) Centrioles.
- c) Sister chromatids.
- d) Spindles.

