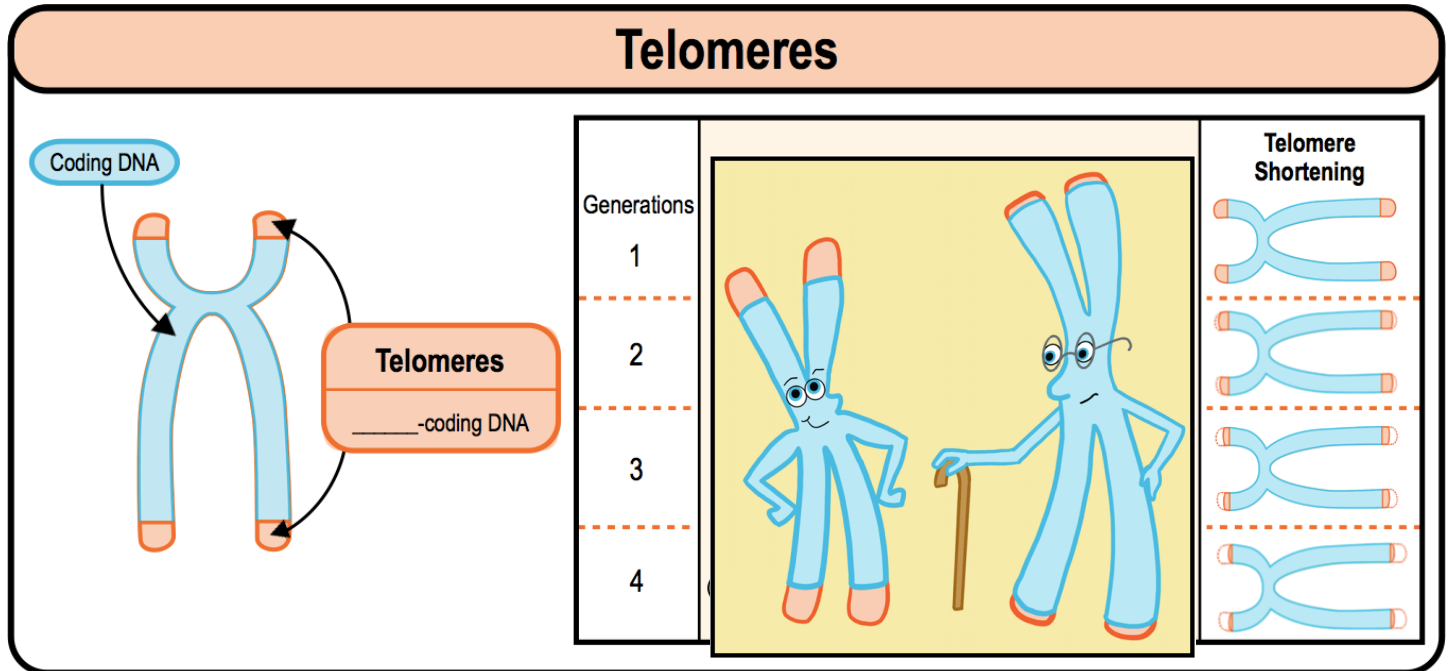


## CONCEPT: TELOMERES

- **Telomeres:** \_\_\_\_\_-coding DNA, consisting of repeating sequences, at the tips or ends of *eukaryotic* chromosomes.
  - In many cells, telomeres \_\_\_\_\_ with each round of DNA replication (has been linked to *aging*).
  - Significant telomere loss signals cell division to \_\_\_\_\_ in a normal cell.
- **Telomerase:** \_\_\_\_\_ found in some cells that catalyzes the *lengthening* of telomeres.
  - Usually expressed germ cells & in \_\_\_\_\_ cells, allowing them to maintain telomere length.



**PRACTICE:** What are telomeres?

- a) The region of DNA that holds two sister chromatids together.
- b) Enzymes that elongate a new DNA strand during replication.
- c) The sites of origin of DNA replication.
- d) The ends of linear chromosomes.

**PRACTICE:** Which of the following effects might be caused by reduced or very little active telomerase activity?

- a) Cells may become cancerous.
- b) Telomere lengthens in sex cells.
- c) Cells age and begin to lose function.
- d) Cells continue to function normally.

**CONCEPT: TELOMERES**

**PRACTICE:** Which of the following types of cells are affected most by telomere shortening?

- a) Prokaryotic cells only.
- b) Eukaryotic cells only.
- c) Prokaryotic and eukaryotic cells.
- d) Animal cells only.

**PRACTICE:** Telomere shortening puts a limit on the number of times a cell can divide. Research has shown that telomerase can extend the life span human cells. How might adding telomerase affect cellular aging?

- a) Telomerase will speed up the rate of cell division.
- b) Telomerase stops telomere shortening and slows or stops cellular aging.
- c) Telomerase shortens telomeres, which slows or stops cellular aging.
- d) Telomerase would have no effect on cellular aging.