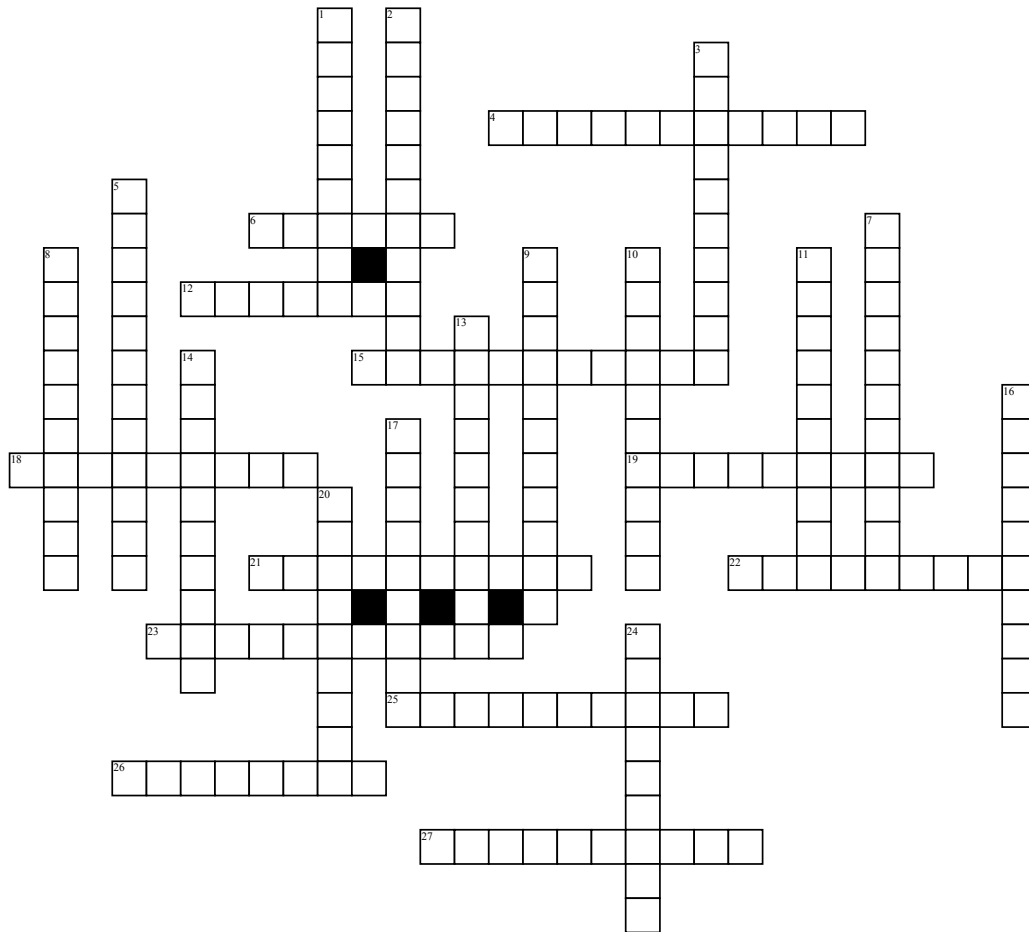


# The Cell Cycle: Mitosis & Meiosis



**Across**

- 4. The process that follows the last stage of mitosis. With two complete copies of the DNA now in two different regions of one cell, the cell membrane will pinch and divide the cytoplasm in half. The result is two individual cells that are identical to the original cell. Each of the two new cells have a complete copy of the DNA and contain all of the organelles that the original cell had.
- 6. Structure of 2 homologous chromosomes and 2 sets of sister chromatids.
- 12. A part of the cytoskeleton of a cell, formed in Prophase I, from which extend the fibers that organize and separate the sister chromatids.
- 15. Where the kinetochore microtubules attach to chromosomes to pull them to opposite poles of the cell.
- 18. The complex of DNA and proteins that makes up eukaryotic chromosomes. When the cell is not dividing, chromatin exists in its dispersed form as a mass of very long, thin fibers that are not visible with a light microscope.
- 19. Third stage of the first division of meiosis. Homologous chromosomes move to the opposite poles of the cell.
- 21. First stage of the second division of meiosis. Starts with two haploid cells; Nuclear membrane dissolves; spindle fibers form; chromosomes condense.
- 22. The X-shaped, microscopically visible region representing homologous chromatids that have exchanged genetic material through crossing over during meiosis.
- 23. Fourth stage of the second division of meiosis. Nuclear envelope reforms; spindle fibers dissolve; ends with four haploid cells.

- 25. A period of cell growth and normal activity. This period comes between mitosis in the cell cycle. Cells that do not need to replicate will spend their time in this stage. If a cell does need to divide, it will copy all of its DNA while period. This way, the cell has two complete copies of its DNA before it begins the process of mitosis.
  - 26. The pairing up or homologous chromosomes during Prophase I.
  - 27. A cellular structure carrying genetic material, round in the nucleus of eukaryotic cells. Each chromosome consists of one very long DNA molecule and associated proteins.
- Down**
- 1. One of two identical joined copies of the original chromosome.
  - 2. Second stage of the second division of meiosis. Chromosomes line up across the center of the cell, spindle fibers attach to chromosomes.
  - 3. In a duplicated chromosome, the region on each sister chromatid where they are most closely attached to each other by proteins that bind to specific DNA sequences, this close attachment causes a constriction in the condensed chromosome.
  - 5. When sister chromatids exchange genetic material during Prophase I.
  - 7. Four cells have formed and each nucleus contains a haploid number of chromosomes. Cytokinesis occurs during meiosis II.
  - 8. Cells in interphase carry out various processes, such as replicating DNA and chromosomes and synthesizing proteins. Interphase occurs during meiosis I.
  - 9. The cell splits into two daughter cells, each w the same number of chromosomes as the parent. in humans, such cells have two copies of 23 chromosomes and are called diploid

- 10. Fourth stage of the first division of meiosis. Nuclear membrane forms; spindle fibers dissolve; two haploid cells are formed
- 11. Second stage of the first division of meiosis. Pairs of homologous chromosomes move to the equator of the cell.
- 13. The fourth and last stage of mitosis. During this stage the chromosomes gather at opposite ends of the cell and lose their distinct rod-like shapes. Two new nuclear membranes then form around each of the two regions of DNA and the spindle fibers disappear.
- 14. The second stage of mitosis. In this stage the chromosomes line up across the center of the cell and become connected to the spindle fiber at their centromere.
- 16. Third stage of the second division of meiosis. Centromere break, releasing chromatids; chromatids move to opposite poles of the cell.
- 17. The first and longest stage of mitosis. In this stage the chromosomes become visible and the centrioles separate and move to opposite poles of the cell.
- 20. First stage of the first division in meiosis. The chromosomes condense, and the nuclear envelope breaks down. Crossing-over occurs.
- 24. The third stage of mitosis. In this stage the sister chromatids separate into individual chromosomes and are pulled apart.

**Word Bank**

- |               |             |             |             |              |             |              |
|---------------|-------------|-------------|-------------|--------------|-------------|--------------|
| Interphase    | Cytokinesis | Centromere  | Tetrad      | Metaphase I  | Prophase I  | Chromatin    |
| Crossing Over | Metaphase I | Kinetochore | Telophase I | Metaphase II | Anaphase I  | Telophase II |
| Prophase I    | Cytokinesis | Prophase II | Chiasmata   | Synapsis     | Chromatid   | Chromosome   |
| Interphase    | Cytokinesis | Anaphase I  | Anaphase II | Spindle      | Telophase I |              |