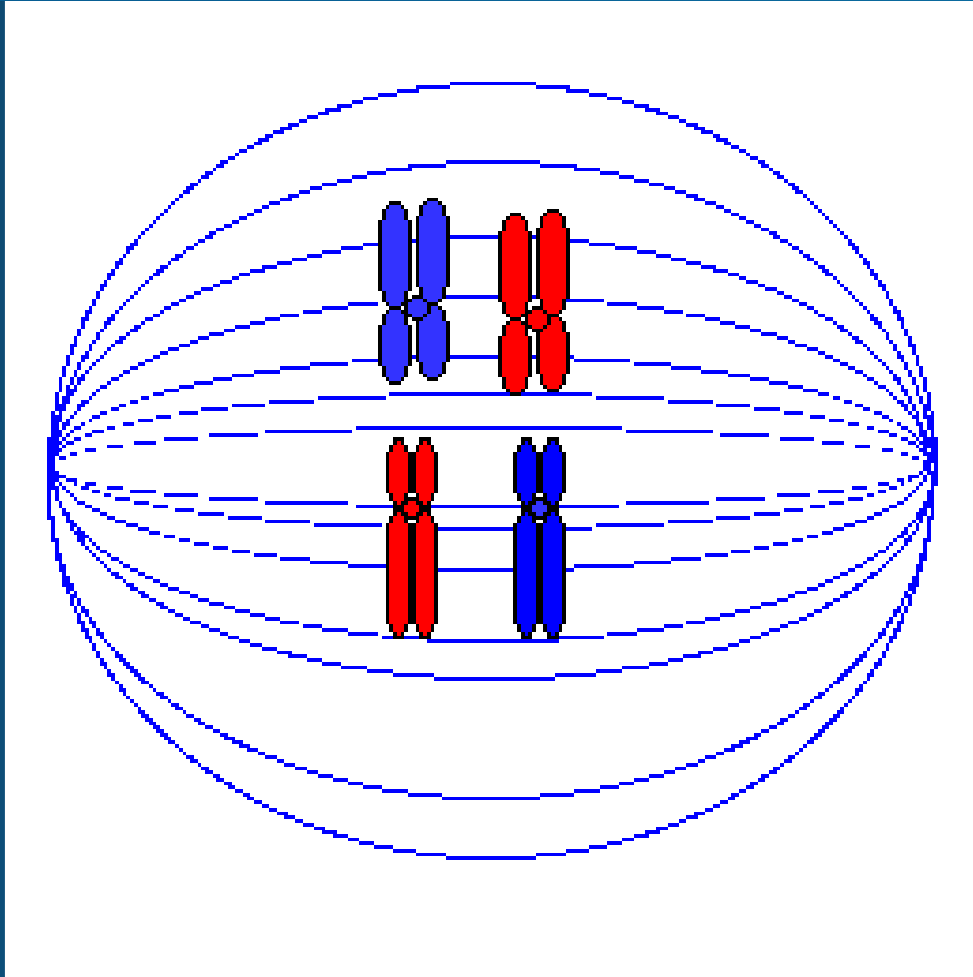


Reproduction in Somatic and Embryogenic cell



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Reproduction in Somatic and Embryogenic Cells

- ❖ Reproduction in cells can happen in various ways, and it differs between somatic cells (body cells) and embryogenic cells (cells involved in the development of an embryo).

Somatic Cell Reproduction

- ❖ 1. Mitosis:
- ❖ Purpose: The main goal is growth, repair, and maintenance of tissues.
- ❖ Interphase: The cell prepares for division by growing and duplicating its DNA.
- ❖ Prophase: The chromatin condenses into visible chromosomes, and the nuclear membrane begins to break down.
- ❖ Metaphase: Chromosomes line up in the middle of the cell.
- ❖ Anaphase: Sister chromatids (duplicated chromosomes) are pulled apart to opposite sides of the cell.
- ❖ Telophase: Nuclear membranes start to form around each set of chromosomes.
- ❖ Cytokinesis: The cell splits into two identical daughter cells.

Somatic Cell Reproduction

❖ 2. Characteristics:

- ❖ Produces two identical daughter cells.
- ❖ Each daughter cell has the same number of chromosomes as the original cell (diploid).
- ❖ This process is common in skin, muscle, and other body tissues.

Embryogenic Cell Reproduction

- ❖ 1. Meiosis:
- ❖ Purpose: To produce gametes (sperm and egg cells) for sexual reproduction.
- ❖ Meiosis I:
- ❖ Prophase I: Chromosomes condense, and homologous chromosomes pair up and exchange segments (crossing over).
- ❖ Metaphase I: Paired homologous chromosomes line up in the middle of the cell.
- ❖ Anaphase I: Homologous chromosomes are pulled to opposite sides of the cell.
- ❖ Telophase I: Two new nuclei form, and the cell divides (cytokinesis).

Embryogenic Cell Reproduction

- ❖ Meiosis II: (Similar to mitosis)
- ❖ Prophase II: Chromosomes condense again in each of the two new cells.
- ❖ Metaphase II: Chromosomes line up in the middle of each cell.
- ❖ Anaphase II: Sister chromatids are pulled apart.
- ❖ Telophase II: New nuclei form, and each of the two cells divides, resulting in four cells in total.

Embryogenic Cell Reproduction

❖ 2. Characteristics:

- ❖ Produces four non-identical daughter cells.
- ❖ Each daughter cell has half the number of chromosomes as the original cell (haploid).
- ❖ This process creates genetic diversity in the offspring.

Embryogenic Cell Reproduction

- ❖ Key Differences

- ❖ **Mitosis (Somatic Cell Reproduction):**

- ❖ One division process.

- ❖ Results in two identical diploid ($2n$) cells.

- ❖ Used for growth and repair.

- ❖ **Meiosis (Embryogenic Cell Reproduction):**

- ❖ Two division processes.

- ❖ Results in four non-identical haploid (n) cells.

- ❖ Used for sexual reproduction.

THE END