

Meiosis

How do sex cells end up with half the number of chromosomes as body cells? To answer this question, you need to understand the events that occur during meiosis. **Meiosis** (my OH sis) is the process by which the number of chromosomes is reduced by half to form sex cells—sperm and eggs.

You can trace the events of meiosis in *Exploring Meiosis*. In this example, each parent cell has four chromosomes arranged in two pairs. During meiosis, the chromosome pairs separate and are distributed to two different cells. The resulting sex cells have only half as many chromosomes as the other cells in the organism. In *Exploring Meiosis*, notice that the sex cells end up with only two chromosomes each—half the number found in the parent cell. Only one chromosome from each chromosome pair ends up in each sex cell.

When sex cells combine to produce offspring, each sex cell will contribute half the normal number of chromosomes. Thus, the offspring gets the normal number of chromosomes—half from each parent.

✓ **Checkpoint** What types of cells form during meiosis?

EXPLORING Meiosis

During meiosis, a cell undergoes two divisions to produce sex cells that have half the number of chromosomes.

1 Beginning of Meiosis

Before meiosis begins, every chromosome in the cell is copied. As in mitosis, centromeres hold the double-stranded chromosomes together.

2 Meiosis I

The chromosome pairs line up next to each other in the center of the cell. The pairs then separate from each other and move to opposite ends of the cell. Two cells form, each with half the number of chromosomes. Each chromosome is still double-stranded.

3 Meiosis II

The double-stranded chromosomes move to the center of the cell. The centromeres split and the two strands of each chromosome separate. The two strands move to opposite ends of the cell.

4 End of Meiosis

Four sex cells have been produced. Each cell has only half the number of chromosomes that the parent cell had at the beginning of meiosis. Each cell has only one chromosome from each original pair.

