

How Do Cells Help Animals Reproduce?

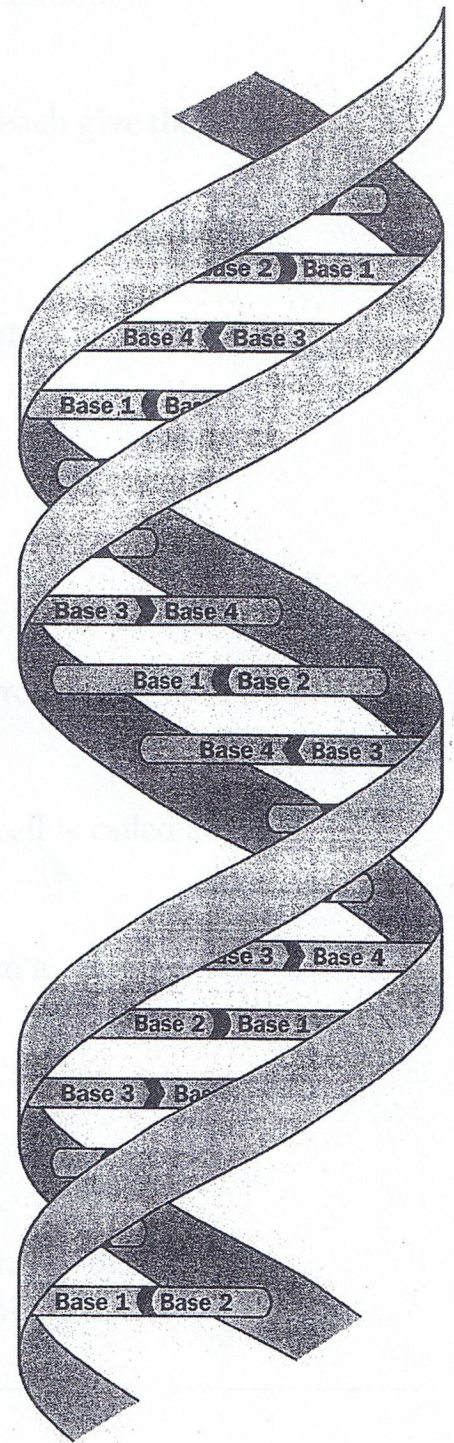
Like plants, animals produce sex cells, or eggs and sperm, by a second kind of cell division called meiosis. Meiosis results in new cells that have only half the usual number of chromosomes found in other cells in the animal's body. For example, a certain fly has two pairs of chromosomes in the nucleus of each of its body cells. Two pairs of chromosomes make a total of four chromosomes. During meiosis, cell division separates the pairs. When each new sex cell forms, only one chromosome from each pair is in the nucleus, making two chromosomes in all, or half the number of chromosomes in the parent cell.

You learned that inside the nucleus of a cell, the chromosomes form a tangled ball of threads. If you straighten a chromosome thread and make it large enough to see, you would see that it is shaped like a twisting ladder. This ladder is called **DNA**, and it holds the genetic codes that direct the size, shape, and behavior of living cells.

The DNA ladder has sides and steps. The steps, or rungs, of the ladder are built of special molecules called **bases**. Think of these bases as DNA's alphabet. Although there are only four bases, they are arranged and repeated in many ways to build a cell's genetic code. Each piece of a DNA molecule that carries a single message for the cell is called a **gene**. Every cell in an animal's body, other than the sex cells, has the same genetic information in its nucleus.

Remember that sex cells have only half as much genetic information as other cells. When an egg and a sperm join, their chromosomes combine to make the first cell of a new animal. Just as in plants, this first cell is called a **zygote**, and it has chromosomes from both its parents. And, like in plants, this means the animal will be like its parents, but also different from its parents.

DNA—The Code of Life



The order of bases in DNA acts like an alphabet. It "prints" the genetic codes.

A.

Write True if the sentence is true. Write False if the sentence is false.

- _____ 1. Meiosis makes new cells with half the number of chromosomes as in the parent cell.
- _____ 2. During meiosis, chromosome pairs always stay together.
- _____ 3. Chromosomes are built from a material called DNA.
- _____ 4. A DNA molecule looks like a twisting ladder.
- _____ 5. A thread of DNA is made of genes.
- _____ 6. When they reproduce, parent animals each give their baby a complete set of chromosomes.

B.

Write the word or words that best complete each sentence.

bases DNA gene zygote

- 1. A chromosome is made of a very long thread of _____.
- 2. The "steps" of a DNA molecule are built of different kinds of _____.
- 3. A piece of DNA that codes one message for the cell is called a _____.
- 4. When an egg cell and a sperm cell join, they form a _____.

C.

Write one or more sentences to answer the question.

One parent fly has red eyes, and the other parent fly has white eyes. The offspring has pink eyes. How do you explain this?
