Cell Reproduction : Notes/W.S.-40

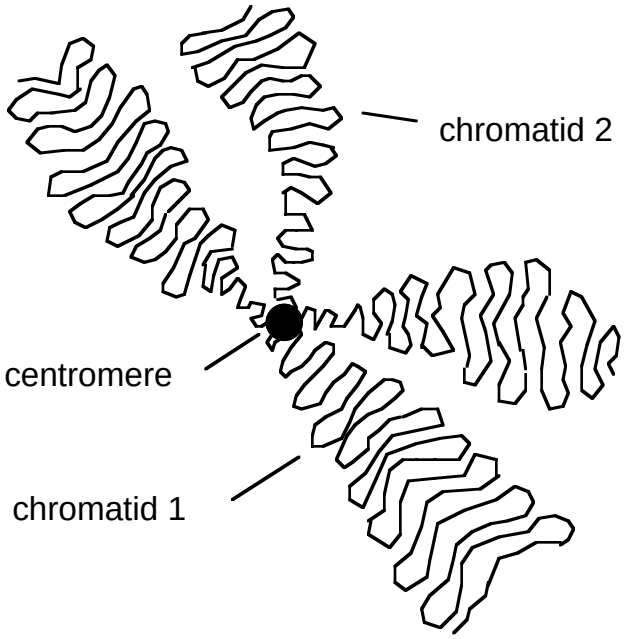
A cell can reproduce itself by a process called **mitosis**. The "parent" cell splits into two identical "daughter" cells.

This is an example of **asexual reproduction**.

This process is accomplished by the DNA in the nucleus. The DNA (deoxyribonucleic acid) is a long molecule found in the **chromatin** of the nucleus which contains all of the information necessary to run the cell. The DNA molecule can also make a copy of itself. This is called **replication**.

After the copy is made, the chromatin condenses into a double chromosome. This **chromosome** consists of two identical chromatids that are held together by the centromere.

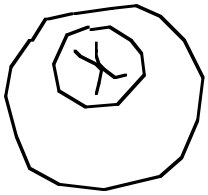
Chromosome (detail)



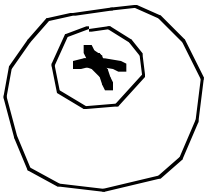
This double chromosome splits into two parts. One chromatid goes to one of the daughter cells and the other chromatid goes to the other daughter cell. The chromosomes are identical (same DNA), so the daughter cells are identical with the parent cell.

The diagram below shows the steps in mitosis. The cell shown has only one chromosome. The number of chromosomes in a cell varies. The body cells of corn contain 20 chromosomes. The body cells of the fruit fly contain 8 chromosomes. Human body cells contain 46 chromosomes.

Steps in Mitosis

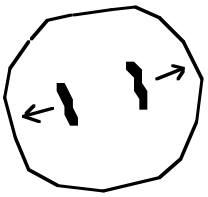


chromatin (DNA) replicates

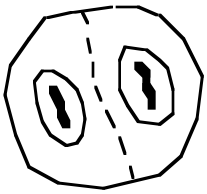


chromosome condenses

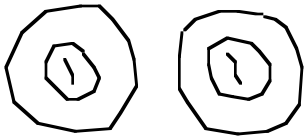
nuclear membrane disappears, chromosome splits



chromosomes move to opposite sides of the cell



nuclear membrane forms around each chromosome. cell membrane forms



parent cell splits into two daughter cells

Steps for Mitosis

1) DNA in chromatin replicates.

2) Double chromosome forms. Two identical chromatids are joined by the centromere.

3) Nuclear membrane disappears. Chromosomes split into two parts.

4) The two chromosomes move to opposite sides of the cell.

5) Two nuclear membranes form around each chromosome. Cell membrane forms.

6) Parent cell splits into two daughter cells.

Questions:

1) What is mitosis?

2) What is DNA?

3) Where is the DNA located within the cell?

4) What does the word replication mean?

5) State the six steps in the process of mitosis.

6) What is a chromosome?

7) Draw a picture of a chromosome. Name the parts.

8) Explain why the two daughter cells are identical to the parent cell.

Answers: 1) Mitosis is the process where a parent cell splits into two identical daughter cells., 2) It is a molecule that contains all of the information necessary to run the cell., 3) The DNA is located in the nucleus., 4) duplicate, or reproduce, 5) see text, 6) It is a structure that forms when the cell is about to reproduce. It is condensed DNA., 7) see text, 8) They have identical DNA.