



MITOSIS

(Bobbitt Blue Series)

- 1 prophase
- 2 early metaphase, polar view
- 3 metaphase
- 4 early anaphase
- 5 mid anaphase
- 6 late anaphase
- 7 late telophase
- 8 interphase

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During the period between cell divisions (**interphase**) the chromosomes are in the form of very fine threads which cannot be distinguished with the usual microscope. It is probably during this portion of the life history of the cell when most of the synthesis of new protein occurs.

As the cell begins to divide (**prophase, 1**) the chromosomes within the nucleus begin to shorten and become thicker. This is accomplished by a coiling process which may be likened to a coiled spring. The nuclear membrane disappears; as this occurs a spindle-shaped mass of fibers appears around the chromosomes. These fibers connect the chromosomes to the two poles of the spindle in which lie two dense bodies called centrosomes.

The chromosomes then migrate to a plane halfway between the poles of the spindle. This plane is called the equatorial plate and is the plane along which the cell eventually divides. Model 2 represents a polar view of this stage of cell division (**metaphase**).

During this stage each chromosome becomes visibly split into two distinct parts. This lengthwise separation of the chromosomes is shown in model 3. The chromosomes appear to be shorter in this and the following two models because they extend above and below the section represented.

The daughter chromosomes then start to diverge (**early anaphase, 4**), moving toward the opposite poles of the spindle.

As they move farther apart (**late anaphase, 5**), each of the chromosomes appears to be attached to a spindle fiber at a given point, the centromere. The centromere is concerned with the anaphase movements of the chromosomes and leads them toward the poles of the spindle.

As the chromosomes approach the poles (**early telophase, 6**) they come close together in a mass and the cell first elongates and then constricts along the equatorial plate. This constriction progressively deepens until it completely separates the two daughter cells and their chromosomes (**late telophase, 7**).

Finally the chromosomes uncoil and return to the fine threadlike form of the interphase. As they uncoil a nuclear membrane is formed and the two daughter nuclei are produced, each of which is identical in form and chromosome number to the mother nucleus (8).