Telophase

Telophase is the fourth phase of cell division and is characterized by the physical splitting of the original cell into two daughter cells. Cytokinesis occurs during telophase and is the process of separating the plasma and organelles between each daughter cell. In meiosis I telophase, the cell has now become haploid because each daughter cell only has one parent's genetic information for each chromosome (1-23). The other parent's chromosomes are in the other daughter cell. This is known as reductional division. In meiosis II telophase, the new daughter cells are haploid and the original cell was also haploid. This is because meiosis II picks up where meiosis I leaves off, and meiosis I left off with two haploid cells. Those haploid cells have an extra copy of a chromatid from each parent and split the two sister chromatids into individual daughter cells. In mitosis telophase, the new daughter cells are diploid and the original cell was also diploid. This is because in prophase, homologous chromosomes DO NOT pair and instead line up independently on the metaphase plate. Thus, each cell gets one chromatid from each parent for each of the 23 chromosomes, resulting in diploid daughter cells. Finally, the chromosomes decondense from chromatids to chromatin allowing the genetic information to be read by polymerase again. The nuclear membrane reforms and the nucleoli re-appear, finalizing the creation of two complete daughter cells.

PLAY PICMONIC

Cytokinesis Divides Cells

Side-toe-police Splitting the Cell

Cytokinesis is the separation of plasma and organelles between each daughter cell so that it has what it needs to survive.

Meiosis I Cell Ends Haploid

Mouse-rose (1) Wand with Hat-plaid-sister chrome-kids

In meiosis I, the cells begin as diploid and become haploid. At the end of replication they only have one original copy of each chromosome, while the original cell had two distinct copies of chromosomes (two alleles).

Meiosis II Cell Ends Haploid

Mouse-rose in (2) Tutu with Hat-Plaid chrome-kids

In meiosis II, the cells begin as haploid and stay haploid. The original parent cell had one pair of sister chromatids for each chromosome (1-23), but did not have a pair from each parent. Thus, the original cell had double the amount of genetic material in two identical copies. When those identical copies are split into two daughter cells, they too only have information from one parent, indicating a haploid to haploid division.

Mitosis Cell Ends Diploid

Mitt-toes with Diaper-plaid Chrome-kids

In mitosis, cells that started out as diploid remain diploid, meaning they still have genetic information from both parents. This is because homologous chromosomes are not paired in prophase and are lined up individually on the metaphase plate, resulting in both daughter cells getting two separate copies of genes.

Chromosomes Decondense into Chromatin

Chrome-tin-cans

Chromatin is condensed into chromosomes for replication and separation, but they now begin to decondense back into chromatin. The condensing of chromatin into chromosomes during mitosis facilitates easier transportation and attachment of mitotic spindles to the kinetophores.

Nuclear Membrane Reforms

Nuclear-balloons

The nuclear membrane reforms in each almost-separated daughter cell around the set of chromosomes. Nucleoli also re-appear.