



BIO380F—HUMAN DEVELOPMENT

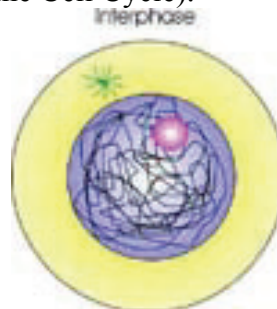
Professor Danton H. O'Day

University of Toronto at Mississauga

Supplementary Material: Mitosis

INTERPHASE

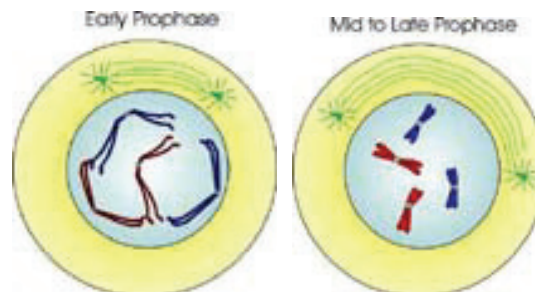
Most cells are in interphase, the phase between cell divisions. At this point the chromosomes are uncondensed with their strands existing as chromatin in the nucleus. They become condensed as chromosomes during mitosis. Prior to the actual events of mitosis, the DNA complement of the chromosomes is duplicated (see Events of the Cell Cycle).



Human somatic cells and stem cells divide by mitosis. This process maintains the diploid status of cells. Mitosis is comprised of four successive phases: prophase, metaphase, anaphase, telophase.

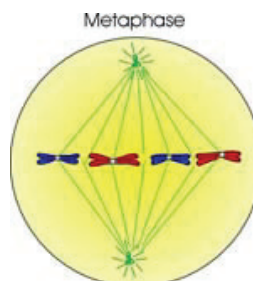
PROPHASE

Chromosome condensation occurs during prophase. At this time the nuclear envelope breaks down and the spindle fibres (microtubules) become organized. The chromosomes begin to organize themselves along the future metaphase plate.



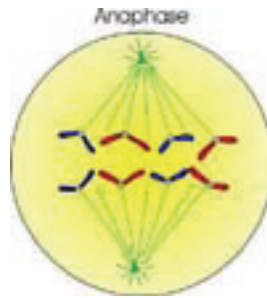
METAPHASE

At metaphase the chromosomes are aligned at the metaphase plate and are attached to microtubules within the spindle.



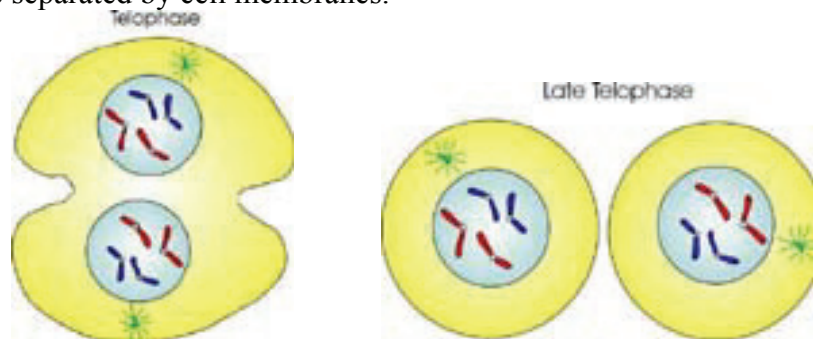
ANAPHASE

During anaphase, the sliding of the microtubules pulls the chromosomes towards the poles pulling the sister chromatids apart.



TELOPHASE

Once the chromosomes are at the poles the cells are in telophase and the nuclear envelope reforms as the daughter cells become separated by cell membranes.



At this point the chromosomes will decondense and a nucleolus will reform as the cells enter into interphase.



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