

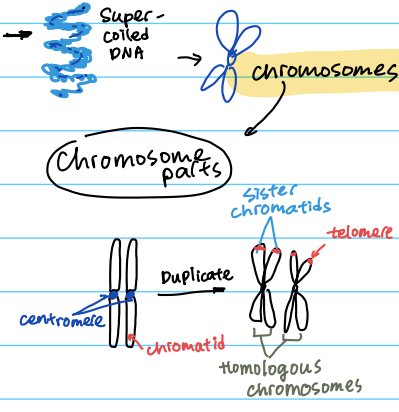
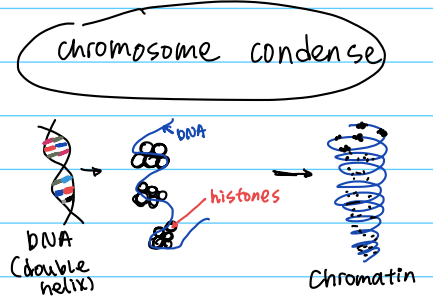
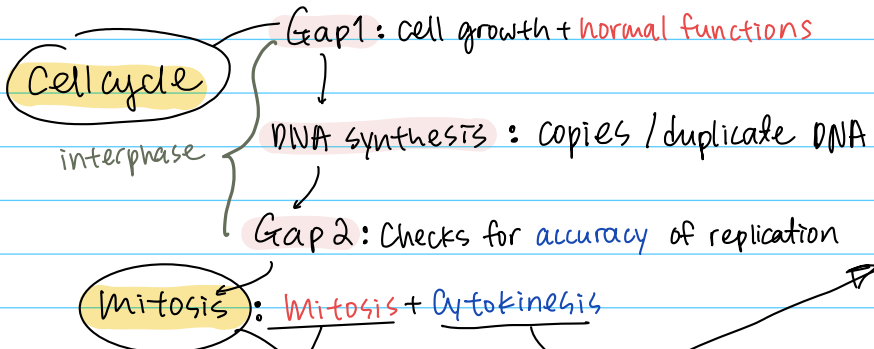
Mitosis & Cytokinesis

Topics

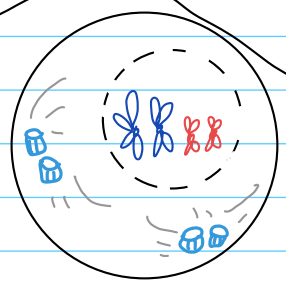
- Cell cycle
 - 4 main stages
- Chromosome parts
- Mitosis
 - 4 phases
- Cytokinesis
 - animal cells v.s. plant cells
- Cell division rate
- Diploid / Haploid
 - autosomal cell, somatic
- Karyotype

Vocabulary

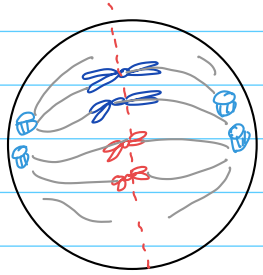
- mitosis - division of **nucleus**
- Cytokinesis - division of **cytoplasm**.
- histones - **Proteins** that **DNA** wraps around.
- Chromatin - **DNA** and **histones** wrapped compactly around.
- Chromatid - **half** of duplicated chromosome.
- centromere - the **center** point of chromosomes.
- Telomere - **Protect** DNA and **do not include genes**.
- spindle fibers - protein that drags chromatids apart.
- centrioles - involved in the production of spindle fibers.
- cleavage furrow / cell plate - developed in cytokinesis.
- Autosomal cells / Somatic cells^{2N} - body cells (non-sex).
- Homologous chromosomes - 2 same chromosomes.
- Karyotype - the number & appearance of chromosomes.



- ### prophase
- Chromosomes condense
 - nuclear membrane disappear
 - Centrioles appearing
 - Spindle fibers form



- ### Metaphase
- chromosomes line up across the middle of the cell
 - Spindle fibers connect centromeres to the poles of the cell.

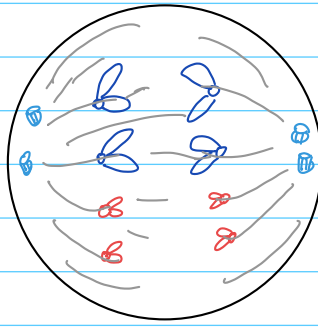


- ### Cell division rates
- cells divide at different rates based on their type
 - some cells don't divide

shortest phase of mitosis

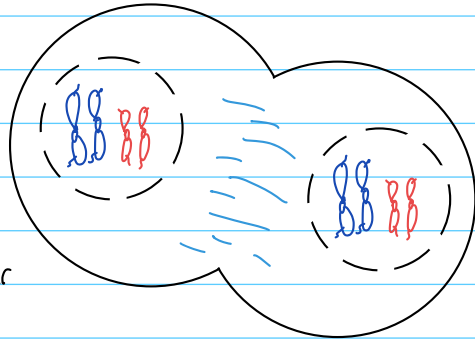
Anaphase

- Centromeres split
- sister chromatids separate
- separated chromatids move to opposite poles of the cell.



Telophase

- Chromosomes lengthening
- nuclear membrane reappearing
- Cleavage furrow forming
- Spindle fibers & centrioles disappear

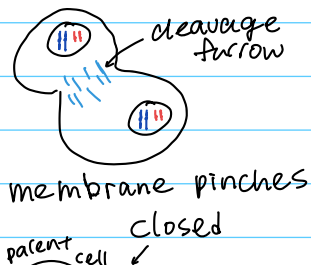


In telophase, cells won't completely separate

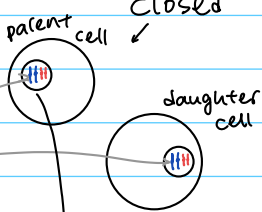
Animal cells

Cytokinesis

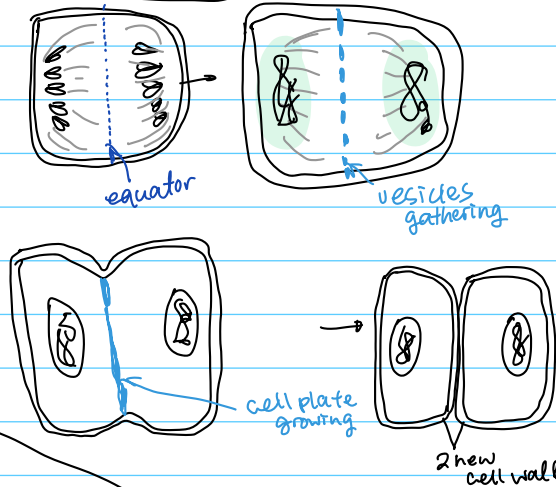
Animal cells



should be diffused DNA



Plant cells



Diploid cells

- $2N \rightarrow$ in pairs
- = autosomal
- = somatic
- \rightarrow Body cells / non-sex cells
- humans have 23 sets of 2 chromosomes
- 46 chromosomes
- \rightarrow 22 pairs regular chromosomes + 1 pair sex chromosomes

Haploid

- N
- \rightarrow sex cells (eggs or sperms)

karyotype

- shows the number / appearance of the chromosomes.

