# Cells

## Organelles

### Nucleus

#### DNA - Deoxyribonucleic Acid

DNA -> (via messenger RNA) -> Ribosome (using Ribosomal RNA to hold mRNA in place) -> (via transfer RNA) ->Product

TRANSCRIPTION PROCESS

TRANSLATION PROCESS

1 less oxygen on ribose then RNA

Lenghts of DNA = Chromosomes (About a yard long wrapped around histones - little proteins)

Double StrandedComplimentary Base Pairing

```
S - A = T - S
P           P
S - T = A - S
P           P
S - G ≡ C - S
P           P
S - C ≡ G - S
P           P
S - G ≡ C - S
P           P
```

Double Strands = 2 halves of the latter

Uses: A, T, G, C

- Adenine
- Thyamine
- Cyosine
- Gaunine

Large Molecule

#### RNA - Ribonucleic Acid

Single Stranded

Small Molecule

Transports copied code off of DNA to Ribosomes

Uses: A U C G

- Adenine
- Uracil
- Cyosine
- Ganuine

Types

- Messenger RNA
  - Transfers DNA code to Ribosomes
- Ribosomal RNA
  - Holds mRNA in place
- Transfer RNA
  - Each piece matches an Amino Acid

#### Nucleur Membrane

Regulate entry/exit

Made of: Phospholipid Bilayers

### Ribosomes

- Translates the mRNA sequences that were Transcripted from the DNA in to a Protein or Enzyme
- Mitochondria
  - Energy Processor
  - ATP + Oxygen = Energy + Carbondioxide
- Endoplasmic Reticulum
  - Rough
    - with Ribosomes
  - Smooth
    - w/o Ribosomes
  - Network of membranes
- Lysosome
  - Consumes external products for cell
- Centrioles
  - Assist in Cell Division (Mytosis)
- Cilia
  - hair like appendages to the cell
- Flagella
  - cell tail

## Life Cycle

- Interphase
  - G1 - Growth Phase - Doing It's Job
  - S - Synthesis Phase - Doubles Chromosomes 46 -> 92
  - G2 - Growth Phase 2 - Job + Growth
- Mitosis
  - Prophase
    - Nuclear Membrane dissolves
    - Nuclear Material Organizes
    - Centrioles move to outside of nucleus
    - Nuclear Material moves to center of cell
  - Metaphase
    - Material meets in middle
  - Anaphase
    - Material sperates to two sides of cell
  - Telophase
    - Begins to split
    - Cytokinesis - cell completes split

## Transfer of Material Through Cell Membrane

- Active
  - endocytosis
    - bring in to cell material through invagination
    - if liquid pinocytosis
    - if solid phagocytosis
  - exocytosis
    - expell through evagination material from cell
  - active transport
    - Go against the concentration gradient (low -> high)
- Passive
  - diffusion
    - simple - high->low concentration of particles
    - facilitated = w/ help of helper molcules
  - **f**iltration
    - **F**orcing **F**luid through **F**enestrations in a **F**ilter

osmosis
high->low concentration of fluids
Crenate - loss of fluids to outside that is hypertonic (extra particles)
lysis - absorption of fluids from outside that is hypotonic (few particles)
homeostasis - no movement since equal particles in and out - isotonic

## Cell Membrane

Regulate entry / exit to cell
Made of: Phospholipid Bilayers

## Cytoplasm

Coloid (type of suspension) fluid for organelles

## Cytology - The Study of Cells