**EUKARYOTIC CELL STRUCTURES**
Created by: Caitlin King

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- **Centrioles**: Works on the organization of the cell by spacing where the nucleus is compared to the other organelles.

- **Centrosome Matrix**: Helps to form the microtubules.

- **Chromatin**: Helps to package DNA, especially during mitosis, and helps control which genes are expressed.

- **Cytosol**: The liquid that all of the organelles float in inside of the cell.

- **Cytoskeleton**: The most common function is to act, as the name suggests, a skeleton for the cell to provide support and shape.
  
  - **Intermediate filaments**: Help make up the cytoskeleton, usually thicker than microfilaments.
  
  - **Microtubules**: Helps form the cytoskeleton for support of the cell, as well as movement of the cell.

- **Golgi apparatus**: The Amazon shipping center of proteins, this acts to package proteins from the ER into transport vesicles to be carried to other parts of the cell.

- **Lysosomes**: The Rumba of the cell, it acts to engulf any toxic or unwanted molecules so that the cell is not harmed. Can also work in groups to take down bigger molecules that it alone cannot.

- **Mitochondrion**: The power house, creates all of the energy needed for the cell by breaking down glucose into water, oxygen, and ATP (the unit that represents energy).
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**Nucleus**: Where all of the DNA is housed to give out instructions.

**Nucleolus**: Between the nucleus and the nuclear envelope, it acts as the factory for creating ribosomes that the rest of the cell can use.

**Nuclear Envelope**: A double layered membrane that protects the nucleolus and the nucleus.

**Peroxisomes**: Breaks down fatty acids into hydrogen peroxide, but don’t worry, that breaks down into water and oxygen.

**Plasma membrane**: The shell of the cell, protects all of the organelles and controls what molecules enter and exit.

**Ribosomes**: Where proteins are synthesized in the cell, creating different forms of amino acids together to create the proteins.

**Rough Endoplasmic Reticulum**: Helps ribosomes bind so proteins can be made and folded properly.

**Smooth Endoplasmic Reticulum**: Breaks down carbohydrates, creates lipids that are needed for the cell, and regulates calcium in the muscles.

*Secretion of Exocytosis*: Toxins and other degraded products of the cell and released along the cell membrane outside of the cell to be disposed of. Note that this is a function of the cell and not an actual structure.

**Review Time!**

Match the names to the function descriptions

1. Mitochondria
2. Nucleus
3. Rough endoplasmic reticulum
4. Ribosomes
5. Plasma Membrane
6. Cytoskeleton
7. Lysosomes
8. Smooth endoplasmic reticulum
9. Golgi Apparatus

A. Breaks down Carbohydrates
B. Creates energy for the cell
C. Protects all other organelles
D. Helps bind ribosomes
E. Provides support
F. Holds all DNA
G. Engulfs toxic waste
H. Transports proteins
I. Synthesizes proteins

Answers: 1B, 2F, 3D, 4I, 5C, 6E, 7G, 8A, 9H

Reference:
The following resources were referenced during the creation of this handout: *TES Syllabus and Revision Notes* and *Molecular Biology of the Cell, 4th Edition*.