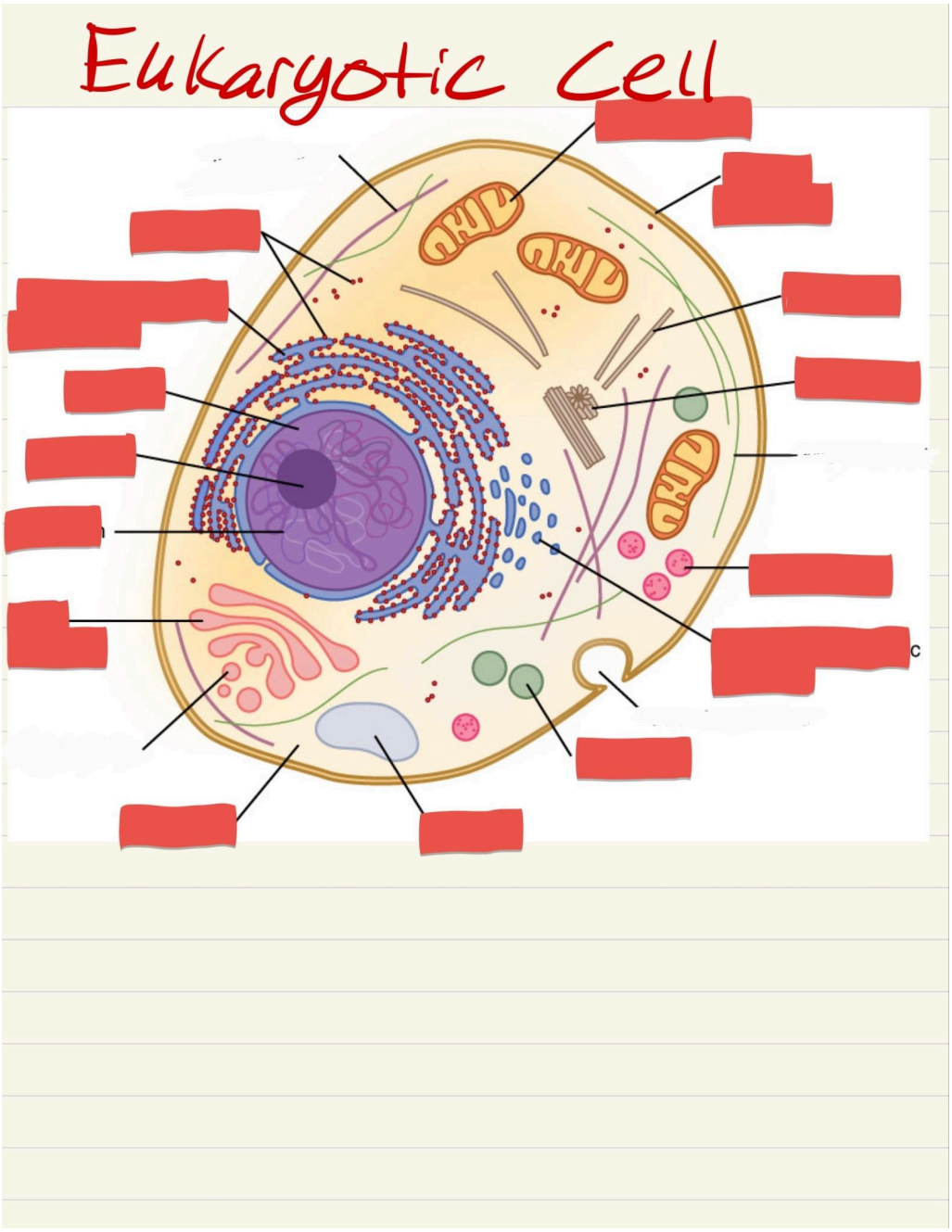
Identify all the parts of the cell:



Functions of cell parts:

Ribosomes- site of protein synthesis + made up of protein and ribosomal RNA (rRna) exist in 2 forms:
- Free ribosomes: free floating
- Membrane-bound: attached to ER membrane.

Rough Er- external surface appears rough because it is studded with ribosomes
-SITE of SYNTHESIS and PROCESSING of proteins (bc of ribosomes)

Nucleus- Contains DNA (synthesis of nearly every protein)

Nucleolus- Dark staining spherical body within the nucleus involved in Ribosomal RNA SYNTHESIS

Chromatin
- The genetic material - Uncoiled DNA
- Chromosomes are condensed Chromatin

Golgi apparatus- Golgi Apparatus (Warehouse + Distribution)
- Stacked and flattened membranous sacs
- Modifies, concentrates, and packages proteins and lipids received from ROUGH er
- Prepares shipment, packaging things sent by the ER

Cytoplasm-
All cellular material that is located between the plasma membrane and the nucleus. (Cell fluid + organelles)

Vacuole- membrane bound organelle (Stores water, nutrients, wastes)

Peroxisomes- Membranous sacs containing powerful detoxifying substances that neutralize toxins
- Peroxisomes also play a role in breakdown and synthesis of fatty acids (similar to smooth Er)

Smooth Er- Network of looped tubules continuous with rough er
- lacks ribosomes
- Functions in lipid synthesis, detoxification (Makes lipid and secretes poison)

Lysosomes- Spherical membranous bags containing digestive enzymes
- Digest ingested bacteria

- Degrade nonfunctional organelles

Centrioles- Pair of barrel-shaped organelles involved in cell division (mitosis)
- Help control cytoskeleton
- Form the basis of cilia and flagella

Plasma membrane- acts as protective layer of the cell

Mitochondria- - "Power plant of cells" produces most of the cells energy (ATP) by aerobic cellular respiration
- Enclosed by double membranes
- Contain their own DNA, RNA, and Ribosomes
- Resemble bacteria, capable of cell division by FISSION.

RMP process-

Resting membrane potential (RMP)
o **Electrical potential energy** produced by separation of oppositely charged particles across plasma membrane in all cells
▪ **Difference in electrical charge across the plasma membrane is called the membrane potential**

o Voltage occurs only at membrane surface
▪ Rest of cell and extracellular fluid are neutral
▪ Membrane voltages range from –50 to –100 mV in different cells (negative sign (–) indicates inside of cell is more negative relative to outside of cell)

K+ is Key Player in RMP
▪ **K+ diffuses out of the cell through leakage channels down its concentration gradient**
▪ Negatively charged proteins cannot leave
• As a result cytoplasmic side of cell membrane becomes more negative
▪ **This negativity attracts K+ back into the cell (electrical gradient opposes concentration gradient)**
▪ When drive for K+ to leave cell is balanced by its drive to stay, RMP is established
• Most cells have an RMP around –90 mV after potassium leaves through Passive transmembrane channel

In many cells, Na+ also affects RMP
▪ Na+ is also attracted to inside of cell because of negative charge
• If Na+ enters cell, it can bring RMP up to –70 mV
▪ **Na+ permeability is slightly higher than zero because of a few leakage channels**

Comes into the cell by passive transmembrane channel

Cl– does not influence RMP because its concentration and electrical gradients balance each other

Active Transport Maintains Electrochemical Gradients
▪ RMP is maintained through action of the **Na+/K+ pump (sodium–potassium ATPase)**, which continuously ejects **3 Na+ ions out** of cell and brings **2 K+ ions in**
▪ Steady state is maintained because rate of active pumping of Na+ out of cell equals the rate of Na+ diffusion into cell
▪ Neuron and muscle cells “upset” this steady state RMP by intentionally opening gated Na+ and K+ channels

Booklet:
https://dashboard.blooket.com/set/68cb13591888dad0182b691b