

key:
 [Structure]
 [Functions]
 non-membrane organelles

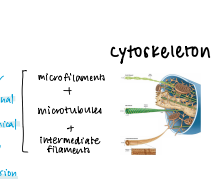
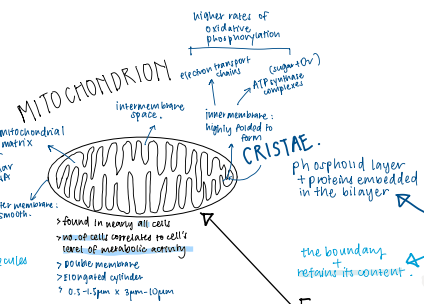
Eukaryotic Cell

possess a distinct nucleus bonded by a double membrane and has membrane-bound organelles

FUNCTION:

Compartmentalised hydrolytic enzymes from the rest of the cell
Provides a space where the cell can digest macromolecular safely, without general destruction
Autophagy/ digestion of worn out organelles within the cell
Local membrane surrounds worn out organelles to form autophagosome
Primary lysosome fuses with the autophagosome to form secondary lysosome
Organelle broken down by hydrolytic enzymes
Products absorbed and assimilated into cytoplasm (recycled)
Autophagy/ self digestion of cellular damage or cell death
Release hydrolytic enzymes
Also occurs in development of multicellular organisms
Digestion of materials made in the cell or taken from outside
Digestion of foreign particles

Destroy worn-out organelles in **autophagy**. Self-destruct a cell after its death in **autolysis**. Digest material engulfed by the cell from **phagocytosis**

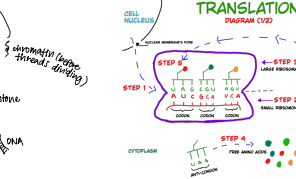
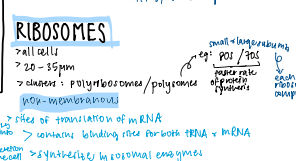
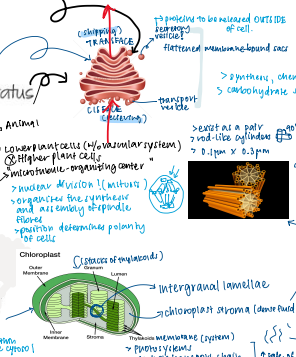
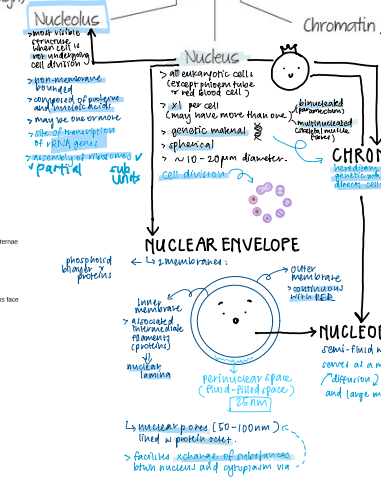
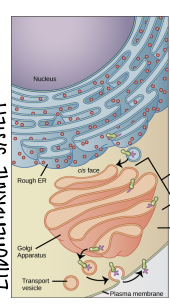
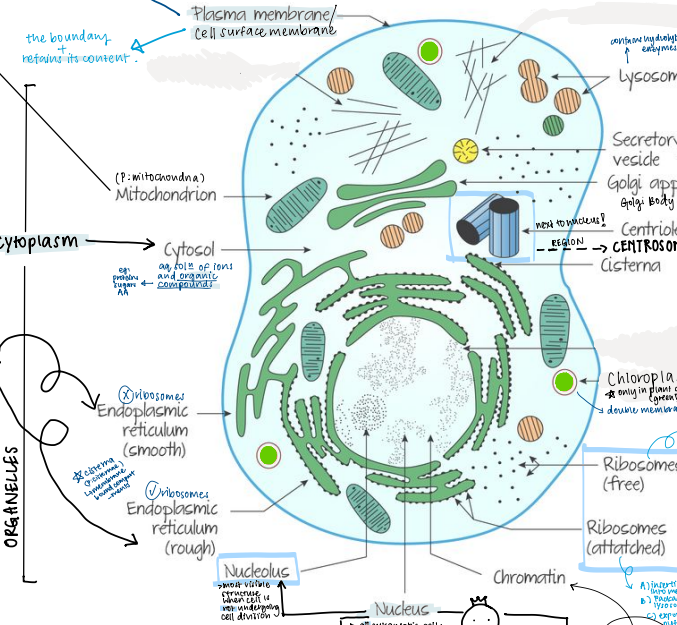


ENDOPLASMIC RETICULUM

STRUCTURE	FUNCTION
SER: No ribosomes, Fine membranous tubules	Detoxification of drugs and poison
RER: Ribosomes present, Flattened membrane-bound sacs	Site of synthesis of proteins
Site of synthesis of lipids	Intercellular transport network
Storage of calcium ions	Temporary storage of secretory proteins
	Enzymes in the lumen carry out post translational modifications of proteins synthesised by bound ribosomes

SRHS
 Lipids for:
 A) structural component
 B) Reservoir
 C) Hormones
 D) Storage molecule.
 contain enzymes
 Ca²⁺
 muscle component (2nd messenger)

Organelles w/ membrane (x2: double)	Organelles w/o membrane
chloroplast (x2)	ribosomes
mitochondrion (x2)	nucleolus
nucleus (x2)	
endoplasmic reticulum	
smooth	
rough	
golgi body	
lysosome	



mass of organelles in order (centrifuge)

- Nuclei
- chloroplasts
- Mitochondria
- Lysosomes
- Endoplasmic reticulum
- Ribosomes

Animal Cell	Plant Cells
Cell wall absent	Cellulose cell wall present
No cell wall and therefore no 'pit and 'plasmodesma (singular)	Pits and plasmodesmata (plural) present in cellulose cell wall
Chloroplasts absent	Chloroplasts present
Vacuoles, if present, are small and numerous, and are scattered throughout the cell	Mature cells normally have a single large central vacuole filled with cell sap (which is enclosed by a membrane called tonoplast)
Tonoplast absent	Tonoplast present around vacuole
Centrioles present	Centrioles absent in higher plant cells (i.e. plants with a vascular system)
Glycogen granules present (for carbohydrate storage)	Starch granules present (for carbohydrate storage)
**Cilia and flagella sometimes present	Cilia and flagella absent in higher plant cells
Microvilli may be present	Microvilli absent

(a) Outline the structural features which distinguish a prokaryotic and a eukaryotic cell [2]

Prokaryotic cell	Eukaryotic cell
Does not possess membrane-bound organelles.	Possess membrane-bound organelles.
/ Contains nucleoid which is not membrane-bound.	/ contains nucleus, which has double membrane.
Contains 70S ribosomes.	Contains 80S ribosomes.
Contains circular DNA.	Contains linear DNA.
DNA is not complexed with histones.	DNA is complexed with histones.
Has peptidoglycan cell wall.	Plant cells have cellulose cell walls while animal cells do not have a cell wall.