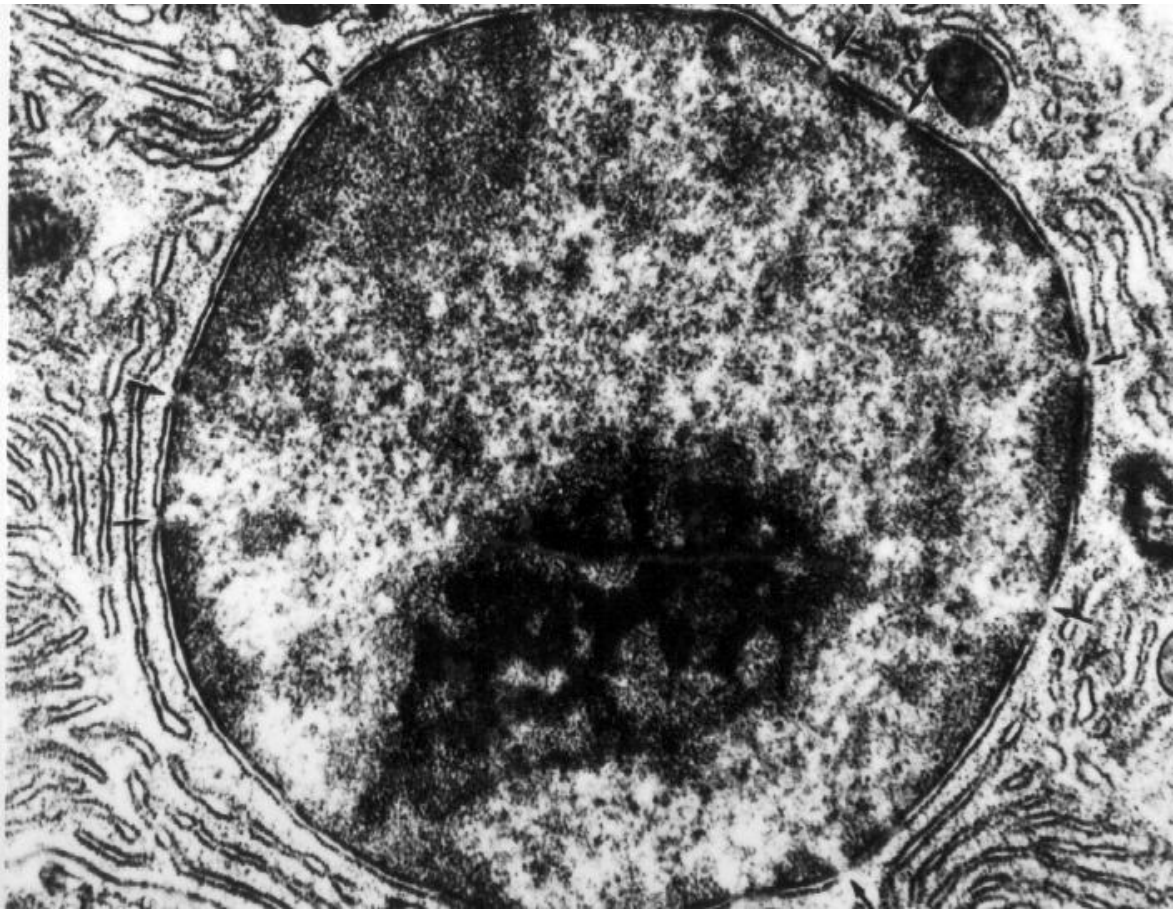
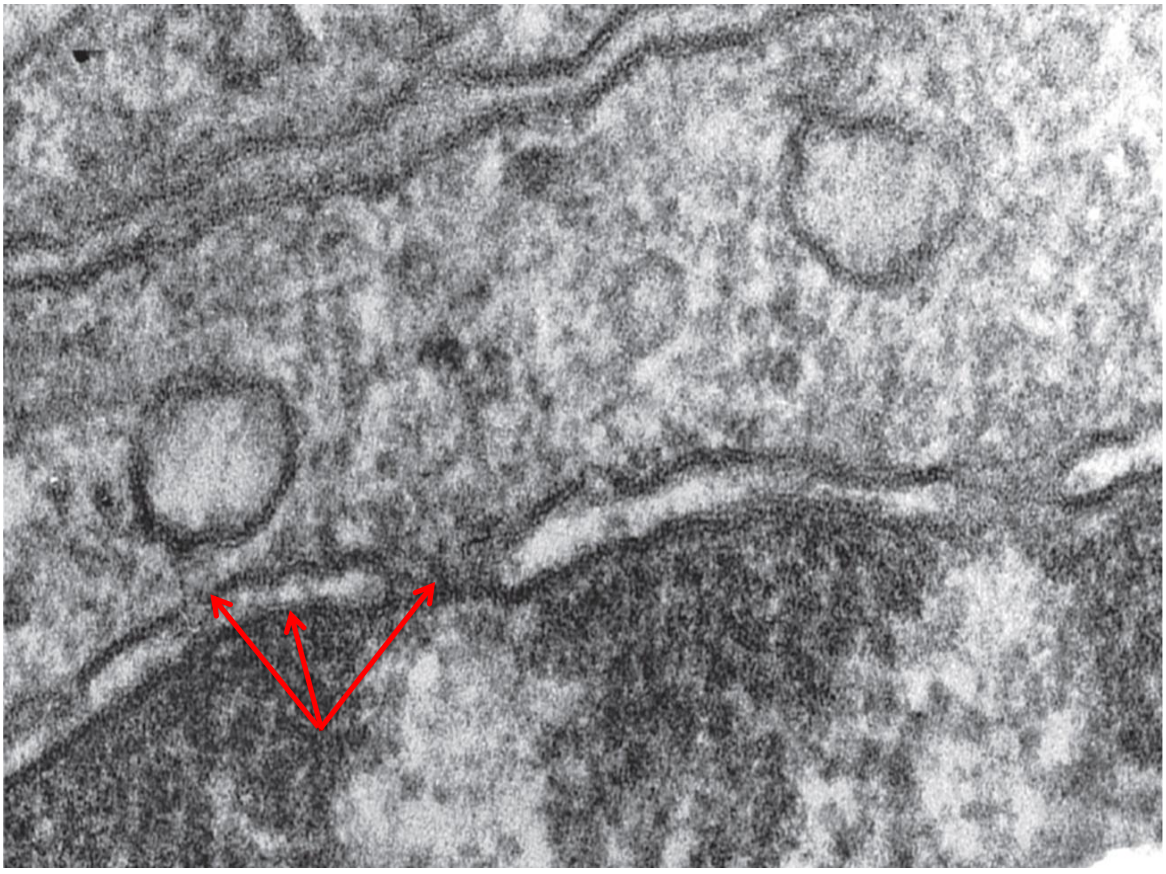
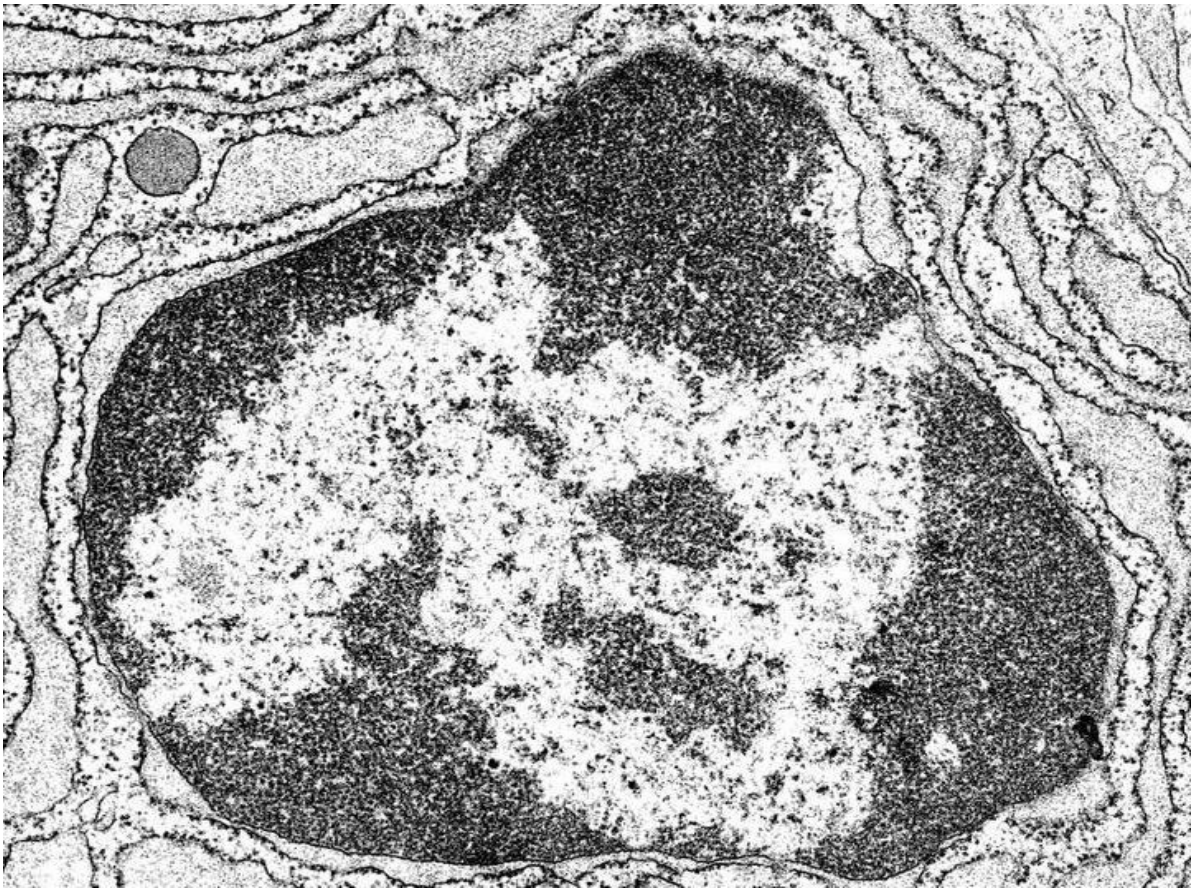
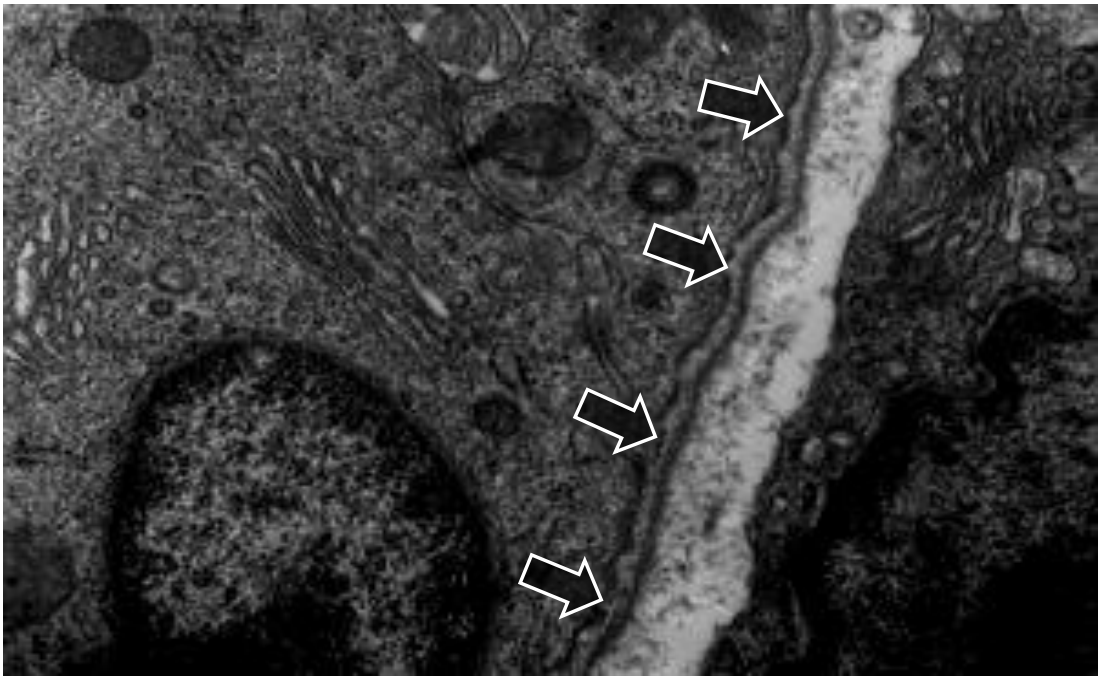
Cell Overview



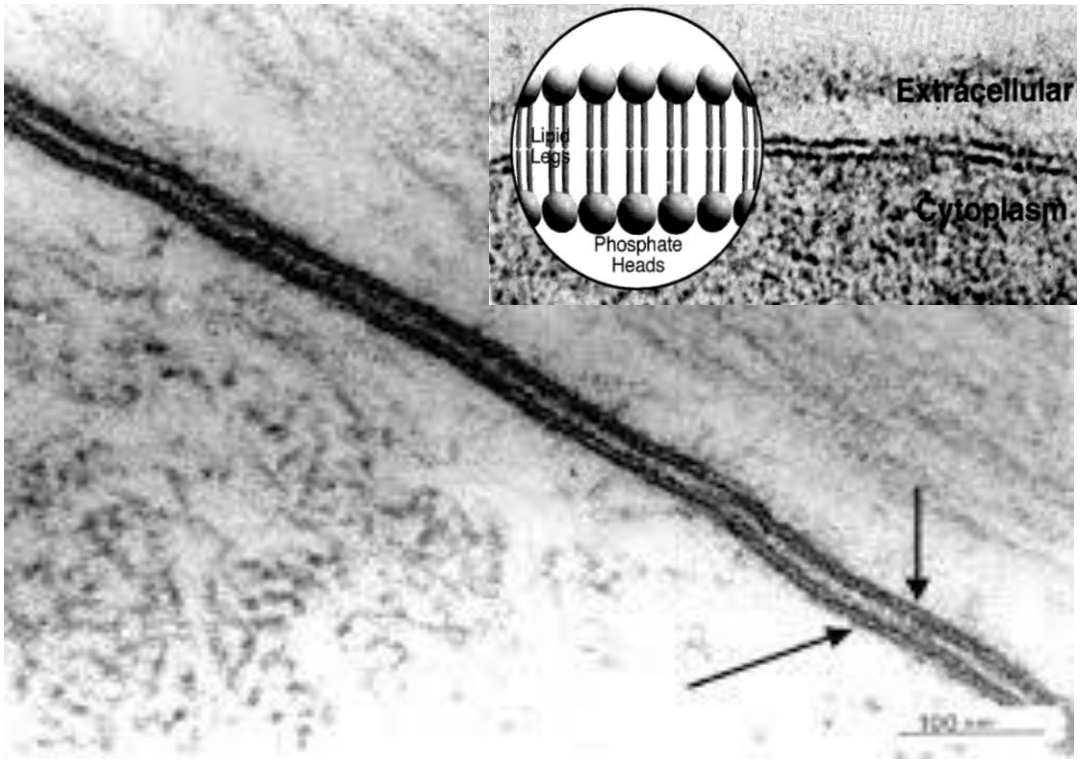




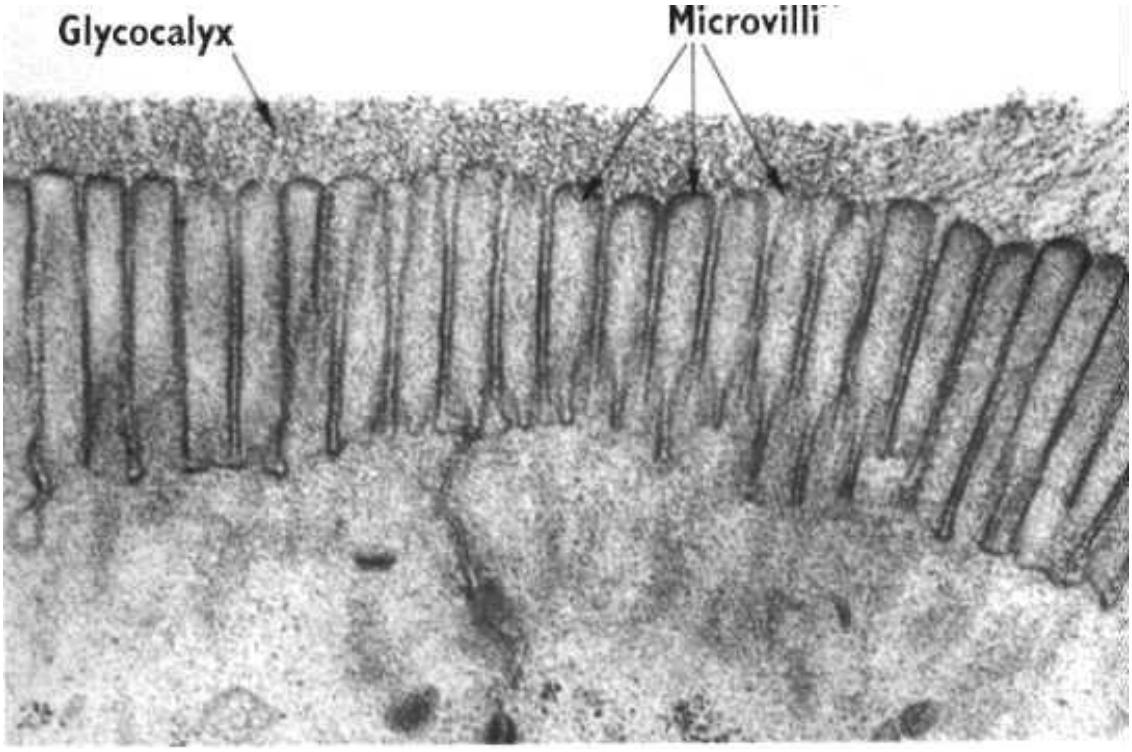
Cell membrane

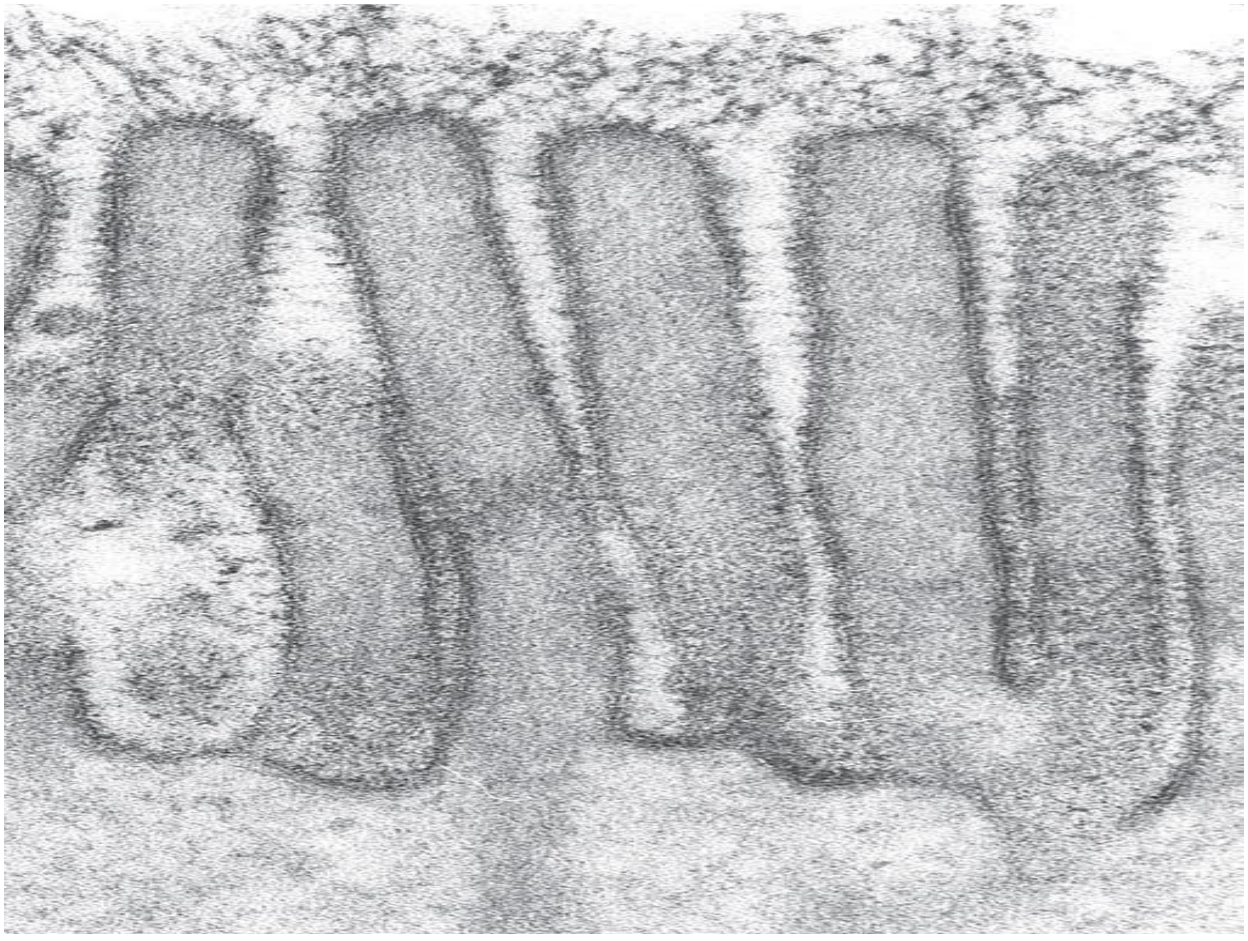


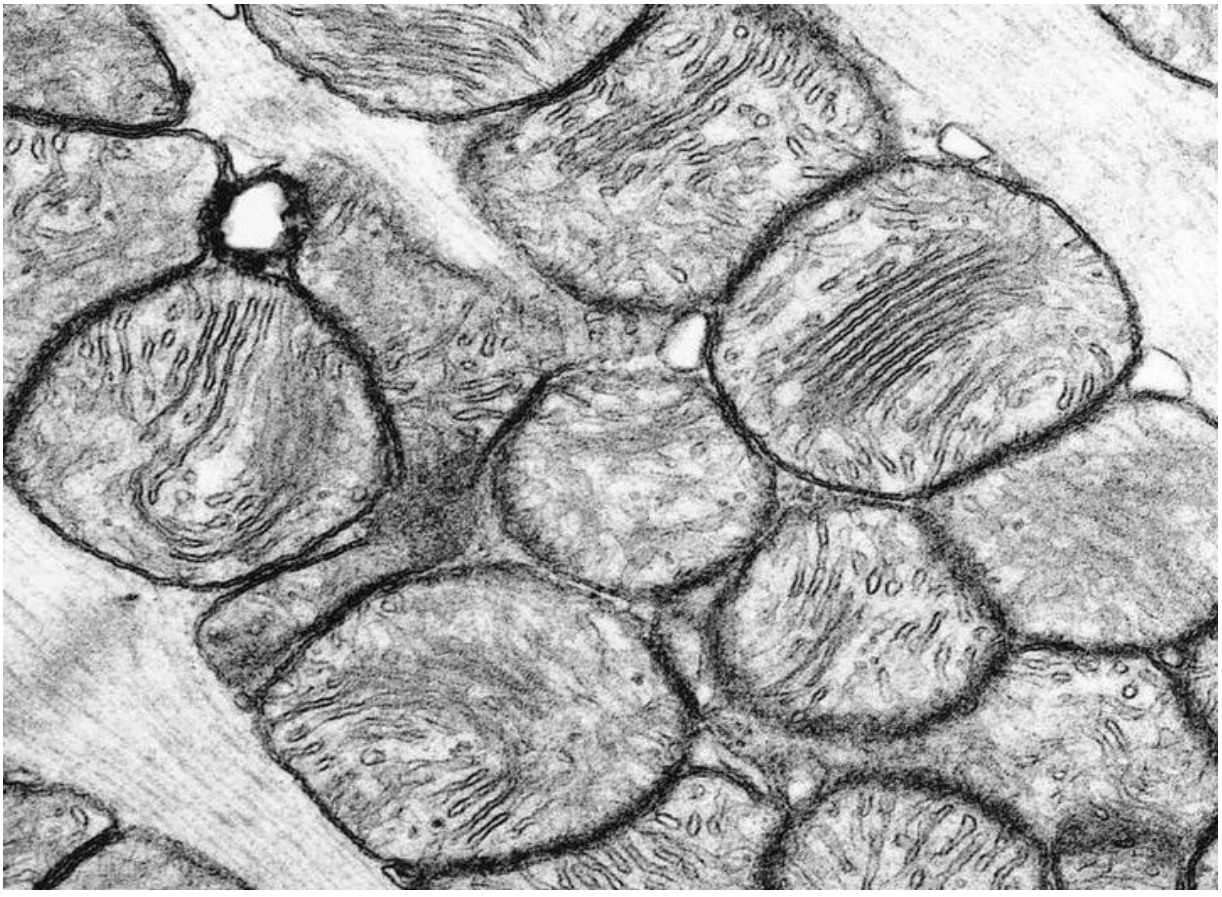
Cell membrane

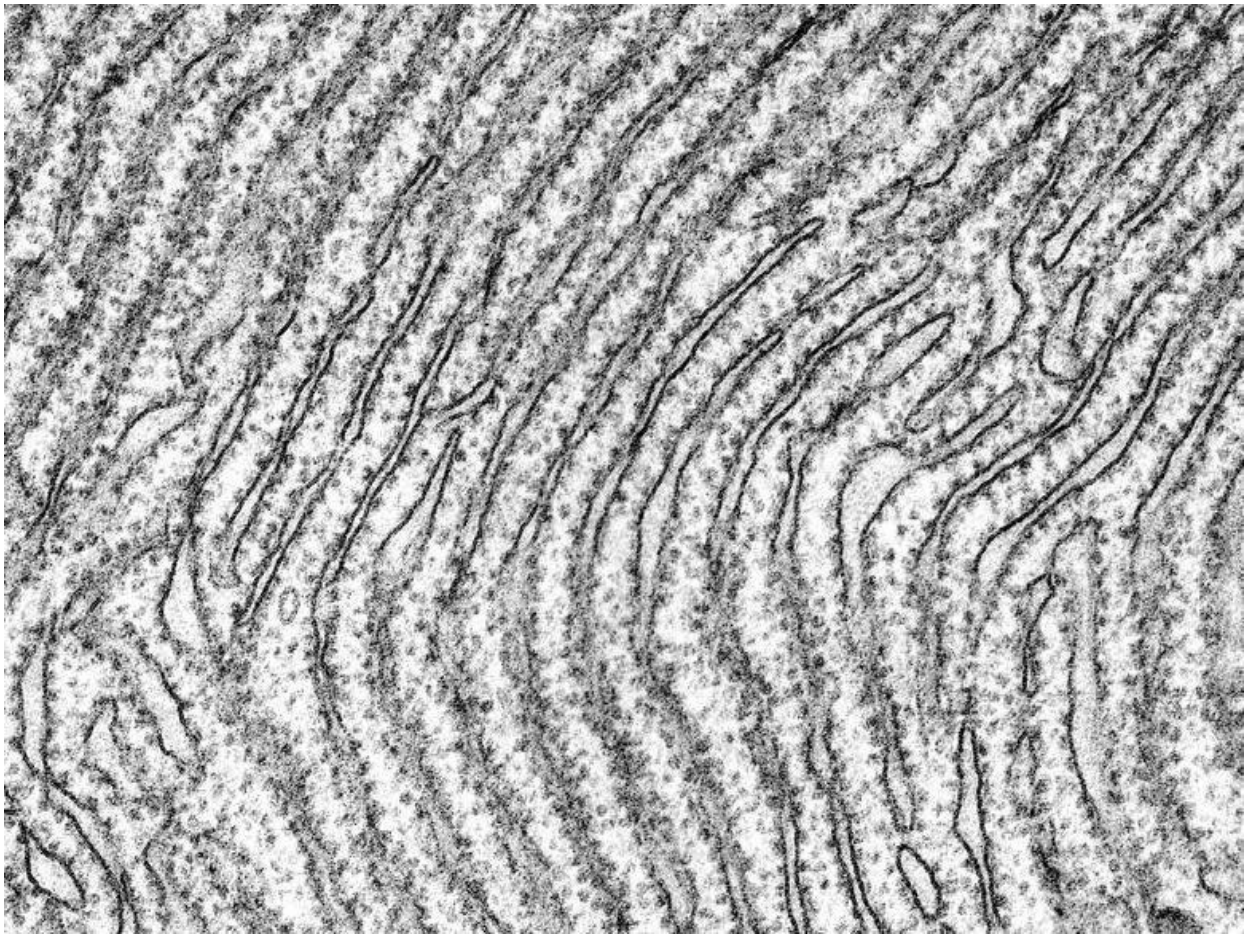


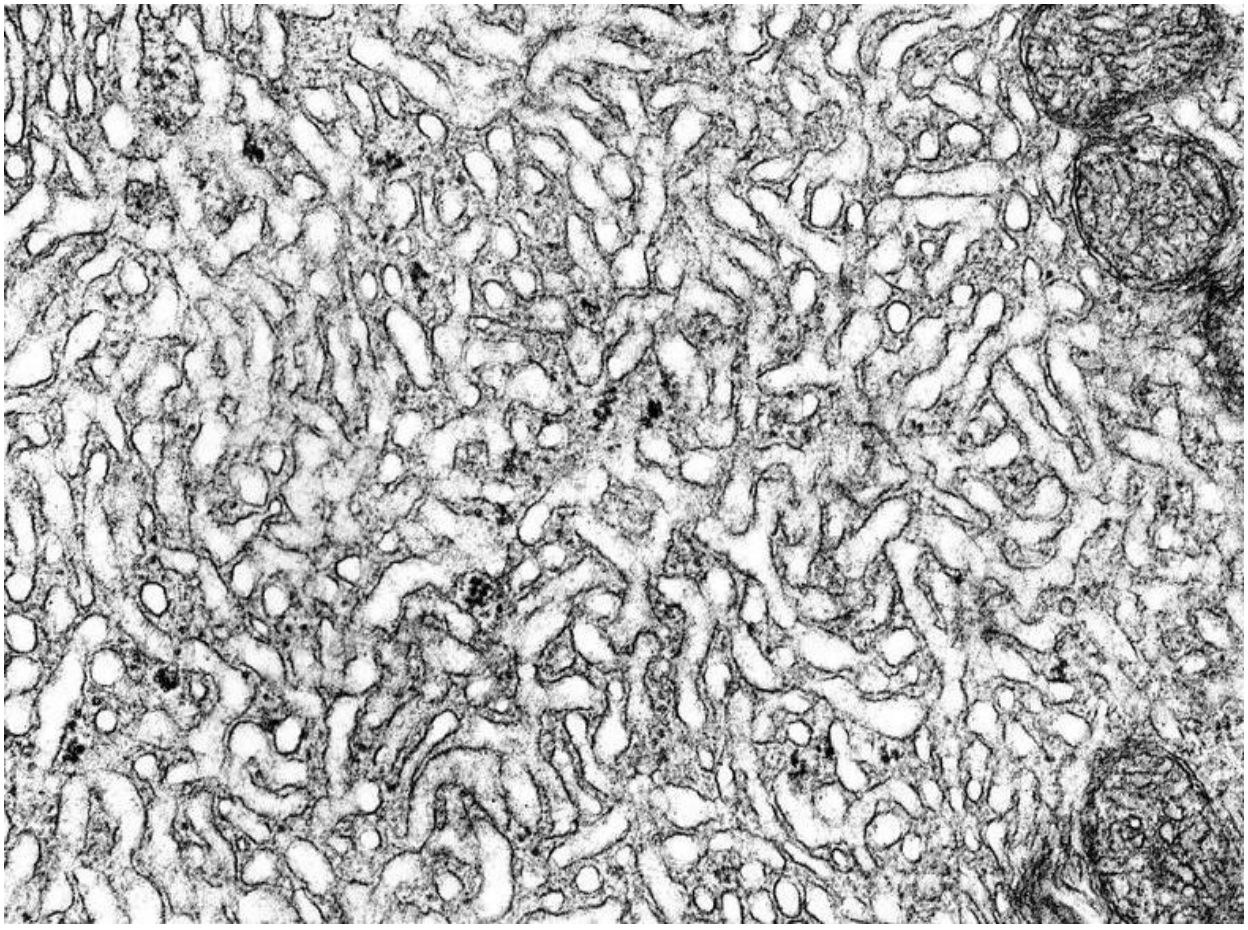
Glycocalyx & Microvilli

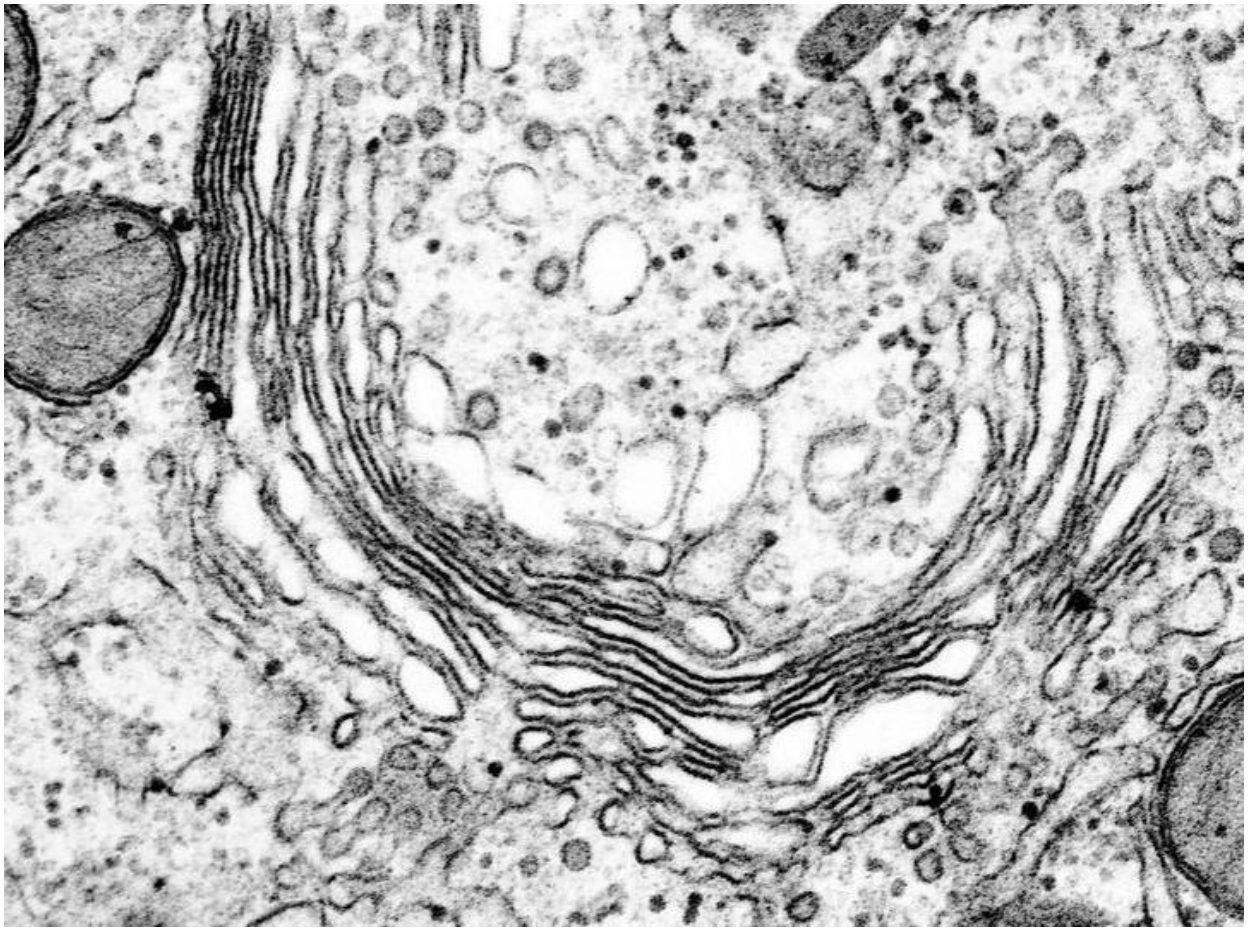


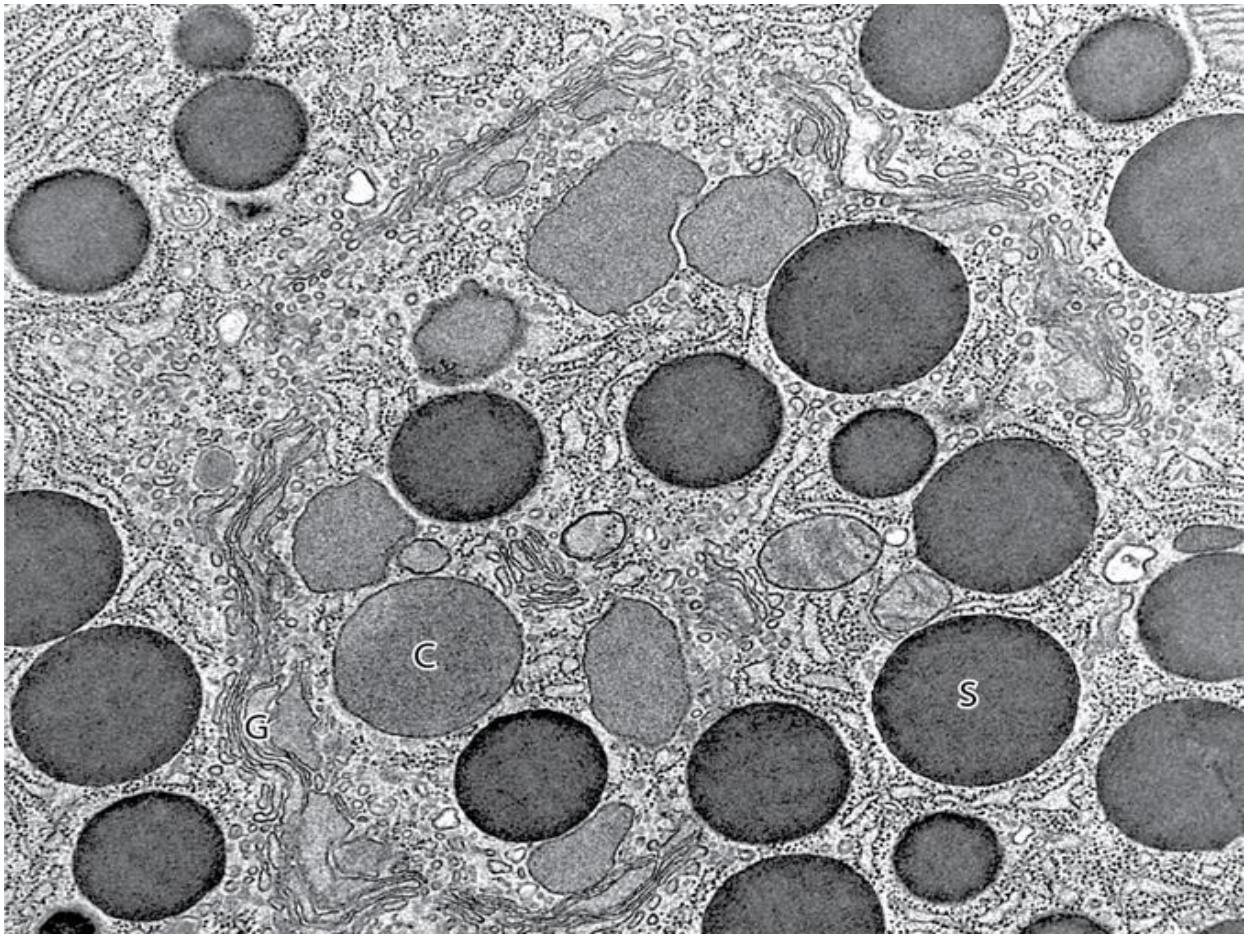


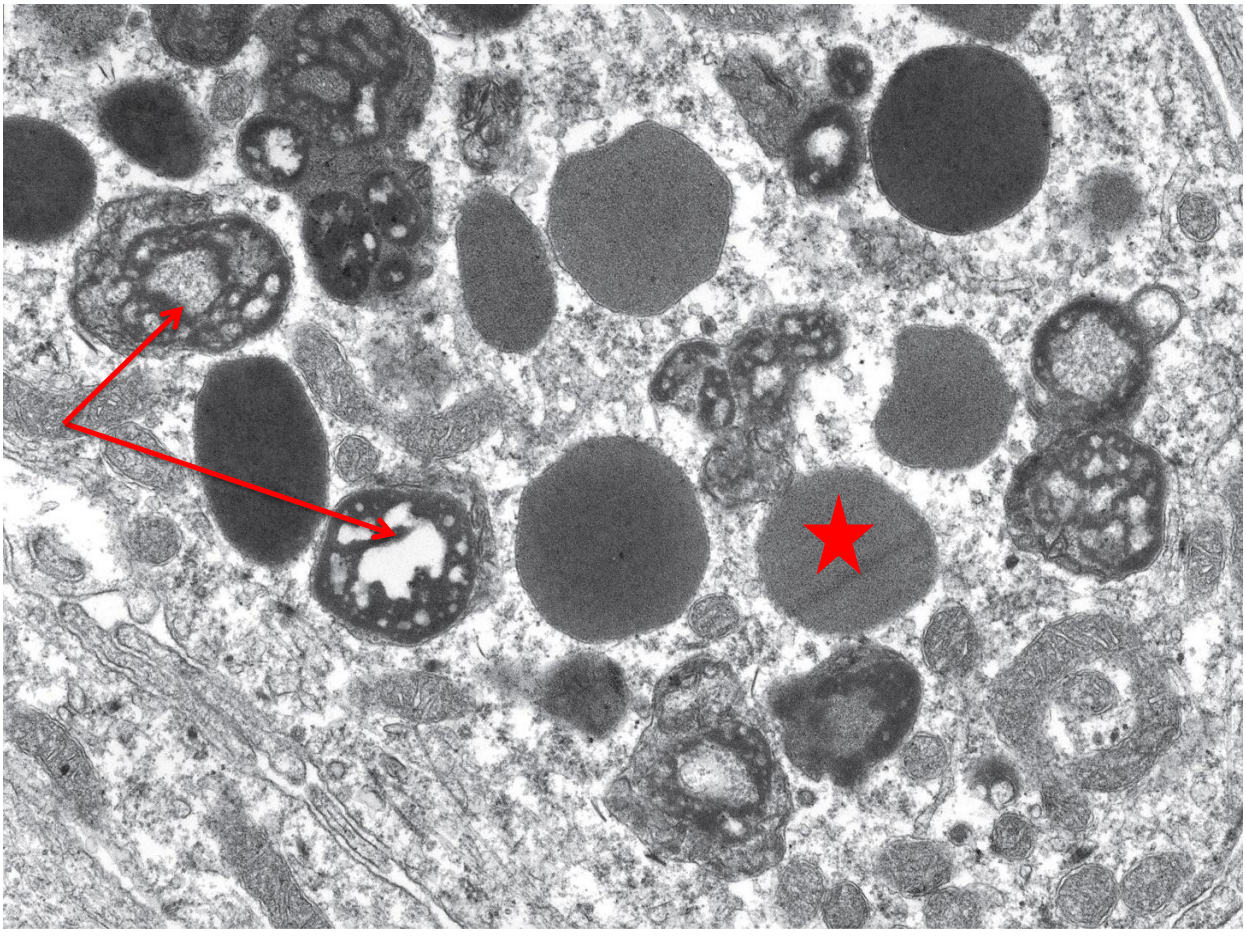


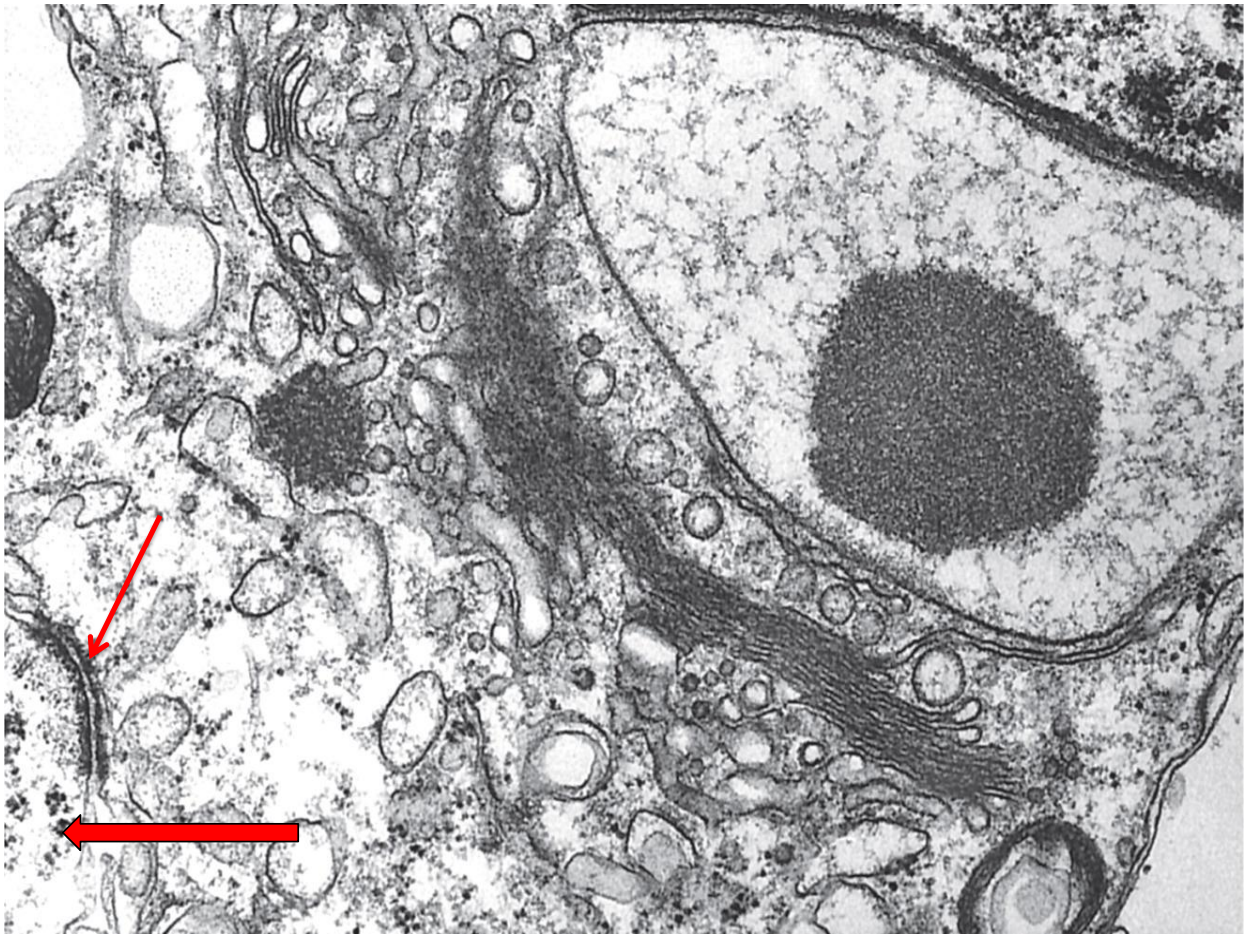


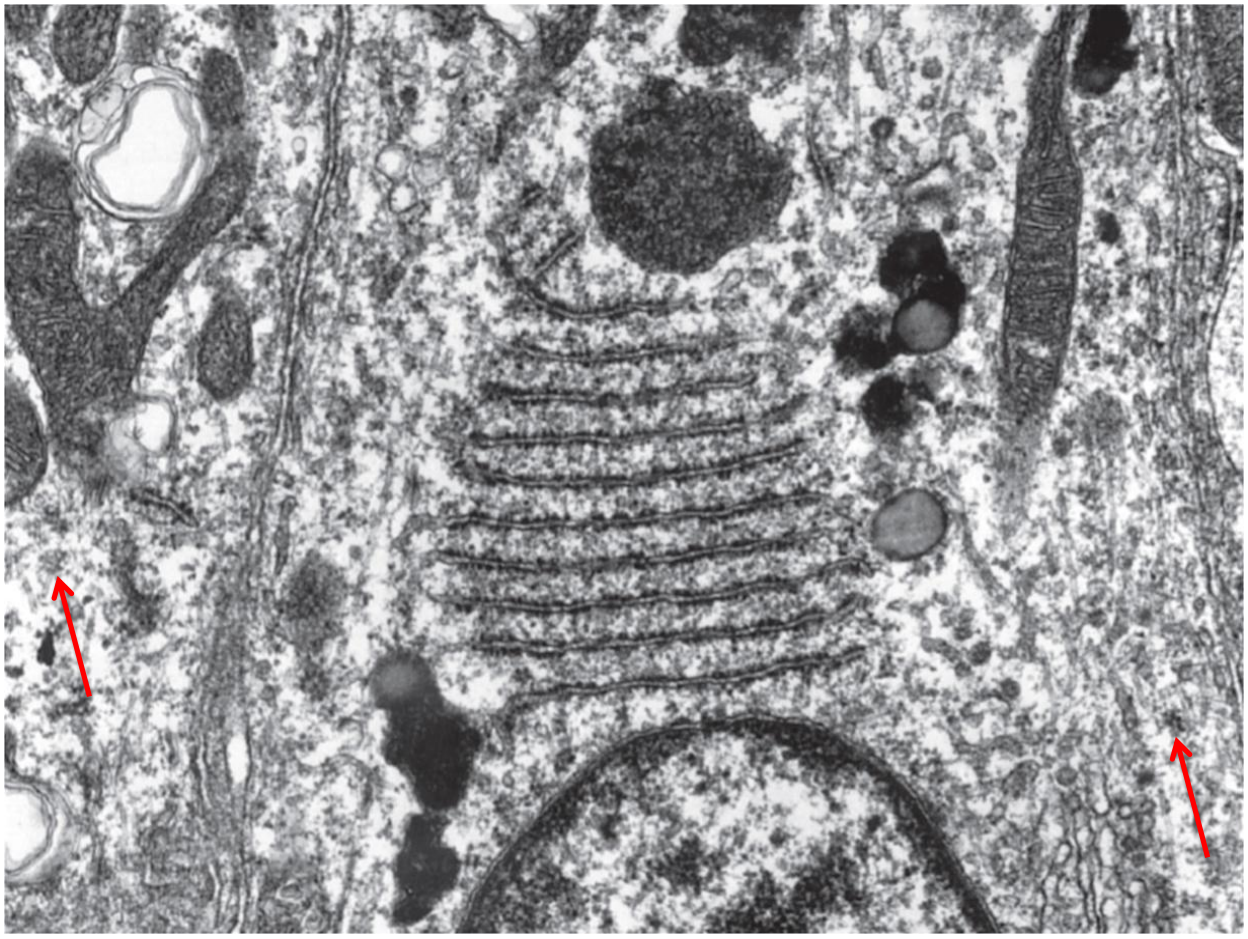





C
S
G

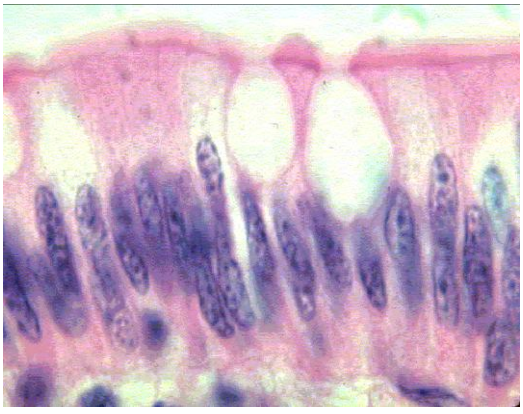






Light microscopic appearance of cellular organelles

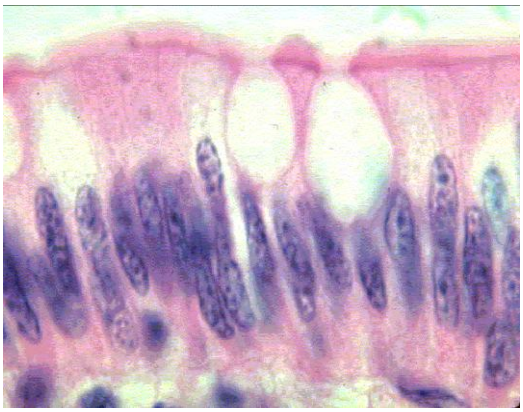
Basophilic



- Basophilic structures are stained by basic dyes:
  - Basic dyes are **positive**
  - Basophilic structures are **negative** (ex. DNA, RNA, ribosomes, RER)
- Mnemonic:

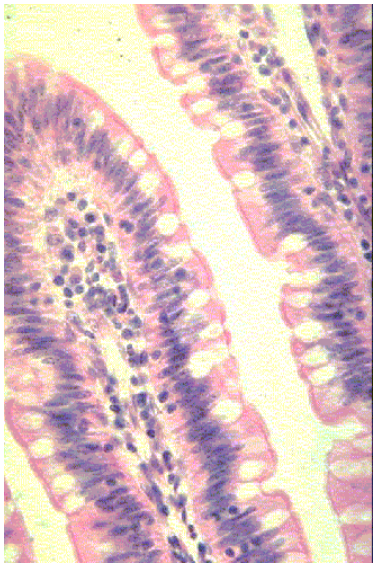
  Basophilic = **B**lue

Acidophilic (Eosinophilic)



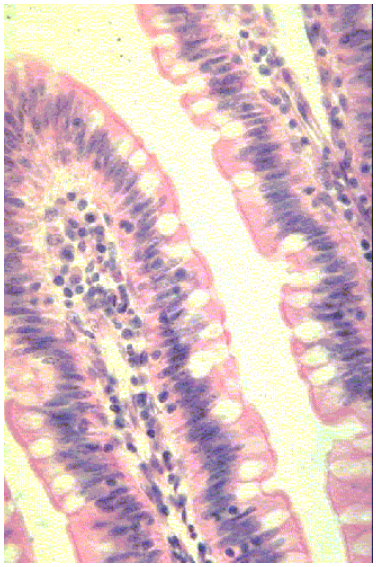
- Acidophilic structures are stained by acid dyes:
  - Acid *dyes* are **negative**
  - Acidophilic structures are **positive** (ex. Proteins, collagen, cytoplasm)
- Eosinophilic = Pink

Eosin (H&E)



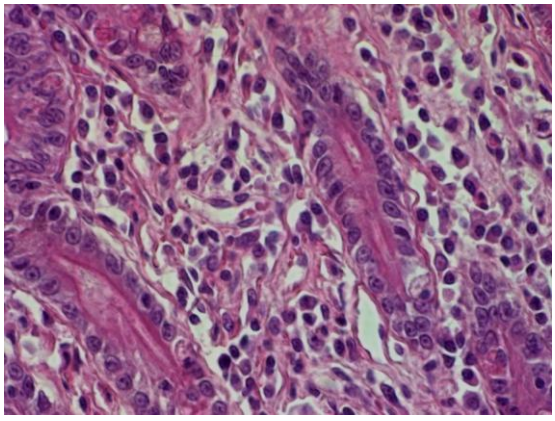
- Pink
- Stains Eosinophilic structures ex. Proteins, collagen, mitochondria (cytoplasm)

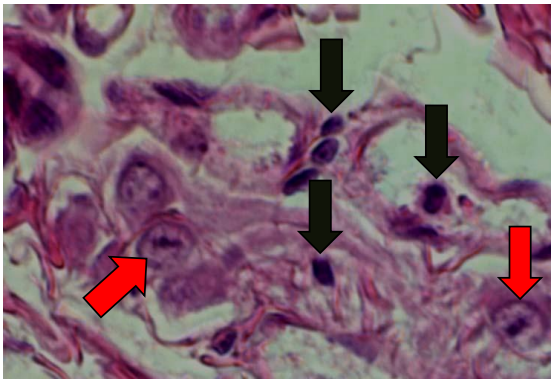
Hemotoxylin (H&E)



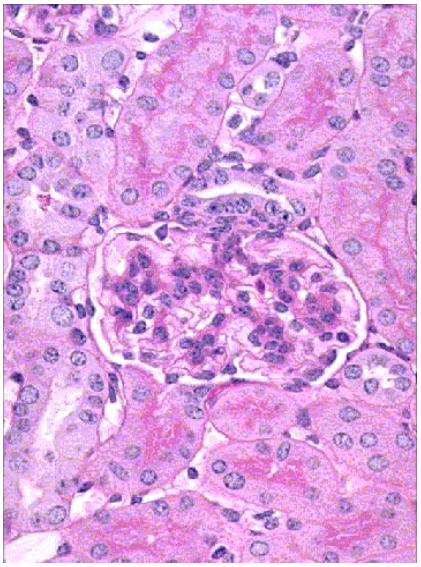
- Blue, purple or blackish
- Stains Basophilic structures ex. DNA, ribosomes, RNA
  - Euchromatin is DNA in USE. It is spread out, diffuse, and less stained.
  - Heterochromatin is condensed DNA, and stains dark blue.

Heterochromatic and Euchromatic Nuclei

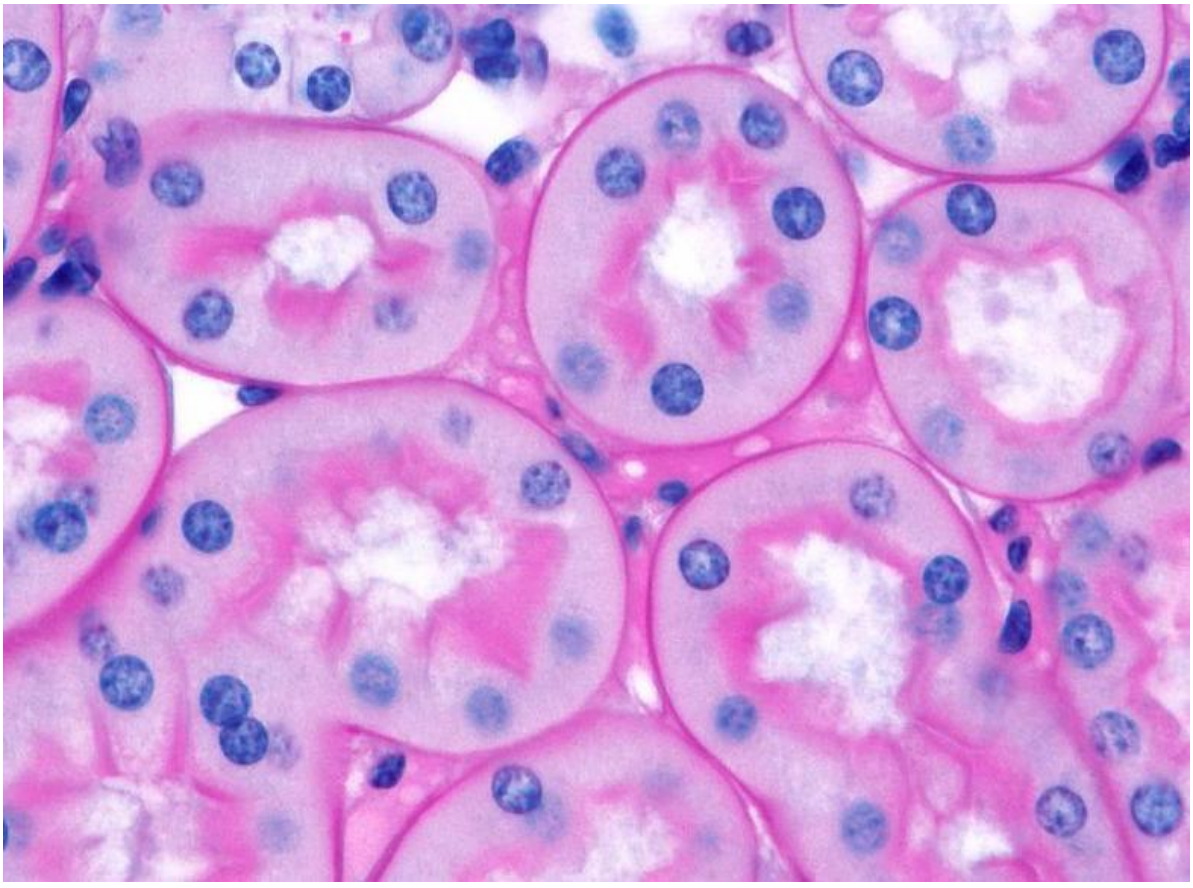




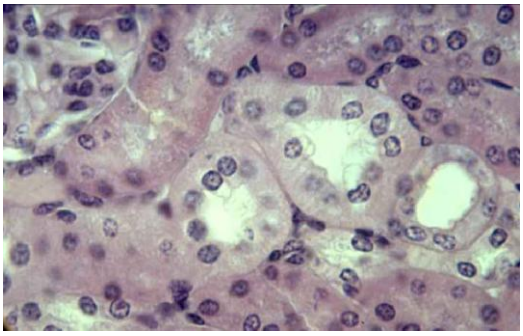
Periodic Acid Schiff &Hematoxylin (PAS)

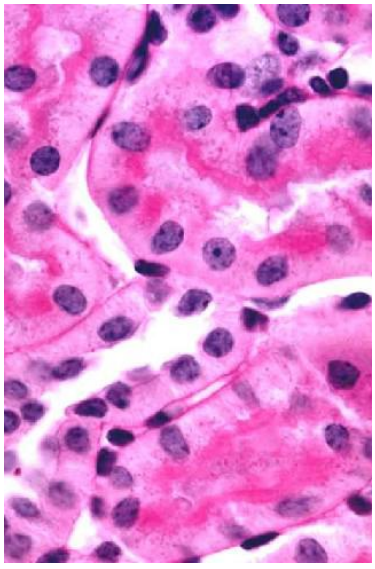


- Pink, Magenta
- Stains carbohydrates and carb. rich macromolecules ex. Glycogen, mucin, basement membrane, etc.
- If you see PAS, think CARBOHYDRATES.



H&E vs. PAS





Question 1

- How would you describe the structure at the pointer?
  a) Eosinophilic
  b) Basophilic
  c) Negatively charged
  d) Positively charged

Question 1

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  a) Eosinophilic
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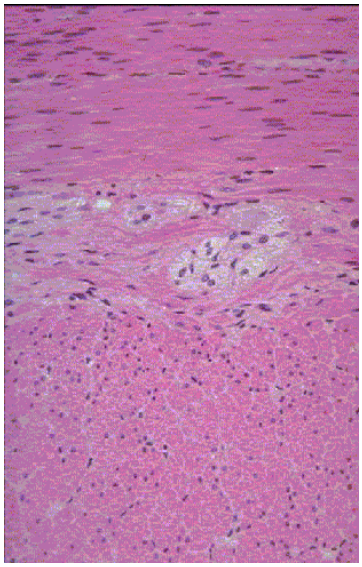
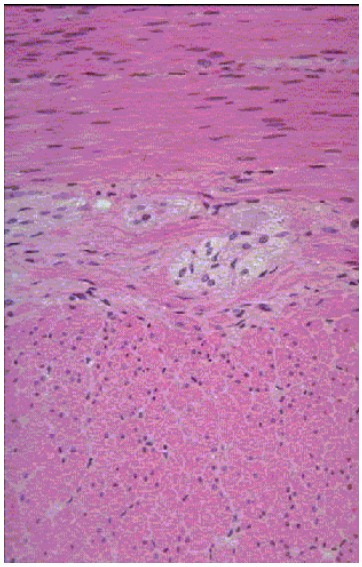
Question 2



- The pink regions are eosinophilic due to:

a) Endosomes
b) rER
c) Cytosolic proteins
d) Golgi
e) Cilia

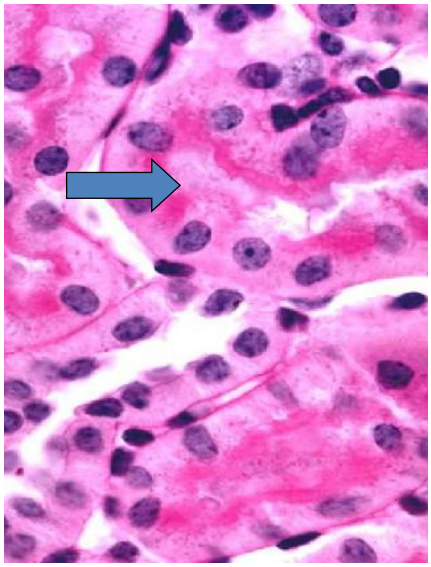
Question 3



- The pink regions are eosinophilic due to:

a) Endosomes
b) rER
c) Cytosolic proteins
d) Golgi
e) Cilia

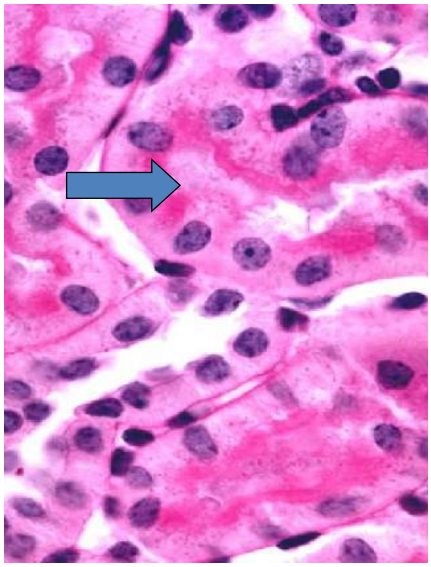
Question 4



- The apex of this cell stains positively because of

a) Ribosomes
b) Carbohydrates
c) Fats

Question 4



- The apex of this cell stains positively because of

a) Ribosomes
b) Carbohydrates
c) Fats

Now … Examine a number of different slides and note the features that they all have in common: nucleus, nucleolus, chromatin, cell membrane and cytoplasm

Notice the following in each slide:

Shape of the cells

Cytoplasm

•Staining reaction

•Granules

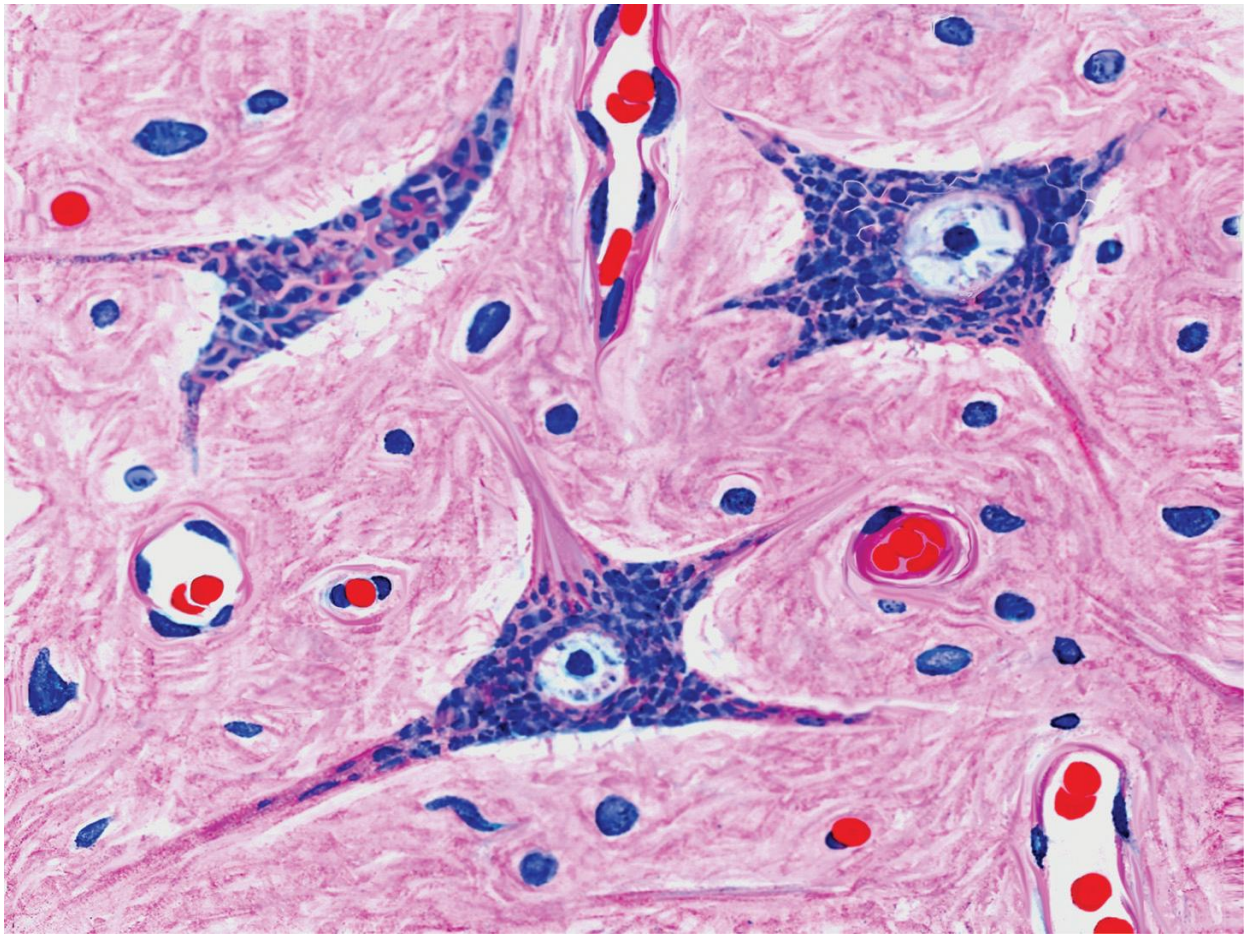
Nucleus

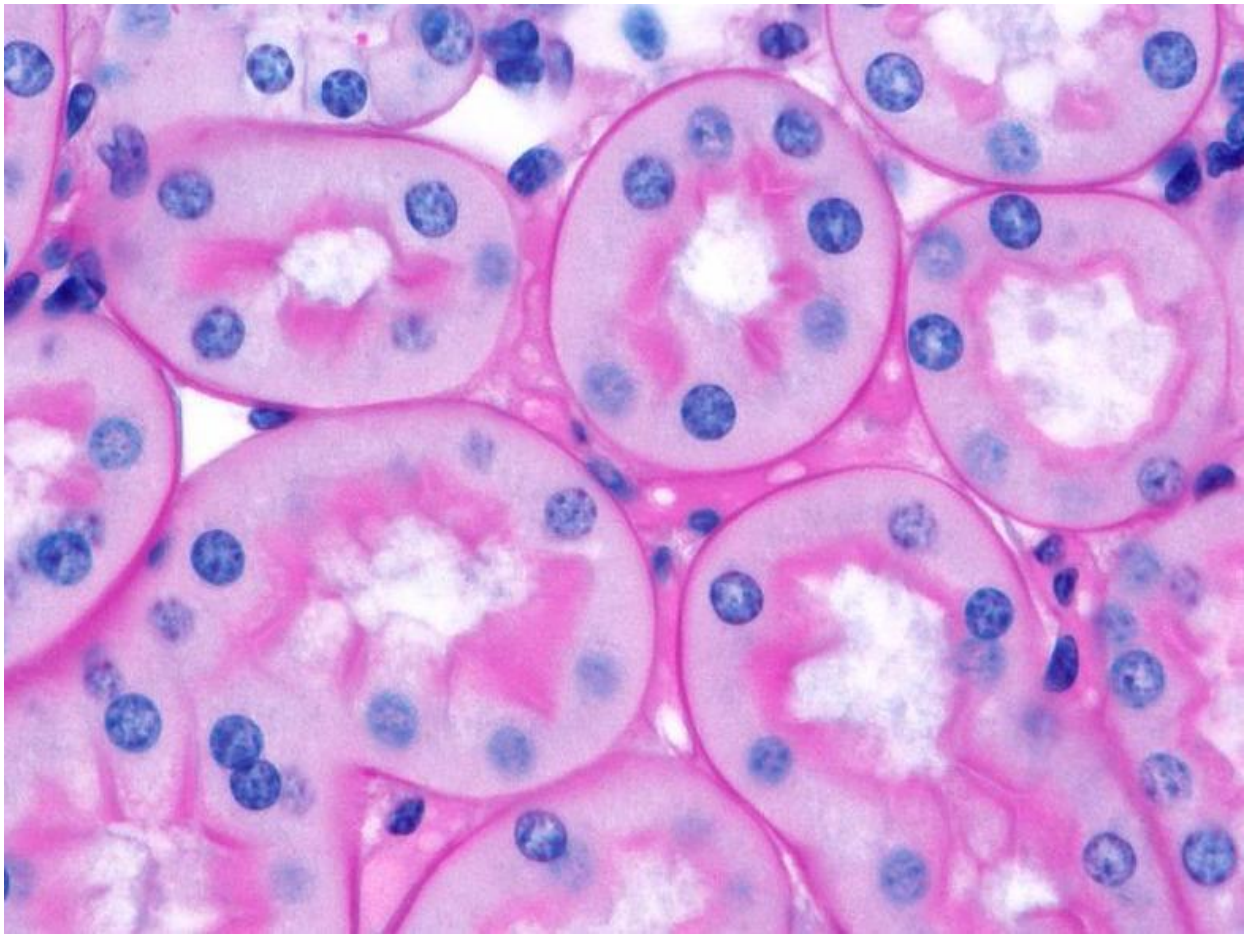
•Staining reaction

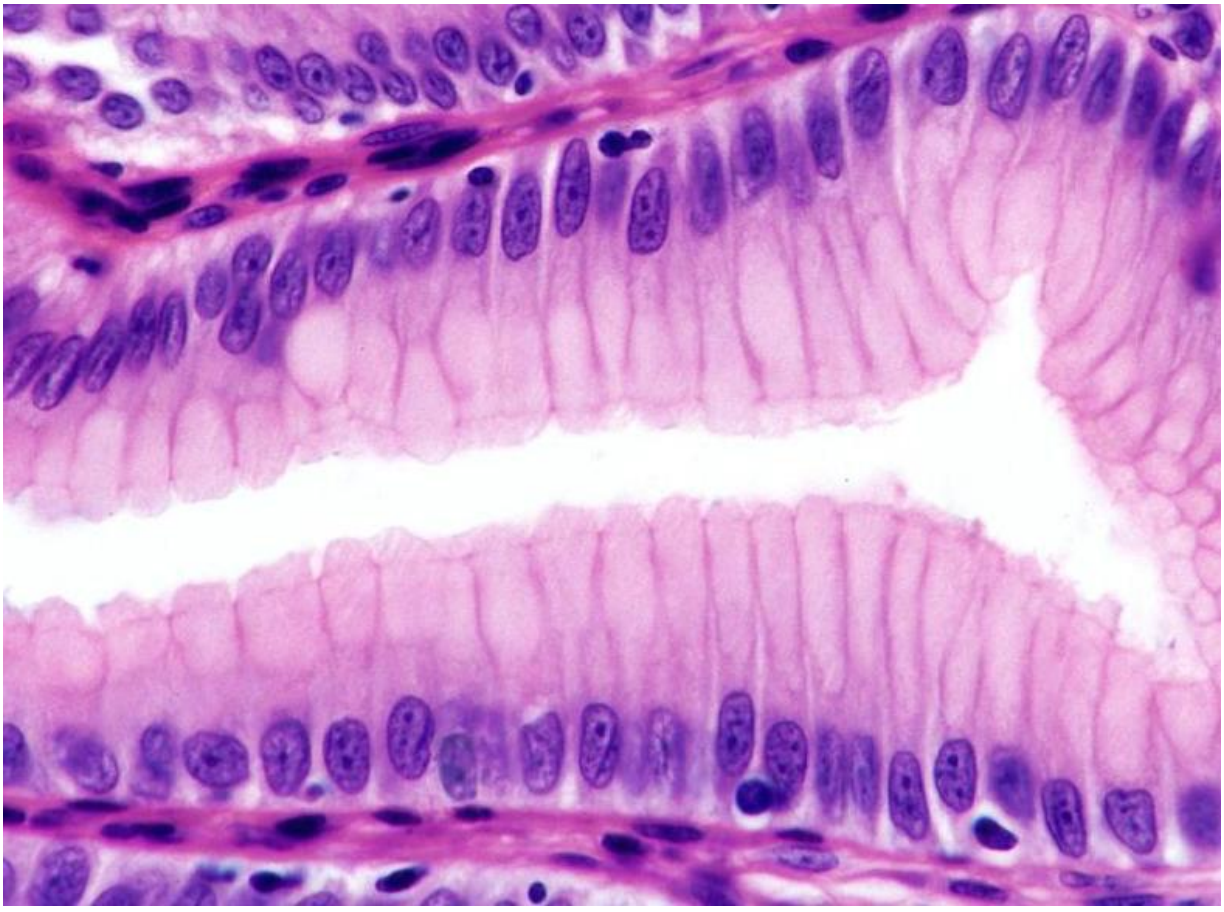
•Nucleolus

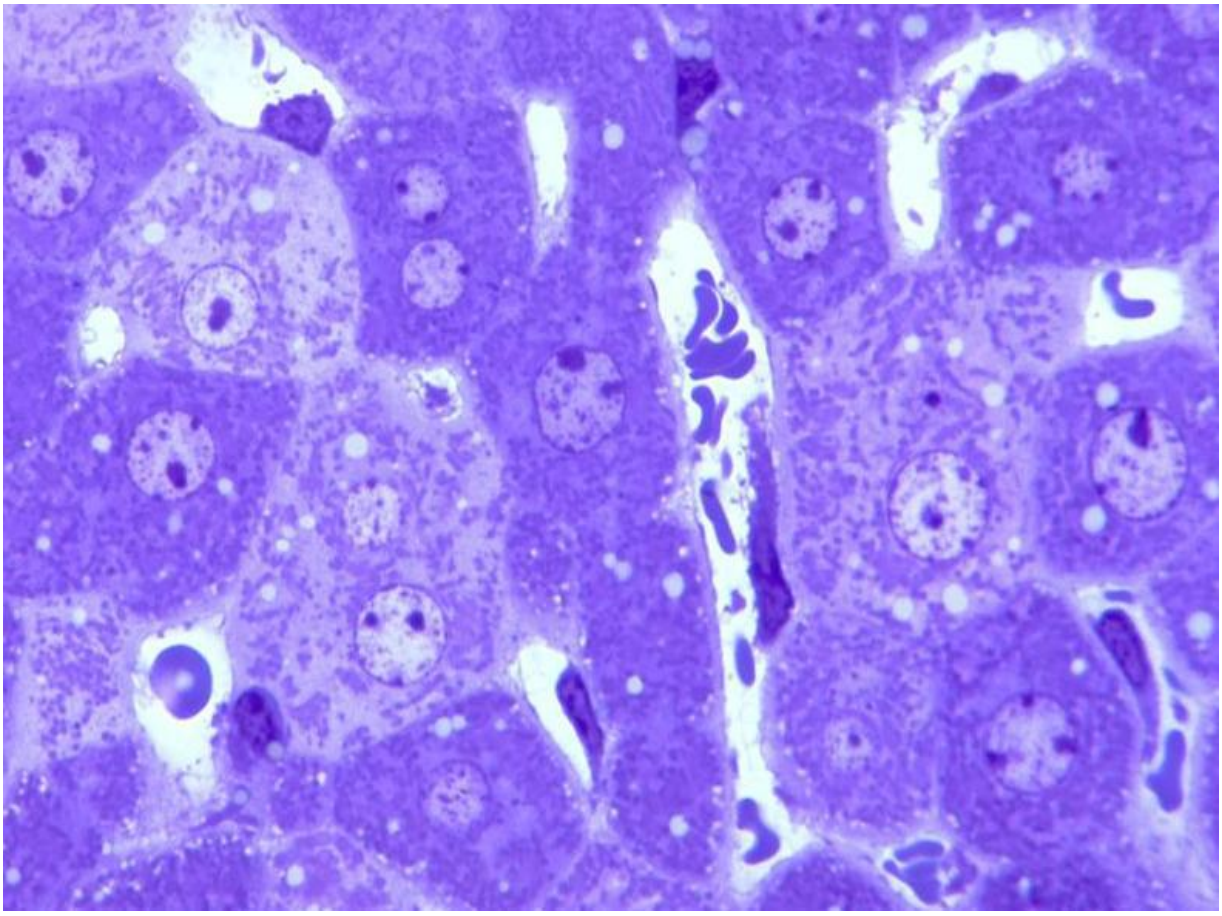
•Position

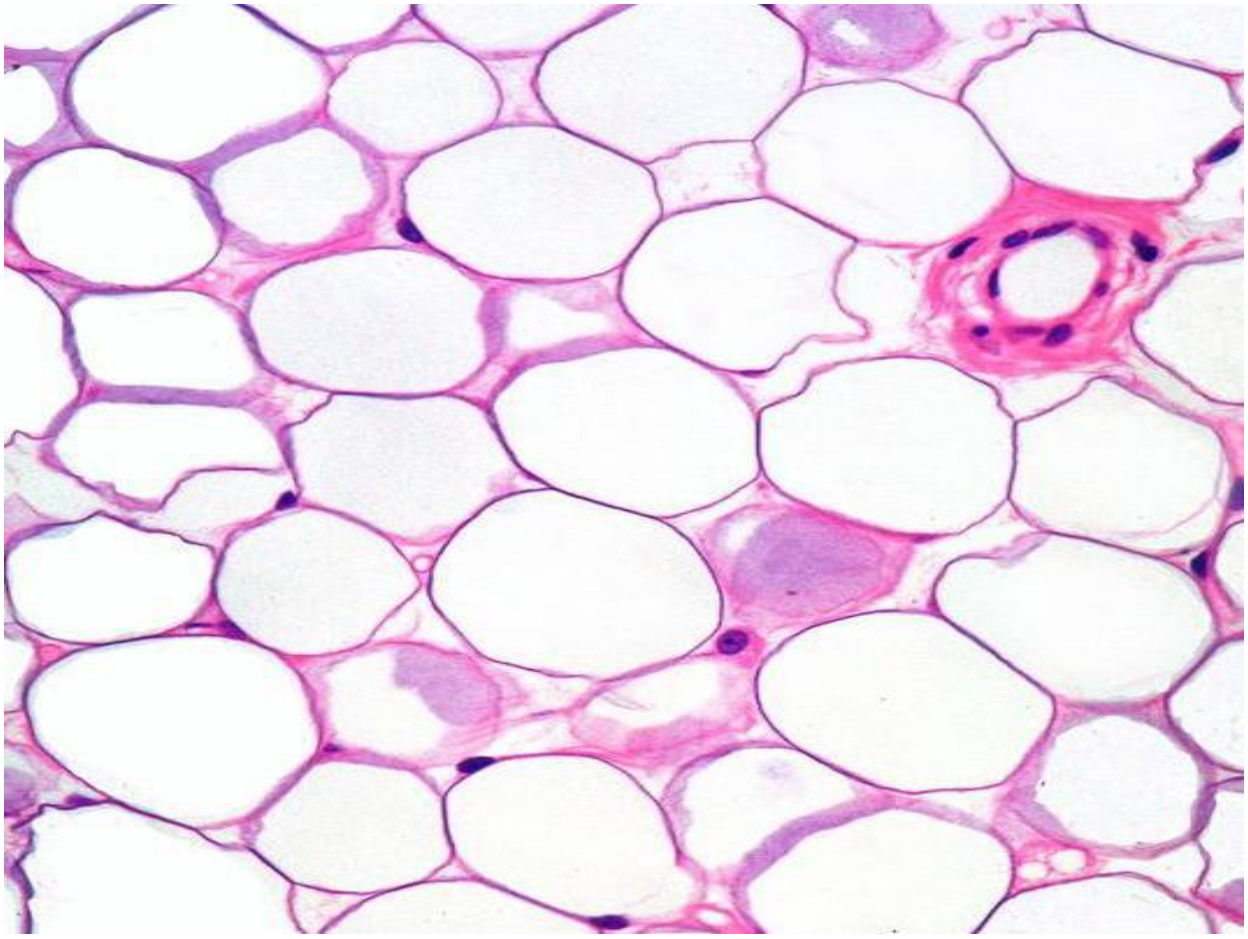
•Chromatin

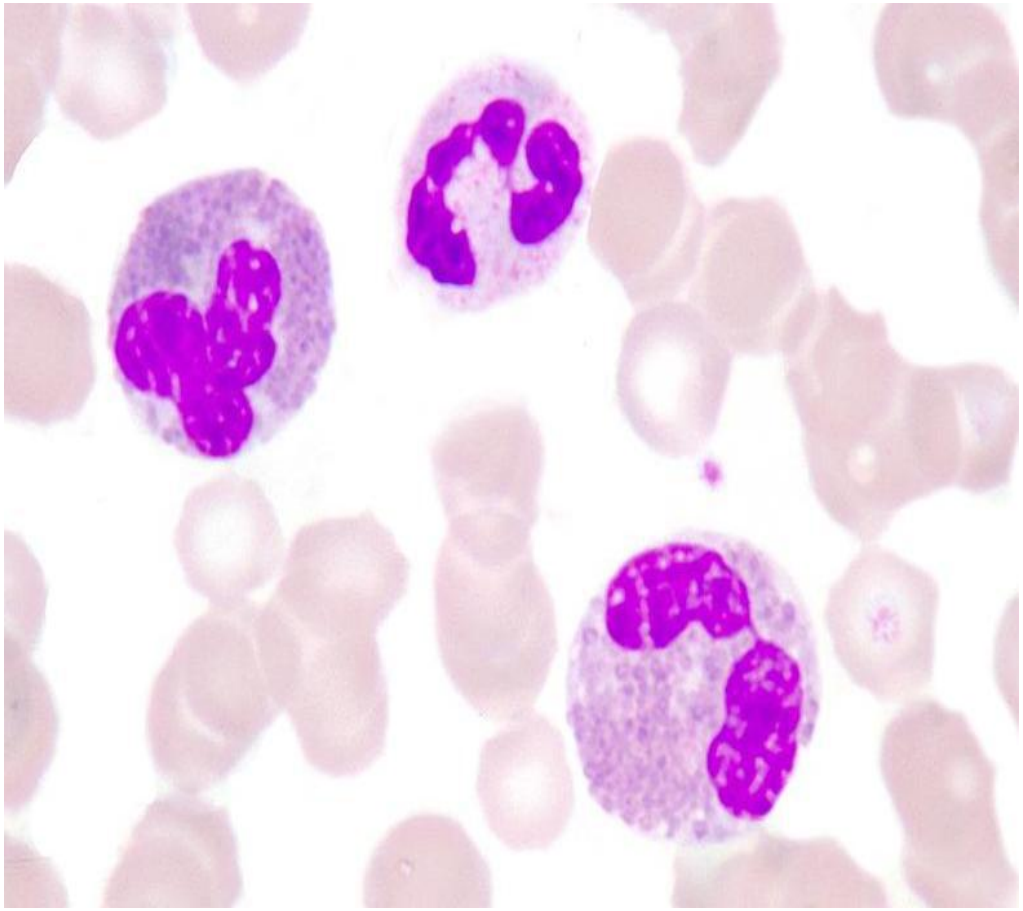








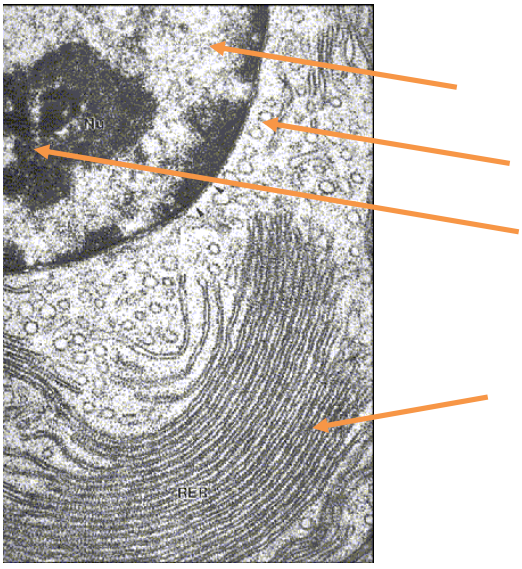




Electron Microscopy

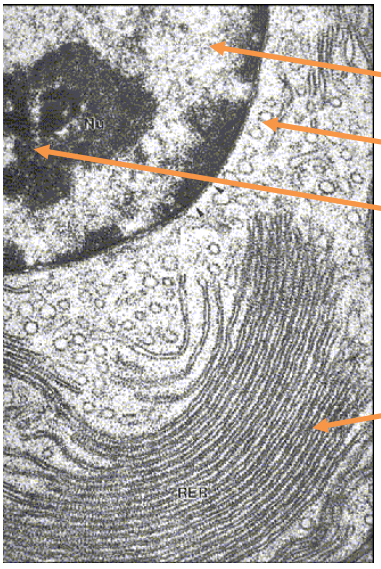
EM 1

Identify structures

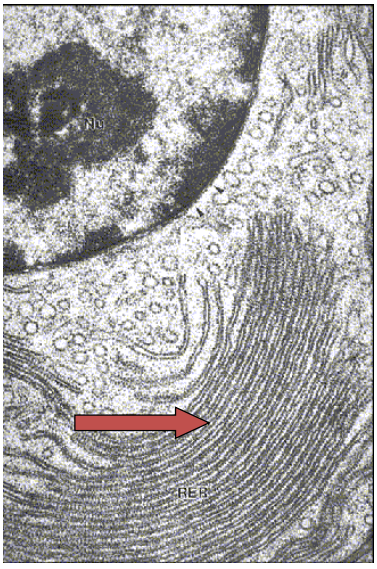


EM 1

Identify structures



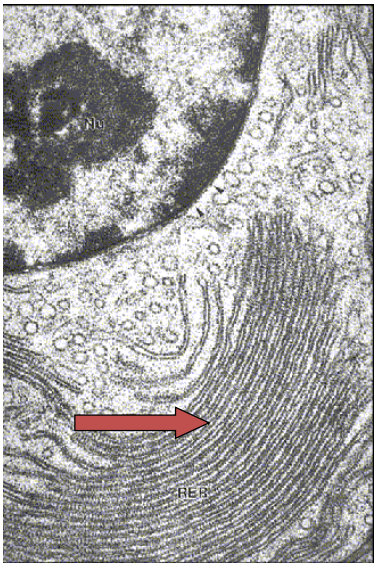
EM1, Q1



Proteins that are made here may end up at which of the following sites:

a) Outside the cell
b) Golgi Apparatus
c) Plasma Membrane
d) All of the above
e) None of the above

EM1, Q1



Proteins that are made here may end up at which of the following sites:

a) Outside the cell
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d) All of the above
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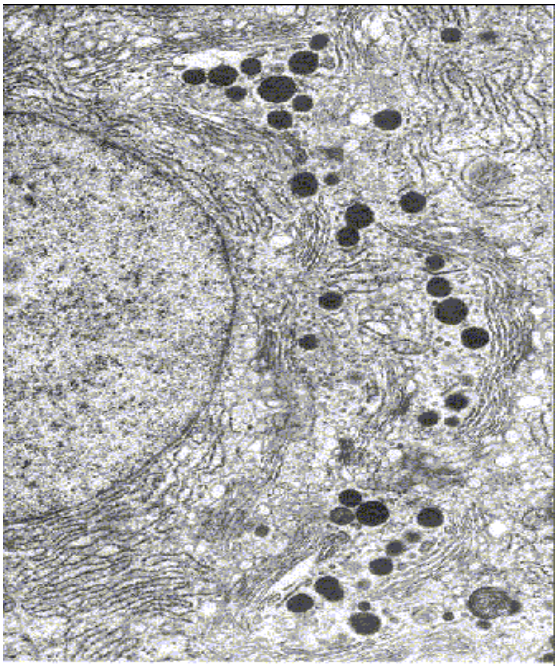
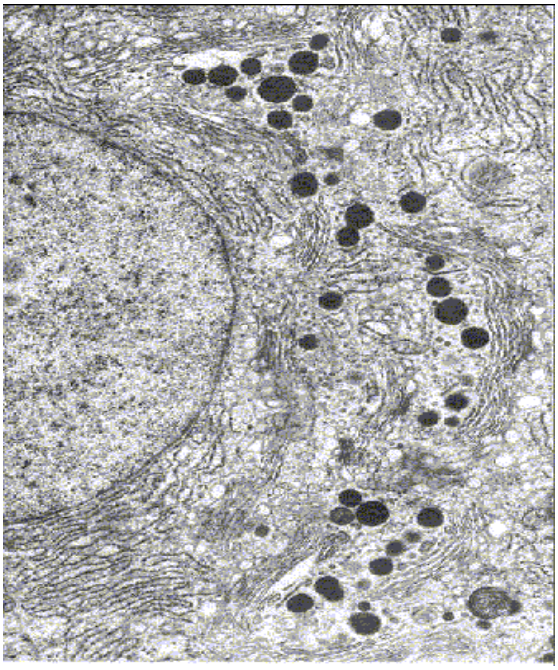
EM2



- Active or inactive cell?

EM2



- Active or inactive cell?
  - **ACTIVE**