

DII Hons/Sub. — 28.3.2020.

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APRIL
MONDAY

01

2019

Marmari College

Darbhanga

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GOLGI COMPLEX

An eukaryotic cytoplasmic organelle.

First discovered by an Italian Physician & Nobel Laureate Camillo Golgi in 1898 during an investigation of the nervous system.

The Golgi app. is noticeable with both light & electron microscope.

Membrane bound organelles, which are sac like. Found in cytoplasm of most eukaryotic cells and absent in prokaryotes, Mammalian RBCs & sperm cells of bryophytes.

Structure of Golgi apparatus.

- it is made up of several stack of parallel, flattened sac or cisternae.
- many peripheral tubules & vesicles.

CISTERNAE

- 1) Golgi app. is made up of approx 4-8 cisternae usually equally spread (space) in stack separated from each other by thin layer of intercisternal cytoplasm.
- 2) It has a distinct polarity, the two poles are Cis & Trans. Surface responsible for receiving and shipping departments.
- 3) Forming (Cis) face convex side of stack. Maturing (trans) face concave side of stack.
- 4) Secretory material from smooth endoplasmic reticulum via transport vesicles reaches golgi bodies.

TUBULES & VESICLES

Tubules — small round tubules formed from the periphery of the cisternae. And few get enlarged & concave surface of the Golgi bodies.

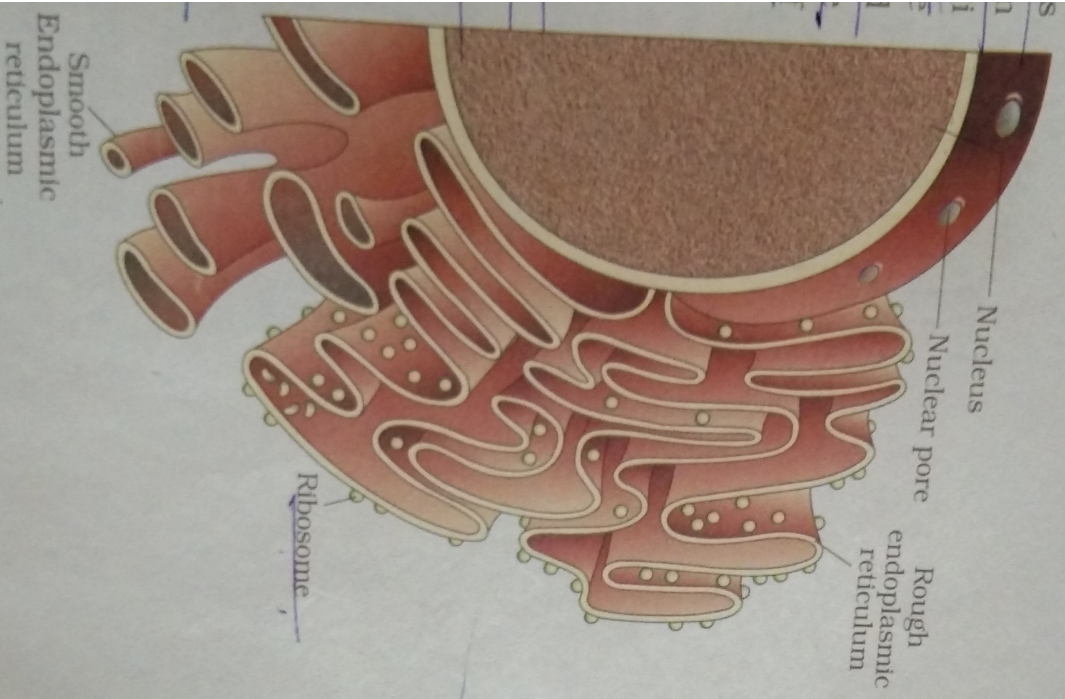


Figure 8.5 Endoplasmic reticulum

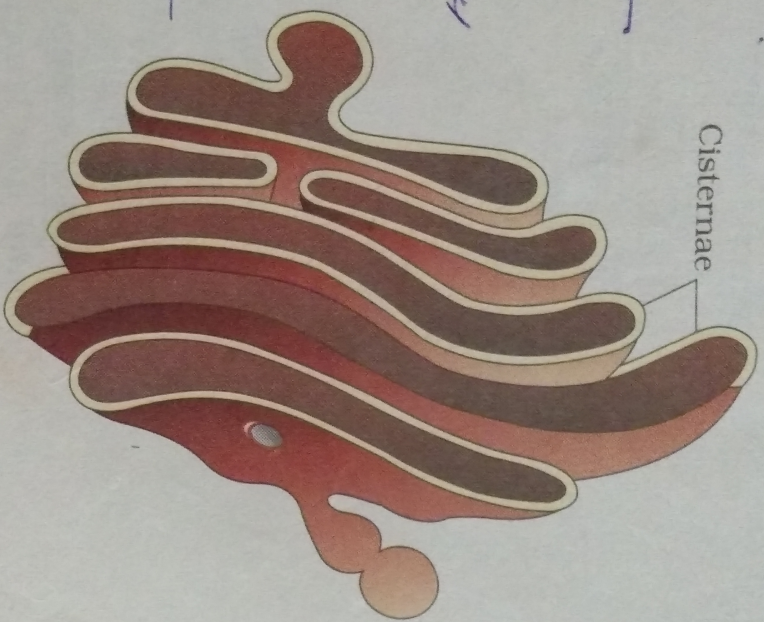


Figure 8.6 Golgi apparatus

MAR 2019	MAY 2019	M	T	W	T	F	S	S
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		13	14	15	9	10	11	12
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GOLGI - Complex - Contd.

2019

APRIL
TUESDAY

02

092-273 • Wk 14

2

VESICLES - lie near the end of concave surface of golgi complex.

Types of vesicles - smooth vesicles & coated vesicles.

Golgi Matrix - smooth vesicles & all golgi complex filled with a fluid.

Modification in CGN (cis golgi network) & TGN (trans golgi network).

- Two networks the cis Golgi network (CGN) & Trans Golgi network (TGN) are made up of outermost cisternae at the cis & trans face.

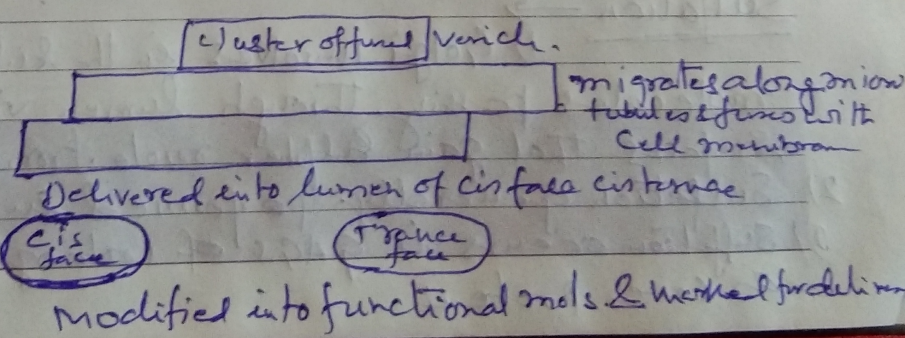
- Vesicles containing proteins from the endoplasmic reticulum (ER) merge with the CGN and allowing protein to enter Golgi complex.

- As CGN receives protein from the ER it begins these modification moving along membrane to membrane towards the TGN.

- At the other end of Golgi complex, newly modified protein arrives at the TGN where it sends off to different parts of cell via trans post-vesicle.

PATHWAY:

Protein & lipid



FUNCTIONS

Secretion

Synthesis

Sulfation

Apoptosis

Phosphorylation

Secretion - Golgi complex plays an important role in secretion → Production of Polysaccharides

Path of Secretion - 1) Nuclear membrane

2) Nuclear pore

3) Rough endoplasmic reticulum

4) Smooth endoplasmic reticulum (SER)

5) Ribosomes attached to RER

6) Macromolecules

7) Transport vesicles

8) Golgi apparatus

9) Cis face of Golgi apparatus

10) Trans face of Golgi apparatus

11) Cisternae of the Golgi apparatus

Synthesis - It is also major site of carbohydrate

2) Induces synthesis of glycosaminoglycans

3) Golgi app. to Polysaccharides and form to form proteoglycans

Sulfation →

1) Golgi involves in the sulfation of molecules passing through lumen via Sulfatase

- Surfaces that gain sulphur mole from a donor

2) Sulfation generally performed in Trans Golgi

3) Sulfation occurs in GAGs of proteoglycans as core protein

MAY 2019

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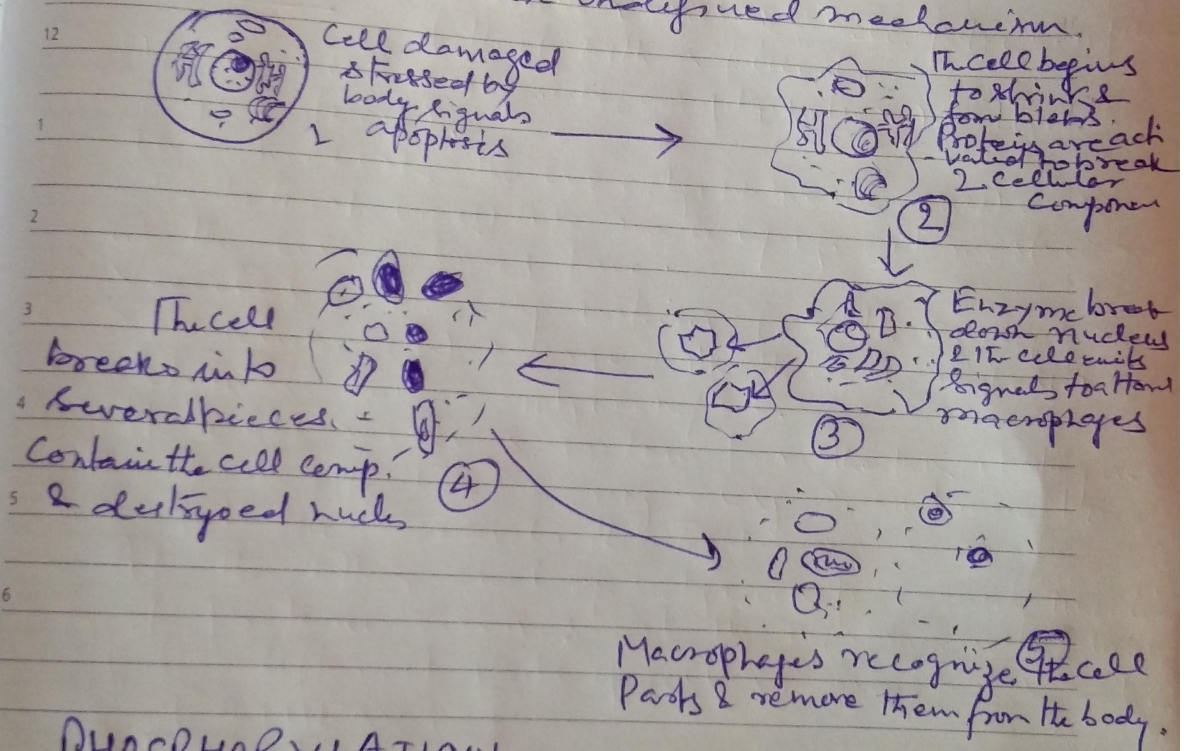
APRIL THURSDAY

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4

- 4) Level of hydration is important to proteoglycans.
- 9 APOPTOSIS → has a putative role in apoptosis.
- 10 → A newly characterized protein (Golgi antiapoptotic protein) almost exclusively resides the Golgi & protects cells from apoptosis.
- 11 → As yet it is an undefined mechanism.



PHOSPHORYLATION

Phosphorylation of mol. requires energy in the form of ATP.

NOTES The ATP is imported in the lumen of Golgi which is utilized by Casein Kinase I & Casein Kinase II.

Apolipoprotein — forms a mol. VLDL (constituent of blood serum).