YAKEEN NEET 2.0

2026

Cell : The Unit of Life

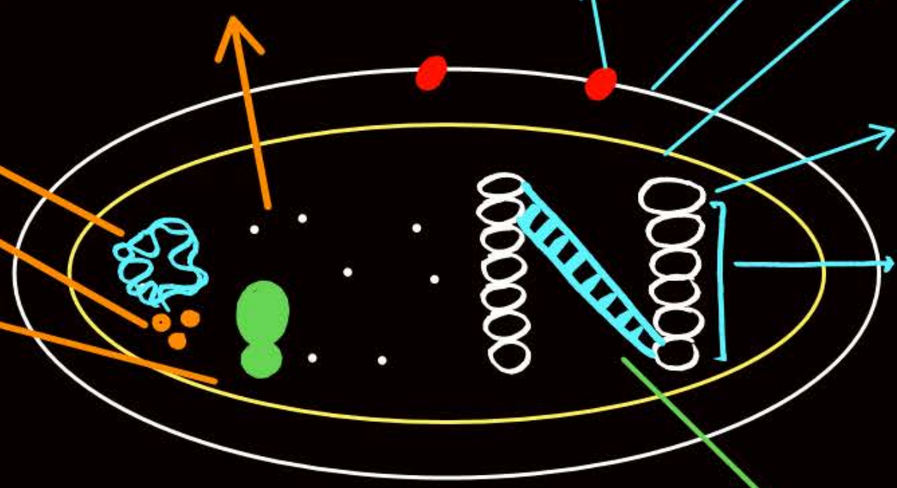
Botany | Lecture - 07

Rupesh Chaudhary Sir

Topics to be covered

1. PLASTID
2. Cell membrane & TRANSPORT
3.
4.

CHLOROPLAST



STROMA: COVERED BY INNER MEMBRANE

PORINS PROTEIN

OUTER MEMBRANE : PORINS ✓ MORE PERMEABLE

INNER MEMBR : X , LESS PERMEABLE.

STROMA
- SMALL, dS, CIRCULAR DNA.
- RNA
- 70S RIBOSOME

SYNTHESIS SOME PROTEIN
SO SEMIAUTONOMOUS CELL ORGANELLE.

★ STROMA: PROTEIN SYNTHESIS
↓
DARK RXN FOOD SYNTHESIS (CALVIN CYCLE) BY UTILISING ENERGY OF LIGHT RXN (CARBOHYDRATE)
RUBISCO ENZYME (ABUNDANT PROTEIN).

FLAT, MEMBRANOUS, SAC LIKE : THYLAKOID

THYLAKOID ARRANGE ONE ABOVE OTHER : PILES OF COIN
GRNA / INTERGRANAL THYLAKOID
↓
THYLAKOID → MEMBRANE → PIGMENTS → ABSORB LIGHT
LIGHT REACTION : SYNTHESIS OF ENERGY (ATP, NADPH+H^+)

STROMAL LAMELLA / STROMAL THYLAKOID
FLAT, MEMBRNOUS, TUBULE CONNECT TWO GRANA.

★ LENS, DISC, SPHERICAL, SPIRAL, CUP, RIBBON LIKE: SHAPE
★ LENGTH: 5-10um , WIDTH: 2-4um
★ CHLAMYDOMONAS, GREEN ALGAE (PROTISTA) : ONE CHLOROPLAST
★ MESOPHYLL CELLS OF LEAVES: 20-40 CHLOROPLAST.
★ ELECTRON TRANSPORT CHAIN (ATP SYNTHESIS) : THYLAKOID MEMBRANE

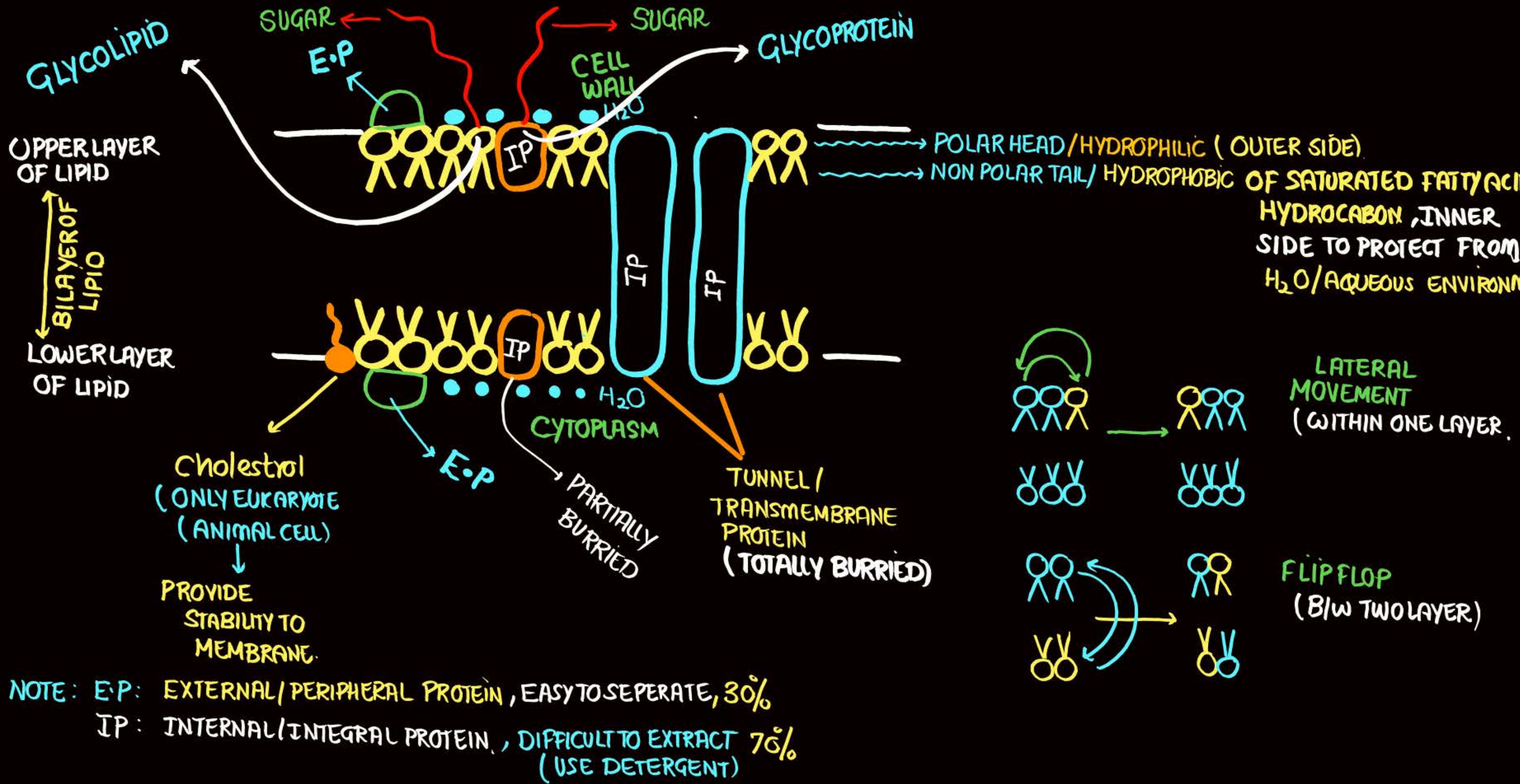
ATP SYNTHESIS: PHOTOPHOSPHORYLATION

CELL MEMBRANE

- EASY TO STUDY : CELL MEMBRANE : 1950, ELECTRON MICROSCOPE.
- CHEMICAL STUDY: HUMAN RBC MEMBRANE. → FOUND → LIPID + PROTEIN
- BIOCHEMICAL STUDY: FOUND : CARBOHYDRATE + PROTEIN : RBC MEMBRANE : 52% PROTEIN, 40% LIPID, 8% CARBOHYDRATE.
- BEST MODEL: SINGER & NICOLSON (1972) : FLUID MOSAIC MODEL.
  - FLUID → LIQUID NATURE DUE TO LIPID (FLUIDITY)
  - MOSAIC → TWO DIFFERENT PATCHES (LIPID & PROTEIN)
- LIPID (LIQUID) + PROTEIN (SOLID)
  - ↓
  - चासनी + गुलाबजामुन
- QUASI-FLUID / SEMI-FLUID
- PROTEIN (ICEBERG) IN SEA OF LIPID
- MOST COMMON LIPID (PHOSPHOLIPID) eg: PHOSPHOGLYCERIDES

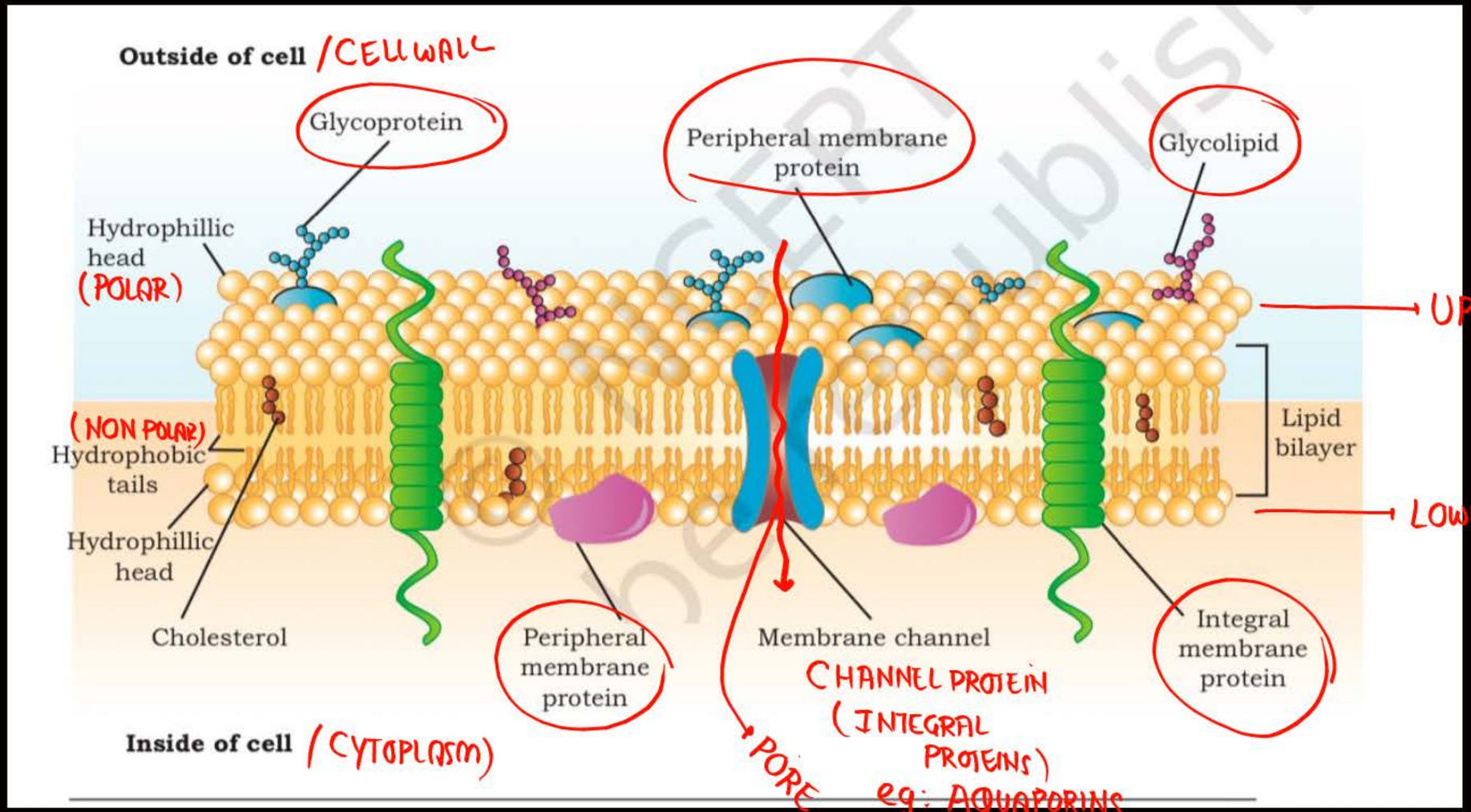
LIPID MADE UP OF FATTY ACID

- SATURATED → SOLID NATURE (घी)
- UNSATURATED → LIQUID NATURE (OIL)



NOTE: E·P: EXTERNAL/PERIPHERAL PROTEIN, EASY TO SEPERATE, 30%

IP: INTERNAL/INTEGRAL PROTEIN, DIFFICULT TO EXTRACT 70%
(USE DETERGENT)


Outside of cell / CELL WALL
Glycoprotein
Peripheral membrane protein
Glycolipid
Hydrophillic head (POLAR)
UPPER LAYER
(NON POLAR) Hydrophobic tails
Lipid bilayer
Hydrophillic head
LOWER LAYER
Cholesterol
Peripheral membrane protein
Membrane channel
Integral membrane protein
CHANNEL PROTEIN (INTEGRAL PROTEINS)
PORE
eg: AQUAPORINS
Inside of cell / CYTOPLASM)

TO BE CONTINUE :

PYQ (MODULE) ∋ पढ़ाया है

PRARABH EXERCISE (TOPIC).

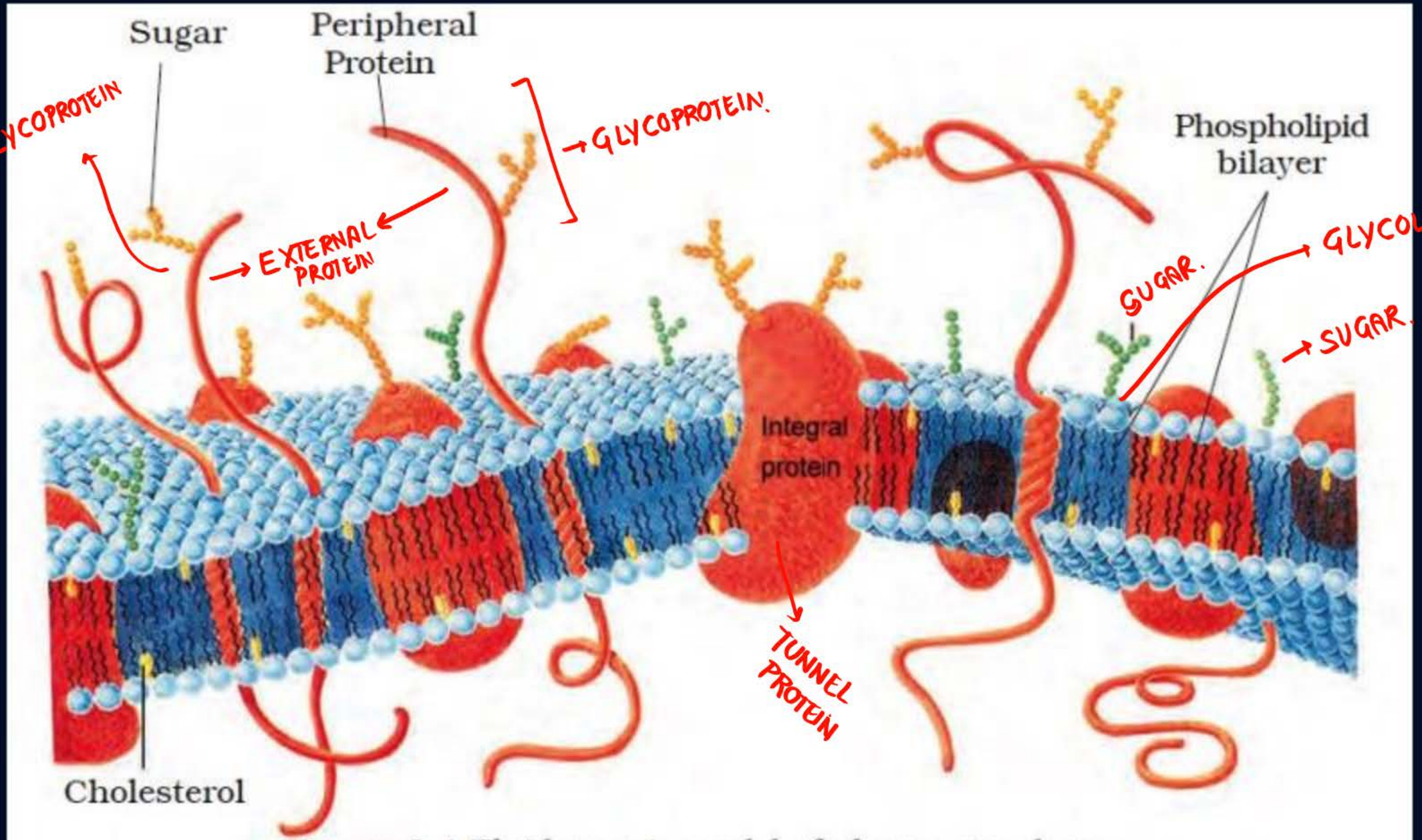


Figure 8.4 Fluid mosaic model of plasma membrane

THANK YOU