SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi. Coimbatore -641035

COURSE NAME : MEDICINAL BIOCHEMISTRY
YEAR : PHARM D /I YEAR
TOPIC 1 : CELL AND ITS BIOCHEMICAL ORGANISATION

Design Thinking in Cellular Processes

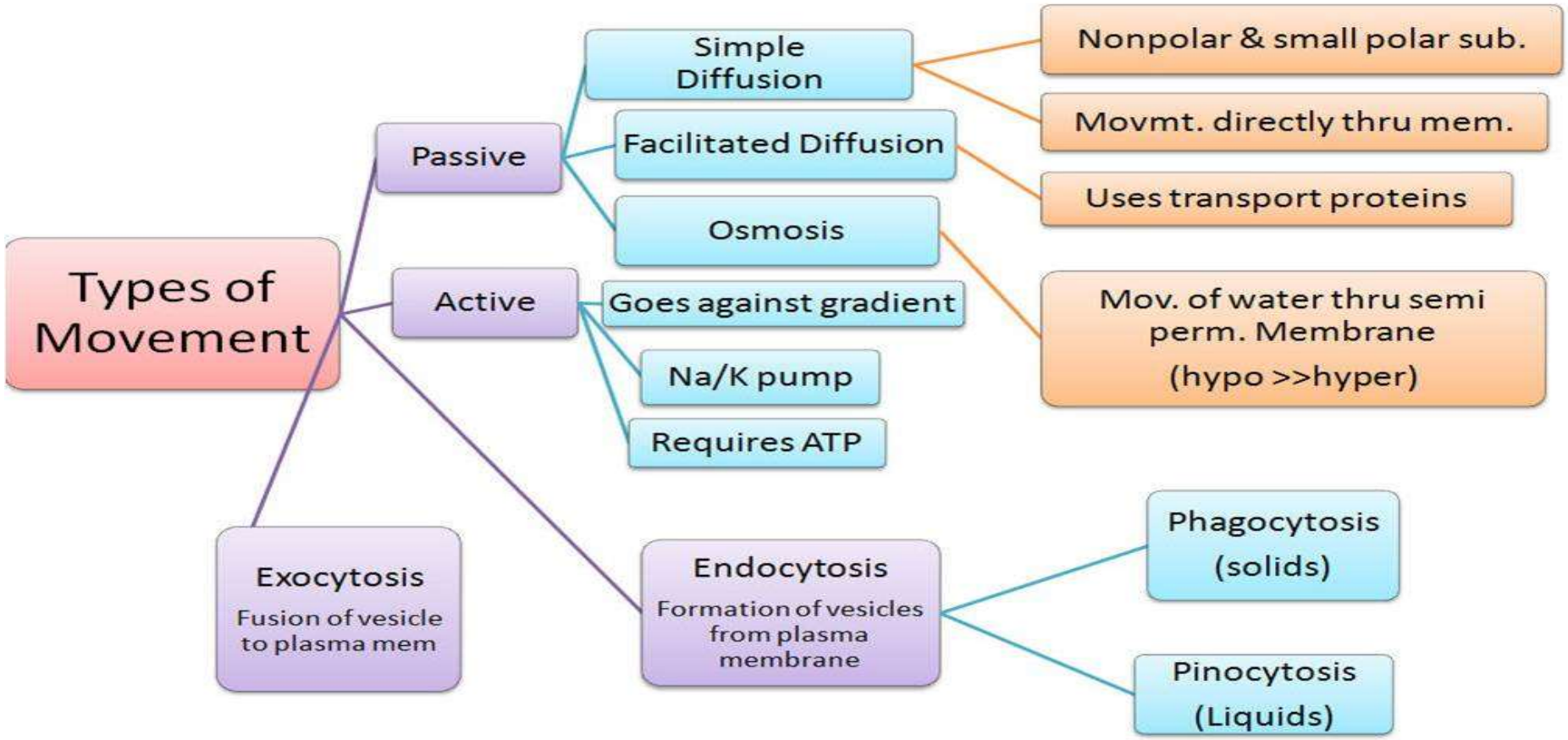
1.Empathize: Deeply understand the student's or learner's challenges, needs, and experiences. This involves engaging with students, educators, and biologists to uncover pain points, preferences, and unmet needs in understanding microscopic cell processes.

2.Define: Reframe the problem based on insights from the empathize phase and establish clear context. This involves synthesizing data to pinpoint the core issue, such as defining the need for clearer explanations of cellular mechanisms.

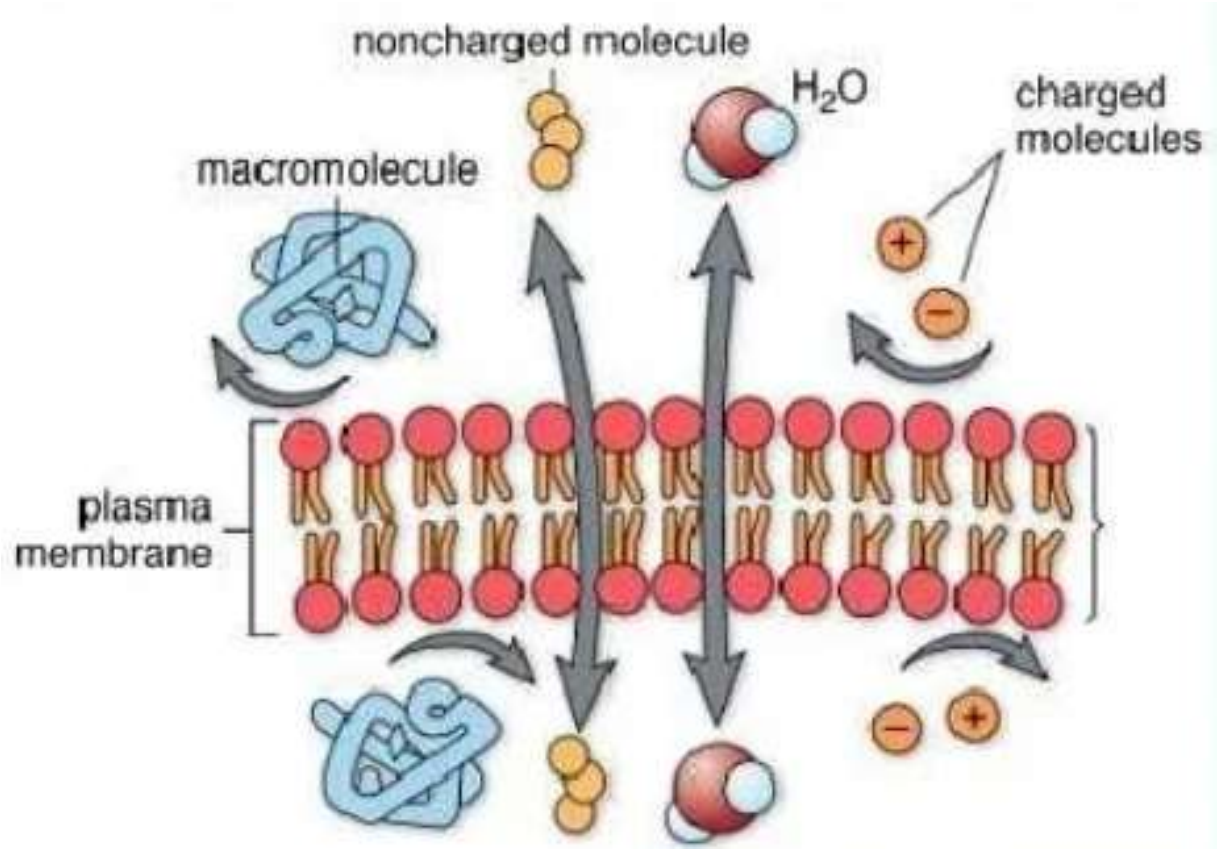
3.Ideate: Brainstorm and explore a wide range of ideas and potential explanations, including innovative diagrams or models.

4.Prototype: Simulate and build educational tools or visuals to enhance comprehension.

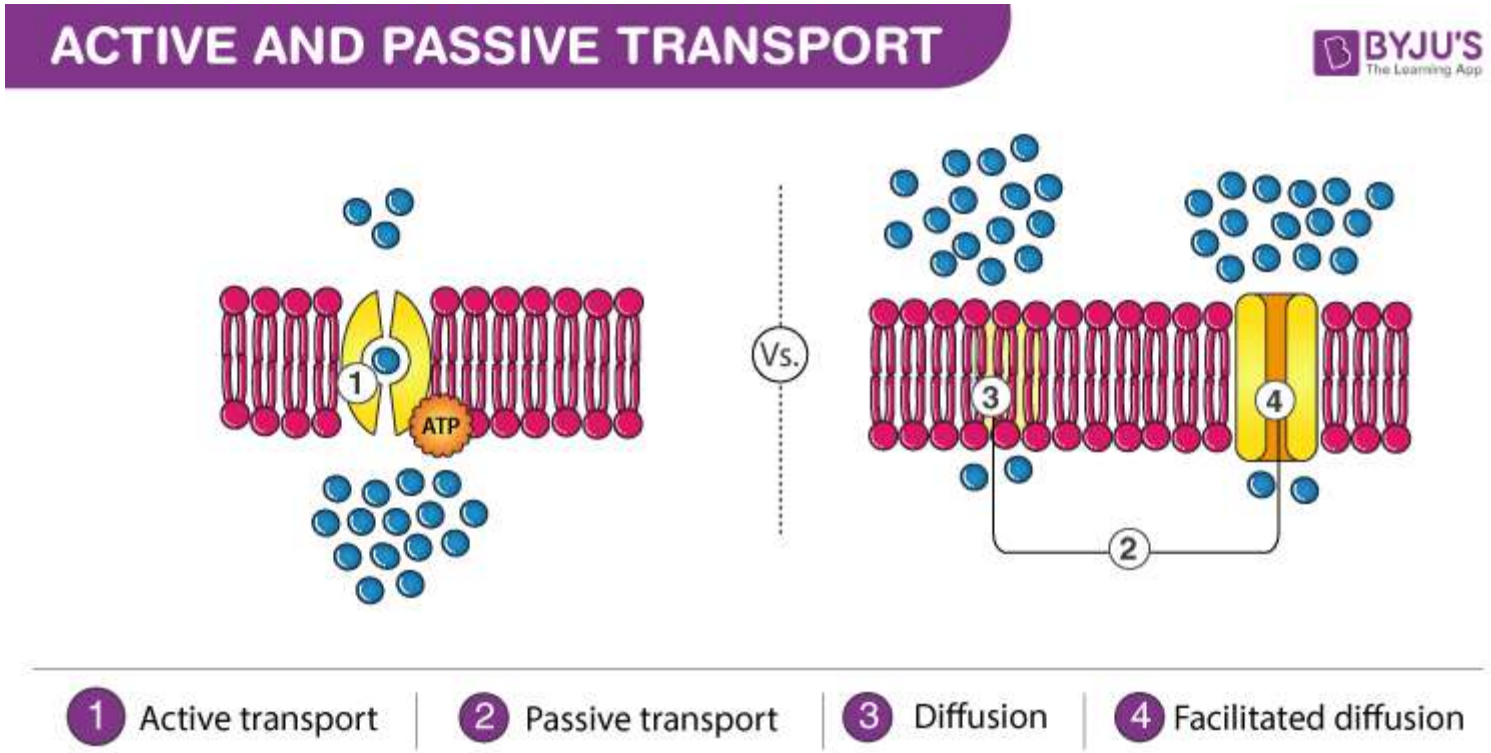
MINDMAP


Types of Movement
Passive
Simple Diffusion
Facilitated Diffusion
Osmosis
Nonpolar & small polar sub.
Movmt. directly thru mem.
Uses transport proteins
Mov. of water thru semi perm. Membrane (hypo >>hyper)
Active
Goes against gradient
Na/K pump
Requires ATP
Exocytosis
Fusion of vesicle to plasma mem
Endocytosis
Formation of vesicles from plasma membrane
Phagocytosis (solids)
Pinocytosis (Liquids)

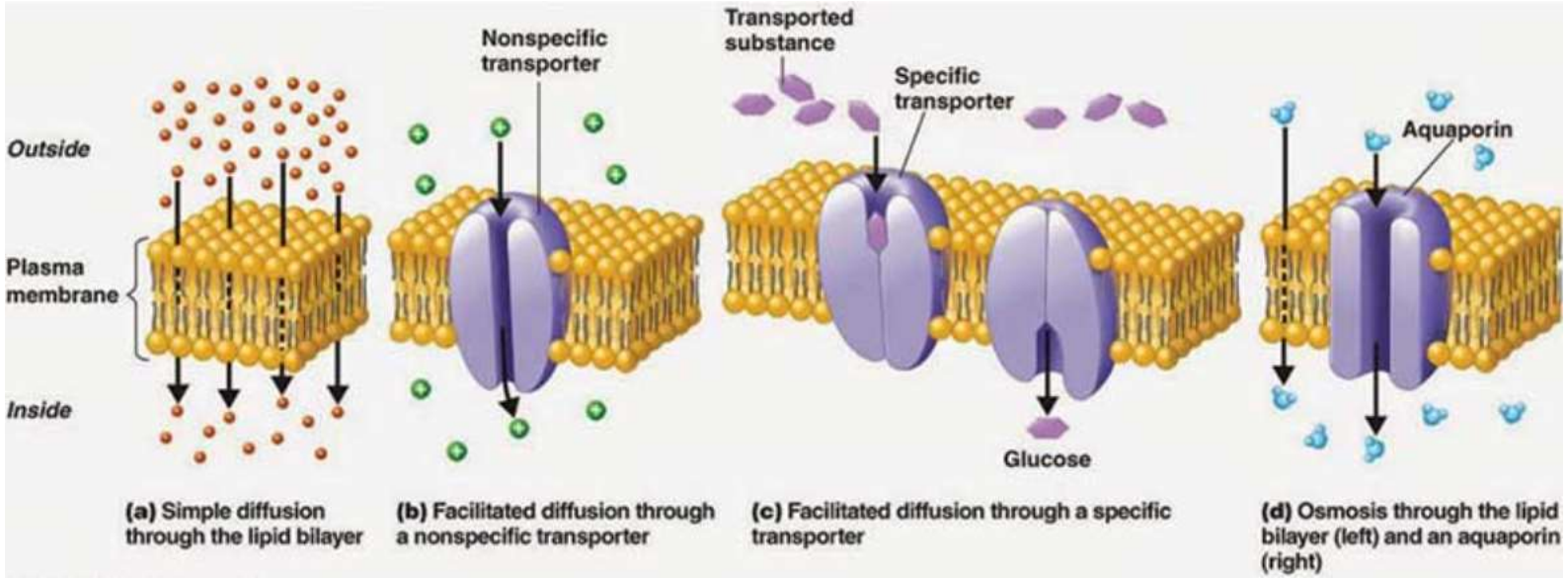
INTRODUCTION



TRANSPORT ACROSS CELL MEMBRANE

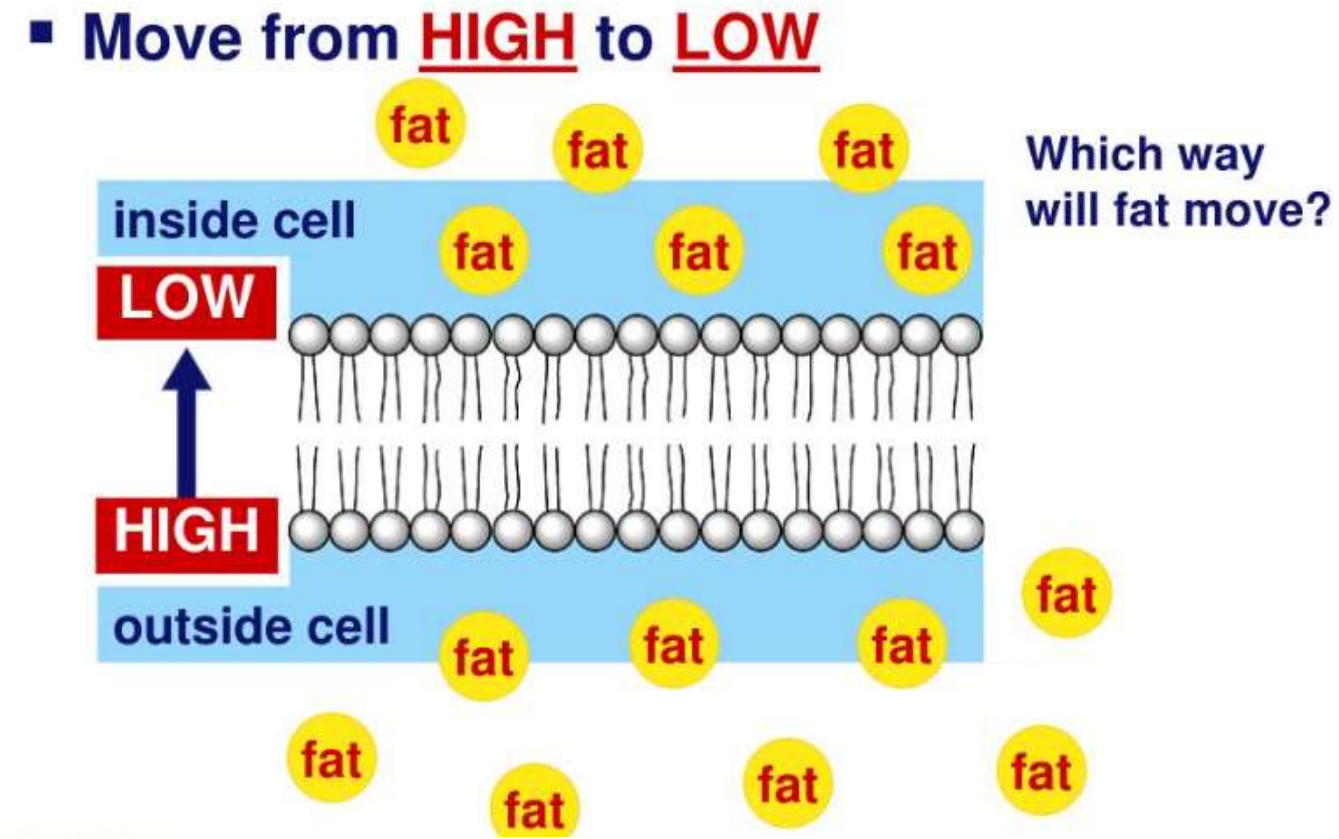


PASSIVE TRANSPORT



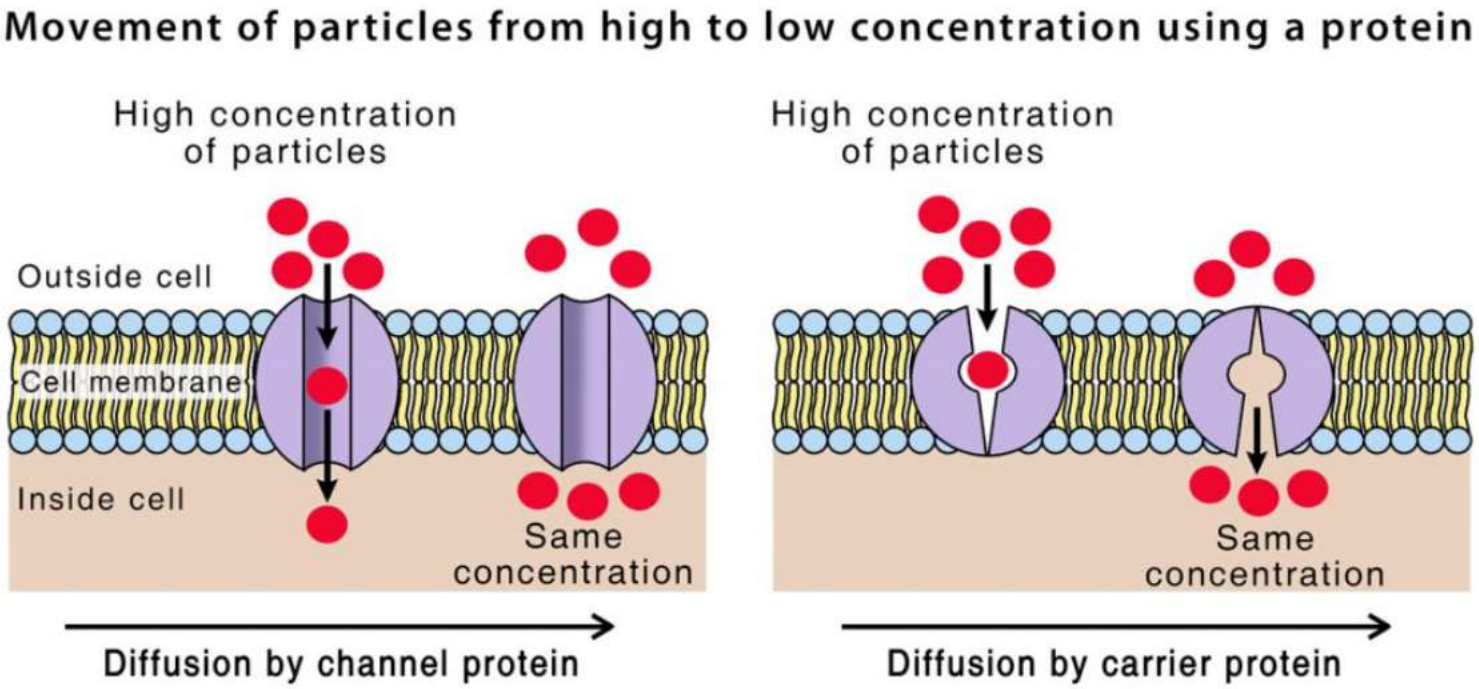
PASSIVE TRANSPORT

- Simple Diffusion: No energy, small molecules.



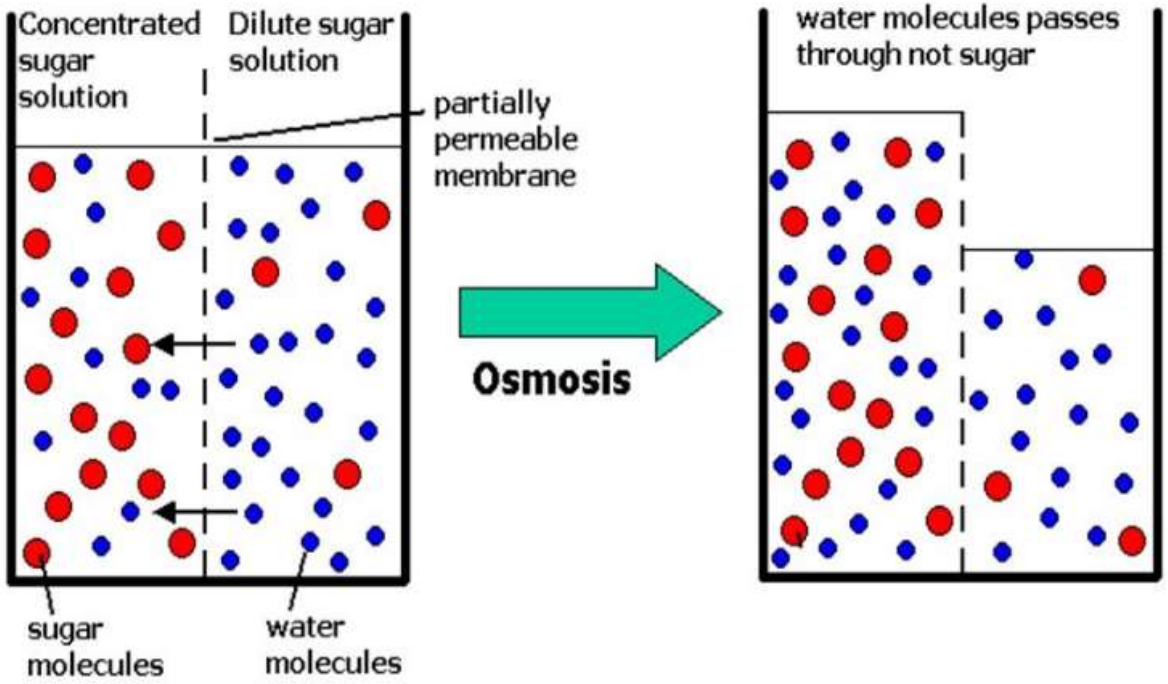
PASSIVE TRANSPORT

- Facilitated Diffusion: Via carrier proteins.

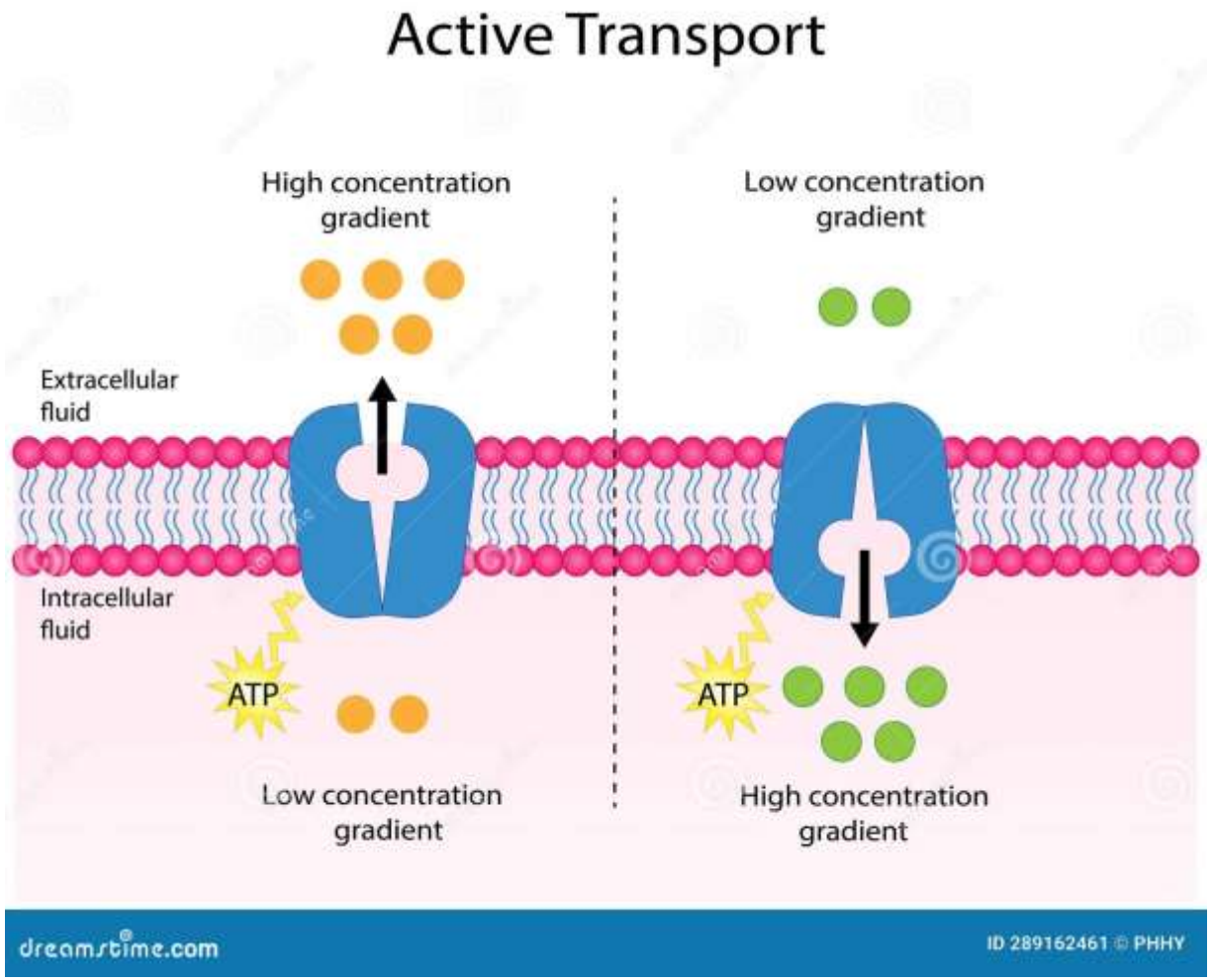


PASSIVE TRANSPORT

- Osmosis: Water movement.

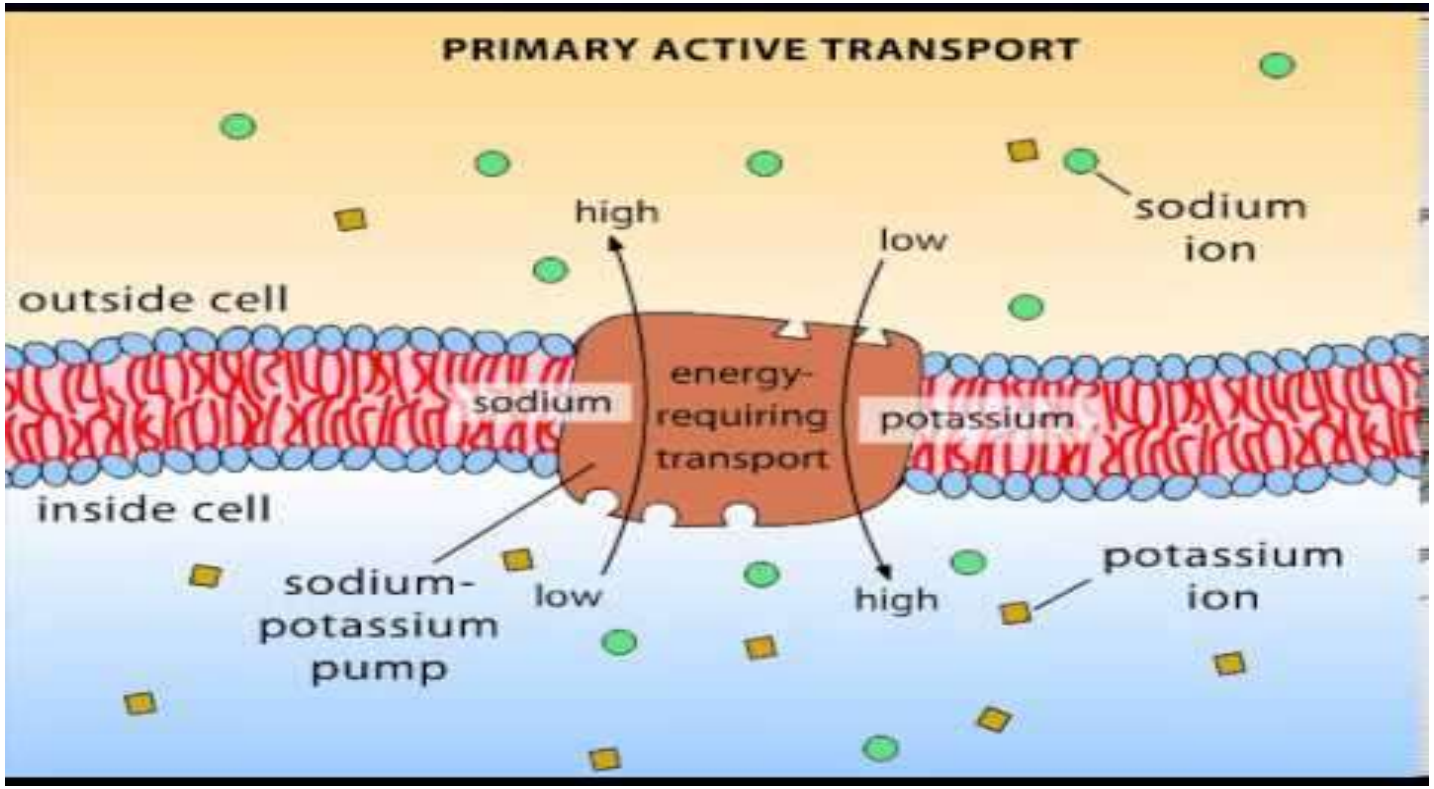


ACTIVE TRANSPORT



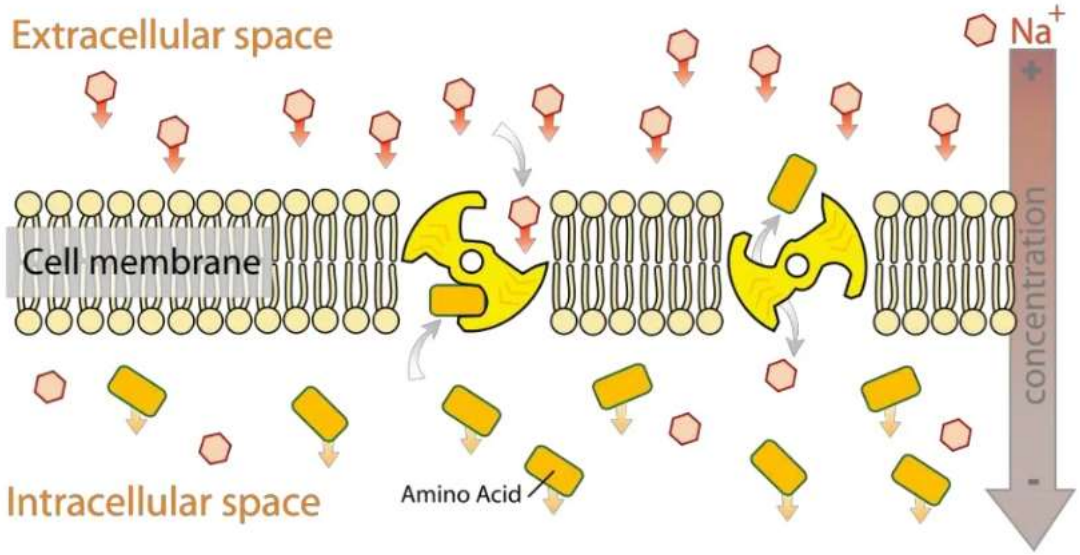
ACTIVE TRANSPORT

- Primary: Uses ATP directly, e.g., Na/K pump.



ACTIVE TRANSPORT

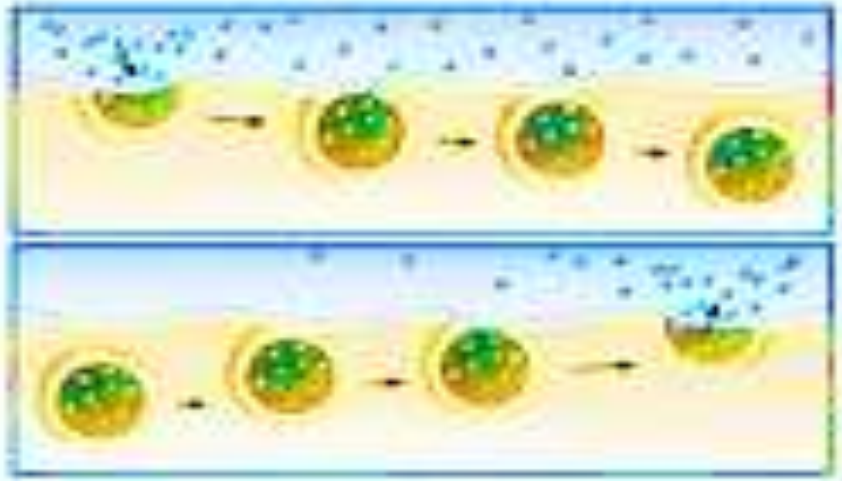
- Secondary: Uses gradient, e.g., symport, antiport.



BULK TRANSPORT

Bulk Transport

- Transport of proteins, polysaccharides, large molecules



Endocytosis: take in macromolecules, form new vesicles

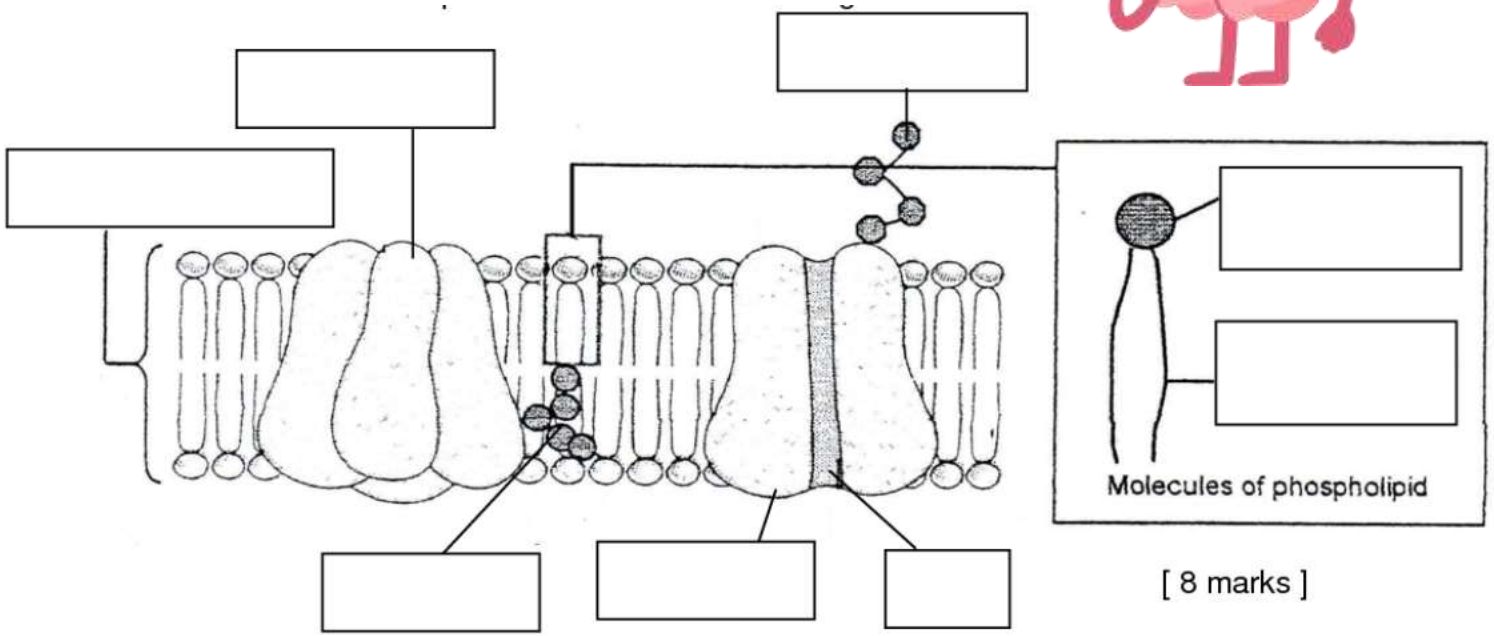
Exocytosis: vesicles fuse with cell membrane, expel contents

SUMMARY

- Transport maintains balance, division enables growth, junctions support tissues. All vital for human anatomy.
- Cell division is crucial for growth, repair, and reproduction, primarily through mitosis and meiosis.
- Cell junctions connect adjacent cells in tissues, providing adhesion, communication, and barriers.

CLASS ASSESSMENTS

LABELE THE FEATURE IN DIAGRAM?



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REFERENCE

- ✓ Essentials of Medical Physiology, K. Sembulingam & P. Sembulingam (Jaypee Brothers Medical Publishers)
- ✓ A Textbook of Human Anatomy and Physiology-I, SIA Publishers
- ✓ Human Anatomy & Physiology Gerard J. Tortora & Bryan H. Derrickson (Wiley)
- ✓ Ross and wilson anatomy and physiology in health and illness, Anne Waugh &Allison Grant.
- ✓ Tortora GJ, Derrickson B: Principles of Anatomy and Physiology, 15th Edition, Wiley, 2017.
- ✓ Marieb EN, Hoehn K: Human Anatomy & Physiology, 11th Edition, Pearson, 2019.


thank you