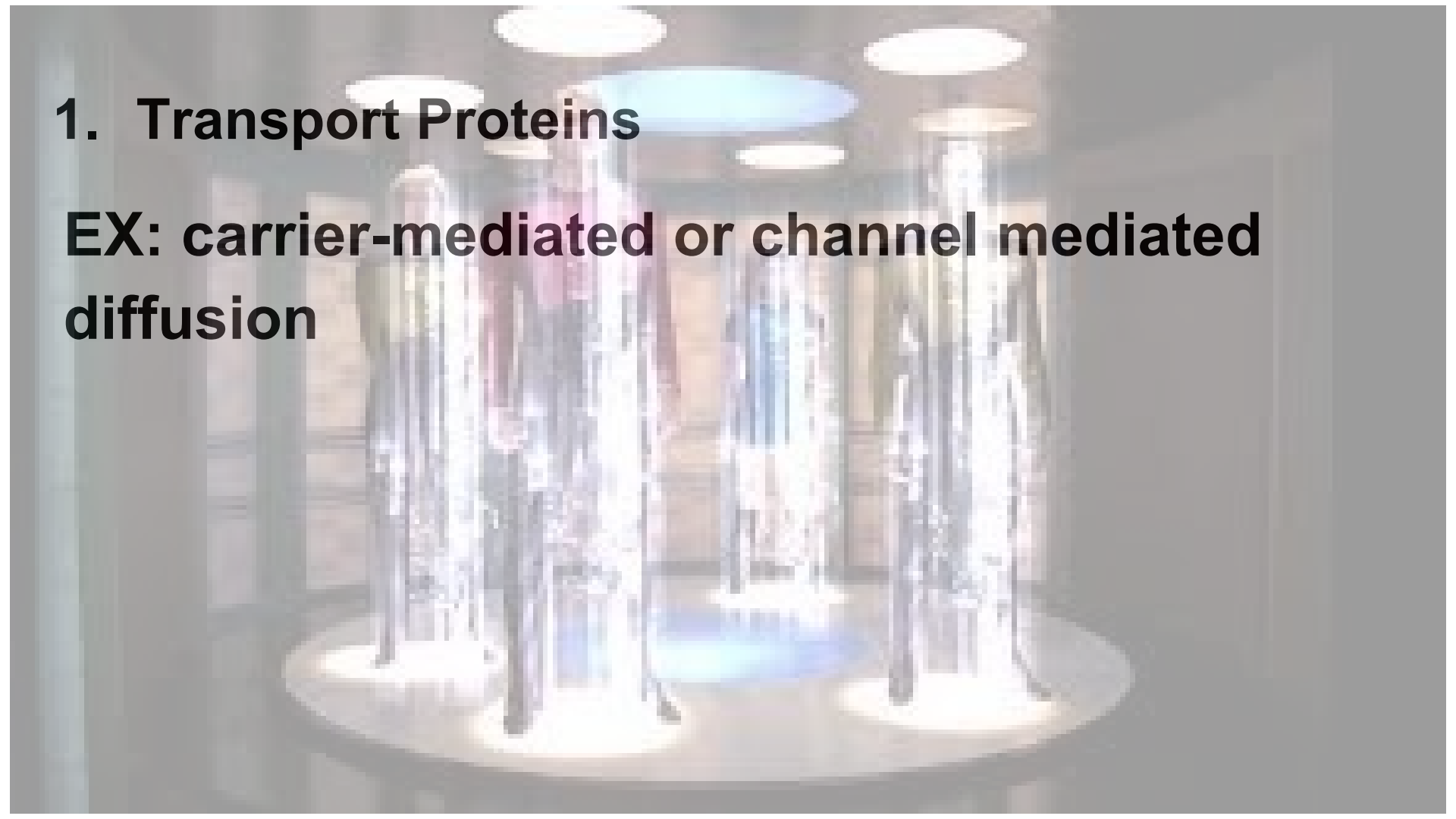
Ch. 3- CELLS
The Living Units

Membrane Proteins
Membrane Junctions
Mitochondria
Developmental Aspects

Membrane Proteins- pg 66, fig. 3.4

1. Transport
2. Receptors for signal transduction
3. Attach to cytoskeleton
4. Enzymatic activity
5. Intercellular joining
6. Cell-cell recognition



1. Transport Proteins

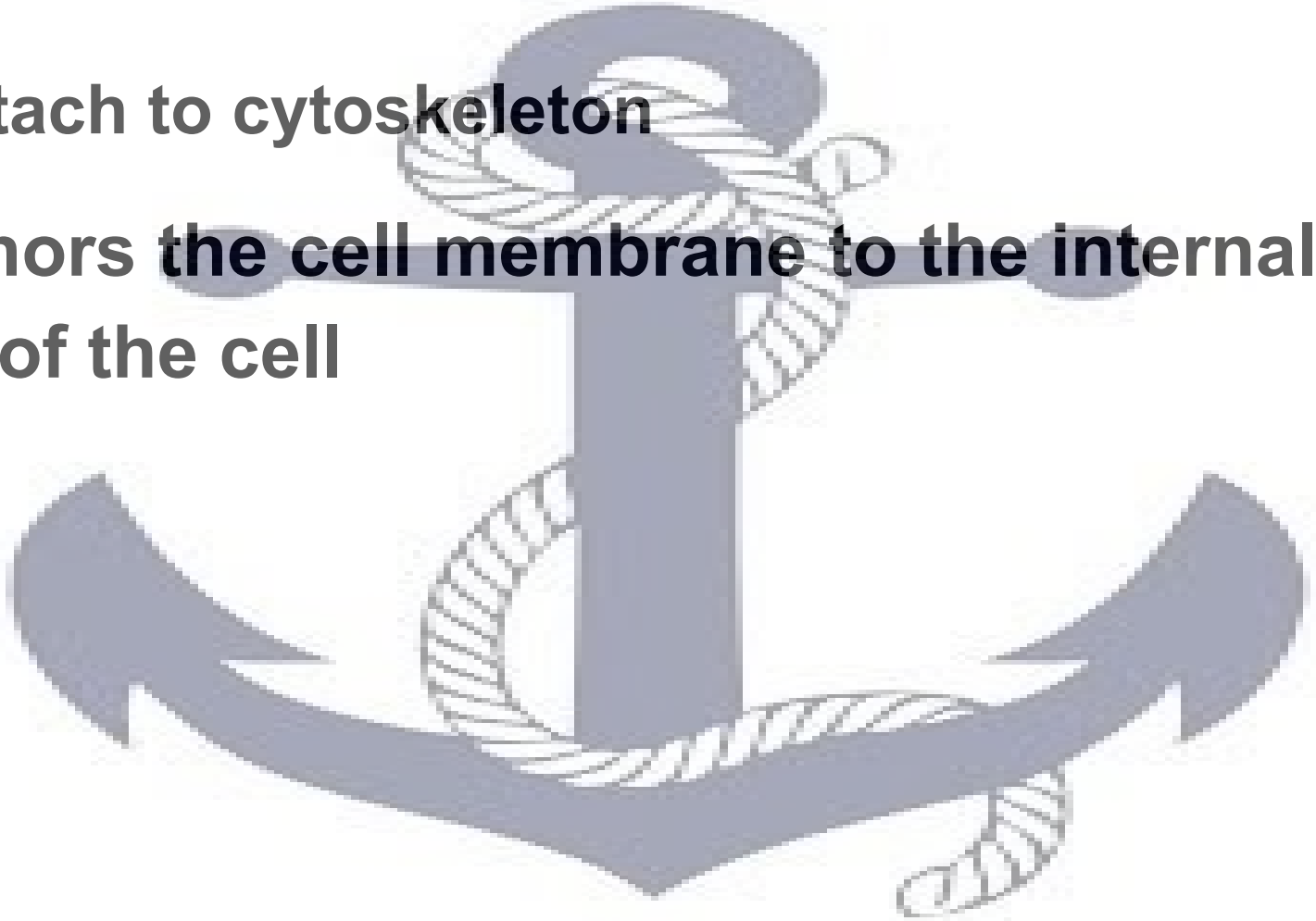
EX: carrier-mediated or channel mediated diffusion

2. Receptors for signal transduction

A binding site with a specific shape made for hormones.

3. Attach to cytoskeleton

Anchors the cell membrane to the internal part of the cell

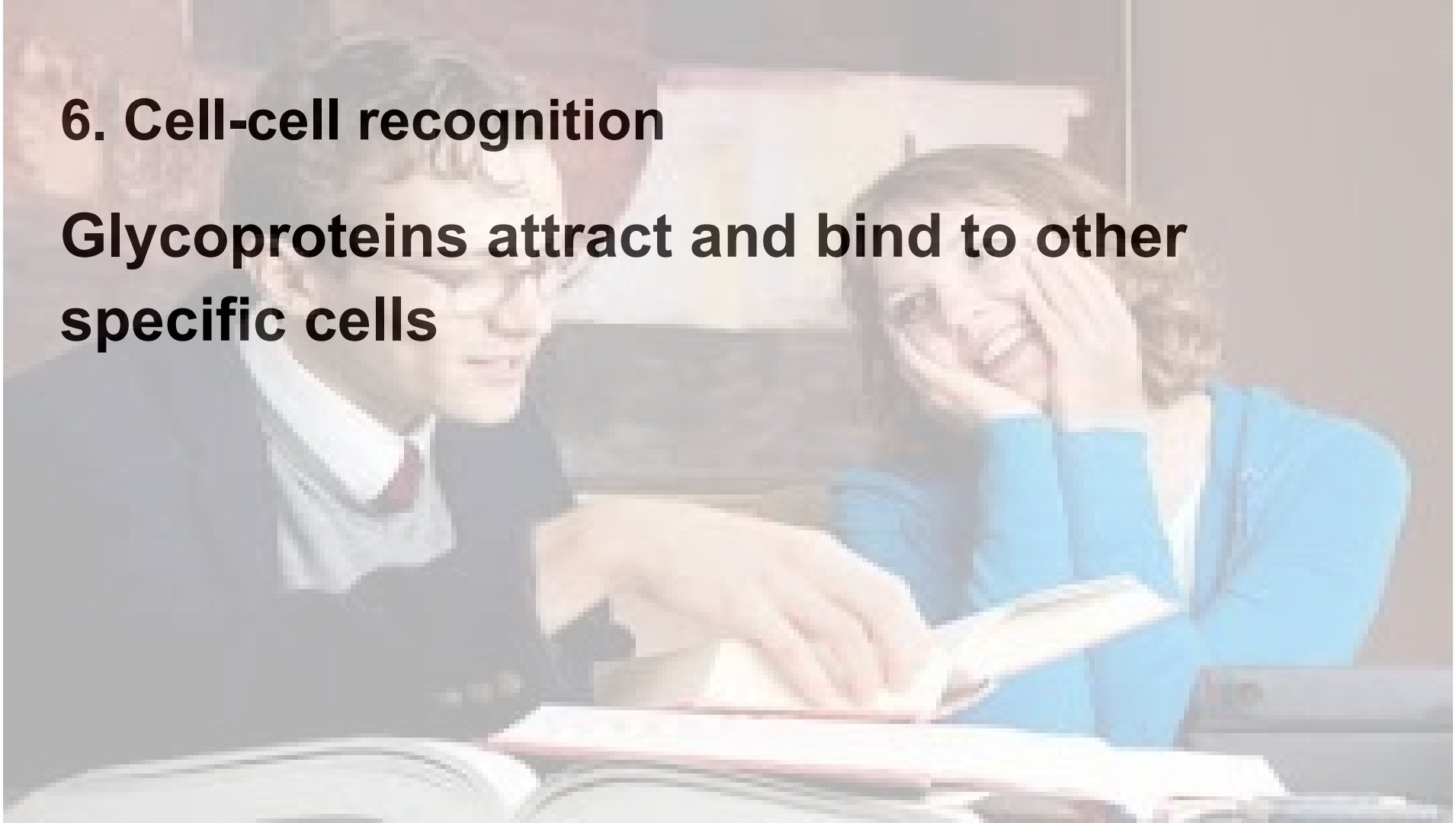


4. Enzymatic Activity

A protein built into the membrane can be an enzyme, catalyzing as particles enter the cell

5. Intercellular Joining

Two cells that are next to each other temporarily bind assisting in cell-to-cell interactions



6. Cell-cell recognition

Glycoproteins attract and bind to other specific cells

Membrane Junctions, pp 66-67

What are the 3 ways in how cells bind together?

1. **Tight: impermeable site; EX: digestive tract keeps digestive enzymes from seeping in bloodstream**
2. **Desmosomes: anchoring sites by cadherins create a zipper-like space; seen in tissues that go handle extreme pressure; EX: skin, heart muscle**

Membrane Junctions

What are the 3 ways in how cells bind together?

3. Gap Junctions: known as a NEXUS connect by connexons used for diffusion; exists where electrical activity occurs; EX: heart, gut

Generation of a Resting Membrane Potential,pp79-80

Membrane potential: a voltage across the membrane between ions (charged particles)

A POLARIZED cell is:

- **at resting potential= -50 to -100 mV.**
- **Internally negative: extracellular fluid**

How the cell exhibits a STEADY STATE

- Ions leak IN/OUT of the cell due to passive transport
- Ions are inside and outside of the cell
  - K+ (potassium ions) are found inside the cell
  - Na+ (sodium ions) are found outside of the cell
- In order to keep the balance, active transport to maintain K+ inside and Na+ in the extracellular fluid

The Sodium-Potassium Pump

- Is an example of **ACTIVE TRANSPORT**
- Pumps out more **Na+** as more is pumped in (3)
- Pumps in more **K+** as more leaves (2)

*Cells would become hypertonic IF Na+ was not actively transported OUTSIDE of the cell

Mitochondria, pg 83

Bean shaped organelle that are in motion

Provides most of its ATP supply

Mitochondria are in large amts where needed

ATP → ADP

Contains their own DNA, RNA & ribosomes

Microslide time!

Cells of Your Body

Work in pairs

Turn in at end of period

Developmental Aspects of Cells, pp.108-109

Life begins as a zygote (fertilized egg)

Cells begin to specialize by being exposed to different chemical signals and the triggering processes that switch them on/off

Cell Differentiation

Where organs are made up of structures to assist in function

EX: Liver produces more lysosomes

Apoptosis

Cell death and destruction are normal occurences during early development

Advantage: eliminates stressed cells, injured or not needed

How it works: through chemical signals, cytosol leaks into mitochondrial membranes and destroys the DNA until all parts are demolished