Project: Phospholipid Bilayer (Plasma membrane)

Refer to page 65 of the textbook.

Construct a 3-D model of the Phospholipid Bilayer (Fluid Mosaic Model).

Include and label the following structures (1-13) on the FRONT of your project.

Use the names on the list.

1. Cytoplasm (watery environment)

2. Integral proteins (include channels)

3. Filaments of cytoskeleton

4. Peripheral proteins

5. Inward-facing Layer

6. Outward-facing Layer

7. Carbohydrate

8. Nonpolar tail

9. Polar head

10. Cholesterol

11. Extracellular fluid (watery environment)

12. Glycolipid

13. Glycoprotein

Suggested materials (these are only suggestions):

Newspaper, aluminum foil, buttons, beads, pasta, beans, seeds, thread, yarn, pipe cleaners, cloth fabric, soda straws, popsicle sticks, toothpicks, ribbon, sculpted papier mâ·ché, moldable lightweight material, etc.

Do not use coins, sharp objects or odorous materials!

Material should resemble the structure it is used to depict. For example, peripheral proteins are wide with channels inside. Carbohydrates and glycolipids consist of linked chains. Cytoskeleton filaments are long and thin (filamentous). Tails and head should be attached but constructed of different materials.

Write your name conspicuously on the front in right upper corner.

On the BACK of the project, make a key by using a “sample” of the material used on the front.

The back should include 1) a small sample, 2) name of structure, 3) function (concise and begins with a verb) of structure

For example, if you use a bead or seed to illustrate a polar head use the same bead/seed on the key in the back.

Remember:

* Do not spend ANY money to construct this project.
* Be creative!
* Membrane may be curved or straight.
* Board should not be longer (side to side) than 18 inches or taller (top to bottom) than 10 inches.
* Use a stiff material or board that will not bend at all.
* Project should not crack, shred, crumble, peel, or lose pieces, etc. before it is assessed.
* Project should be neat and CLEAN!
* Material selected for each structure MUST be consistent. For example, you may not make one integral protein out of a different substance than another. All proteins should be made of same substance but their anatomy and location will vary i.e. peripheral vs. integral.
* Avoid simple mistakes. Read guidelines carefully.

All “heads” must have 2 “tails”

Peripheral proteins located on the periphery; integral proteins pass through membrane

At least 1 integral protein has a channel; travels from intracellular to extracellular

Cholesterol is embedded; carbohydrates and glycolipids are not.

Hand in on or BEFORE the deadline. Late projects will NOT be accepted under any circumstances! Please see me AFTER class or email me if you have questions.

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