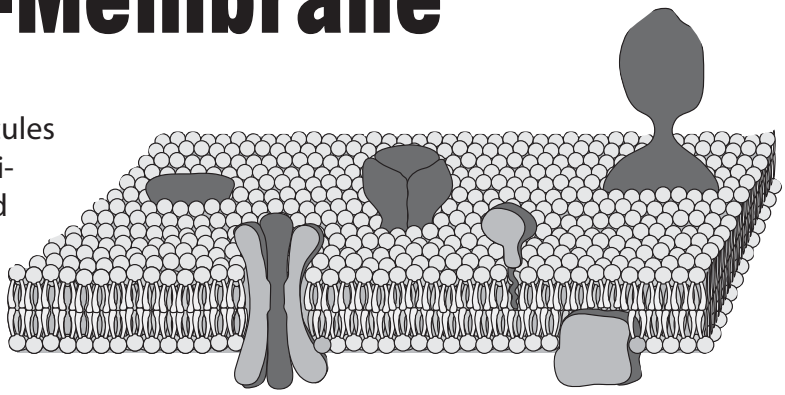
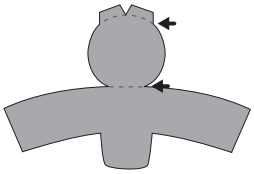
Name _____

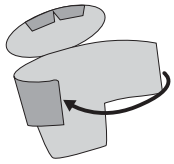
Date _____

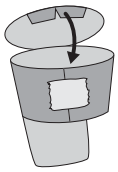
Build-A-Membrane

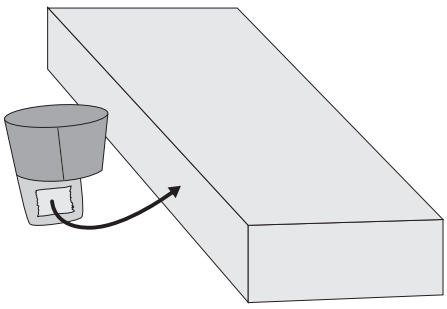


Cell membranes are made of phospholipid molecules that arrange themselves into two rows called a bi-layer. Proteins are embedded in the phospholipid bilayer, through one or both layers. These proteins help other molecules cross the membrane and perform a variety of other functions. Create a model of a small section of cell membrane by following the instructions below.





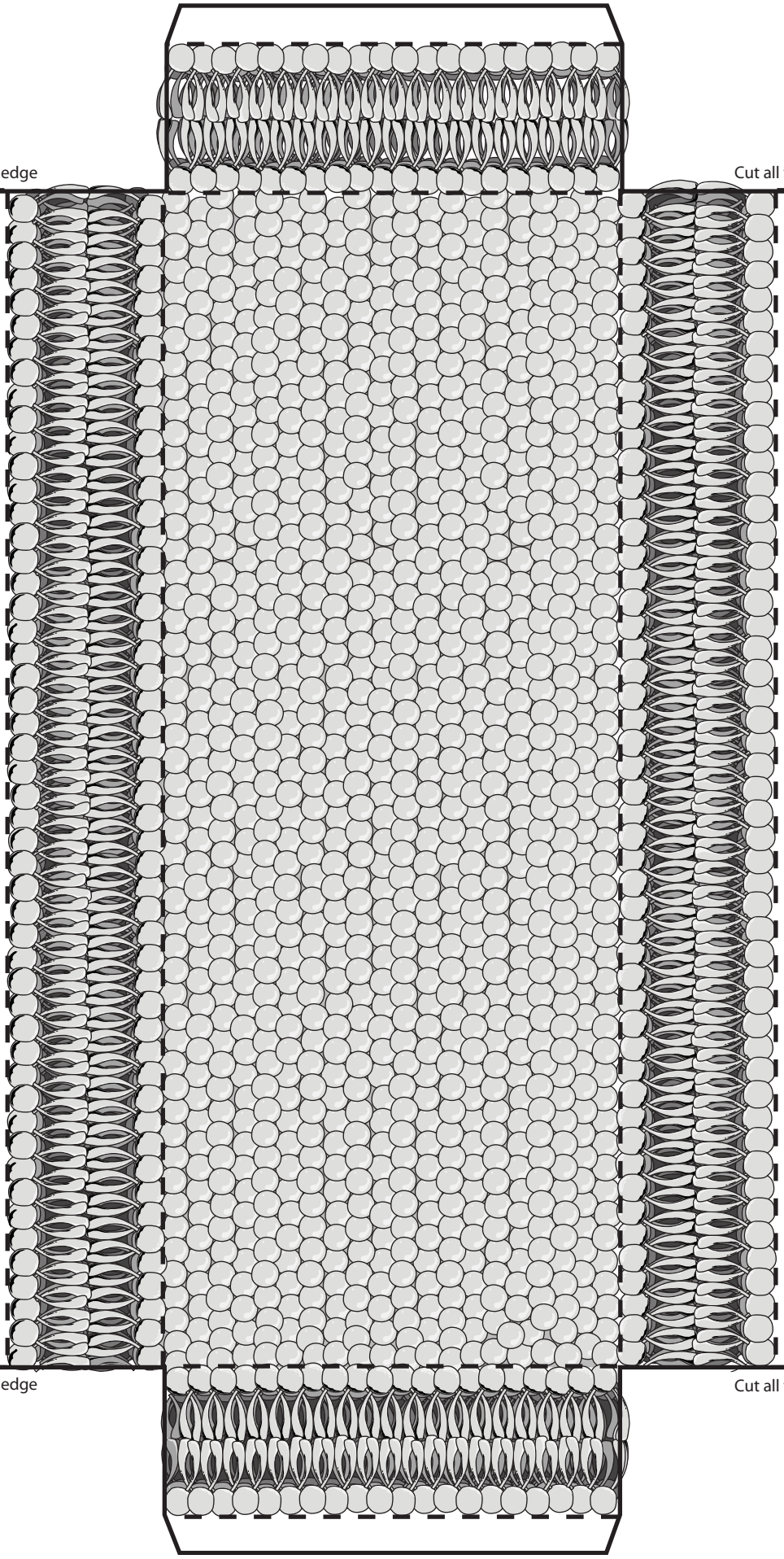




1. Cut out the phospholipid bilayer (page S2) along the solid lines. Cut all the way to the edges of the paper in the direction of the arrows.
2. Fold the phospholipid bilayer along the dotted lines and tape the edges together to form a fully enclosed rectangular box.
3. Cut out each protein (pages S3 and S4) along the solid black lines and fold along the dotted lines.
4. Form a 3-D shape by joining the protein sides and tops together and tape them in to place. Use the tabs to help you.
5. Tape the 3-D proteins into place along the edges of the phospholipid bilayer.
6. By staggering the transmembrane proteins back and forth along both long sides of the bilayer "box", the whole model will stand up by itself on a table.

Cut all the way to the edge

Cut all the way to the edge



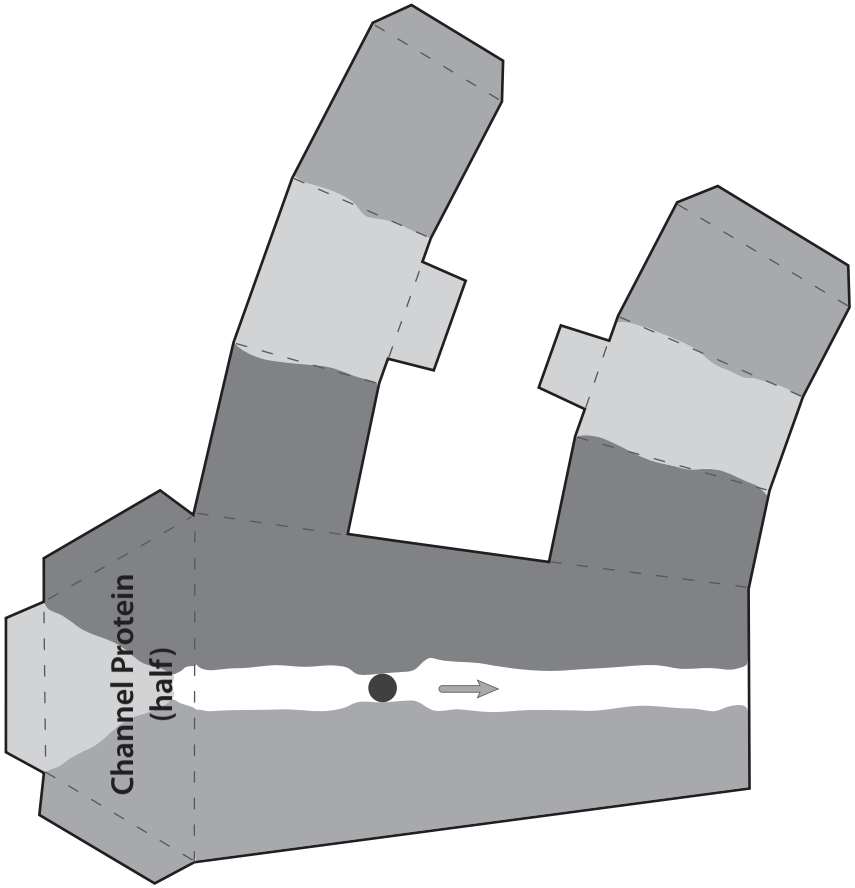
Fold along dotted lines.

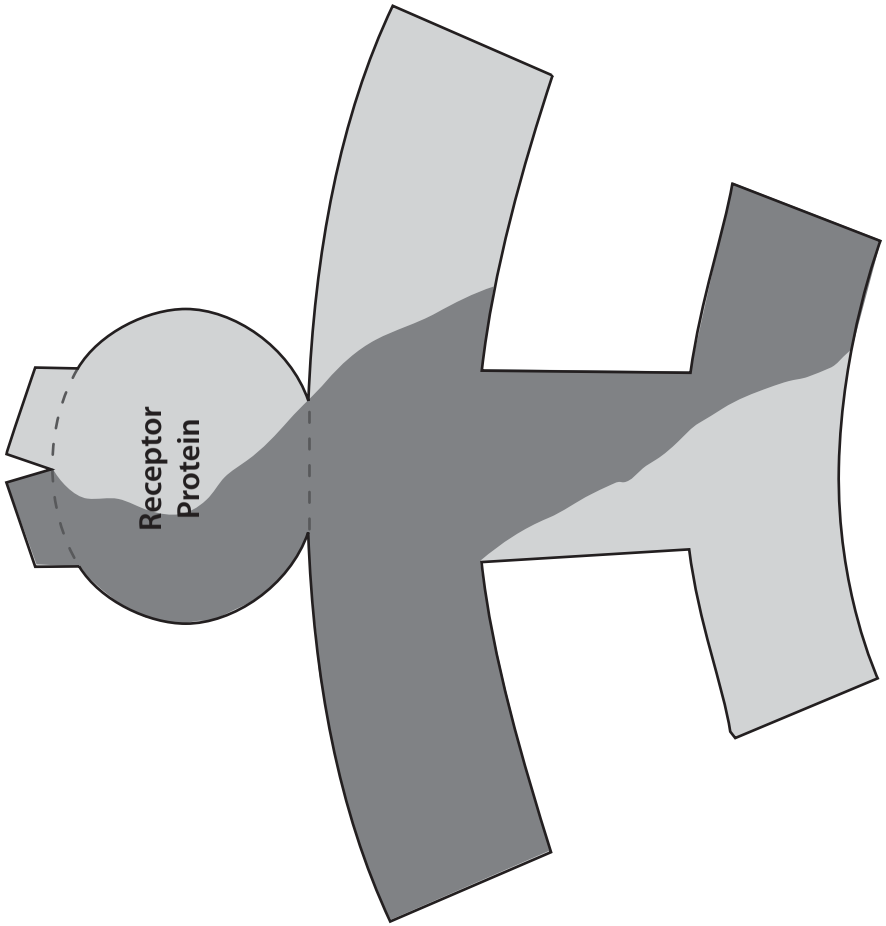
Phospholipid Bilayer

Cut all the way to the edge

Cut all the way to the edge

Protein Cut-outs





Protein Cut-outs