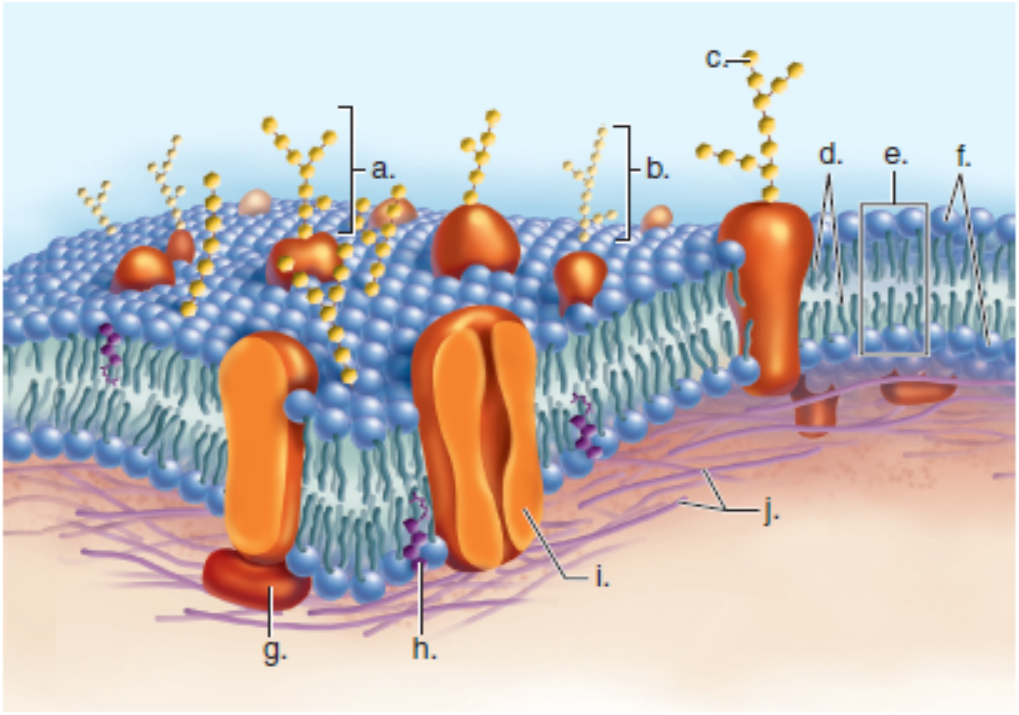
Cell Membrane Structures and Functions

Read MHR 2012 p 68 -70. Label the following parts of a cell membrane in the table below. Then specify the function of each part of the cell membrane where possible.



	Structure name	Function
a	glycolipid	Glycolipids also serve as recognition sites for other molecules as well as joining cells to form tissues.
b	Glycoprotein	Glycoproteins also serve as markers for anchors to other internal structures like the cytoskeleton.
c	Carbohydrate chain	carbohydrate chains that protrude from glycoproteins on the outer layer of the cell membrane enable cells to “recognize” each other.
d	Fatty acid tails	Presence of double bonds in the fatty acid “tails”: Double bonds form “kinks” in a fatty acid tail. The presence of one or more double bonds causes fatty acids to be less tightly packed and more fluid. • Fatty acid “tail” length: Longer fatty acid “tails” have more intermolecular attractions and hold together more tightly compared to shorter fatty acid tails, thus reducing fluidity.
e	Phospholipid	Fluidity of a bilayer is an important property. If it is too #uid, a bilayer permits too many molecules to diffuse in and out of a cell. If it is not fluid enough, a bilayer prevents too many molecules from crossing.
f	Phosphate head	polar “heads” cluster together, facing the

		water molecules. Intermolecular interactions, such as hydrogen bonding, occur between water molecules and between water molecules and the polar “heads” of the phospholipids.
g	Peripheral protein	help to stabilize membranes, and hold them in place by linking them with the cytoskeleton of the cell.
h	Cholesterol	the presence of cholesterol increases the intermolecular forces in the membrane and holds it more tightly together, thus reducing fluidity.
i	Transmembrane/ integral protein	Determine the function of the membrane by performing the following functions. • Transport: Proteins play an essential role in transporting substances across the cell membranes. • Signal reception and transduction: Receptor proteins in cell membranes bind to signal molecules, such as hormones, and change shape as a result.
j	Cytoskeleton	maintains the cell’s shape