

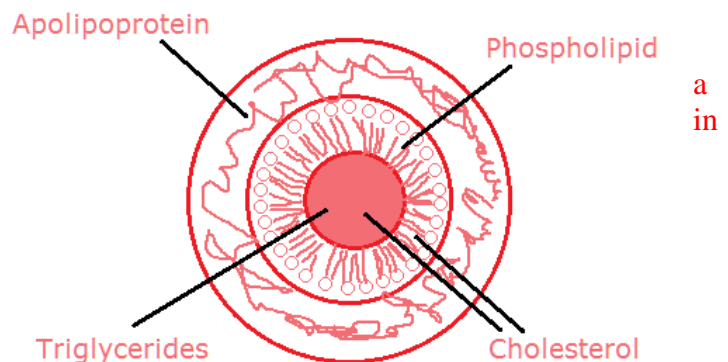
QUIZ #2

Weighting the quizzes: I have the idea of weighting the 3 multiple choice questions at 50% of the quiz, and the (short?) answer question at 50%. For question 4, I figure that 4(a) is two-thirds of the question and 4(b) is one-third, which are $1/3^{\text{rd}}$ and $1/6^{\text{th}}$, respectively, of the total quiz score. Thus, if I make the multiple choice questions 2 pts each, then 4(a) is 4 points and 4(b) is 2 points

For the multiple choice questions, there is *one* and *only one* best answer. Use the back of the sheet if you need to complete answers.

- Triglycerides are composed of three fatty acids esterified (covalently bound as an ester) to:
 - phospholipids
 - LDL
 - cholesterol
 - glycerol**
 - glucose
- Which of these receptor types has the ability to phosphorylate itself (autophosphorylation)?
 - G-protein coupled receptor
 - gap junction receptor
 - receptor tyrosine kinase**
 - steroid hormone receptor
 - claudin receptor
- Which of these is an unsaturated fatty acid?
 - C18:0
 - C16:1**
 - C16:0
 - both (a) and (c)
 - none of the above
- (a) Draw or briefly describe the lipoprotein as a layered spherical structure, showing the relative layering from center to surface of the following components: (i) apolipoprotein, (ii) phospholipid, (iii) triglyceride, (iv) cholesterol? (names of apolipoproteins are not important: just show the general positions of these components in a lipoprotein: keep in mind lipophilic & hydrophilic chemistry!)
(b) How is the density of a lipoprotein changed relative to the amount of lipid within it?

(a) The illustration need not be so detailed. 3 concentric layers with TG and cholesterol the center, phospholipid in the next outer shell (cholesterol okay too), and apolipoprotein on the outermost shell



(b) Adding lipid to a molecule reduces its density relative to water or aqueous solutions, which is what bodily fluids really are. So the more fat/lipid there is a molecular assembly like a lipoprotein, the lower the density it acquires. This is why chylomicrons and VLDLs are quite low in density despite being larger in size: they have a great deal of fat content (size has no relationship to density!). What removes the fat gradually until it acquires LDL size? ***Lipoprotein lipase*** enzyme on the surface of some cells. When the particle becomes an LDL, it is taken out of the bloodstream then by ***LDL receptors***.