

Physiology 115  
Spring 2015

Name Bryan Kuo

### QUIZ #2

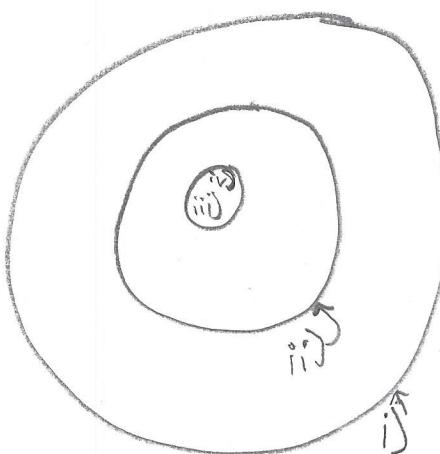
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  - a. phospholipids
  - b. LDL
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  - d. glycerol
  - e. glucose
  
2. Which of these receptor types has the ability to phosphorylate itself (autophosphorylation)?
  - a. G-protein coupled receptor
  - b. gap junction receptor
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  - e. claudin receptor
  
3. Which of these is an unsaturated fatty acid?
  - a. C18:0
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4. (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)  $\text{surface} \rightarrow \text{center}$   
 $\text{Apoli} \rightarrow \text{phospho} \rightarrow \text{cholest} \rightarrow \text{tri}$
  
  - b) less lipid, more dense

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b) As the amount of lipids decreases, the density increases

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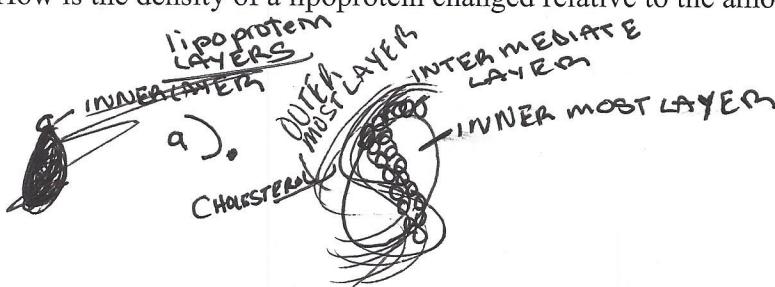
Name PIDLEY, S 27APR15

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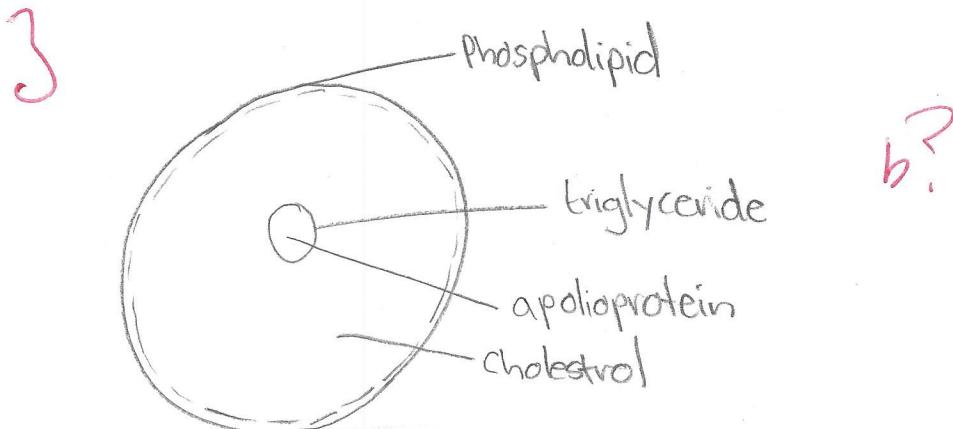
- ① APOLIPOPROTEIN - BINES TO VLDL - IDL - LDL
  - PHOSPHOLIPID
  - APOLIPOPROTEIN
  - CHOLESTEROL
  - Triglyceride
- THE LESS FAT THE HIGHER DENSITY -  
more fat less dense



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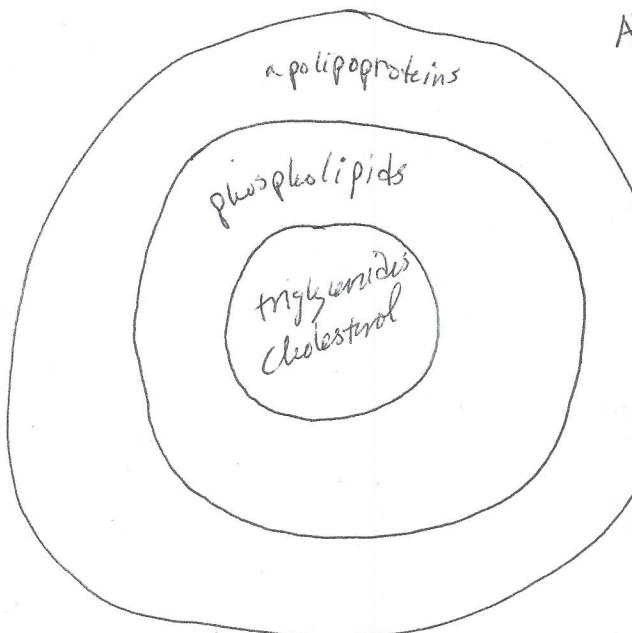
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A) Lipoproteins are three layers. The innermost layer is the hydrophobic molecules like cholesterol, triglycerides. The next innermost layer is made up of phospholipids. The outermost layer is made up of hydrophilic molecules, ~~water~~, the apolipoproteins.

B) As the lipid content of a lipoprotein goes down, the density increases since proteins ~~water~~ are more dense than lipids.

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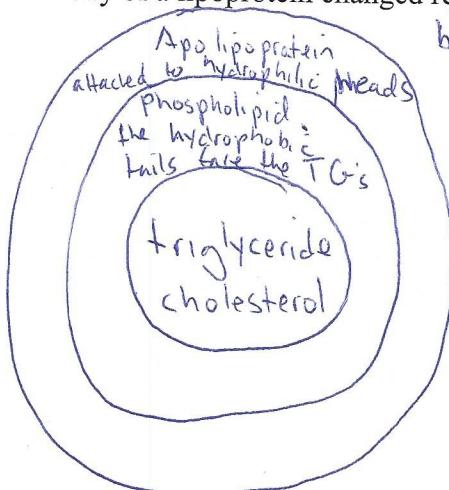
4. Lipoproteins AS SPHERICAL STRUCTURE IN A SPHERICAL STRUCTURE  
 IS A LIPID BILAYER SIMILAR TO A CELL MEMBRANE. THE PROTEIN  
 IS ON THE OUTSIDE, WITH THE TRIGLYCERIDES: CHOLESTEROL ON  
 THE INSIDE. THE MORE LIPOPROTEIN, THE LESS DENSE IT IS.  
 THE LESS DENSE, THE MORE UNHEALTHY IT IS.  
 ALSO THE LIPOPHILIC SIDE ON THE OUTSIDE MAKES IT UNHEALTHY

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a)



b)

when a lipoprotein comes in contact with lipase it removes triglycerides and cholesterol from the lipoprotein. As fat floats on water this makes the lipoprotein have a higher density. This shows that the lipid has less lipid within it.

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Name Liz Wells

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B) ~~Hypothetically~~ density is relative to the amount of lipids because within it

the more lipids the less dense + will be & vice versa.

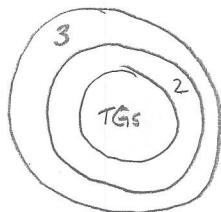
A) The lipoprotein is a spherical structure with cholesterol in the center, then triglycerides, then phospholipids with apolipoproteins on the outside layer.

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A.



TGs = TRIGLYCERIDES

2 = PHOSPHOLIPID + CHOLESTEROL

3 = APOLIPOPROTEINS

B. THE MORE LIPOS IN THE TG LEVEL, THE LESS DENSE IT IS.

THAT IS WHY CHYLOMICRONS ARE SO LARGE BUT ARE THE LEAST DENSE.

HDLs ARE EXTREMELY DENSE BUT HAVE THE LEAST LIPID AMOUNT BECAUSE THEY HAVE THE MOST PROTEINS.

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?

$$VLDL > IDL > LDL > HDL$$

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Name Donovan Smith

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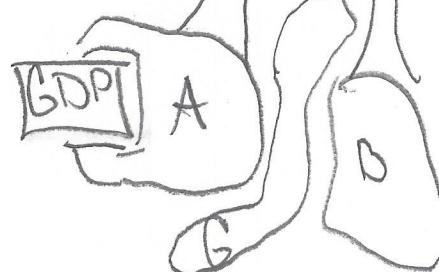
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D A) ?



b) It gets more rigid

D

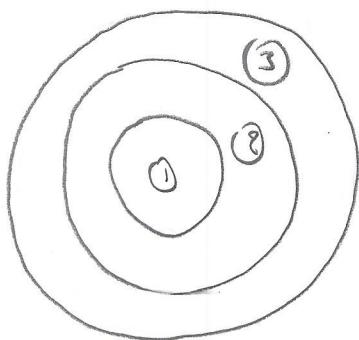


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3



(a) Layers:

- ① most hydrophobic molecules = TG, and esterified cholesterol.
- ② Phospholipids + unesterified cholesterol.
- ③ Apo protein = use for marking and transport.

(b) <sup>the</sup> higher the amt of protein is, the lesser is the density. That's why HDL has the least amt of lipid.

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*alcohol*

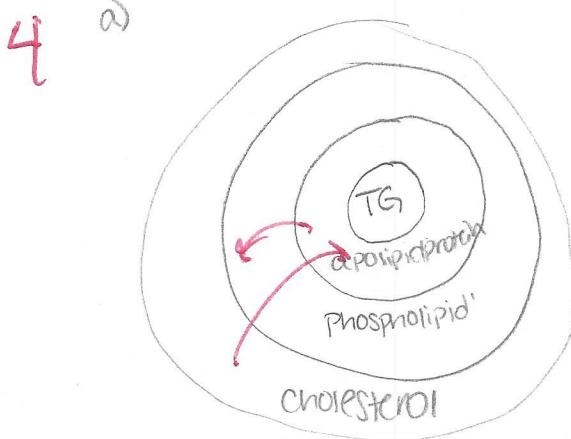
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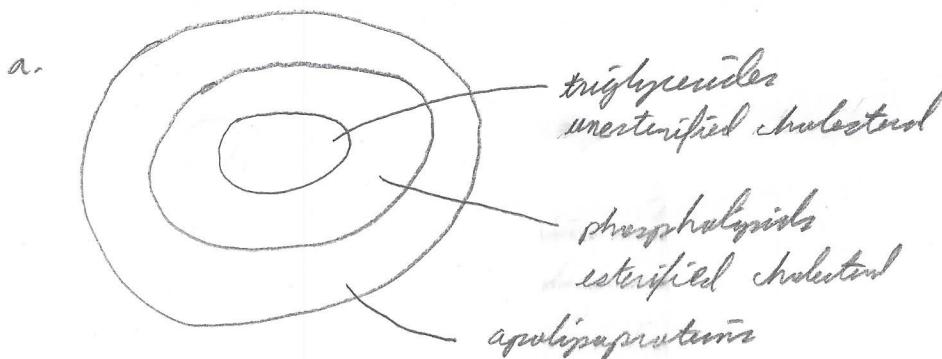
b) The density of a lipoprotein increases as more cholesterol is added

chylomicrons	largest / bad
↓	
LDL	
↓	
IDL	
↓	
HDL	smallest / good

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- b. The density of a lipoprotein changes as it is acted upon by enzymes. Chylomicrons are transported to the liver, where they are broken down to VLDL, IDL, LDL, and HDL. HDL's have the least amount of lipid but are the densest, are transported to the liver and excreted in bile.

The innermost area is the most lipophilic. Middle has lipophilic tails of phospholipids pointed inwards. Outer layer composed of proteins.

12

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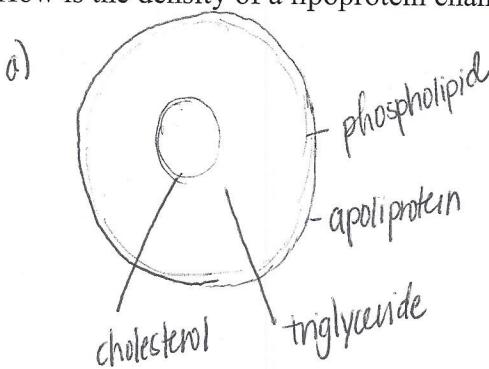
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Name Tomie Thompson

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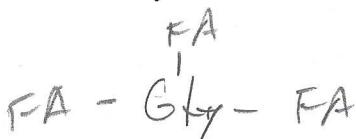
b) ~~The more dense a lipoprotein~~  
The more lipid within the lipoprotein  
the less dense it becomes.

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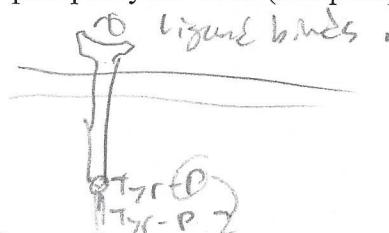
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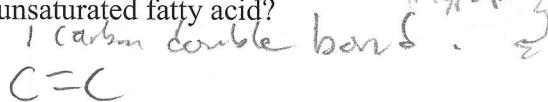
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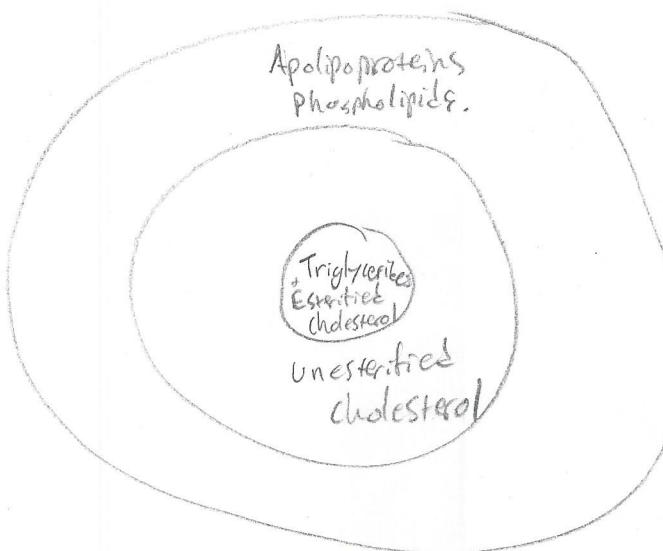
3. Which of these is an unsaturated fatty acid?

- a. C18:0
- b. C16:1
- c. C16:0
- d. both (a) and (c)
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4. (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.



b. Density of lipoproteins increases the less lipids it has.

Lowest Density

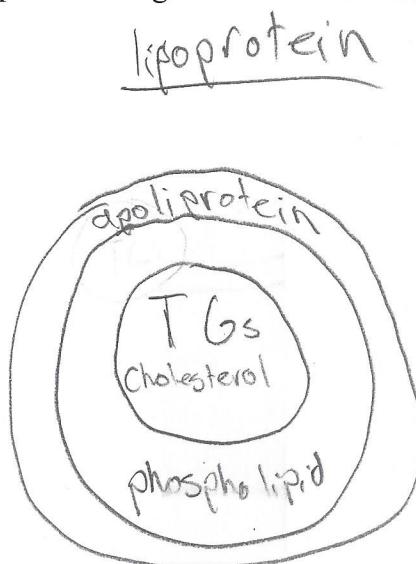
Chylomicrons  
IDL  
LDL  
HDL

Highest Density

### QUIZ #2

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.

1. Triglycerides are composed of three fatty acids esterified (covalently bound as an ester) to:
  - a. phospholipids
  - b. LDL
  - c. cholesterol
  - d. glycerol
  - e. glucose
  
2. Which of these receptor types has the ability to phosphorylate itself (autophosphorylation)?
  - a. G-protein coupled receptor
  - b. gap junction receptor
  - c. receptor tyrosine kinase
  - d. steroid hormone receptor
  - e. claudin receptor
  
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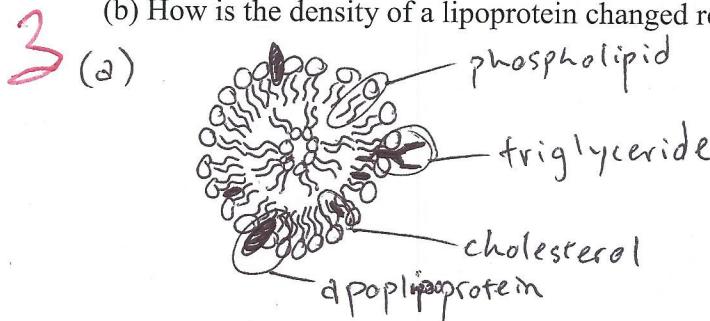


Lipoproteins become less dense as the amount of lipids within it decreases

### QUIZ #2

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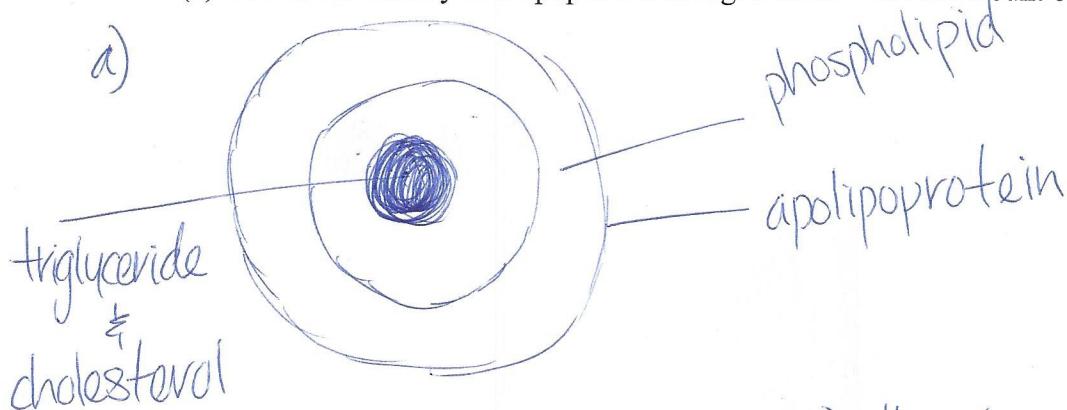


2 (b) As the density of a lipoprotein increases, the amount of lipid within it decreases

### QUIZ #2

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 (b) How is the density of a lipoprotein changed relative to the amount of lipid within it?



b) the density decrease as the amount of lipid increase

**QUIZ #2**

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 (b) How is the density of a lipoprotein changed relative to the amount of lipid within it?

B) The more lipoprotein there is the higher the density. This is due to a higher fat content which adds to the density  
*lowers*

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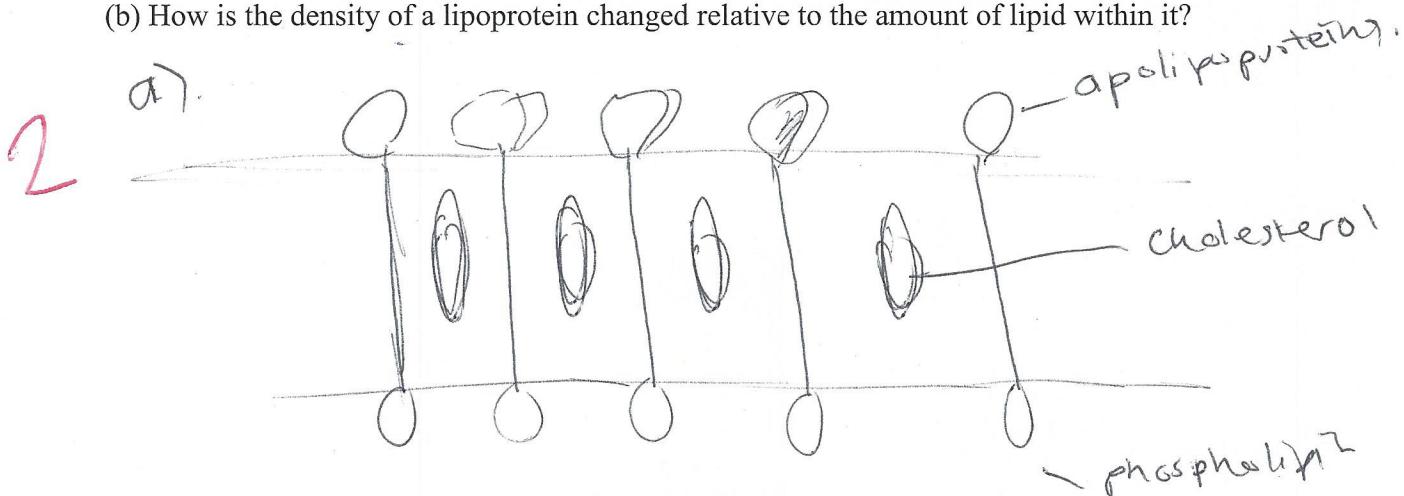
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**2** (b) How is the density of a lipoprotein changed relative to the amount of lipid within it?

**a** **B** The Density is changed due to the Amount of Fat content, there is a Lower Density. Other factors can affect the Density and fat content like How HDL's can convert the triglycerides and take them to the liver to be excreted by bile. This ~~process~~ process changes the Density  $\Rightarrow$  Fat (triglycerides) Content.

### QUIZ #2

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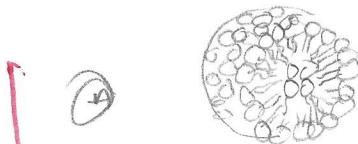


b). as the amount of lipid increases,  
so does the density.

**QUIZ #2**

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② IT INCREASES IN DENSITY

?