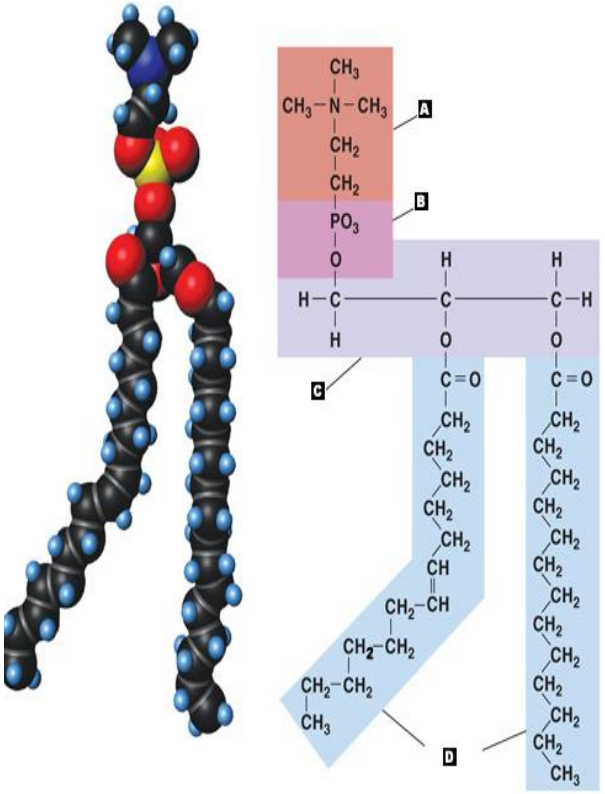
Examine the diagram below, showing a phospholipid. The areas labelled A, B, C, D are (in order...)...

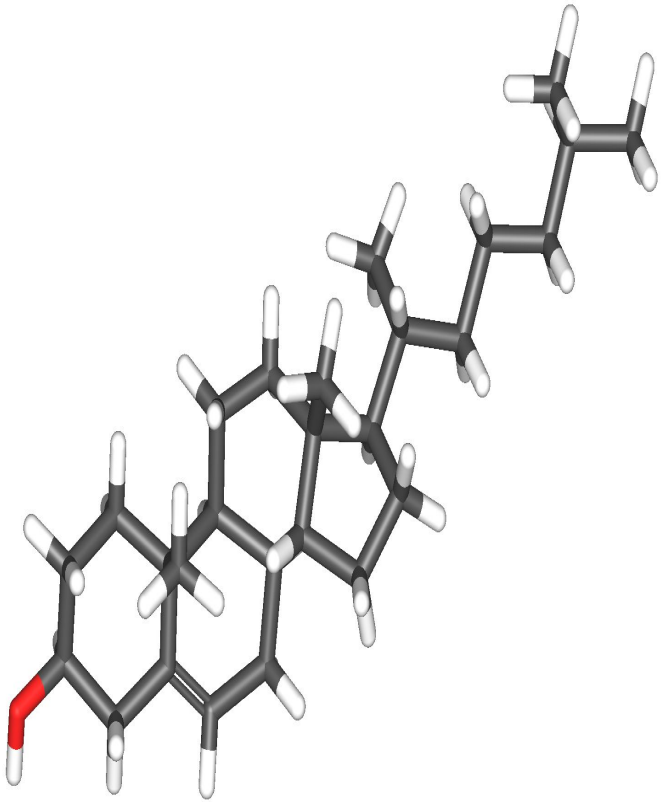
A)Protein, phosphate, carbohydrate, lipid
B)Phosphate, glycerol, fatty acids, nitrogenous base
C)Amino acid residue, phosphate group, glycerol, fatty acids
D)Fatty acids, phosphate, carbohydrate, hydrocarbon
E)Amino acid residue, fatty acid, glycerol, phosphate

Answer:C



Which molecule is shown below?
A)Triglyceride
B)Fatty acid
C)Cholesterol
D)Glycerol

Answer:C



Factor	Substance A	Substance B
Energy response in the body	Rapid, for immediate energy	Slow, for long-term energy
Energy value per gram	4 calories	9 calories
Effect on weight when consumed in excess	Less impact on weight	Greater impact on weight
Storage in the body	Limited	Unlimited

A. Substance A is carbohydrates, and Substance B is lipids
B. Substance A is lipids, and Substance B is carbohydrates
C. Substance A is proteins, and Substance B is carbohydrates
D. Substance A is vitamins, and Substance B is lipids
Answer:A

Which of the following statements about lipids is false?
A. The lipids found in biological systems are either hydrophobic or amphipathic.
B. Lipids represent highly reduced forms of carbon.
C. Lipids are highly soluble in water.
D. Upon oxidation in metabolism, lipids yield large amounts of energy.
Answer: C

Which of the following statements about fatty acids is true?
A. The double bonds found in fatty acids are nearly always in the cis configuration.
B. Saturated fatty acid chains can pack closely together.
C. Unsaturated fatty acids produce flexible, fluid arrays because they cannot pack closely together.
D. All of the above.
Answer: D

Which of the following properties of lipids is crucial for their role in forming biological membranes?

A. Lipids solubility in organic solvents such as chloroform and benzene

B. Lipids ability to store energy in the form of triglycerides.

C. The amphipathic nature of lipids, allowing them to form bilayers with hydrophobic tails facing inward and hydrophilic heads facing outward.

D. Lipids distribution in both plants and animals.

Answer:C

Ceramide is a precursor to which of the following?

A)Sphingosine
B)Sphingomyelin only
C)Glycoshingolipids only
D)Sphingomyelin and glycosphingolipids
E)Sphingolipids only
Answer:D

All of the following are found in membranes except:
A. Nucleic acids.
B. Phospholipids.
C. Glycoproteins.
D. Glycolipids.
Answer: A

What are the membrane structures that function in active transport?
A. Peripheral proteins.
B. Carbohydrates.
C. Integral proteins.
D. Hydrophobic molecules.

Answer:C

Micelles of fatty acids in water are organized such that the _____face the solvent and the_____ are directed toward the interior.
A. Carboxylic acid groups; hydrocarbon chains
B. Hydrocarbon chains; carboxylic acid groups
C. Hydrophobic tails; hydrophilic heads
D. None.
Answer: A

Which of the following is true about cis fatty acids compared to trans fatty acids?

A. Cis fatty acids are more likely to be solid at room temperature, while trans fatty acids are more likely to be liquid.

B. Cis fatty acids cause less bending in the hydrocarbon chain compared to trans fatty acids.

C. Cis fatty acids are generally liquid at room temperature and found in plant oils, whereas trans fatty acids are more likely to be solid and found in animal fats and partially hydrogenated oils.

D. Cis fatty acids and trans fatty acids have identical effects on cholesterol levels in the body.

Answer:C

Which of the following statements is true about the physiological role of cis fatty acids compared to trans fatty acids?

A. Cis fatty acids are generally more solid at room temperature compared to trans fatty acids.

B. Cis fatty acids are predominantly found in processed foods, while trans fatty acids are found in natural plant sources.

C. Cis fatty acids are essential for cell membrane structure and fluidity, while trans fatty acids are associated with negative health effects.

D. Cis fatty acids and trans fatty acids have identical effects on cardiovascular health

Answer:C

Which of the following statements about oils and fats is correct?

A) Oils are composed mainly of saturated fatty acids, which have no double bonds in their carbon chains.

B) The presence of double bonds in the fatty acids of oils causes them to be more tightly packed and solid at room temperature.

C) Fats contain a higher proportion of unsaturated fatty acids, which include double bonds that create kinks in the chains, leading to lower melting points.

D) The physical state of oils and fats at room temperature is determined by the degree of saturation and the presence of double bonds in their fatty acid chains.

E) Fats are liquid at room temperature because their fatty acid chains are loosely packed due to multiple double bonds.

Answer:D

How do micelles trap grease and dirt?
A) The hydrophilic heads attract grease and dirt.
B) The hydrophobic tails attract and encapsulate grease and dirt
C) The water molecules directly bind to the grease and dirt.
D) The grease and dirt dissolve in water without the help of soap.

Answer: B

What type of alcohol is found in waxes?
- A) Polyhydric alcohol
- B) Monohydric alcohol
- C) Trihydric alcohol
- D) Dihydric alcohol

Answer:B

What is the carbon chain length range for the fatty acids in waxes?

- A) C1 ~ C12
- B) C10 ~ C20
- C) C14 ~ C36
- D) C30 ~ C40

Answer: C

Which of the following is an example of an alcohol found in waxes?

- A) Ethanol
- B) Glycerol
- C) Palmitoyl alcohol
- D) Butanol

Answer:C

Which of the following eicosanoids does not play a role in inhibiting platelet aggregation?
A) Prostacyclins
B) Prostaglandins
C) Thromboxanes
D) All of the above inhibit platelet aggregation
Answer:C

Which of the following about prostacyclins is true?
A) They induce platelet aggregation
B) They constrict smooth muscles
C) They induce vasodilation
D) They do not affect blood vessels

Answer:C

What is the general chemical formula for the saponification of a triglyceride?
A) Triglyceride + Water → Glycerol + Fatty acids
B) Triglyceride + Base → Glycerol + Soap
C) Triglyceride + Alcohol → Glycerol + Soap
D) Triglyceride + Acid → Glycerol + Soap
Answer:B

What happens to the soap molecules produced in saponification in water?
A) They dissolve completely
B) They form micelles
C) They precipitate out of solution
D) They react with water to form
Answer:B

AN EXAMPLE OF GLYCEROPHOSPHOLIPID INVOLVED IN CELL SIGNALING IS

a) Cardiolipin
b) Phosphatidic acid
c) Phosphatidylcholine
d) Phosphatidylinositol

Answer:D

WHICH OF THE FOLLOWING IS A STORAGE FORM OF LIPID?

a) Glycolipid
b) Phospholipid
c) Sufolipid
d) Triacyl glycerol

Answer:D

Which statement best explains the amphipathic properties of free cholesterol and cholesterol ester?

A) Free cholesterol is amphipathic due to its polar hydroxyl group and non-polar steroid nucleus, while cholesterol ester loses its amphipathic nature because the polar hydroxyl group is esterified with a fatty acid

.B) Cholesterol ester is more amphipathic than free cholesterol because the esterification process introduces additional hydrophilic regions.

C) Both free cholesterol and cholesterol ester are amphipathic because they contain both hydrophilic and hydrophobic regions.

D) Free cholesterol is non-amphipathic due to its hydrophobic steroid nucleus, while cholesterol ester becomes amphipathic after esterification.

Answer:A

Which of the following is not a function of glycoproteins on the plasma membrane?

A) Cell-cell recognition
B) Signaling molecule
C) Immune response regulation
D) Energy production
Answer:D

Which of the following statements about cholesterol is correct?

A) Cholesterol is found primarily in large amounts in the extracellular fluid surrounding the cell.
B) Cholesterol is located on the outer leaflet of the plasma membrane.
C) Cholesterol is mainly located in the inner leaflet of the plasma membrane, helping to maintain membrane fluidity and stability.
D) Cholesterol is not involved in stabilizing membrane proteins.
E) B+C
Answer:C

Which of the following factors makes COX-2 a better target for NSAID therapy compared to COX-1?
A) COX-2 contributes to gastric mucosal protection
B) COX-2 enhances platelet function
C) COX-2 is primarily involved in the inflammatory response
D)B+C

Answer:C

How can long-term use of aspirin lead to gastrointestinal complications?(Not required but intended to enrich your information)
A) Increases gastric mucus production
B) Decreases gastric mucus production and increases stomach acidity
C) Improves digestion
D) Has no effect on the gastrointestinal tract

Answer:B

Which of the following statements accurately describes the role of cholesterol in the plasma membrane

A) Cholesterol primarily increases the fluidity of the membrane.

B) Cholesterol decreases membrane stability by making it more permeable.

C) Cholesterol helps to stabilize the membrane by reducing excessive fluidity and rigidity.

D) Cholesterol completely prevents protein and lipid movement in the membrane.

Answer:C

Which type of sphingolipid contains sphingosine, a fatty acid, and a phosphocholine group?
A) Glycosphingolipids
B) Sphingomyelin
C) Cerebrosides
D) Gangliosides

Answer:B

Which of the following is a characteristic of gangliosides?
A) Contains a single sugar molecule
B) Includes sialic acid in its structure
C) Is found mainly in the mitochondria
D) Is a type of phospholipid

Answer:B

The primary function of cerebrosides is to:

A) Facilitate cell-to-cell communication in the nervous system
B) Store energy in muscle cells
C) Transport ions across the membrane
D) Digest extracellular materials

Answer:A

A 45-year-old patient presents with severe watery diarrhea and vomiting. Upon examination and diagnostic testing, it is found that the patient has a cholera infection. The cholera toxin primarily affects which cellular component to facilitate its entry into intestinal cells?

A) Glycolipids with galactose
B) Glycolipids with mannose
C) Glycolipids with sialic acid
D) Glycolipids with glucose

Answer:C

Which sphingolipid structure is found on the surface of red blood cells and determines the ABO blood group?
A) Ceramide
B) Ganglioside
C) Cerebroside
D) Globoside
Answer:D

Which blood group antigen is associated with a terminal N-acetylgalactosamine sugar?
A) Type A
B) Type B
C) Type AB
D) Type O
Answer:A

The presence of which sugar determines the B antigen in the ABO blood group system?
A) N-acetylgalactosamine
B) Glucose
C) Galactose
D) Sialic acid
Answer:C

Which sphingolipid is commonly found in high concentrations in the brain's myelin sheath?
A) Globoside
B) Sulfatide
C) Cerebroside
D) Phosphatidylserine
Answer:B

Arrange the following lipoproteins based on their protein-to-lipid ratio from highest to lowest: HDL, LDL, VLDL, IDL.

A) HDL > IDL > LDL > VLDL
B) VLDL > LDL > IDL > HDL
C) HDL > LDL > IDL > VLDL
D) IDL > HDL > VLDL > LDL

Answer: A

Which of the following lipoproteins has the highest volume of triglycerides relative to its total lipid content?
A) HDL
B) LDL
C) VLDL
D) IDL
Answer: C

Given the following densities: HDL (1.2 g/mL), LDL (1.04 g/mL), and VLDL (0.95 g/mL), what can be inferred about the relative protein content of HDL compared to LDL?

A) HDL has a lower protein content than LDL.
B) HDL has a higher protein content than LDL.
C) HDL and LDL have the same protein content.
D) The protein content cannot be inferred from density alone

.Answer: B

Which of these statements best describes the composition of Lipids?

A) C, H, O in a 1:2:1 Ratio
B)C, H, O, N, P all present
C) C, H, O in no specific ratio
D)C, H, O, S
Answer:C

Which of the following functional groups would be found in typical lipids?
A)Carboxyl -COOH (O=C-O-H)
B)Hydroxyl -OH
C)Carbonyl -C=O
D)All of these are possible

Answer:C

The image below shows a molecule of Octanoic Acid. Which type of molecule is it?

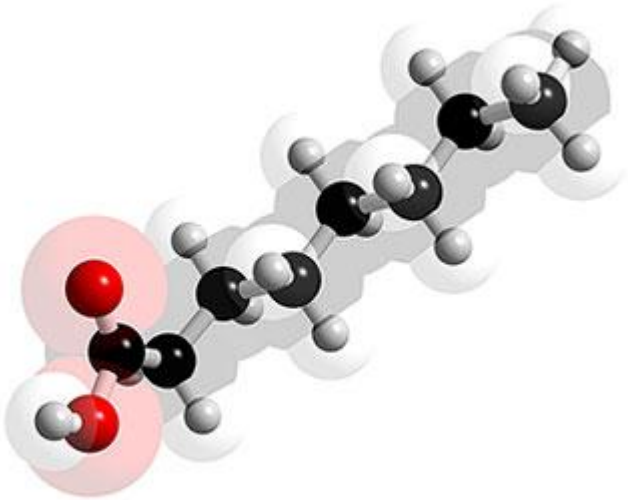
A)An alcohol

B)An unsaturated fatty acid

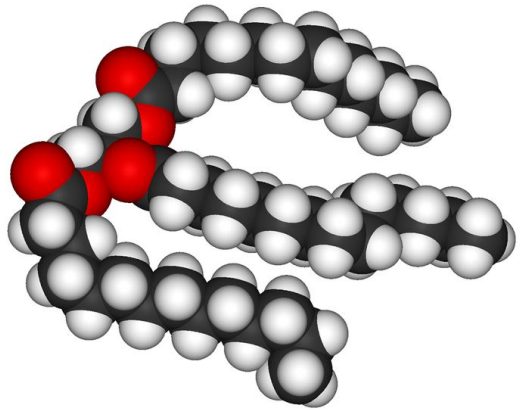
C) saturated fatty acid

D)None of the above mentioned

Answer:C



Which of the following would be true of this molecule?



A)It is a triglyceride fat
B)It is most likely liquid at room temperature
C)It is most likely a solid at room temperature
D)Only a & b
E)Only a & c
Answer :D

What effect does emulsification by bile acids have on the surface area of fat droplets?
A) Decreases the surface area available for enzyme action
B) Has no effect on the surface area of fat droplets
C) Increases the surface area available for enzyme action
D) Converts fat droplets into solid fat

Answer: c

On complete hydrolysis, a triglyceride yields:
A. Glycerol and phosphoric acid
B. Glycerol and a fatty acid
C. Glycerol and two fatty acids
D. Glycerol and three fatty acids
Answer :D

Phosphatidic acid is made up of:
A. Phosphoric acid and choline
B. Phosphoric acid and glycerol
C. Phosphoric acid, a fatty acid and glycerol
D. Phosphoric acid, two fatty acids and glycerol

Answer:D

According to the fluid mosaic model of cell membranes, which type of molecule spans the membrane, from its inner to outer surface?
A. Carbohydrate.
B. Hydrocarbon tails.
C. PhospholipiD.
D. Protein.
Answer: D