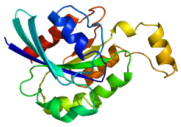
Chem 331 Biochemistry

Lipids

Learning Objectives, Study Guides



Learning Objectives

- Describe the general properties of the fatty acids. Include the properties of the chains found in lipid membranes in phospholipids
- List the major physiological functions of fatty acids
- Derive the structure of saturated or unsaturated fatty acids. Be able to specify the omega or delta ends. Recognize the alpha, beta and gamma carbons of fatty acids
- Determine the impact of fatty acids in membrane fluidity – including the role of cholesterol
- Explain why triacylglycerols are highly concentrated forms of stored metabolic energy
- Be able to know the general structures of phosoholipids and distinguish the various head groups. Also know the various positions on the glycerol and which acyl chains are bonded to which glycerol carbon.
- List the actions of the phospholipases. Explain the specific functions of these lipases and their biochemical / physiological importance.
- Recognize the structure and significance of an ether link at the sn1 postion – platelet activating factor
- Determine which lipid and lipase product is bioactive. What does bioactive mean?
- Know the sphingolipids and their components.
- List the different functions of sphingolipids including the cerebrosides and gangliosides
- Know the general structure of cholesterol. Be able to identify cholesterol from its derivatives.
- List and be able to identify the general features of the ecosanoids.
- Know the biochemical functions of the eicosanoids
- Explain the basic molecular structures of terpenes and some of their biochemical roles in plants and animal cells

Study Notes from Dr P: *Lipids are highly diverse molecules making this chapter seem a little more fragmented than some of the others covered in biochemistry. However it is important you do more than memorize the structure or remember the list of what lipids are where. I will ask you to identify or draw a fatty acid using standard nomenclature. It is also important to know the way phospholipids are put together and the differences in their head groups. Many of the examples of what lipids do are just that… illustrations of how lipids are important. You will be expected to know what lipases hydrolyze where and the basics of how lipids signal.*