

## Chapter 28 - Lipids – Concepts

### 1. Energy

<b>General Rules for Assigning Oxidation Numbers:</b>	<b>Assign Oxidation Numbers for (CH<sub>4</sub>, CO<sub>2</sub>, carbohydrate, fat)</b>
<b>Fats are a better source of energy than Carbohydrates (2):</b>	
<b>Signs an Oxidation reaction occurred (4):</b>	<b>Signs a Reduction reaction occurred (4):</b>

### 2. Reactions

<b>Dehydration (example, formation of triacylglycerols)</b>	<b>Hydrolysis (example, breaking apart of a triacylglycerol)</b>
<b>Hydrogenation (Addition of H<sub>2</sub>/Reduction)</b>	<b>Bromine Reaction (tests for unsaturation C=C)</b>

### 3. Metabolic Pathways

<b>Define: Metabolic Pathway</b>	<b>Examples (2):</b>
<b>Define: Precursor, Parent, Daughter, Enzyme</b>	

### 4. Eicosanoids

<b>Arachidonic Acid</b>	<b>Prostaglandin/Prostacyclin/Thromboxane/Leukotrienes</b>
<b><math>\omega</math>-3 vs <math>\omega</math>-6</b>	<b>Enzymes (cyclooxygenase/lipoxygenase)</b>
<b>Local Hormones – Examples:</b>	<b>Drugs (NSAIDS/COX2/Aspirin) – Effects/Good/Bad</b>

### 5. Hydrophilic/Hydrophobic

<b>Hydrophilic Functional Groups:</b>	<b>Hydrophobic Functional Groups:</b>
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### 6. Fatty Acids – Physical/Chemical/Biological Properties/How small changes lead to big differences

<b>saturated vs unsaturated</b>	<b><math>\omega</math>-3 vs <math>\omega</math>-6</b>
<b>cis vs trans</b>	<b>Fats vs Oils</b>

7. Compound Lipids

<b>Phospholids – structure/use</b>	<b>Sphingolipids – structure/use</b>
<b>Glycolipids – structure/use</b>	<b>Steroids – structure/use</b>

8. Biological Impacts - General

<b>Lipids Aggregation (3)</b>	<b>Micelles vs Liposomes</b>
<b>Atherosclerosis</b>	<b>Cell Membranes</b>

9. Atherosclerosis

<b>Definition:</b>	<b>Causes</b>
<b>VLDL</b>	<b>LDL</b>
<b>HDL</b>	<b>Liver/Adipose Tissue/Peripheral Tissue</b>
<b>Treatments – (3)</b>	

10. Cell Membranes

<b>Definition/Purpose:</b>	<b>Membrane Properties (2):</b>
<b>General Composition (4):</b>	<b>Facilitated Diffusion vs Active Transport</b>
<b>Effect of unsaturated FA vs Cholesterol on Membranes</b>	<b>Purpose of Proteins</b>

11. Steroids/Cholesterol

<b>General Structure/Identify Functional Groups</b>	<b>6 Examples</b>
<b>Metabolic Pathway</b>	
<b>Main Uses for Cholesterol (2)</b>	

12. Categories of Lipids

<b>Simple Lipids</b>	<b>Compound Lipids</b>
<b>Steroids</b>	<b>Miscellaneous (2)</b>