* Beta-oxidation – fat burning – breaking down fat – catabolic process – break down fat for energy (lipid)
* Left part of the graph of slide 3 – lipid
* Triacylglyerols – main class of molecules to get energy and compose diet
* Catabolic pathway – red arrows going down
* Break down TAGs get fatty acids and glycerol
* Glycerol will feedback into glycolysis and gluconeogenesis
* When break down fatty acid – will get acetyl-CoA which goes to down to CAC and etc and oxidativeP to get ATPs
* TGAs – glycerol and fatty acids – fatty acids….- ATPs
* Lipids major source of our energy – 5 to 25% of body weight – 90% is TGAs
* Structure of TGAs represent glycerol – triacyl is the green (slide 4) – when break down they are fatty acids
* Can get from diet – stored in adipose tissues – or synthesise them
* Mainly though diet
* Major role is to produce ATPs
* Another important role is plasma membrane – several other membranes – inner and outer membranes of mitochondria
* Glucose has CHOH but TGA has … more opportunities to donate electron
* Lipids are lipophilic so they try to stay together and pack together more than glucose in water
* Stearate ion – form by 18 Cs – fatty acids – long chain of carbons – polar group is the carboxylic group that likes water
* Oleate ion – has one unsaturated bond – double bond – 18:1n-9 – carbon 9 has the unsaturated – mainly in cis position – bending
* Can get different fluidity – double bond in more oily face – saturated more solid
* Capric acid - Decanoic acid – 10:0 – these fatty acids have 10 Cs and non-double bond
* Palmitoleic acid – 16:1c(tri)9 – one unsaturated on carbon 9
* Will focus on palmitic acid and palmitoleic acid
* In order to make TGA break down, need bile salt – lipid insoluble in water – bile salt solubilised the lipid and transform them into the small intestine – enzymes cleave the lipids and store in the intestine
* Another way – synthesise in the liver – de novo synthesis – body able to synthesise it – store in adipose tissues
* Body can mobilise the lipids if they are stored
* TGAs ingested – bile salts will cover the lipids – act as a platform for lipase to bind and start digesting – lipase makes these lipids able to store in the intestine – work for vitamins too
* Transport the lipids through lipoproteins – mixture of lipid and protein
  + To transfer sth, lymphatic system is composed of water – lipids will precipitate – need protein to transfer
  + 5 classes of lipoproteins
  + The density is proportional to the amount of triacylglycerol – TGAs go down – density becomes higher
* Lipoproteins have a core – made by TGAs and/or cholesterol esters, phospholipid with tails going inside, cholesterol, hydrophilic facing out
  + Function to transfer lipids