Lipids, Fats and Fatty Acids

- Body Mass Index (BMI) is the relative measure of a person's weight (in Kilograms) taking into account their 0 height (in Metres)
 - BMI is calculated by dividing your weight by your height squared
 - E.g. The BMI of an individual weighing 75kg and who is 1.8 metres tall would be 23kg/m²
 - A BMI of **30 and over** is classed as clinically obese
- Obesity can lead to a number of health problems such as: 0
 - Type 2 Diabetes
 - Cardiovascular Disease (CVD)
 - Hypertension
 - Osteoarthritis
 - **Gall Stones**
- Fat cells, also known as adipose cells, are usually yellow in colour 0
 - These cells can inflate to 4x their normal size when subjec to weight gain
 - The nucleus, in particular, becomes squashed . against the cell membrane (See Right)
- A Lipid is a family of water-insoluble, but organic-solvent-0 soluble molecules
 - Lipids are **non-polar** molecules
- Non-polar molecules Non-polar means the electrical change representing atoms in the molecule balance enclosure out so there is no net-change
 - This also ment at lipids are bydrophobic
- ore A fatty acid **s** a **long chain of hydrocarbons with a terminal carboxylic acid group** (See Right)
 - The carboxylic acid group can be protonated or deprotonated
 - Protonated COOH groups have an extra H proton (shown by +)
 - Deprotonated COOH lose a H proton and so, lose the hydrogen
 - They may also be written as [CH₂]_nCH₃
 - They come under two types:
 - Unsaturated and Saturated
 - Saturated means all carbon atoms are saturated with Hydrogen and only have C-C bonds
 - Unsaturated fatty acids have some double carbon bonds, C=C, due to the lack of covalent bonds with the hydrogen atoms. Monounsaturated is one double carbon whereas **polyunsaturated** is >1 double carbon bond
 - Cis unsaturated fats have all hydrogen atoms on the same side creating a **kinked** makeup
 - Trans unsaturated fats have hydrogen atoms alternate sides creating a straight make up
 - Fatty acids are usually bonded together using a glycerol backbone during a condensation reaction, releasing water and creating an ester bond (See Right)





