Low density lipoproteins - excess LDLs overload membrane receptors, LDL cholesterol deposited on artery walls causes atheroma
High density lipoproteins - more protein less cholesterol, transports cholesterol to liver, lower blood cholesterol levels, remove atheroma

1.16

Ethics of invertebrate use - less developed nervous system, short life anyway, no consent, no way to know if they are in pain

CVD Treatments:
Antihypertensives - reduce blood pressure, cause dizziness and dehydration
Statins - inhibit LDL cholesterol production, cause tiredness and vomiting
Anticoagulants - reduce clotting by inhibiting vitamin k production, risk of bleeding
Platelet Inhibitors - reduce clotting by inhibiting platelet production, bleeding in gastrointestinal tract

Topic 2: Genes and Health
Gas exchange surfaces:
Good blood supply - enables oxygen to be carried away quickly and food to be replaced quickly, maintains the concentration gradient
Large SA/V ratio - there is a larger surface for diffusion to occur
Thickness of surface - thin surfaces allow quicker diffusion
Concentration gradient - higher concentration gradient means faster diffusion
Fick's Law:

$$\text{Rate of Diffusion} \propto \frac{\text{Surface Area} \times \text{concentration difference}}{\text{distance}}$$

Lung structure:
Blood supply - pulmonary circulation system
Large SA/V ratio - alveoli
Thickness of surface - thin cell walls (of capillaries/alveoli)
Concentration gradient - between alveolar air and blood

Cell membranes:
Phospholipid - hydrophilic phosphate head, hydrophobic fatty acid tails
Intrinsic protein - proteins that span the whole bilayer (carrier or channel)
Extrinsic protein - proteins that occupy only one side of the bilayer
Extrinsic molecules - glycoprotein, glycolipids, cholesterol
Fluid-Mosaic model - bilayer controls entering/exiting substances, dense phospholipid heads and lighter tails, extrinsic proteins dissociated easily, intrinsic proteins made of hydrophilic and hydrophobic amino acids

Osmosis - net movement of water particles through a partially permeable membrane from an area of high concentration to low concentration

Passive transport:
Diffusion - movement of particles from an area of high concentration to low concentration, requiring no energy (occurs through bilayer for hydrophobic, small and non polar molecules)
Facilitated diffusion - movement of particles from an area of high concentration to low concentration gradient through channel or carrier protein, requiring no energy (transports hydrophilic, large and polar molecules through membrane)
Channel protein - molecule is transported through, passive transport