electron transport chain

An electron transport chain is made up of a series of electron carriers, each with progressively lower energy levels. As high energy electrons move from one carrier in the chain to another, energy is released. This is used to pump protons across a membrane, creating a concentration difference across the membrane and therefore a proton gradient. The proton gradient is maintained as a result of the impermeability of the membrane to hydrogen ions.



The only way the protons can move back through the membrane down their concentration gradient is through hydrophilic membrane channels linked to the enzyme ATP synthase (catalyses the formation of ATP). The flow of protons through these channels provides the energy used to synthesise ATP from ADP and Pi.