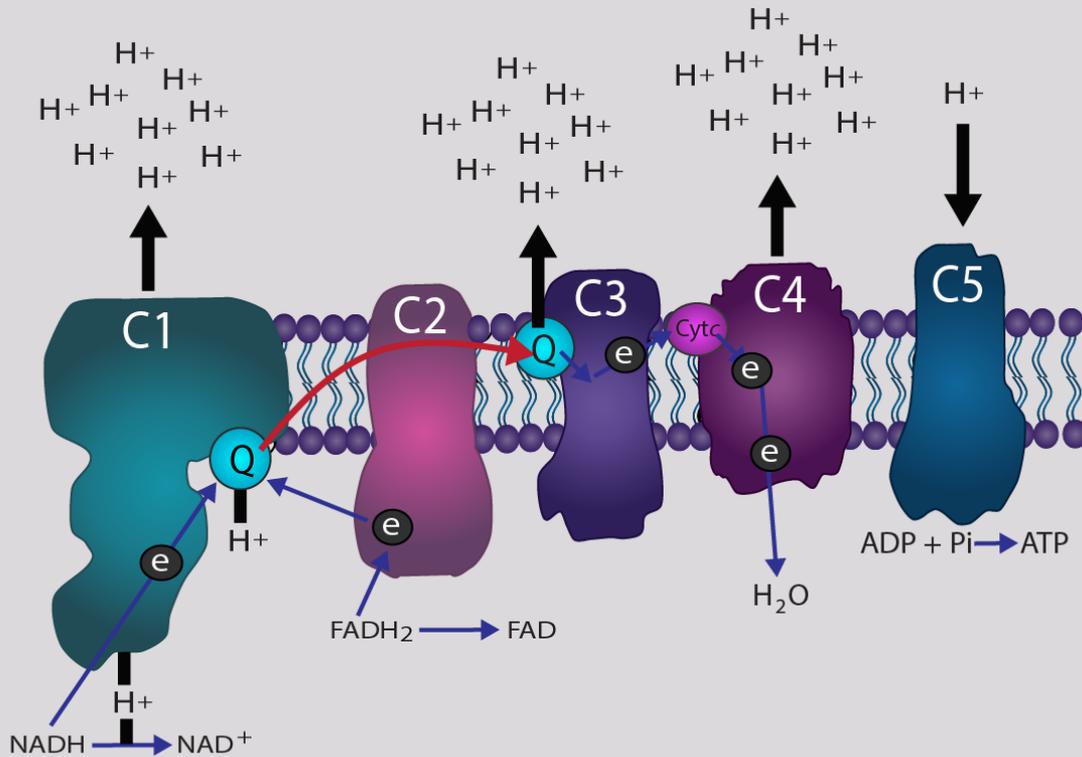


## Fact sheet



This electron transport chain is made up of 4 complexes which are groups of proteins that work together to carry out their function, the 5<sup>th</sup> complex is responsible for the final step of the energy generation. It is found in the inner mitochondrial membrane and parts of the first, third, fourth and fifth complexes are coded for by the mitochondrial DNA. In order for energy to be generated several steps have to occur.

Electrons are particles within an atom that are negatively charged, along with the other particles (protons and neutrons) they make up everything in the universe and they are very important in biology. Electrons are passed between the complexes of the electron transport chain and enable the cells to generate energy. The first complex accepts the electrons that are produced from the degradation of the food we eat. As it passes the electrons to the third complex in the chain protons (positively charged hydrogen atoms) are moved across the inner mitochondrial membrane. At complex three the electrons from complex one are joined by others donated by complex two. Complex three passes these electrons onto complex four and in the process moves more protons across the inner mitochondrial membrane. Within complex four the electrons are joined to oxygen to produce water, alongside one final movement of protons. Since so many protons have now been moved across the membrane the amount of them is higher on one side of the membrane than the other, this creates a gradient. Complex five then uses this gradient to produce ATP. The proton gradient rotates this final complex and with each rotation an ATP is made. For every cycle of the electron transport chain over 30 ATPs are produced, this shows how efficient energy generation is within the mitochondria.