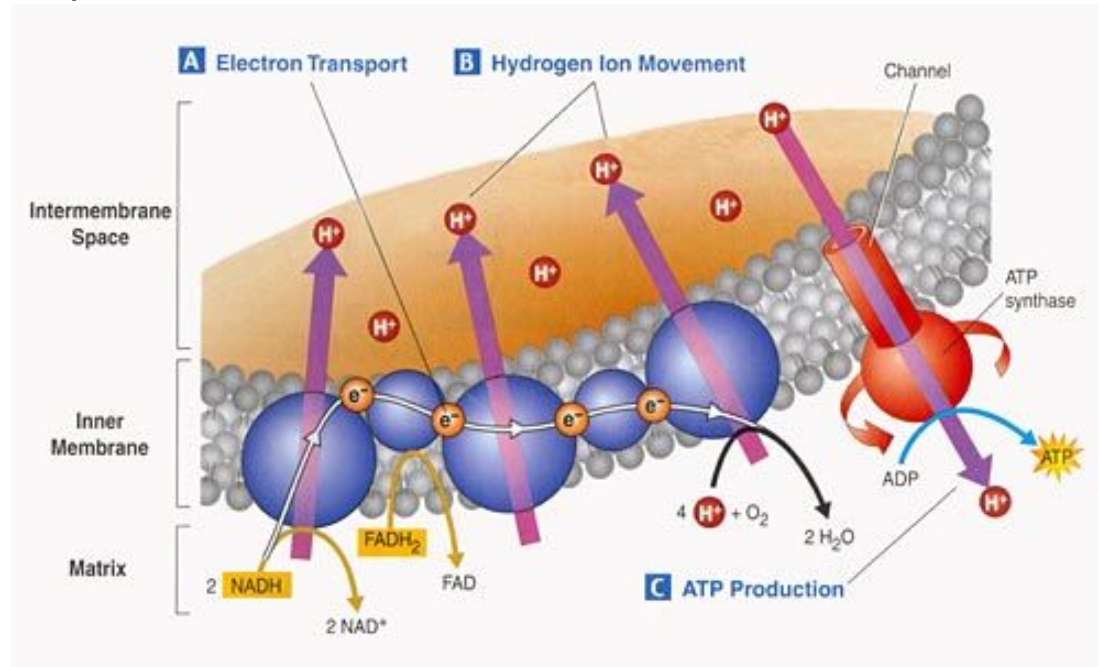
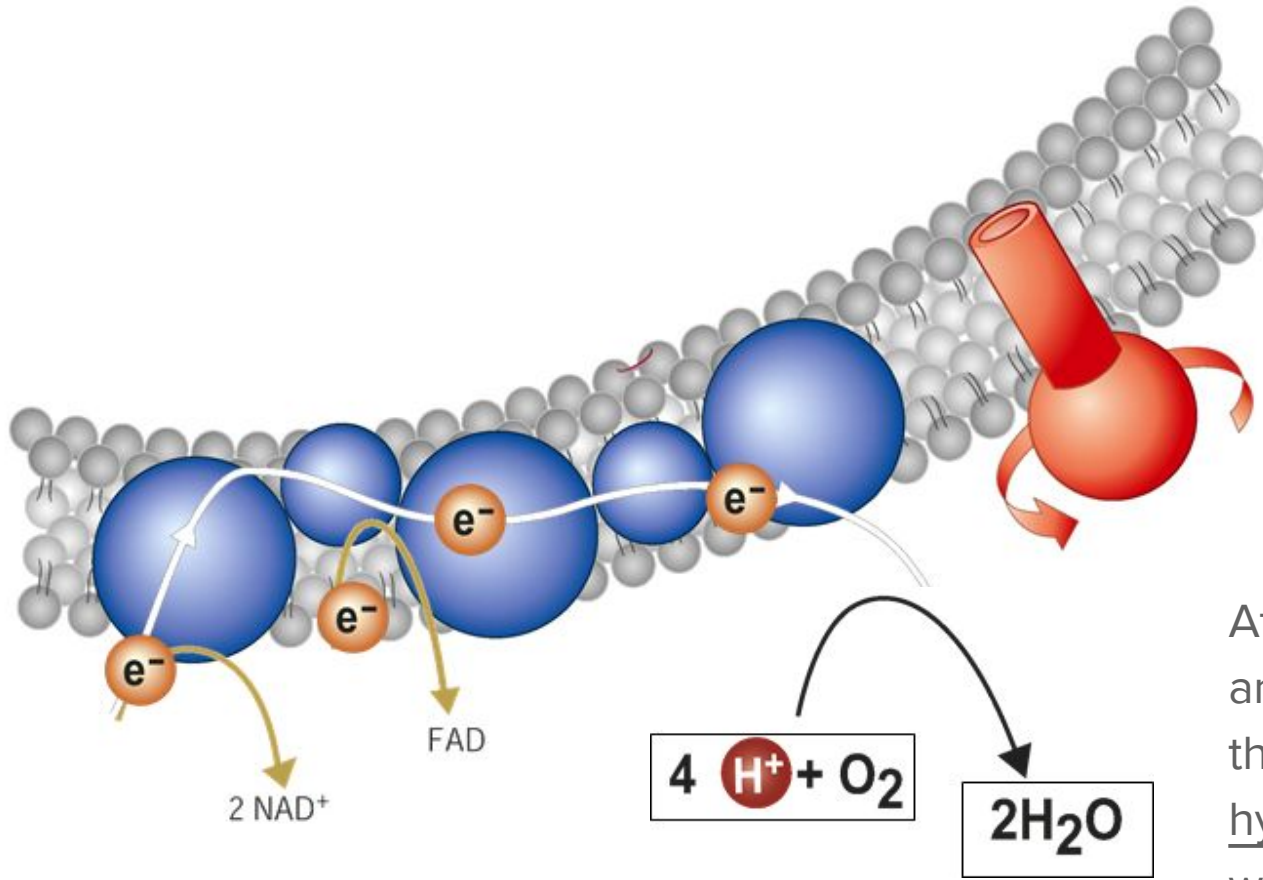


# The Electron Transport Chain

The high energy electrons produced in the Krebs cycle are transported by NADH and FADH<sub>2</sub> to the electron transport chain in the matrix membrane.

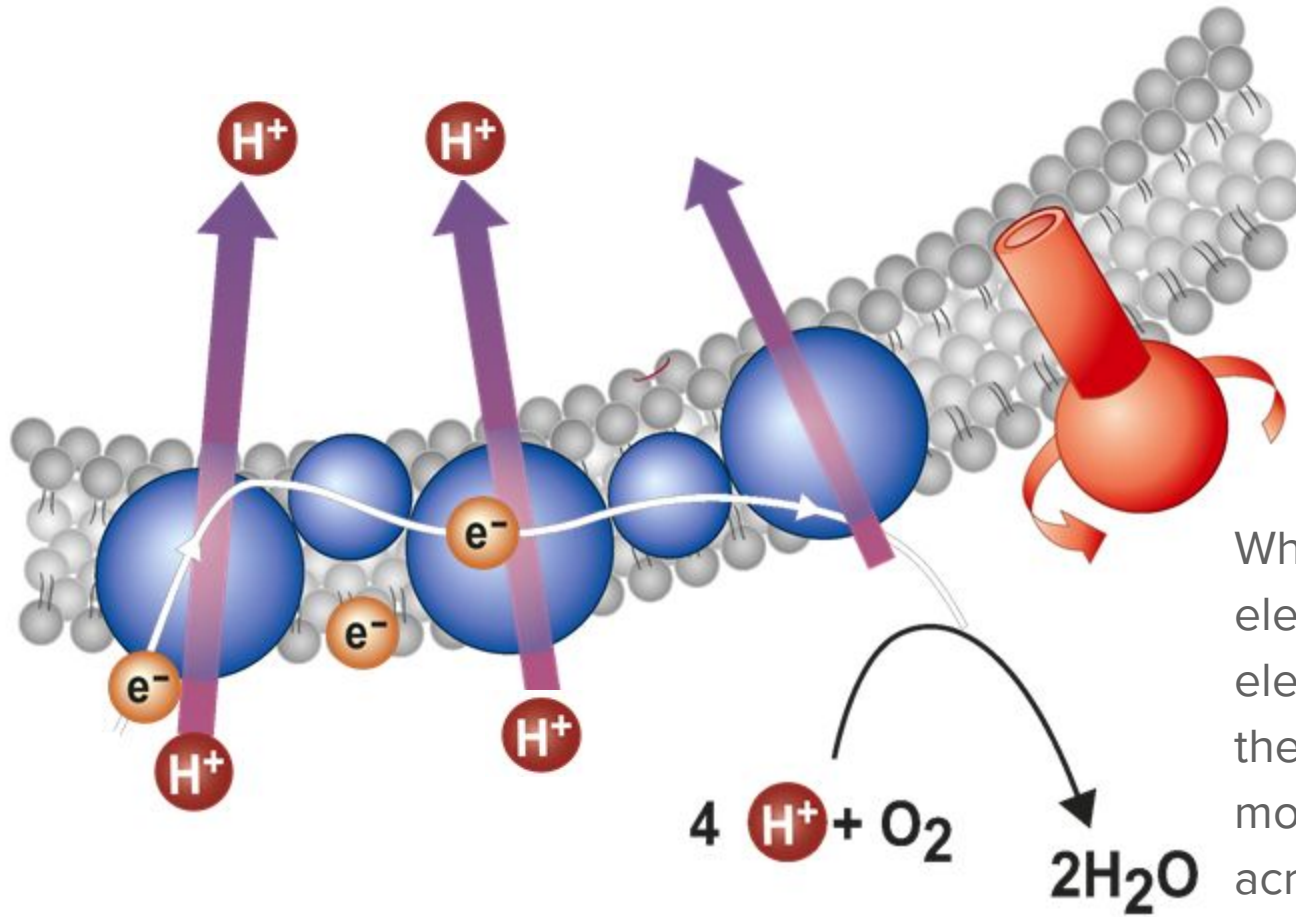
The electron transport chain uses the high-energy electrons to convert ADP to ATP.



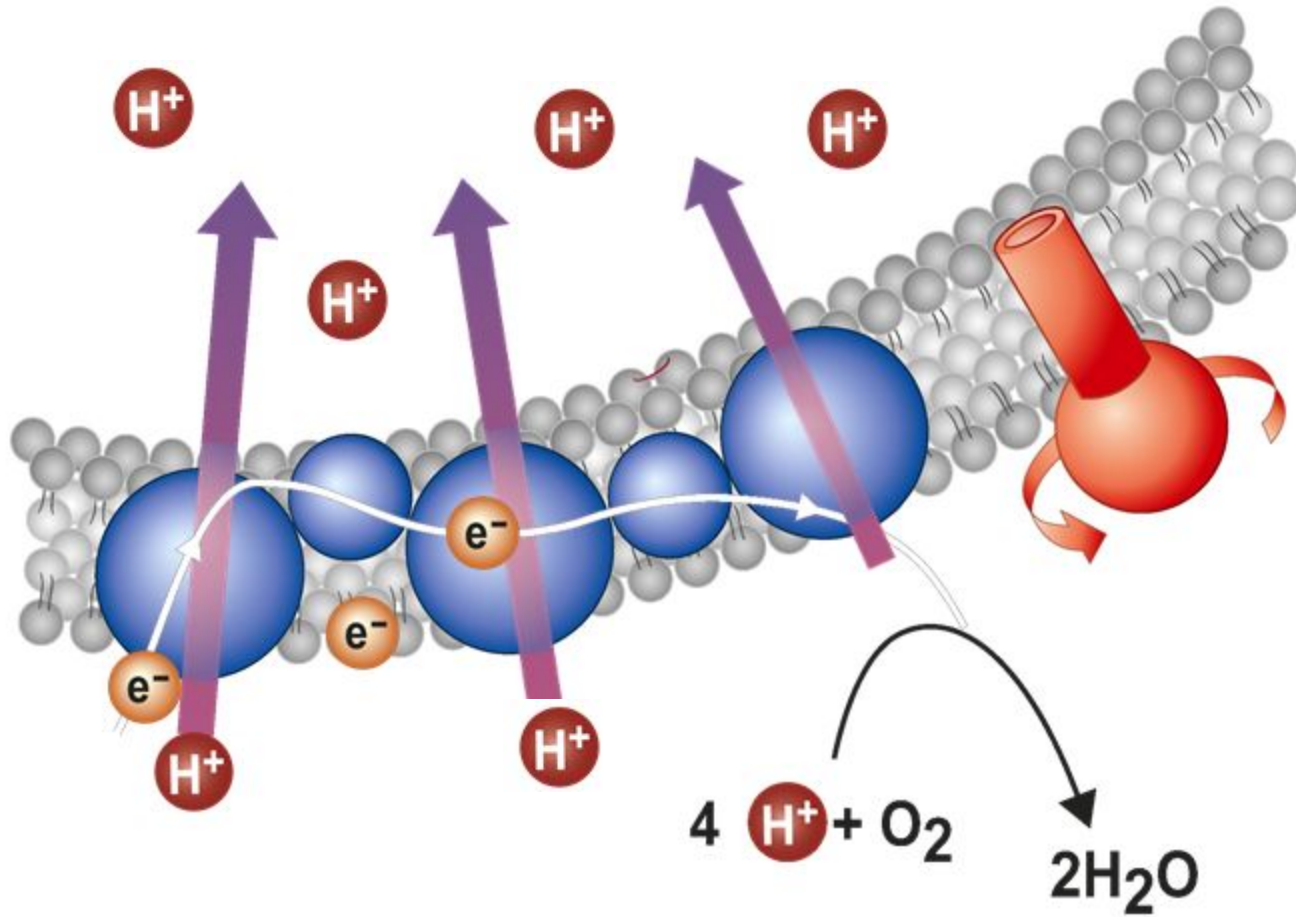


High energy electrons are passed from one carrier protein to the next.

At the end of the chain, an enzyme combines these electrons with a hydrogen ion to form water.

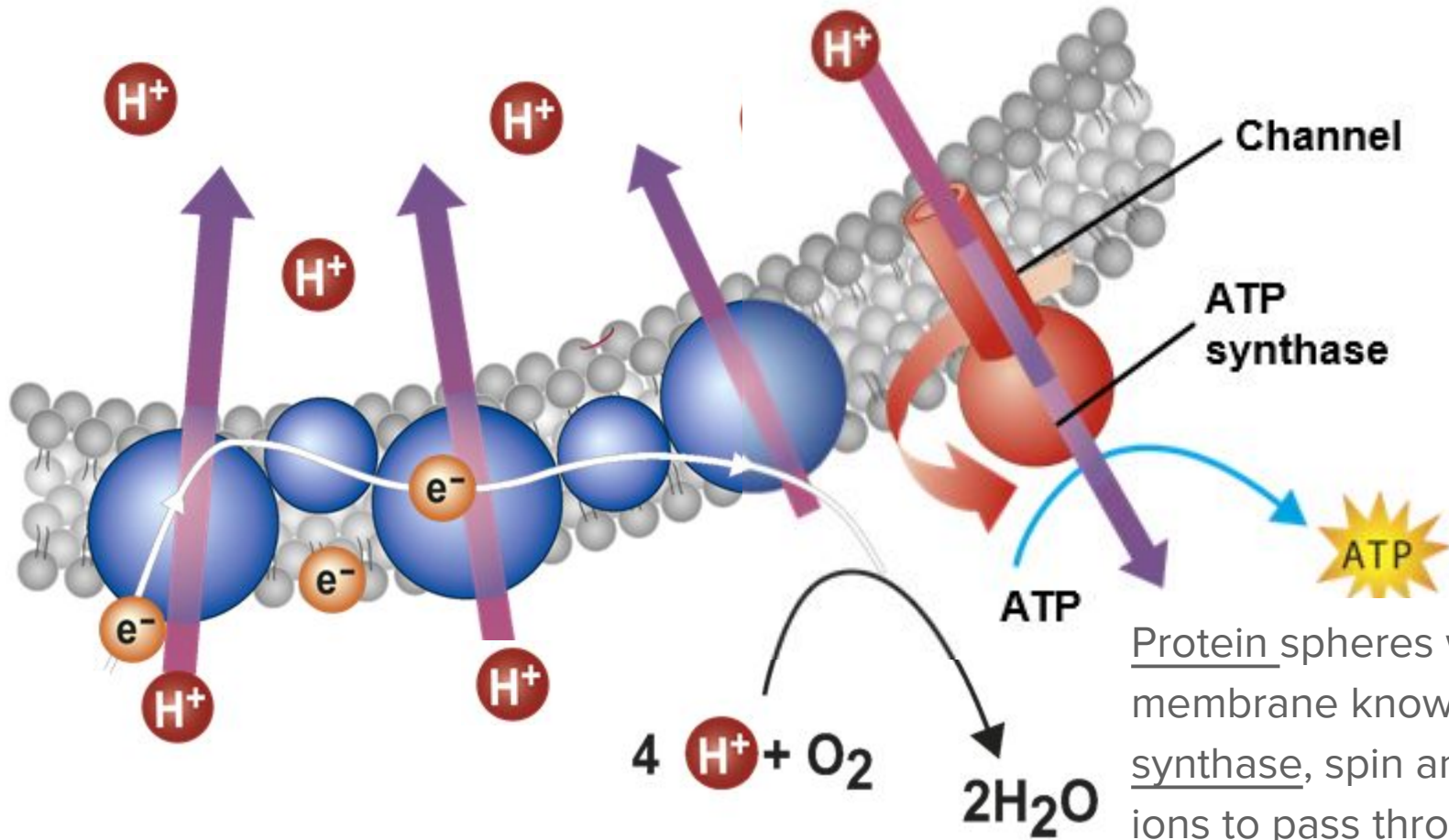


When 2 high energy electrons move down the electron transport chain, their energy is used to move hydrogen ions across the membrane.



During electron transport,  $H^+$  build up in the intermembrane space and it becomes positively charged.

This makes the outside negatively charged as the  $H^+$  ions are removed.



Protein spheres within the membrane known as ATP synthase, spin and allow  $H^+$  ions to pass through its channel, making ATP!

While glycolysis produces only 2 molecules of ATP per molecule of glucose,

the complete breakdown of cellular respiration results in the production of 36 molecules of ATP.

This represents about 38% of the total energy of glucose.

