Biology 20

Unit C: Photosynthesis and cellular respiration

ATP at the inner membrane

Hydrogen ions return through ATP synthase

- Hydrogen ions sit above the inner membrane bar.
- They flow down through ATP synthase, and ATP leaves into the matrix.

Reducing power becomes ATP

- NADH and FADH supply reducing power at the inner membrane.
- Chemiosmosis is the hydrogen-ion flow through ATP synthase.
- ATP forms in the matrix and can leave to do cell work.

Key terms

chemiosmosis

The flow of hydrogen ions through ATP synthase that stores energy in ATP.

ATP

The molecule that carries usable chemical energy for cell work such as contraction and active transport.

inner membrane

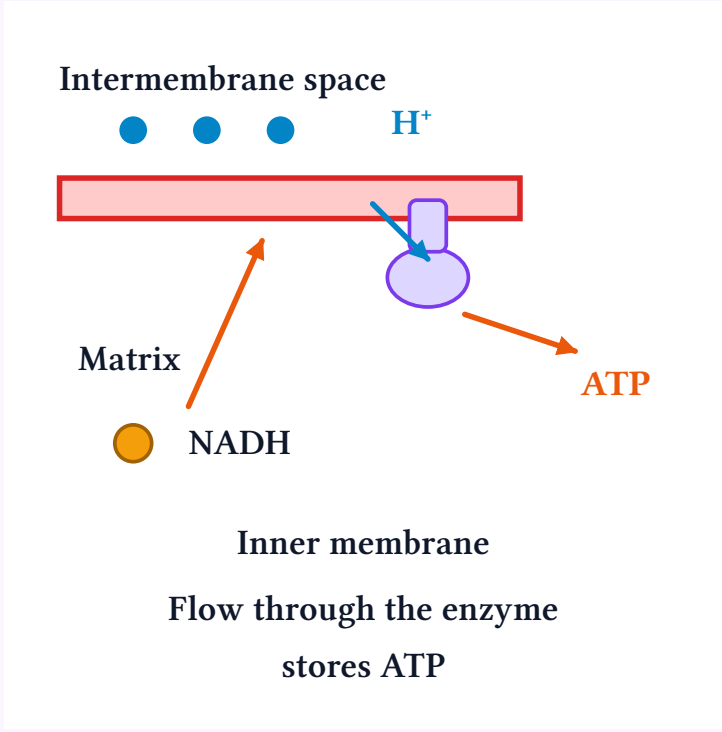
The mitochondrial membrane that holds the electron carriers and ATP synthase.

ATP synthase

The enzyme in the inner membrane that lets hydrogen ions flow back and forms ATP.

ATP forms at the inner membrane

- NADH is in the matrix, donating upward.
- The ion arrow points back through the enzyme.
- The caption says that flow stores ATP.



Send each element to its exit

- Carbon atoms from glucose leave as carbon dioxide.
- Hydrogen from glucose and inhaled oxygen meet in water.

Jobs that use ATP

- Contraction in the heart spends ATP.
- Active transport in the gut spends ATP too.

Ions and atoms

- Describe chemiosmosis at the inner membrane.
- Send glucose carbon and inhaled oxygen to their products.

Oxygen makes the larger ATP yield possible

- This membrane path needs oxygen to keep accepting electrons.
- Cells have shorter routes when oxygen is scarce.