

electron micrograph of a chloroplast

Life's Energy Organelles

The Chloroplast



muscle cells

stroma A chemical brew where carbon dioxide is converted to carbohydrates in the Dark Reactions of photosynthesis.

thylakoids

Hollow disc-shaped

bodies where chlo-

rophyll molecules

facilitate the Light

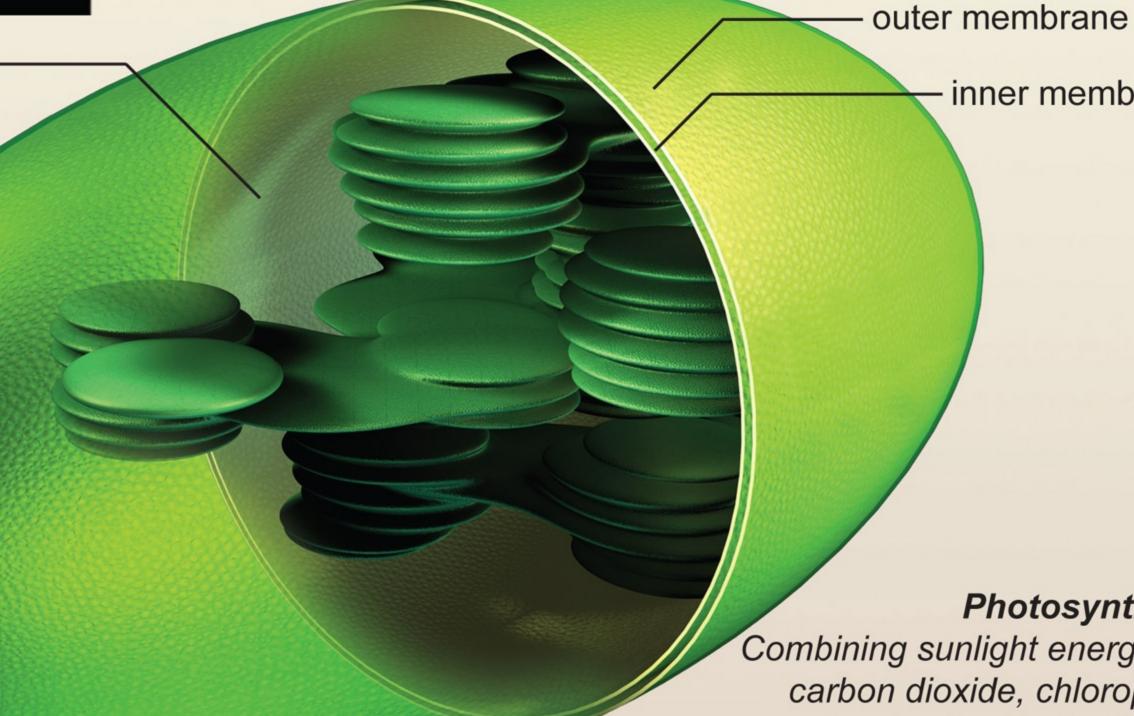
Reactions of photo-

synthesis. Energy-

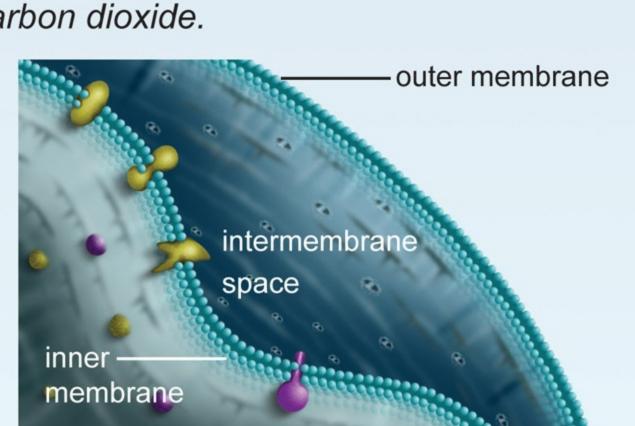
is given off.

carrier molecules are

produced and oxygen



synthesize food in the form of sugar and starch. Oxygen is produced as a waste product.



A protein that pumps hydrogen ions from the intermembrane space, into the matrix, in the process coverting ADP to ATP, the most common energy-carrier molecule.

electron micrograph

of mitochondria

matrix A soup of enzymes that

including ATP.

transfer energy from

food molecules such

as pyruvate, to hydro-

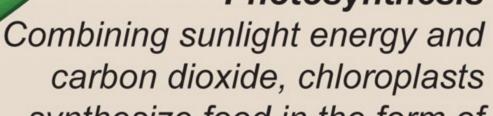
gen ions from which a

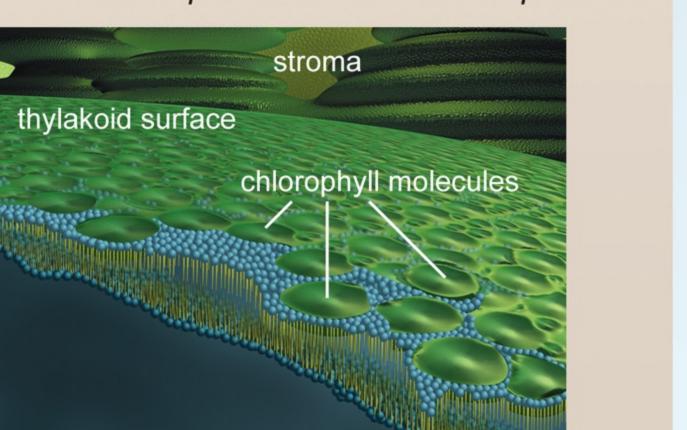
molecules are made,

variety of energy-carrier

electron micrographof a

mitochondrion interior





Photosynthesis

inner membrane

Respiration Fueled by oxygen and food molecules, mitochondria assemble energy-carrier molecules that deliver energy throughout eukaryotic organisms. The waste product is carbon dioxide.

intermembrane space -

outer membrane

inner membrane

A sac within a sac.

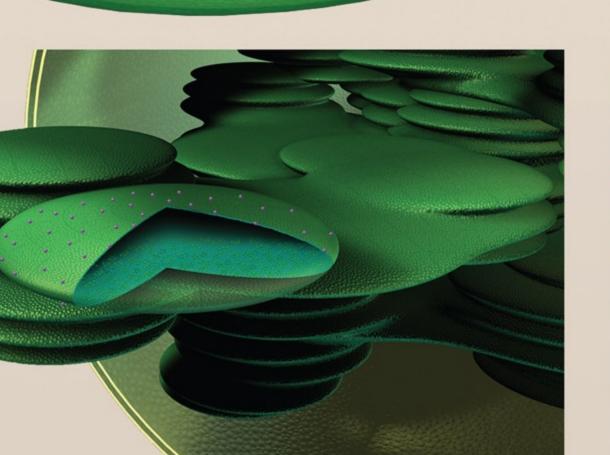
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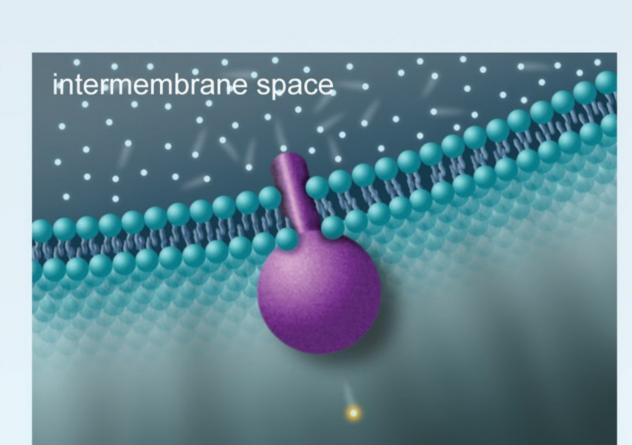
proteins, including

ATP Synthase.

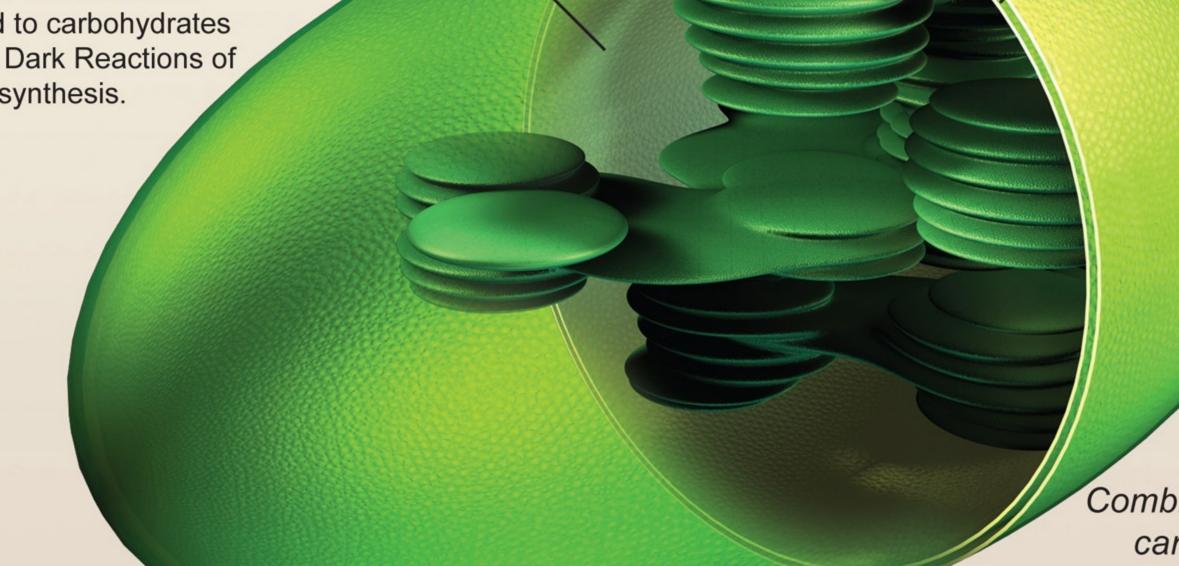
inner membrane are

numerous specialized





mitochondria in Paramecium



ATP Synthase