

# Mitochondria

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# General outline

Found in nearly all eukaryotic cells

1-10  $\mu\text{m}$  long

Can be various numbers of mitochondria in a cell

Move and change shape in a cell

May have been its own organism that at some point melded with other cells



# Functions and Important molecules

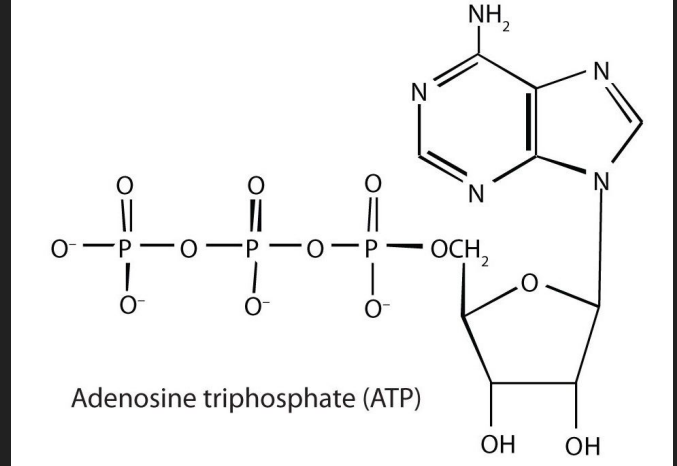
Produces ATP through respiration

Glucose inserted in mitochondria through pyruvic acid

Glucose converted into carbon dioxide, water, and atp

Reproduces itself with its own DNA

Krebs cycle performed within



# Relations

May receive broken down fatty acids from peroxisome.

Membranes made by free ribosomes within mitochondria

Proteins within are created by nuclear DNA

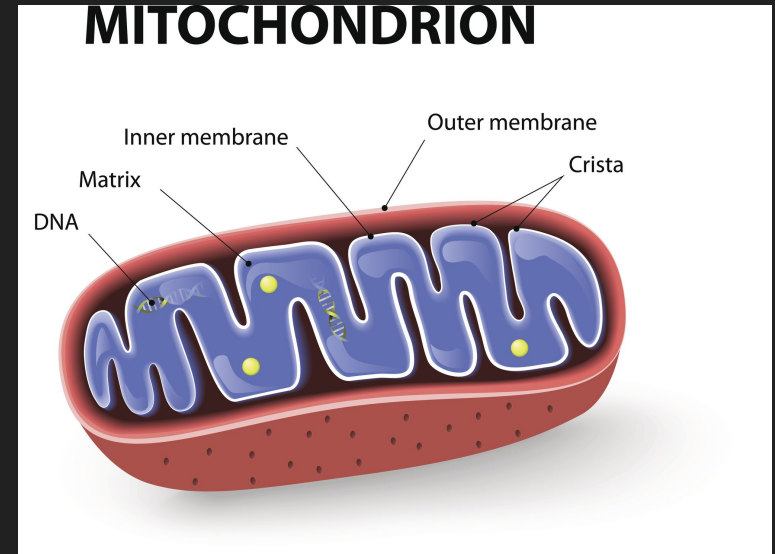
# Structure

Contains 2 phospholipid bilayers

Outer membrane smooth

Inner membrane rough

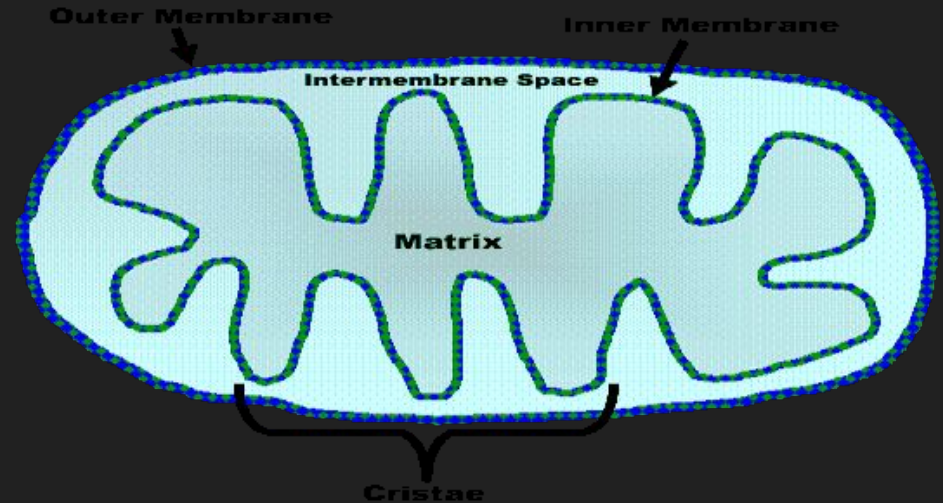
Membranes called cristae



# Intermembrane Space

Coordinates the exchange of proteins and lipids between the mitochondria and cytosol

Signals pathways in order to regulate respiration

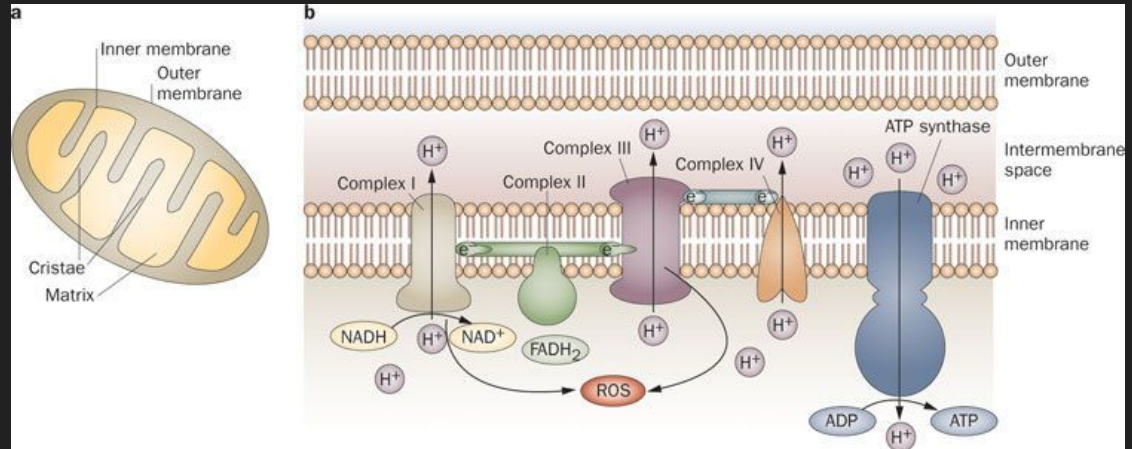


# Mitochondrial Matrix

Respiration is performed here

Contains DNA and Ribosomes

Structure of the inner membrane gives a wide surface area for proteins to interact with



# Bibliography

Nave, R. (n.d.). Adenosine Triphosphate. Retrieved September 19, 2018, from <http://hyperphysics.phy-astr.gsu.edu/hbase/Biology/atp.html>

Evolutionary Origin of Mitochondria. (n.d.). Retrieved September 19, 2018, from <https://www.ruf.rice.edu/~bioslabs/studies/mitochondria/mitorigin.html>

Campbell, N. A., & Reece, J. B. (2005). *AP Edition Biology* (7th ed.). San Francisco, CA: Benjamin Cummings

Herrmann, J. M., & Riemer, J. (2010, November 01). The intermembrane space of mitochondria. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20367280>