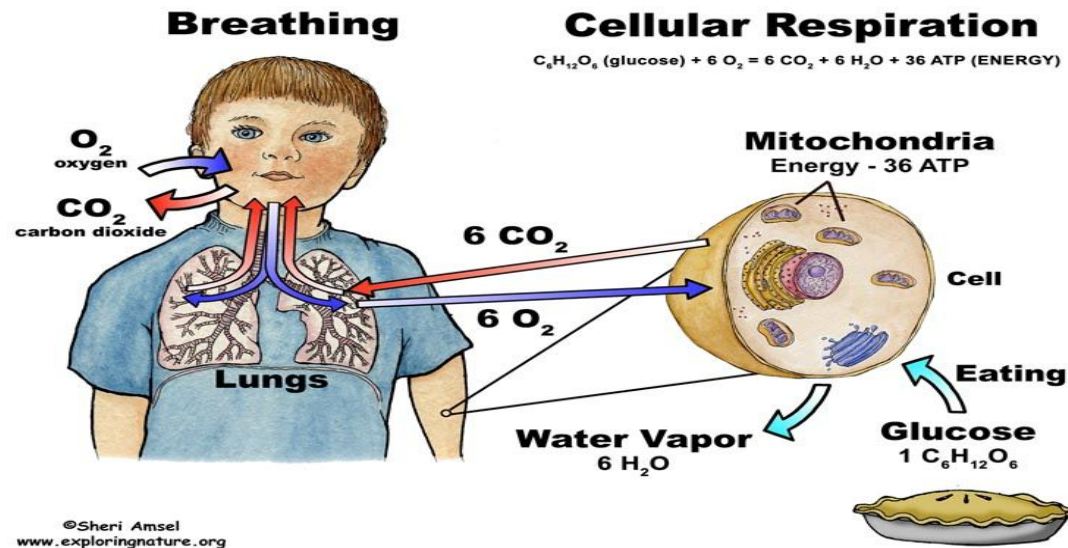


AEROBIC RESPIRATION: function of mitochondria



Lesson objectives

- To establish the relationship between the structure of mitochondria and the process of cellular respiration.



Steps of aerobic respiration

- Aerobic respiration is series of reactions.

- Main steps are:

1) Glycolysis

} In cytoplasm

2) Pyruvate oxidation

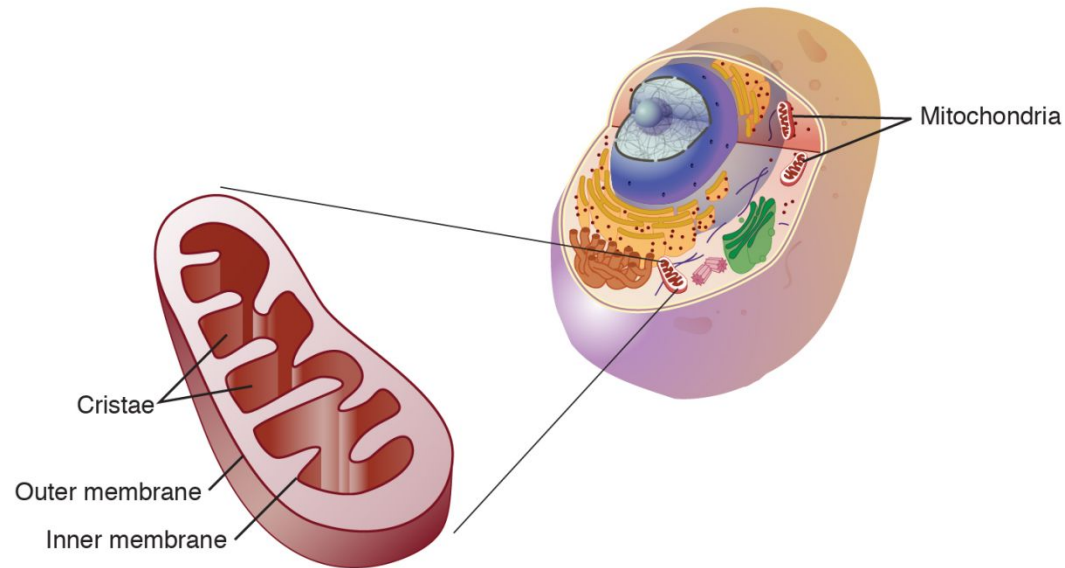
3) Citric acid cycle or Krebs cycle)

4) Electron transport chain
(oxidative phosphorylation)

} In mitochondria

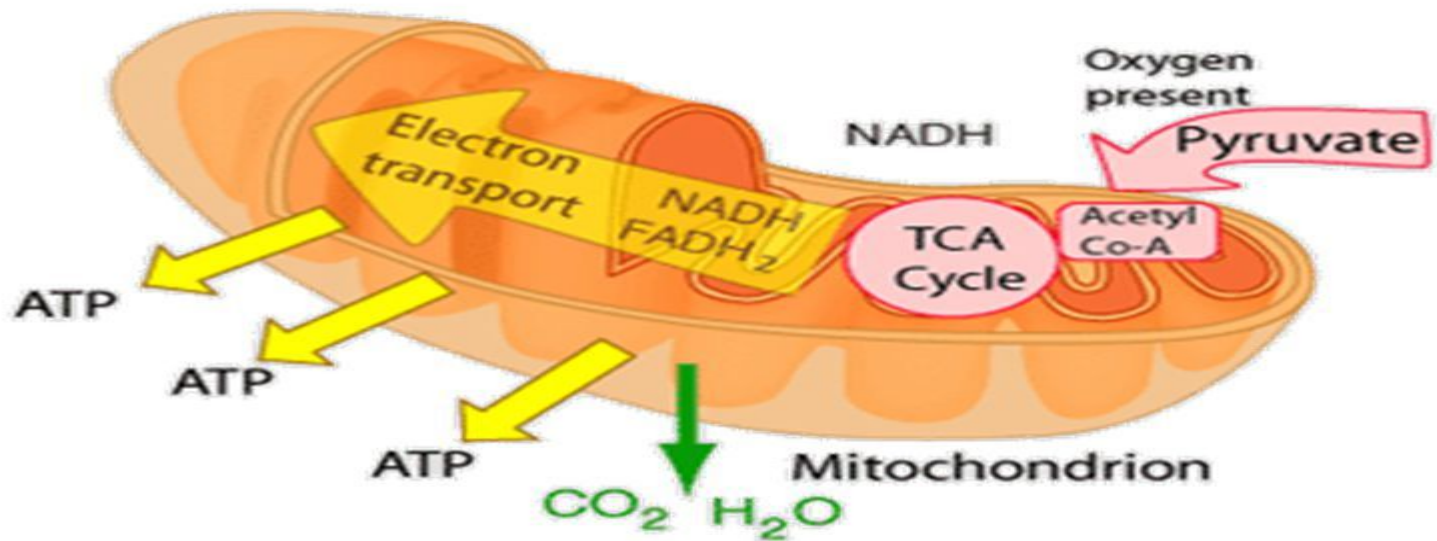
What is mitochondria?

- It is powerhouse of the cell.
- Found in eukaryotic cells.



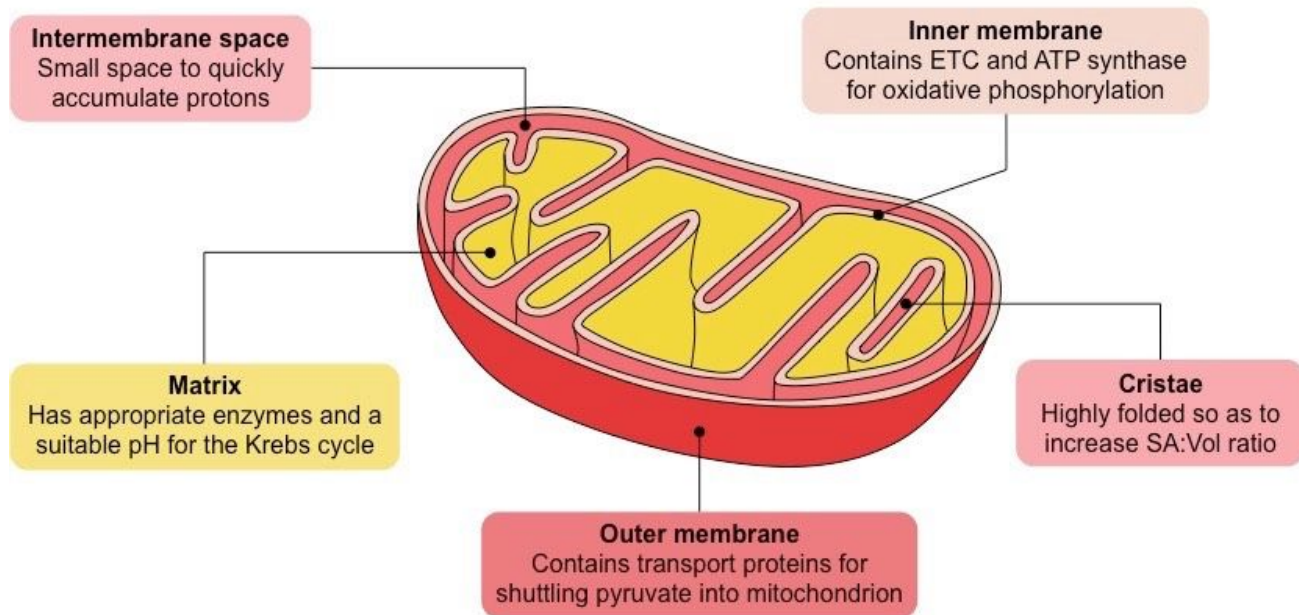
Mitochondria's function

- Production of ATP energy in the process called cellular respiration.
- Three last stages of cellular respiration take place in mitochondria.



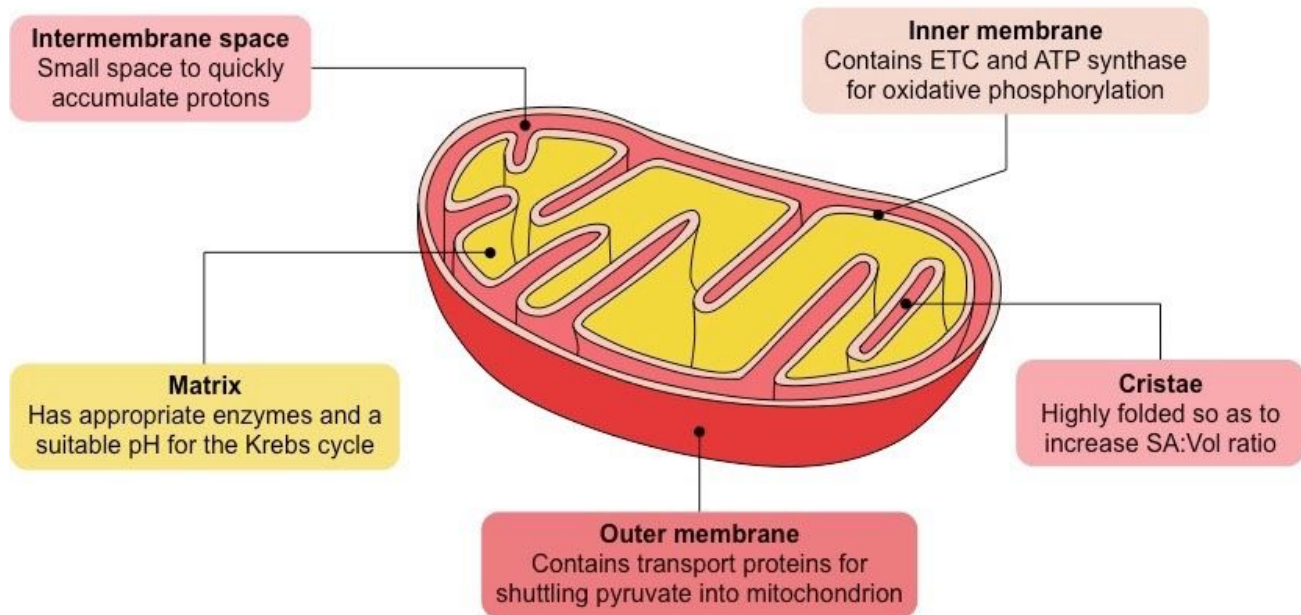
Mitochondrial structure

- **Double-membranous:**
 - ❖ **Outer membrane**
 - ❖ **Inner membrane**
- **Matrix**
- **Intermembrane space**



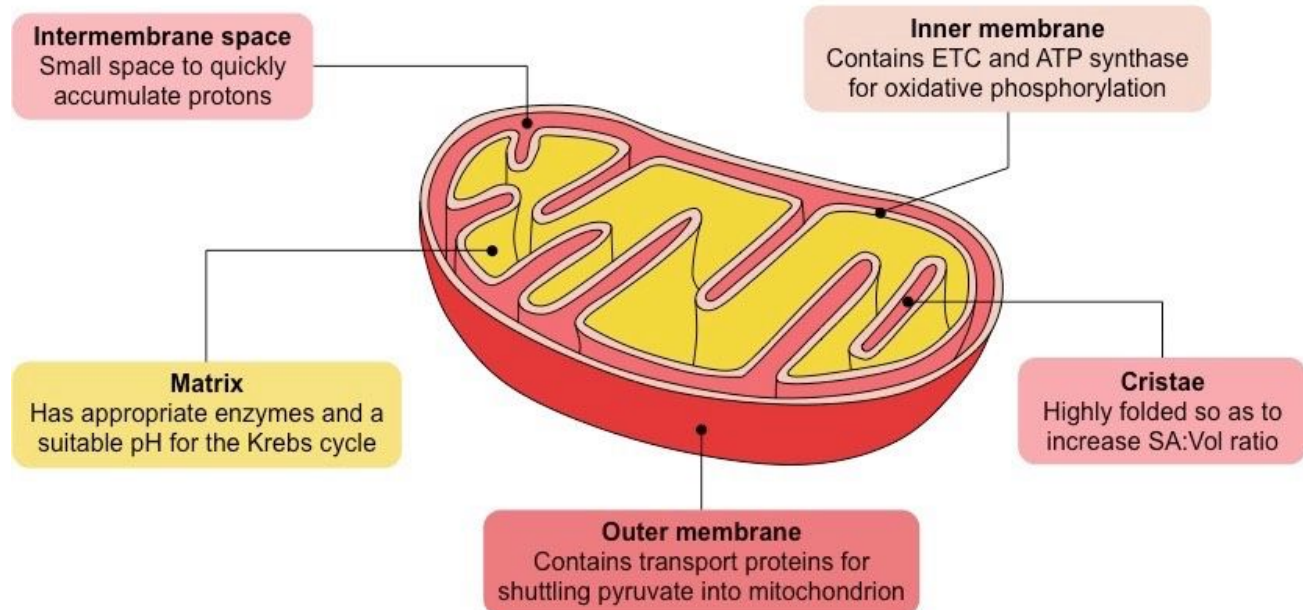
Outer membrane

- Outer membrane is smooth
- More permeable than inner membrane.



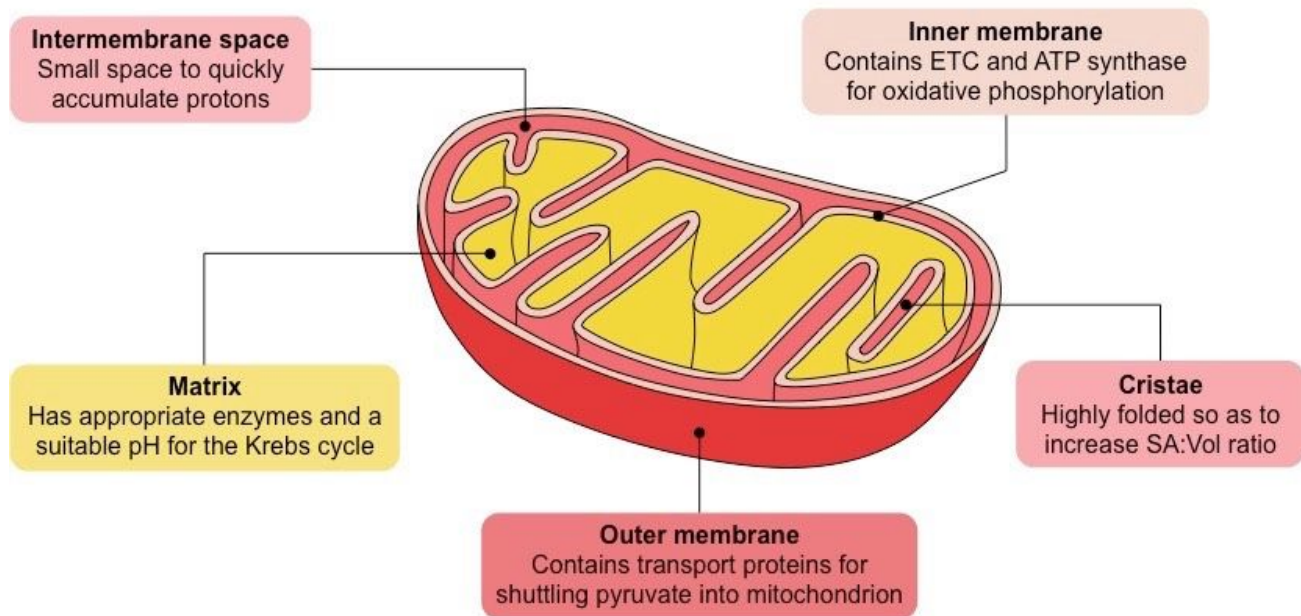
Inner membrane

- Inner membrane forms folds called **cristae**.
- It contains proteins of ETS (last step of cellular respiration) and enzymes that produce ATP energy called ATP synthase.
- It is less permeable than outer membrane.



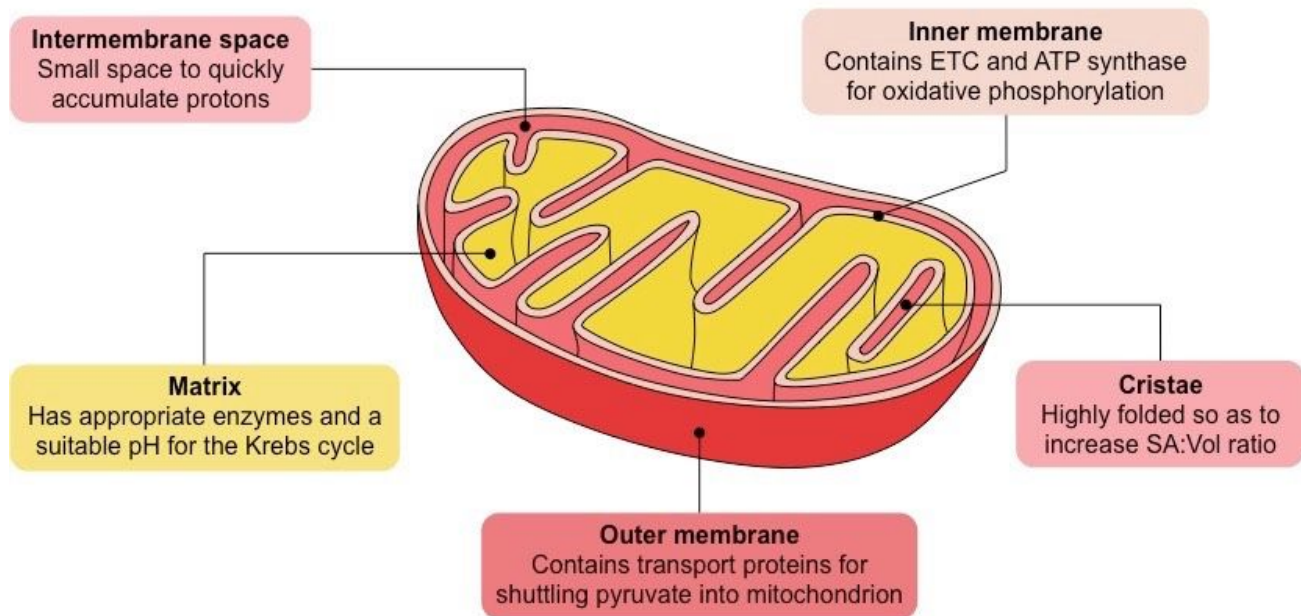
Intermembrane space

- **Intermembrane space** is space between two membranes.
- It has lower pH than matrix.
- The protons of NADH is pumped into intermembrane space by proteins of ETS. As a result proton gradient is formed which is higher in intermembrane space rather than in matrix.



Matrix

- Inner space is filled with fluid called **matrix**.
- Matrix consists of water, proteins, enzymes,
- **Mitochondrial DNA** and **ribosomes** are found in matrix.
- Oxidation of pyruvate and Krebs cycle take place in matrix.
- ATP produced during ETS by ATP synthase enzyme are released into matrix.



Let's do the activity on p. 77



Homework

- Read p. 76-77
- Answer to literacy questions on p 77.
- New words

