Mitochondria

- Mitochondria are called power house of the cell.
  ↓
  Because these are associated with cellular respiration.

Cellular Respiration
↓
- Oxidation of cellular nutrients and energy generation of the cell.

← Glucose, Amino Acid, Fatty Acid & Glycerol

Mitochondria - mito = thread -
Chondria = chondrion = granules

} mitochondria are granules like structures.

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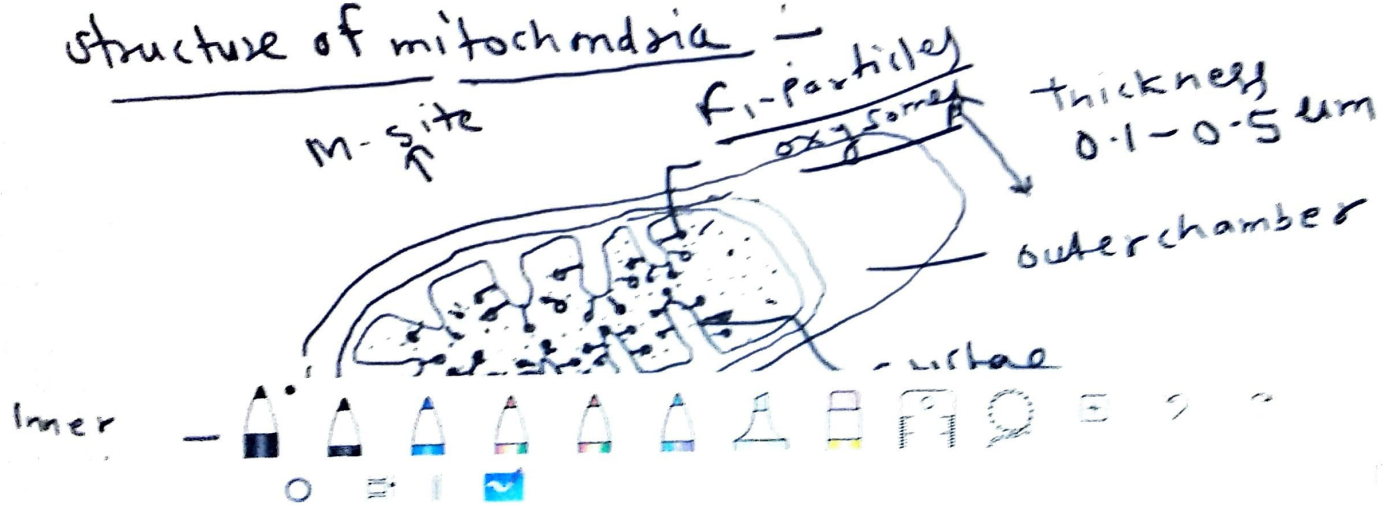
Chondria = chondrion = granules

} mitochondria are granule like structures.

↓

- which were first seen by kolliker.
- C. Benda gave the name mitochondria

structure of mitochondria -



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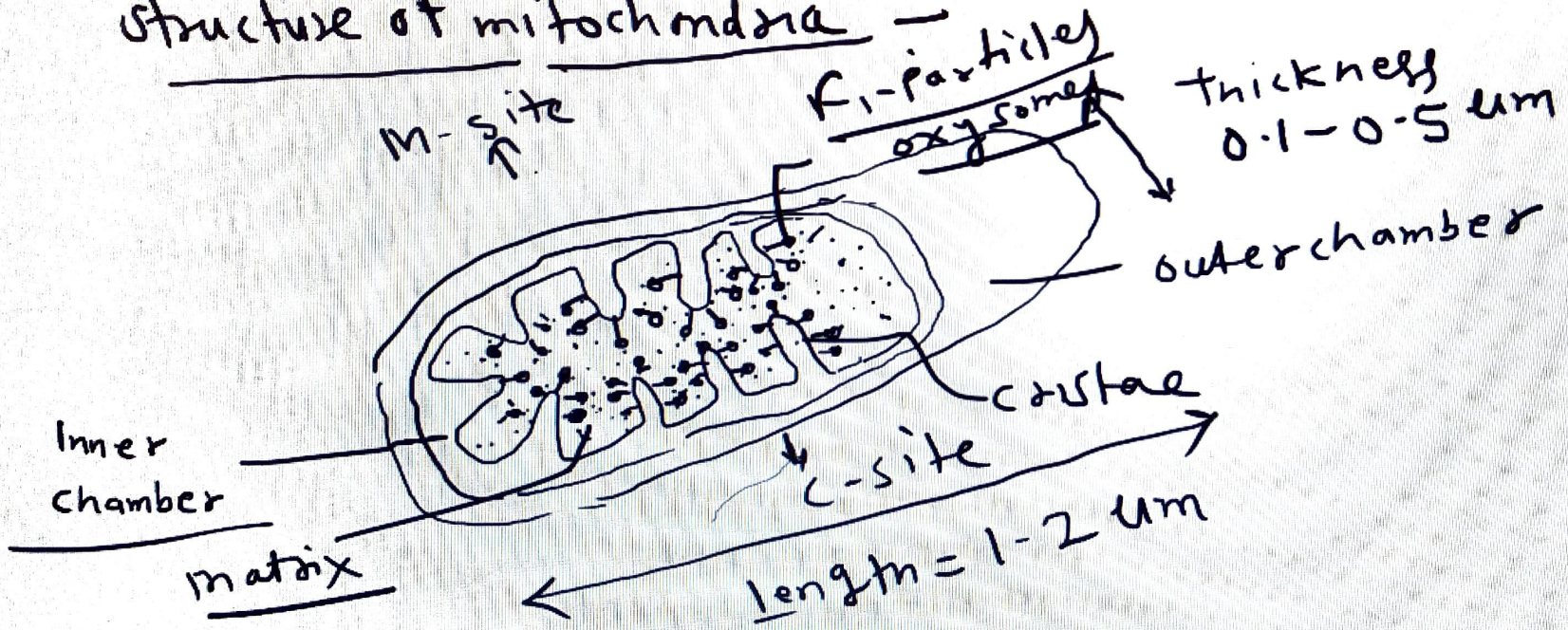
Structure of mitochondria :-



Note . In prokaryotes, mitochondria are absent .

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↳ These present a specialized structure which is called mesosomes.

membraneous infolding

↓

Mesosomes

↓

it is an equivelent to mitochondria.

So, this mesosomes contains respiratory enzymes and performs all respiratory function.

Q.1 In prokaryotic cell, which cell-organelles performs respiratory functions ?

1. Mitochondria
2. Plastid
3. Vacuoles
4. Mesosomes ✓

Cellular respiration.

Q.2. In Eukaryotic cell, oxidation of nutrition accomplished by cell-organelle ?

1. Plastid
2. Endoplasmic reticulum
3. mitochondria ✓
4. Mesosomes

Note ① mitochondria of a cell is collectively called as —

- chondriosome
- chondrioplast
- plastosome
- plasmosomes
- plastochondriosome

} mitochondria.

Note-2 - The dye (stain) used for the staining of mitochondria is Janus-green B.

Q. mitochondria is stained by -

① Aceto carmine - chromosome

② Janus-green B - DNA

③ Neutral red - orange

mitochondria is Janus-green B.

Q. mitochondria is stained by -

1. Acetocarmine - chromosome
2. Actidine-di-orange - B-DNA
3. ✓ Janus-green-B - mitochondria
4. Crystal violet - Bacteria.

✓ mitochondria contains two membrane-system.

Double membrane-system

Inner membrane

✓ mitochondria contains two membrane-system.

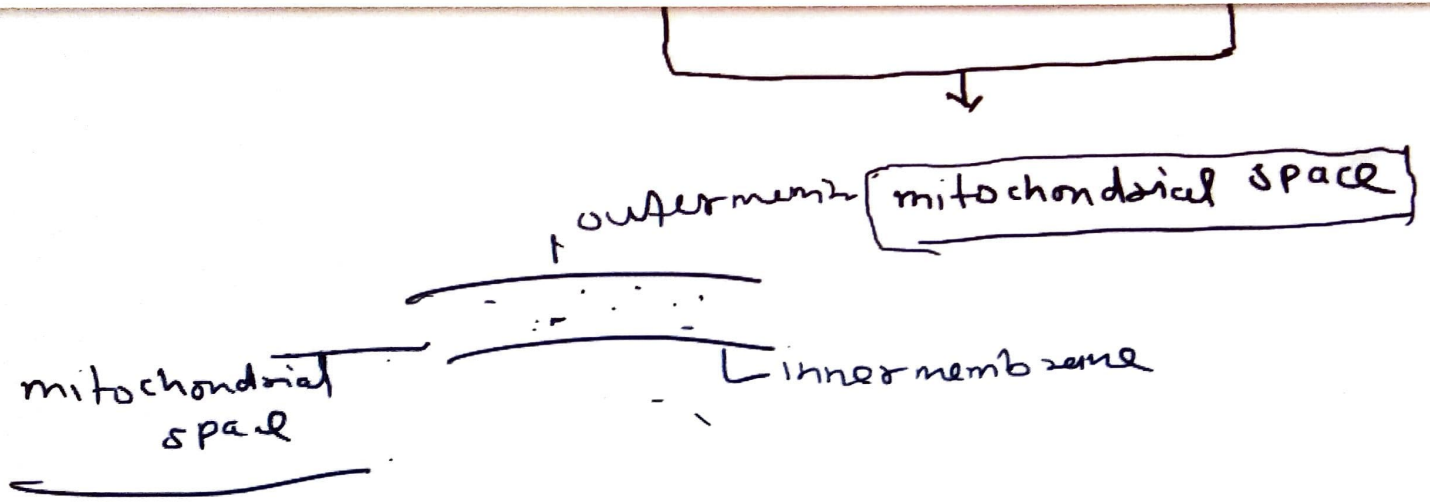
Double membrane-system

(1) Outer membrane

(2) Inner membrane

outermembr | mitochondrial space

mitochondrial space | Innermembrane



Note. width of the mitochondrial space is 40-70 A°

Imp

chemical composition of mitochondria :-

(1) Proteins - 70%

Chemical composition of mitochondria :-

1. Protein - 70%
2. Lipid = 20-30%
   - (i) Phospholipid (90%)
   - (ii) - Rest 10% Lipid
     - cholesterol
     - carotenoids
     - vitamin E
3. Nuclic Acid
   - DNA (max)
   - RNA (Trace)

imp. ✧ Mitochondrial DNA contributes 1% of total cell DNA.

✧ - Krebs cycle present in mitochondria

— Total oxidation of glucose molecule

Imp. ✧ The enzymes of Kreb cycle present in matrix of mitochondria.

Q. Enzymes of kreb-cycle is present in :-

Q. Enzymes of kreb-cycle is present in :-

(1) cristae
(2) outer chamber
(3) oxysomes
(4) mitochondrial matrix ✓

Note - All enzymes of mitochondria is present in mitochondrial matrix

↓

ehydrogase

Note - All enzymes of mitochondria is present in mitochondrial matrix

↓

But exceptional succinic dehydrogase is not present in mitochondrial matrix

↓

Succinic dehydrogenase present inner mitochondrial membrane.

Search the web...

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Q. Succinic dehydrogenase enzyme is present in ⊥

1. mitochondrial matrix
2. cristae
3. oxysome
4. Inner mitochondrial membrane.
5. Outer-mitochondrial membrane.

◇ ETS (Electron transport system) and

mitochondrial matrix

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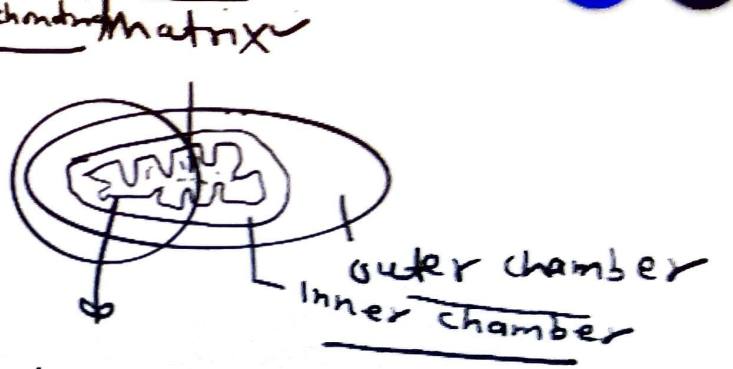
ETS (Electron transport system) and oxidative phosphorylation

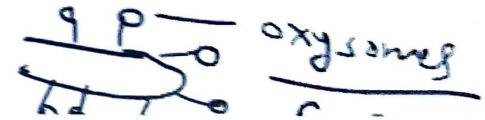
↓

occurs in cristae.



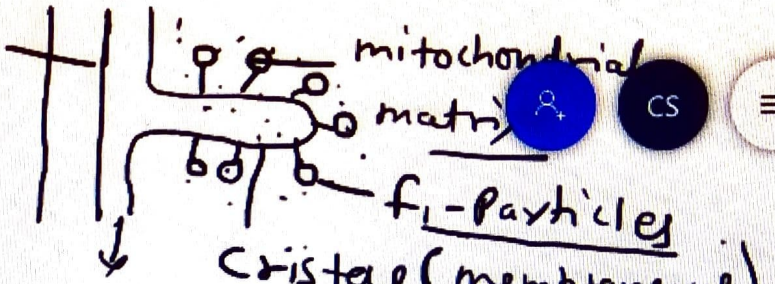
Q. Match the following column :-

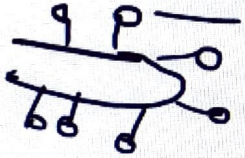
① ETS & oxidative phosphorylation	⟶	(a) - Cristae
② Enzymes of mitochondria	⟶	(b) mitochondrial matrix
③		



Match the following column :-

① ETS & oxidative phosphorylation	ⓐ - Cristae
② Enzymes of mitochondria	ⓑ mitochondrial matrix
③ Succinic dehydrogenase	ⓒ inner mitochondrial membrane
④ Kreb cycle	





b
oxidative phosphorylation

Ans ① - a
② - b
③ - c
④ - b