Mitochondrial theory of aging :-

→ caused by free radical - Reactive oxygen species [ROS]

→ Mitochondria harbor dominant source of ROS in cell

→ oxidative damage to component of mitochondria & electron transport chain lead to increased ROS yields.

- Damage to mitochondria also might adversely affect rate efficiency with which they generate ATP. - to point where it undermines cell vitality & function.

- Second component of mitochondrial damage is mitochondrion's indigenous genome.

- Mitochondrial genome - much reduced
  ↓
  encode 2 ribosomal RNA,
  - 22 tRNA
  - several polypeptide components of complex I, III & IV of electron transport chain, parts of F1, Fo ATPase.
  - Lack surveillance & repair enzyme that help maintain integrity of nuclear DNA.

- Deleterious mutations into mitochondrially encoded portion of ETC & their consequent functional defects, become permanent feature of mitochondrion's genome, to which additional mutation may occur over a time.

→ Mitochondria is contributor to aging & is does not providing unifying explanation for all change associated with human aging.