

Evolution is a central theme/Organizing principle in biology which unifies all diverse life forms to common ancestry (LUCA) [Monophyletic origin]

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Powerful theories that guide extensive research are called Paradigms. The history of science shows that even major paradigms are subjected to refutation and replacement when they fail to account for our observations of the natural world.

They are then replaced by new paradigms in a process called as scientific revolution.

For example, prior to the 1800s, animal species were studied as if they were specially created entities whose essential properties remained unchanged through time (Fixity of Species).

Darwin's theory led to a scientific revolution that replaced these views with the evolutionary paradigm that Species are constantly changing or evolving with time.

Evolutionary paradigm has guided biological research for more than 140 years, and to date there is no scientific evidence that falsifies it; it has strong explanatory power and continues to guide active inquiry into the natural world.

Evolutionary theory is generally accepted as the corner-stone of biology. The abbreviation LUCA stands for Last Universal Common Ancestor.

- Descent with modification is called Evolution.
- Evolution is a central organizing theme or principle in biology which unifies all organisms present on this earth. Organisms are remarkably uniform at molecular level.

Living systems can reproduce themselves. Life does not arise spontaneously but comes only from prior life, through reproduction. Life certainly originated from non-living matter at least once, but this origin took enormously long periods of time. At each level of the biological hierarchy, living forms reproduce to generate others like themselves. Genes are replicated to produce new genes and cells divide to form new cells. Organisms reproduce, sexually or asexually, to produce new organisms. Reproduction at any hierarchical level usually features an increase in numbers, individual genes, cells, organisms and populations.

LUCA is Single celled Progenote/Prokaryote from which all life form emerged

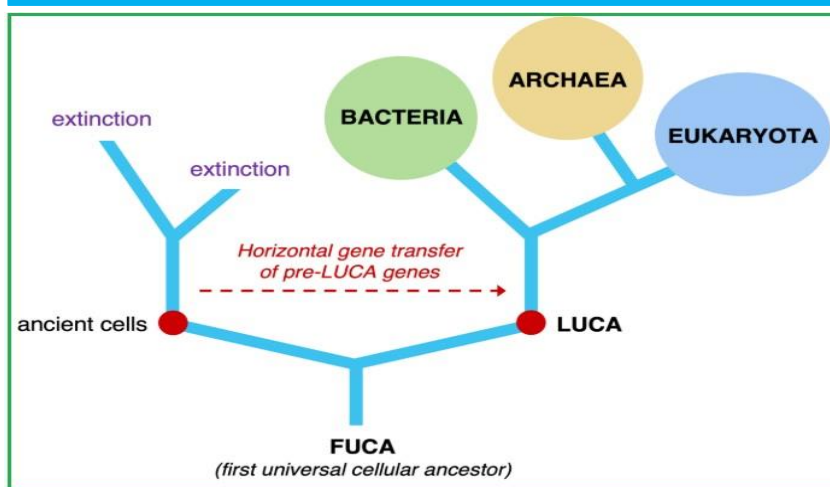
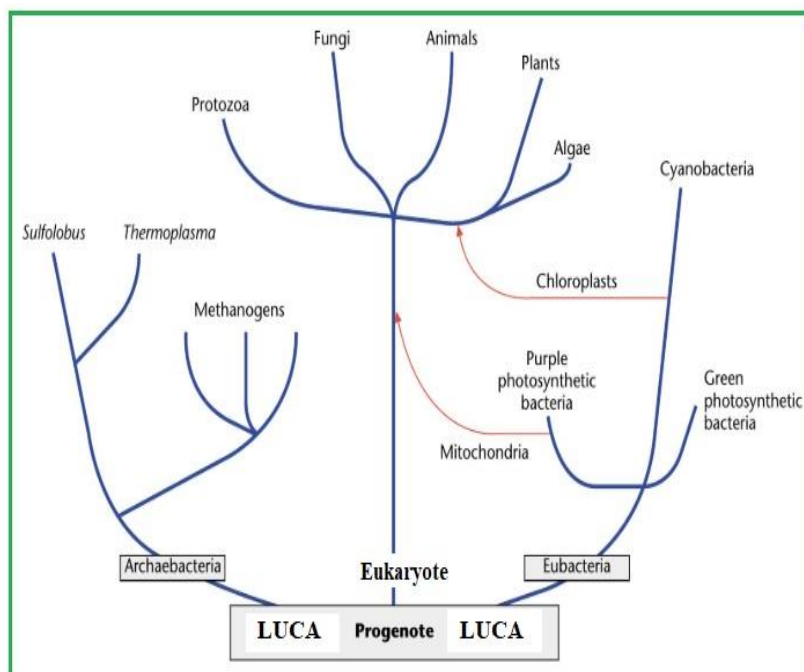


Figure: All life form originated from LUCA and got diversified through adaptation and emergence of new features.

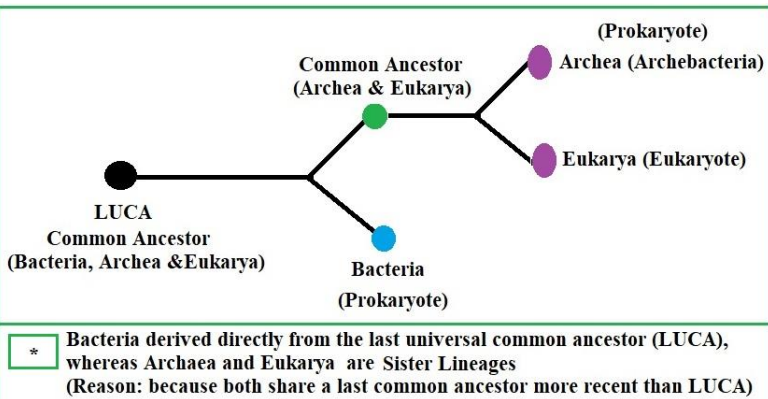


Knowledge Destination cum Concept-Map

LUCA is the microorganism that is proposed to be the genetic ancestor of all domains of life namely Bacteria, Archaea, and Eukarya. The concept of LUCA helps expand the scientific understanding of the tree of life.

Journey from Biological Diversity to Biochemical unity

All organisms uses same Genetic System (DNA & Genetic code) and are uniform at Molecular level
(Molecular Uniformity of diverse organisms reveals common ancestry/LUCA)



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