LECA-TIME: Relative Timing and Modularity in The Path to the Last Eukaryotic Common Ancestor

Description

The origin of eukaryotes has been defined as the major evolutionary transition since the origin of life itself. Comparisons of the broad diversity of eukaryotes indicate the complexity of the last eukaryotic common ancestor (LECA), which already showed an intricate intracellular organization well beyond that of the most complex prokaryotic organisms. How a complex LECA may have arisen from simpler forms remains central to debates on eukaryogenesis.

In the LECA-TIME project, we use an improved phylogenomic approach coupled to supercomputing to dissect the origin and phylogenetic divergence of protein families inferred to be present in LECA. T his approach will allow us to ascertain the number and nature of major waves of gene acquisitions that contributed to LECA gene repertoire, their sources, their relative order, and their metabolic or structural contributions, with the ultimate aim of **proposing plausible ecological interactions between that pre-LECA ancestor and putative gene donors**.

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