

Phylogenetic Analyses of Plastid-Originated Proteins Imply Universal Endosymbiosis in Ancestors of Animals and Fungi

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We searched and analyzed cyanobacteria-originated metazoa/fungi proteins (COPs) by phylogenetic analyses. Analysis of them showed that for millions of years universal plastid endosymbiosis and gene transfer occurred in ancestors of metazoa/fungi, and some transferred fragments have been reserved until now even in modern mammals. Most eukaryotes contained plastids in the ancient era, and some of them lost them later. Functions of homologues in cyanobacterial genomes and eukaryotic genomes are in consensus, and most are involved in the organic compound metabolism. With emergence of organelles and subcellular structure in eukaryotic cells, the locations of these proteins diversified. Furthermore, some novel functions were endowed for COPs, especially in vertebrates.

Key words: Plastid-Originated Proteins, Divergence Time, Endosymbiosis, Gene Transfer