

Nuclear-Localized Plastid DNA Fragments in Protozoa, Metazoa and Fungi

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We analyzed nuclear-localized plastid-like DNA (nupDNA) fragments in protozoa, metazoa and fungi. Most eukaryotes that do not have plastids contain 40–5000 bp nupDNAs in their nuclear genomes. These nupDNA fragments are mainly derived from repeated regions of plastids and distribute through the whole genomes. A majority of nupDNA fragments is located on coding regions with very important functions. Similar to plastids, these nupDNAs most possibly originate from cyanobacteria. Analysis of them suggests that through millions of years of universal endosymbiosis and gene transfer they may have occurred in ancient protists before divergence of plants and animals/fungi, and some transferred fragments have been reserved till now even in modern mammals.

Key words: Nuclear-Localized Plastid-Like DNA (nupDNA), Endosymbiosis, Gene Transfer