

Biodiversity of Microorganisms on the Earth History

Hiroyuki Yamamoto[1]

[1] Microbiology, St. Marianna Univ.

Microorganisms on the Earth maintain a huge population including diversified species and biological functions. Their contributions to the Ecosystem continue over the whole Earth History.

Microorganisms propagate in our surrounding environments. Their population consists of major two phylogenetic groups; Prokaryote (Bacteria and Archaea) and Eukaryote (Protista and Fungi). Classical image of microorganisms was unicellular simple living system, but their biodiversity show a sophisticate life: cell morphology, proper development of multicellular formation, resting stage, enormous diversity of metabolism, physiological versatility, and ecological traits.

Many of living species that ever existed have been extinct by a natural disaster during past earth history. From hydrothermal vent of Precambrian Earth to our existing ecosystem, microbes not only survived during 3.6 billion years but also successively divided into new species or phylogeny, and then expand their ecological niches. Progressive life evolution system creates a novel descendant within conservative heredity law, according to genetic mutation and horizontal gene transmission. The swiftness of adaptation to novel circumstance advances physiological and species diversity. Versatility of prokaryote had invented a modern eukaryote cell by intracellular symbiosis. These eukaryotes evolved and created a next generation of multicellular organisms. Microbes on the contemporary ecosystem still have intimate connection with other organisms.