

Abstract

Anaerobic protists represent a diverse group of eukaryotic organisms that have adapted to life in environments with low or zero oxygen levels. This adaptation has led to changes in their metabolism. Mitochondria and derived organelles in anaerobic protists often have reduced or modified structures and functions. These organisms are ecologically flexible, allowing them to transition between different environments and lifestyle. Many of these organisms can switch between free-living and endobiotic form. Transitions between freshwater and marine environments are also documented. The diversity of anaerobic protists is further supported by their ability to enter syntrophic symbioses with prokaryotic organisms, such as bacteria and archaea. These symbionts provide metabolites to the host and support its energetic metabolism. Such interactions help protists survive and thrive in hostile conditions. Further research, including molecular and phylogenetic analyses, is needed to understand the relationships among different protist representatives and to strengthen our knowledge of the diversity and evolution of these organisms. This work summarizes the diversity of anaerobic protists known so far, with an emphasis on obligate anaerobic free-living representatives. The aim of this thesis is to evaluate which groups of described organisms have undergone transitions between environments or lifestyles and to identify those exhibiting syntrophic symbioses.

Keywords: mitochondria, mitochondrion-related organelles, anaerobic protists, transition, syntrophic symbiosis, free-living