Symposium 3

Biology of heterotrophic and parasitic protists

Organizers: Denis Tikhonenkov (Russia) and Kevin Wakeman (Japan)

Synopsis: Protists represent diverse phylogenetic lineages, and contain a large number of species that possess ancestral cellular and genomic characteristics in relation to their multicellular relatives. Phylogenetic data on heterotrophic and parasitic protists are extremely important in terms of reconstructing the universal tree of life. The basal or intermediate evolutionary positions occupied by these organisms make them particularly important for elucidating the origin, diversity, and evolution of model organisms. Within the framework of the proposed symposium, we will be looking at (1) new data on novel, deep-branching lineages of heterotrophic protists and (2) phylogenomic reconstructions uniting Archaeplastida and Cryptista supergroups. Also, protists are a compulsory linked in microbial food webs and provide effective pathways for the transformation of matter and energy in aquatic ecosystems. They possess a full range of trophic and life strategies seen across eukaryotes, albeit on a microscopic scale. Many protists are secondary-heterotrophic and non-photosynthetic. They have descended from photosynthetic ancestors and reverted to solely heterotrophic lifestyles. In this context (3), an investigation of secondary-heterotrophic protists and their peculiar metabolism and genomic organization will be presented. Finally, a considerable number of protists have evolved independently into a parasitic lifestyle, many of which are notorious pathogens that have an impact on public health and ecology. Here, current views on (4) patterns of evolution and diversity of marine Apicomplexa and parasitic dinoflagellates will be presented. One of the major aspects of protozoan biology is symbiotic relations with prokaryotes, which date back at least two billion years ago to the origin of mitochondria. A broad view of (5) bacterial and archaeal symbioses associated with protist hosts, focusing on their evolution, ecology, and cell biology will be present.

Speakers:
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