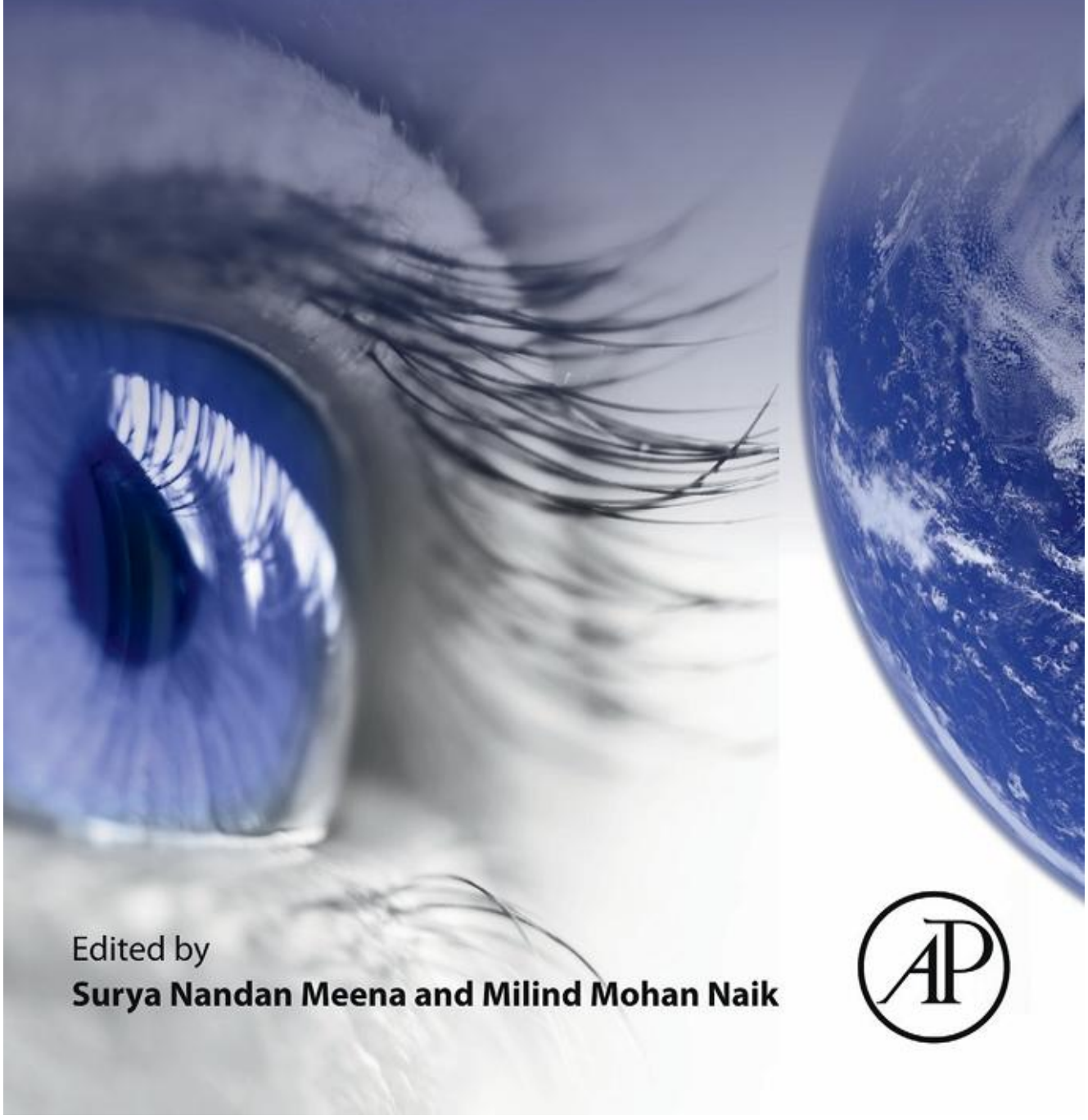
Advances in Biological Science Research

A Practical Approach



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Chapter 30

Advances in isolation and preservation strategies of ecologically important marine protists, the thraustochytrids

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30.1 Introduction

Thraustochytrids are unicellular eukaryotic organisms belonging to the Kingdom Stramenopila. This kingdom also includes diatoms, brown algae, the oomycetes fungi, and a variety of flagellates. This eukaryotic group of organisms has been included in the SAR domain under the eukaryotic tree of life [1]. SAR domain represents organisms belonging to Stramenopiles, Alveolates and Rhizaria and have been named as 'SAR' by Adl et al. [1]. The Alveolates consist of dinoflagellates that are well known for the formation of harmful algal blooms (HABs) and the Rhizaria, comprise the foraminifera that help in palaeoceanography owing to their calcareous tests. The thraustochytrids belong to the Phylum Heterokonta and Class Labyrinthulomycota or Labyrinthulomycetes. The Labyrinthulomycetes was earlier comprised of two distinct phylogenetic groups, the Thraustochytrid Phylogenetic group and the Labyrinthula Phylogenetic group [2], but now it comprises three groups, namely the thraustochytrids, aplanochytrids, and labyrinthulids [3]. The aplanochytrids, earlier called the labyrinthuloids, were placed under Labyrinthula Phylogenetic group, but based on the SSU ribosomal sequences, Leander and Porter [4] showed that the genus *Aplanochytrium* was distinct from the labyrinthulids and thraustochytrids. All the three groups are osmoheterotrophic in their mode of nutrition.

Members of Labyrinthulomycetes typically reproduce by means of stramenopilan zoospores. The zoospores are characterized by two flagella of unequal length and are called the heterokont flagella. The anterior whiplash

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