Xanthophyta Encyclopedia Article

Xanthophyta

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Xanthophyta

The yellow-green algae are photosynthetic species of organisms belonging to the Xanthophyta Phylum, which is one of the phyla pertaining to the Chromista Group in the Protista Kingdom. Xanthophyta encompasses 650 living species so far identified. Xanthophyta live mostly in freshwater, although some species live in marine water, tree trunks, and damp soils. Some species are unicellular organisms equipped with two unequal flagella that live as free-swimming individuals, but most species are filamentous. Filamentous species may be either siphonous or coenocytic. Coenocytes are organized as a single-cell multinucleated thallus that form long filaments without septa (internal division walls) except in the specialized structures of some species. Siphonous species have multiple tubular cells containing several nuclei.

Xanthophyta synthesize **chlorophyll** a and smaller amounts of chlorophyll c, instead of the chlorophyll b of plants; and the cellular structure usually have multiple chloroplasts without nucleomorphs. The plastids have four membranes and their yellow-green color is due to the presence of beta-carotene and xanthins, such as vaucheriaxanthin, diatoxanthin, diadinoxanthin, and heretoxanthin, but not fucoxanthin, the brown pigment present in other Chromista. Because of the presence of significant amounts of chlorophyll a, Xanthophyceae species are easily mistaken for green algae. They store polysaccharide under the form of chrysolaminarin and carbohydrates as oil droplets.

One example of a relatively common Xanthophyta is the class Vaucheria that gathers approximately 70 species, whose structure consists of several tubular filaments, sharing its nuclei and chloroplasts without septa. They live mainly in freshwater, although some species are found in seawater spreading along the bottom like a carpet. Other Xanthophyceae Classes are Tribonema, whose structure consists of unbranched filaments; Botrydiopsis, such as the species *Botrydium* with several thalli, each thallus formed by a large aerial vesicle and rhizoidal filaments, found in damp soil; Olisthodiscus, such as the species *Ophiocytium* with cylindrical and elongated multinucleated cells and multiple chloroplasts.