

Welcome students to Unit 2 Algae. We are going to study the module morphology of Spirogyra, Module #26. I am Mrs Manjiri Barve, Associate Professor in Botany at DCT's Dhempe College of Arts and Science, Panaji, Goa.

We are going to study the classification of Spirogyra, as well as the morphology of Spirogyra.

At the end of this module you will learn to classify Spirogyra. You will understand the external structure of Spirogyra, and you will be able to identify the spirogyra filaments under the microscope.

Let us start with the classification of Spirogyra.

Classification

Kingdom : Plantae as it has cellulose cell wall.

Division : Chlorophyta Because it is a grass green algae with chlorophyll A, B and carotene and xanthophylls.

Class : Chlorophyceae Belongs to class Chlorophyceae , and the reasons are the same as I told you for Chlorophyta.

Order : Zygnemales because at any point of time there are no flagellated reproductive cells seen in this algae.

Family : Zygnemaceae It belongs to family Zygnemaceae because it has unbranched, filamentous algae with cylindrical cells, which are placed one next to the other.

Genus : *Spirogyra*

- Spirogyra comprises more than 300 species, most of them are free floating algae.
- **Habitat:** Commonly found floating in fresh water resources like ponds, lake, ditches etc. and some are also found in slow running stream or river.
- Some species are attached to substratum by the means of rhizoids.
- *Spirogyra* is a filamentous green algae.
- Named for the helical or spiral arrangement of the chloroplasts.
- The vegetative structure or plant body is known as thallus.
- Thallus – unbranched, multicellular, filamentous structure formed by arrangement of cylindrical cells head to head in a single row with a mucilaginous sheath.

Single Cell Structure:

- Cell wall - Outer layer of pectin, inner layer of cellulose.
- Exterior to the cell wall - layer of mucilaginous sheath - gives a slippery/ slimy texture.
- Commonly called 'water silk' or 'Pond scums'.
- Inner surface of the cell wall, lined with a thin layer of cytoplasm.
- The protoplasm consists of semi-permeable plasma membrane, peripheral cytoplasm, round central nucleus and large central vacuole filled with fluids.

- Each cell has one or more spirally coiled ribbon like chloroplast towards the periphery in the cytoplasm.
- Chloroplasts with many pyrenoids (central protein molecule surrounded by starch. Functions as Reserve food material to store starch).

Salient features:

- Free living, green alga, free floating, silky masses, slimy to touch.
- Thallus: filamentous, long hair like, unbranched, no base and apex.
- Filaments with long, cylindrical cells placed end to end in a row.
- All cells in the filament are similar in structure, function and independent of each other.
- Each cell has cell wall enclosing the protoplast.
- Cell wall has two layers – inner cellulose and outer pectose, covered with a mucilagenous sheath that gives the alga slimy feel.
- The protoplast is differentiated into – plasma membrane, cytoplasm, nucleus, central vacuole, one or two chloroplasts with pyrenoids.
- Cytoplasm forms a large central vacuole containing the cell sap.
- A single large nucleus is surrounded by a tiny mass of cytoplasm remain suspended in the centre of the vacuole by a number of cytoplasmic strands.

- Chloroplast is green and spiral band. It bears a number of pyrenods equidistant of each other.

So students, these are the references. Thank You so much.