Welcome students. Today we are going to learn about algae

that is module #23 classification of algae.

A broad outline of the module is, First we will have

a brief introduction about the classification. Then we will

have classification of algae. What are the different divisions

under these algae and some of the major characteristics and

some few examples for each division.

At the end of this module you will be able to name the

different divisions of algae.

You will be able to cite example for different divisions,

least the characteristic of different division and also you

will be able to explain the different divisions of algae.

You have already learnt about the thallus organization, diversity,

distribution, etc. Algae is a huge group with more than 40,000

species. And they have various types of thallus

organization from unicellular to multicellular. Also they have

different types of pigments, reserve food material and also

you will find variation in pigmentation. All this diversity

has made classification of algae a bigger challenge for the

Botanists. And several botanists have tried to classify algae.

You find there are more than 10 different types of

classification available for algae, and among them three are quite popular.

They are the classification by Pascher, classification by Fritsch

and classification by Smith. Pascher classified algae into 8 division and

Smith also followed a similar way. But what he did is, he merged

Chlorophyta and Charophyta into one group, the

Chlorophyta, and gave 7 divisions in total. Fritsch gave about eleven divisions (groups) and called them classes.

Modern algologists classified all the algae based upon the previous

knowledge and whatever current knowledge they have got. They

divided them into eleven divisions. These are the eleveen

divisions and we are going to learn about each one of them in

brief. But before that.

All these classifications, including the modern

classification, they have followed certain characteristics

of algae as the key character to classify them into

different divisions. These are the main characteristics that is

pigment constitution of the cell, nature of the stored food

material, nature of flagella on the motile cells as well as

presence or absence of a well organized nucleus. So these are

the major characters they have utilized for classification of algae.

Now we will go through one by

one in brief. Past division is Cyanophyta. It is also called Blue

Green algae or cyanobacteria. These are the major characters

that is the pigments: major pigments are phycocyanin and

Chlorophyll-a. The stored food material is cyanophycin or myxophycean starch. No well organized

nucleus because these are the

prokaryotes. These are the

only prokaryotic photosynthetic organisms able to produce

oxygen. Best example for this group is Nostoc and Spirulina.

There are many more.

The Second Division is Chlorophyta. They're also

called Green algae and the major pigments are chlorophyll a, b, beta carotene and xanthophylls. Starch and oil is the major

reserve food. The flagella may be two or it maybe 4 in each.

Well organized nucleus and best examples are

Spirogyra and Ulva.

Division Three is Charophyta.This Charophyta members are

commonly called Stoneworts because they are little bit hard

to touch. You feel little bit brittle because they will have

some kind of calcium substance in the plant body and major

pigments are chlorophyll A&B, starch is the major reserve food

and the gametes are flagellated. As

they are eukaryotes they have well organized nucleus and best

examples are Chara and Nitella.

Then division 4 is Euglenophyta. These are

commonly called euglenoids and the major pigment here is

chlorophyll A, B and carotenoids.

It has a special type of starch, or the carbohydrate that

is called paramylon and they also have fat which are energy

rich compounds. They have one or two flagella and well organized

nucleus. Best example you can have is Euglena for this

division.

The next division is Pyrrophyta. Very interesting

unicellular organisms.Chlorophyll A&C is the major

pigment you will find. In addition to this, there will be

peridinin and carotenoids. Starch and fat are the major

reserve food. They are all biflagellate and best example you

can give is Ceratium. This is the one and there are some interesting

information about this. They Have unique kind of nucleus and

also they will have more non histone proteins covering the DNA.

And they're also known for very interesting phenomenon that is

bioluminescence. Best example for this bioluminescence is

Noctiluca, so I'm giving a link at the end. Please go through that

link. Very interesting article about this blue tight.

Sixth division is Xanthophyta which are commonly called yellow green algae. The major pigments

are xanthophylls and chlorophyll

a & c. Oil and leucosin are the major reserve food in this.

And sex cells are biflagellate.

7th Division is Bacillariophyta, a very common or very

well known group. They are called diatoms and chlorophyll a, c,

and fucoxanthin are the major pigments. Then you will find

stored food material is Volutin, leucosin and lipids.

Flagella are very rarely present, or if at all they are

present only in the male gamers during the reproductive stage

and best example are Navicula, Cyclotella.

Division Chrysophyta are called

Golden algae. Few members are included under this group. The

major reserve food is leucosin and oil. They may have one

flagella, two Flagella or they may have three Flagella.

These are also eukaryotes and best example for

this is Dinobryon.

Next division is Cryptophyta.They are commonly called Cryptomonads. These are the unicellular organisms with chlorophyll, a, c and phycobilins. Starch is the major food reserve

and you will find biflagellate, have two flagella. One will be longer than the other.

Best example for this group is Rhodomonas and Cryptomonas.

Then is the division Pheophyta. They are called

Brown algae. So best example for this group is Sargassum and you will find huge algae like macrocystis in

this group. The major pigment here is the fucoxanthin which

gives them brown color and the reserve food is on oil and

polysaccharides. Sex cells are two flagellate in this group.

Now we have the last divisionis Rhodophyta. They are called

red algae. The major pigment here is R-Phycoerythrin and R-

Phycocyanin. R stands for r
Rhodophyta. Or you may consider

for red algae. Floridian starch is the storage food material and none of these organisms have

flagella. Whether it is reproductive structure or

vegetative structure, they don't have flagella in this group.

Example for this group is Polysiphonia, which you

are going to study in the near future. That is, after next

some modules you are going to have this Polysiphonia in detail.
This is about the classification of algae.
There are total eleven divisions and you have

learned different characteristics of these algae

and these are the references.

Students please go through these two links at the bottom

that is Dinoflagellates. Very interesting article about the

dinoflagellates and there is another one that is about

“diatoms natures nanotechnologist” is excellent

microscopic ornamentation you will find in

these diagrams. So please go through these links. Also

read these articles whenever you get time.

Thank you.