Hello everyone I'm Ms. Gautami

Manakikar and the topic for today is

Unit 2 agnatha module 5 that is

the extinct agnatha Ostracodermi.

So in this will study about the

classification of the Ostracoderms

and the general characters of Ostracoderm,

and also the similarity

between Ostracodermi

and cyclostomes.

Learning outcomes,

so at the end of this module you

will be able to describe the general

features of the extinct agnatha that

is Ostracodermi and also compare

the extinct an extant agnathans.

The fossil group of Agnathans

are termed as the Ostracodermi.

These organisms were first recorded

in the rocks of the Cambrian period,

which was about 500 million years ago.

The term Ostracodermi is derived

from 2 Greek terms ‘ostraco’,

which means shell and ‘derma’,

which means skin.

The Ostracoderms existed

in two major groups,

the heterostracans and the cephalaspids.

The heterostracans are

a more primitive group as

compared to the cephalaspids.

After the appearance of the jawed fish,

The Ostracodermi species declined,

and the last Ostracoderms became extinct

at the end of the Devonian period.

Next, is the classification of Ostracodermi.

Ostracodermi is divided into 2 sub class.

Subclass Monorhina and subclass diplorhina.

The subclass monorhina is then

further divided into 3 orders.

Order euphanerida, order anaspida

And order osteotraci.

Similarly, subclass diplorhina

is divided into 2 orders.

Order heterostraci and order Coelolepida.

The general characters of Ostracodermi,

Most of the members that belong to the

Ostracodermi possessed head Shields

of Bony plates and dermal scales that

covered the trunk and the tail region.

Ostracoderms are the

earliest organisms that had a

cephalic shield or a Bony head.

The body armour protected the

species from predators such as

giant scorpions like arachnids

that were present in that era.

So in this picture we can see the

body plates that are present in

the head region of the Ostracoderms.

The main function of this was

to protect them from predators,

but these body plates also

restricted the body movement

In case of the Ostracoderms

the body was surrounded by series

of smaller plates and these smaller

plates were called as the dermal scales.

The head was dorsoventrally flattened and

it was covered by a cephalic shield.

Normally in chordates,

the Gill slits are used for

respiration as well as for feeding,

but in case of Ostracoderms,

the Gill slits were rounded and

used exclusively for respiration.

In Ostracoderms, the mouth was

mainly present on the ventral side

and they had a slit like aperture.

This snout which is present

in the anterior region,

is prolonged into a long rostrum and the

eyes are small and lateral in position.

The inner ear also shows the

presence of two semicircular canals.

So in this picture we can see the

dorsoventrally flattened heas that

is commonly seen in Ostracoderms.

These organisms were mainly bottom

dwellers and filter feeders.

The paired fins were absent

in Ostracoderms

but these organisms showed the

presence of median and caudal fin.

The endoskeleton in Ostracoderms

was moderately ossified.

The tail fin was of heterocercal

Type. In case of heterocercal type,

the tailfin has different or

unequal upper and lower lobes.

There are similarities which are

commonly seen in Ostracoderms,

which are the extinct agnatha and

the cyclostomata which are

group of the living agnathans.

Both these groups are known to show

the presence of a median pineal eye,

which is homologous to the pineal

gland which is seen in mammals.

The endostyle in both these

groups are sac-like.

They have a single nasal opening through

the nasal sac that are paired.

In these groups, the inner ear have two semicircular canals.

They also have pairs of branchial pouches,

which is surrounded by a branchial

basket and the notochord.

In case of the Ostracoderms

and the cyclostomes is continuous.

And the main characteristic feature

of agnatha is the absence of jaw,

which is seen in case of Ostracoderms

and the cyclostomes.

The ostracoderm group is also known

to show some biological significance.

Ostracoderms are the oldest known

vertebrate fossils that were found

in the Cambrian rocks that were dated

back to about 500 million years ago.

Microscopic studies on the plates which

are found in Ostracoderms help in

evolutionary studies and also helps us to

understand the complexity of the structure.

Ostracoderms were

known to have a body armor,

but these body armour were lost after

the extinction of the predator of

Ostracoderms, which were the

giant scorpion like arachnids.

It was earlier thought that the

cartilage is a precursor to the bone,

but as the Ostracoderms are the

oldest known vertebrates and they

showed the presence of Bony armour.

It is now believed that the bone

is the precursor to the cartilage.

So to summarize,

the Ostracoderms are the oldest

known vertebrate fossil,

which were mainly found in

the Cambrian period.

They were divided into 2 subclasses.

Class Monorhina and class Diplorhina.

The main characteristic feature

of the Ostracoderms is that they

showed the presence of body armour,

which was not seen in vertebrates before.

And in terms of biological significance,

study on the fossils of the Ostracoderms

help in evolutionary studies and they have

also helped us to understand that the

bone is a precursor to cartridge.

So with this we come to an end

to the lecture on Ostracoderms,

that is the extinct agnatha,

and these are the references.

Thank you.