Hello students,

today we're going to learn about

the concept of primary organizer,

an experiments by Brachets from

unit no. 2 that is Transplantation,

Embryonic induction, Concept of

primary organizer and competence

and the outline of this module are.

Primary organizer, properties of

organizers and experiments by Brachets.

At the end of this module we will be

able to define a primary organizer and

explain the experiments by Brachets.

So what is an organizer? In simple terms

an organizer is an embryonic

tissue which organizes the surrounding

tissue to develop an embryo,

and organizer is a must without

the presence of an organizer,

an embryo will not be formed.

So formally, if we define an organizer,

it is a region or a group of cells

in an embryo that can both induce and

pattern adjacent embryonic cells.

When we say induce,

that means they can change the

fate of the cells.

And when we say pattern,

they can generate an

organized set of structures.

This particular concept of

organizer was first put up by.

Spemann and Mangold and to date about

post such regions have been demonstrated.

The first one is the primary organizer

or the Spemann's organizer.

The second one is the notochord,

the third one is this zone of

polarizing activity of the limbud

and the mid hindbrain boundary.

All these four regions they

possess the organizers properties.

In case of normal development of an embryo.

The organizer is a must in

the absence of an organizer,

the embryo will not form normally.

For example,

suppose in an experiment wherein

additional organizers were transplanted,

there they found that two

embryos were produced because.

Since there was additional organizer

in that, that gave rise to two embryos.

Now,

let us learn about the properties

of organizers.

Organizers are capable of

self-differentiation.

and self-organization.

They possess the power to induce the

changes within an indoor surrounding cells.

Organizers are not only

restricted to bring about a

change within the cells,

but they are also meant to bring about

the changes in the surrounding cells.

If we crush the organizer or we freeze

them or we kill the organizing cells,

they still have the ability to induce.

So induction occurs not only in the tissues

of the same or closely related species,

but also in the tissues of animals

belonging to different groups.

So that was about the concept

of primary organizer.

Now let us focus on the

experiments by Brachets.

It's Brachet’s who

First experimented on the amphibian

embryo in which the first cleavage furrow

passes through the Grey Crescent region.

Now when we talk about the

first cleavage furrow.

cleavage furrow is an indentation that appears

on the cell’s surface of

the embryo during cleavage.

And this experiment demonstrated

organizing capacity of the Grey

Crescent region of the amphibian embryo.

So after the first cleavage the two

blastomeres were formed one at the

left and the other on the right,

but both these blastomeres,

they contained the Grey Crescent region,

so each separated blastomere

contain the Grey Crescent region

and this Grey Crescent region.

It gave rise to two embryos, but in the.

Second experiment,

the first cleavage does not pass

through the Grey Crescent region,

and since it doesn't pass through the

Grey Crescent Region 1 blastomere.

Receives the Grey Crescent region,

whereas the other one does not

receive the Grey Crescent region.

The blastomere with the Grey Crescent

area it develops into a complete embryo,

but they're a blastomere without

a grey Crescent region.

Does not differentiate and

thus no embryo is formed.

So Brachets experiment clearly

proved or demonstrated the organizing

capacity of the Grey Crescent region

of the amphibian embryo and let us

better understand this experiment

with the help of a diagram.

Now, as you can see here this side,

whatever you can see,

is the first experiment,

whereas on the other side it

is the 2nd experiment.

Now,

in the first experiment is the

embryo answers the Grey Crescent

area after the first cleavage,

the cleavage furrow

passes through the Grey Crescent area,

resulting in the formation

of two blastomeres,

and each blastomere contains

this Grey Crescent region.

Later on,

each blastomere gives rise to a new embryo,

but when he conducts the second experiment,

wherein the embryo consists

of the Grey Crescent area,

but after the first cleavage

the cleavage furrow doesn't pass

through the Grey Crescent area,

but it divides the embryo into

two blastomeres.

But one blastomere contains

the Grey Crescent region,

whereas the other one does not

contain the Greek Crescent region.

So the blastomere,

which contained the Grey Crescent

region gives rise to an embryo,

whereas the blastomere which does

not have the Grey Crescent region,

does not differentiate and therefore

it does not give rise to a new embryo.

The Dorsal lip of the blastopore

is found to have developed

from the Grey Crescent area.

And it is said that it also

possesses the organizing capacity

of the Grey Crescent region.

So a number of embryologists have

shown the importance of the material

that is associated with this dorsal

lip of the amphibian blastopore through

various transplantation experiments.

Let us see what they have to say.

The transplantation or grafting is easy

in gastrula and post gastrula stages.

Why is it so?

Because here at this point of

time the graph does not reject it.

And why it does not reject it

because of lack of immune responses

to the grafted portion,

plus the limph vessels and the

lymph nodes have not yet developed

These lymph vessels

carry Lymph and link more other

structures which prevent the entry

of the harmful substances.

So the transplanted tissue is rejected

only when antigen of the

graft travel into the lymph nodes.

Through lymph vessels,

so a graft between a similar species

is called an allograft or a Homograft.

So today we have learned

about the concept of primary

organizer, an experiments by Brachets.

These are my references. Thank you.