

** Cleavage :- (Division of zygote)

Characters -

- Zygote is divided by mitotic division and forming daughter cells are called blastomeres. It is of two types.
 - (a) Micromere - Smaller in size
 - (b) Macromere (Megamere) - Larger in size
- Nucleous cytoplasm ratio is very low in zygote but during cleavage this ratio increases
- During cleavage there is no growth in blastomeres. Due to this reason size of embryo remains same.
- During cleavage there is no movement in blastomere. Due to this reason shape of embryo remains same.
- Zygote is divided by synchronous division i.e. simultaneous division.
 - Maximum consumption of oxygen take place in cleavage time.

* Type of cleavage -

① Holoblastic type - Complete division of zygote is of two types

① Equal type -

All blastomeres are equal size eg. Herdmania

② Unequal type -

Blastomeres are unequal in size i.e. blastomeres are differentiated into micromere and megamere. eg. frog

② Meroblastic type -

Incomplete division of zygote i.e. division takes place in cytoplasmic part only. eg. Reptiles & birds

① Superficial type -

It is a special type of meroblastic cleavage but division take place in cytoplasmic part of centrolecithal egg eg. - Insect

* Pattern of cleavage

i) Bilateral

ii) Radial

iii) Spiral

** Blastula

After cleavage stage of ~~zo~~ embryo is called blastula.

* Type of blastula -

1) Stenoblastula Blastula is a solid ball like structure

∴ cavity is absent.

eg. Molluscs (annelids)

2) Coeloblastula

Blastula with cavity. It is also two type.

1) Unilayered type. Cavity of blastula surrounded by single layer of blastomere.

2) Multilayered type.

Cavity is surrounded by more than one layer of blastomere.

eg. Frog.

3) Discoblastula. Cavity of blastula is called sub-germinal cavity. It is surrounded by epiblast and yolk surface.
eg. birds

** Gastrula :-

After blastula stage of embryo is called gastrula and process is called gastrulation.

It includes two phenomenon.

1. → Morphogenetic movement of blastomere i.e. movement of blastomere for organ development take place. Formation of three primary germinal layers → Ectoderm, mesoderm and endoderm.