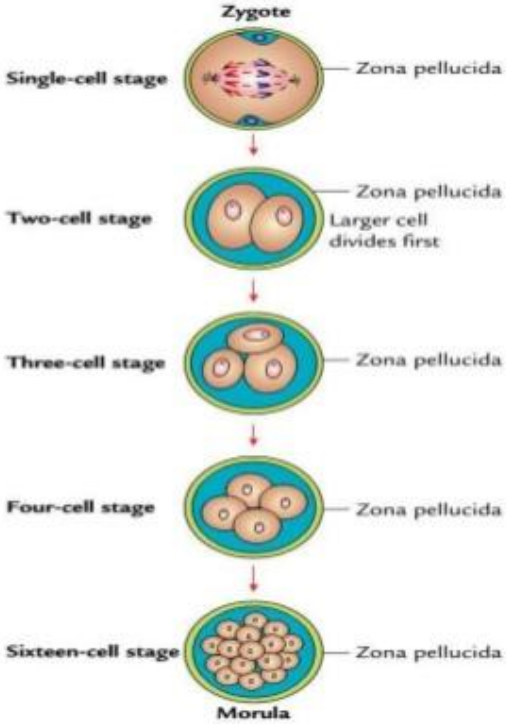
Cleavage of zygote

(i.e., series of mitotic divisions of the zygote)



The **cleavage** consists of repeated mitotic divisions of the zygote into smaller units. This results in a rapid increase in the number of cells. These cells are called blastomeres. They become smaller with each successive cleavage division. The division of zygote starts just after fertilization and continues as the zygote passes along the uterine tube. During cleavage ,the zygote is surrounded by a rather thick zona pellucida.The zygote divides to form two cells of which one is smaller than the other (two-cell stage of embryo). The larger cell divides first giving rise to three-cell stage. The smaller cell divides next and embryo consists of four cells that divide to form eight cells. The 8 cells further divide to form 16 cells.

.

A 16-cell stage embryo resembles a mulberry fruit and is termed morula. In morula, the blastomeres are very small and contain very little cytoplasm to survive.The blastomeres are enclosed by the zona pellucida.

The cells now get arranged into two groups: (a) a group of cells in the center of morula is called inner cell mass (embryoblast)and those that are present at the periphery of morula are called outer cell mass (trophoblast). The resultant whole structure is now called blastocyst.

Blastocyst Formation

The morula enters into the uterine cavity. The endometrial fluid penetrates the zona pellucida and enters into the intercellular spaces of the morula. Gradually the intercellular spaces become confluent and finally a single large cavity is formed.
This cavity is called blastocele.
and at this stage the embryo is called blastocyst. The Blastocele is filled with fluid rich in nutrients, which is secreted by the endometrium of the uterus. This fluid is also termed uterine milk.
As the cavity enlarges the outer cells forming trophoblast become flattened. The inner cell mass called embryoblast becomes compact and is attached

to the trophoblast at one pole—the embryonic pole. The resultant whole structure is now called blastocyst.
The embryoblast gives rise to the embryo and the trophoblast provides nutrition to the embryo. The blastocyst enlarges in size and the zona pellucida disappears.
Now the blastocyst becomes ready for implantation.