

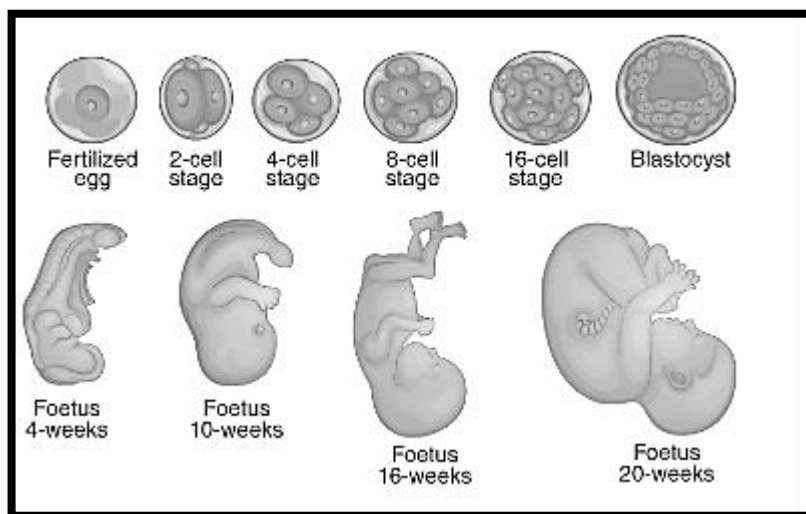
## Reproduction in Animals

### Development of Embryo

#### Development of embryo :

Fertilization results in the formation of zygote which begins to develop into an embryo. The zygote divides repeatedly to give rise to a ball of cells. The cells then begin to form groups that develop into different tissues and organs of the body. This developing structure is termed as embryo. The embryo attaches itself to the uterus wall with the help of placenta and gets embedded in the wall of the uterus for further development. The embryo continues to develop in the uterus. It gradually develops body parts such as hands, legs, head, eyes, ears etc. The stage of the embryo in which all the body parts can be identified is called a foetus. During this period of pregnancy, the baby takes nourishment from the mother through the placenta and the umbilical cord. The uterus increases in size as the foetus grows. The uterus is filled with a fluid called amniotic fluid that protects the foetus from jerks and change in temperature. When the development of foetus is complete the mother gives birth to the baby.

Let us learn about human embryonic development and various stages.



continues dividing mitotically and gets transformed to blastocyst. The outer layer of the blastocyst is called trophoblast and it gets attached to the uterine wall known as the endometrium. The implantation starts in the first week but gets completed by 2nd week.

The inner cell mass of blastocyst forms embryo. Blastocyst differentiates further to embryonic and extraembryonic tissues. The implantation completes at the 2nd week.

The interdigitated chorionic villi of trophoblast and uterine cells form the placenta, which is the connection between the mother and the growing fetus.

The placenta provides nourishment and oxygen to the embryo and helps in removing carbon dioxide and waste produced by the embryo. It also acts as an endocrine gland and secretes various hormones like chg. (Human Chorionic Gonadotropin), estrogen, progestogens, etc. for maintenance of pregnancy.

Gastrulation starts in the 3rd week, the inner cell or embryo starts differentiating into three germinal layers, i.e. ectoderm, endoderm and mesoderm. These cells transform and get differentiated to all the tissues and organs, like nerve, blood, muscle, bone, digestive tract, etc.

Ectoderm- nervous system, brain, spinal cord, epidermis, hair, nails, etc.

Mesoderm- connective tissue, muscles, circulatory system, notochord, bone, kidney, gonads

Endoderm- internal organs, stomach, liver, pancreas, bladder, lung, gut lining

To sum up, the heart is the first organ to start working. After the 1st month of pregnancy, the heart develops.

Limbs and digits develop in the 2nd month.

By the end of 1st-trimester or 3rd month all the major organ systems develop. Genital organs are visible.

During 5th month the embryo starts moving and hairs start appearing on the head.

By the end of 2nd trimester (24 weeks or 6 months), eyelashes are formed, eyelids separate and the body gets covered with fine hair.

By the end of the 9th month, the fetus fully develops and is ready for birth.