

Week 1

- Week 1 - Early zygote
 - Week 1 Carnegie stage – 1,2,3,4,
 - Fertilization
 - Zygote
 - Morula
 - Blastocyst
- Stage 1 starts at the beginning of fertilization
 - Stage 2 begins with the division of the zygote into two cells and ends with the appearance of the blastocystic cavity
 - Stage 3 begins when the blastocystic cavity first appears in the morula and ends when the zona (capsula) pellucida is shed as the embryo makes contact with the endometrial lining of the uterus.
 - Stage 4 is reserved for the attaching blastocyst to the endometrial lining

Week 2

- **Week 2 Implantation**
- Week 2 Carnegie stage -5,6
- Trophoblast - outer cell layer
- Embryoblast - inner cell mass
- Implantation
- Bilaminar embryo
- **Stage 5** Two distinct layers are evident in the trophoblast; 1) a thicker outer layer without cell boundaries, called the syncytiotrophoblast and 2) a thinner inner layer with cell boundaries called the cytotrophoblast.
- **Stage 6** the first appearance of chorionic villi.

Week 3

-
- Week 3 - Embryonic disc
- Week 3 - Carnegie stage – 7,8, &9
- Gastrulation
- Notochord formation
- Trilaminar embryo
- Mesoderm
- Somitogenesis
- Neurogenesis
- Stage 7 the presomite period and well defined embryonic disc appearance of the notochordal process and the gastrulation (primitive) node.

Week 4

- The heart begins
- Week 4 - Carnegie stage -10,11,12 &13
- Heart
- Placodes
- Pharyngeal arches

- Week 5
- **Carnegie stages** __ stage 14
stage 15
-
- Week 6 - Early face
development
- **Carnegie stages**
- Week 6 - Carnegie stage 16
& 17
- **Week 7** - Head and limb
development
- **Carnegie stages** __ stage 18
stage 19
- **Week 8**
- Last embryonic stage
Carnegie stage – 20 21 22
& 23
- Last week of embryonic
development.

!

- Fertilization
- **IST WEEK**
- Cleavage
- Morula formation
- Blastocyst formation & Implantation
- **IInd WEEK** Inner cell mass differentiation & formation of Bilaminar disc
- **IIIrd WEEK**
- Formation of trilaminar disc
- Notochord formation & Body axes establishment
- Cavity formation
- **IIIrd to 8th week Embryonic period Proper**
- Organogenesis

6 stages of embryonic development:

- *Successful development at each stage depends on successful completion of the stage before!*
- *1. Gamete formation (gametogenesis)(n + n): eggs and sperm are produced in specialized tissues*
- *2. Fertilization: the union of egg and sperm .*
- **3. Cleavage: The first days and weeks after conception: mitotic** cell divisions begin, converting the zygote to a multicellular organism
- **Day 1:** [first cleavage](#) - 1 cell becomes 2 **Day 2:** second cleavage - 4-cell stage **Day 3:** 6-12 cell stage - can test at this stage for genetic diseases if done by IVF **Day 4:** 16-32 cell stage - solid ball of cells - [morula](#)

- **Day 5:** Solid *morula* develops into hollow, fluid-filled *blastula* The embryo will develop from the *inner cell mass*, or *embryonic disc*

- : Blastocyst attaches to the endometrium and burrows in: ***implantation***.
- -The blastocyst starts to secrete ***HCG - human chorionic gonatotropin***
- -Stimulates estrogen and progesterone to prevent menstrual flow
 - Causes "morning sickness" in some women...
 - Pregnancy test measures the amount of this

- **Days 7-10: Gastrulation:** major **cellular reorganization** into 2 or 3 tissue (germ) layers: -
Ectoderm: skin, nervous system
-Endoderm: lining of gut and internal organs
-Mesoderm: muscles, bones, heart

Gastrula: Early embryo with **3 tissue layers**. All cells have the same DNA; however, different cells now begin to "turn on" (or "express") different genes to become different organs.

- : **Pregnancy becomes established**
- -Fluid filled ***amniotic cavity*** starts to form
- -***Yolk sac*** starts to form (will make blood cells, germ cells)
- -***Embryo*** starts to form from embryonic disc
- - ***Chorion*** (placenta) starts to form
- At the end of this stage, a woman will have just missed her period