

Development and Differentiation : (page 506)

Conception : sperm combining with egg

epididymus → vas deferens → combines with fluids
from SV, CG, and P → urethra → ejaculation →
vagina → cervix → uterus → oviduct
= CONCEPTION

Fertilization usually happens in an oviduct.

- The acrosome of ONE sperm cell will release enzymes that digest their way through the outer coating of the egg in one spot, stimulating the toughening of the remainder of the egg coat.
- The head of ONE sperm cell breaks off, and its paternal genetic contents are then fused with the maternal genetic material in the nucleus of the ovum. Creates the diploid “zygote”.

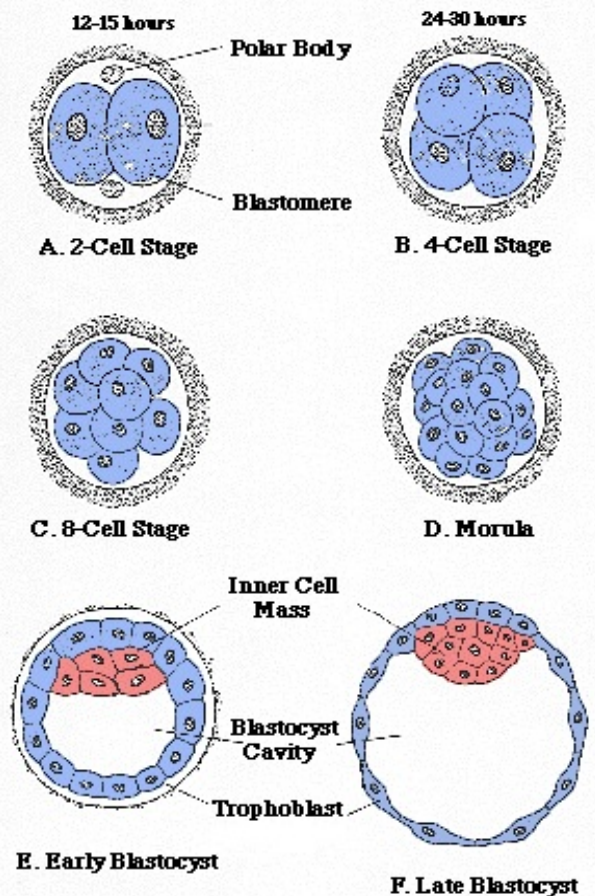


The zygote travels downwards through the oviduct, and it undergoes mitosis. The term “**embryo**” is used from the time “**cleavage**” begins, until bone cells form later. There is NO change in its overall size however (since no new materials are available to make these new cells larger). This small ball of dividing cells is called a “**morula**”.



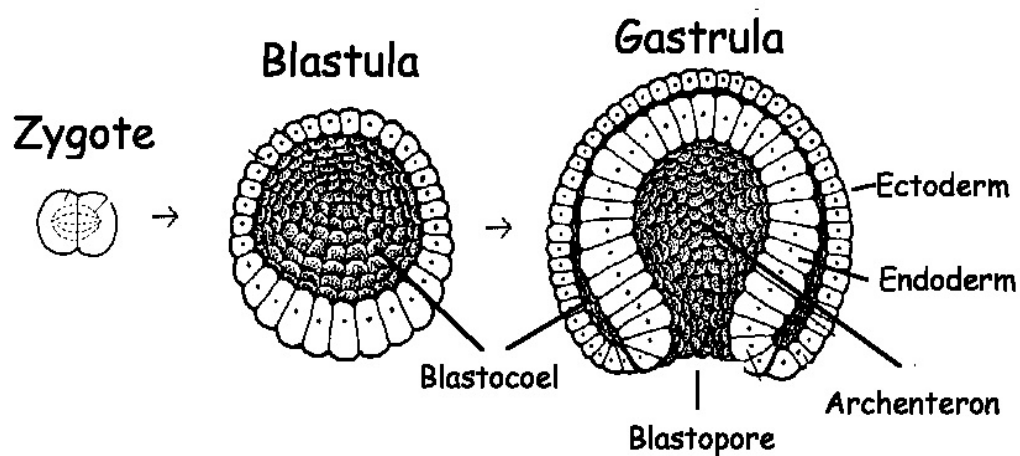
Three to five days later, this cluster of cells will have formed an almost hollow ball of cells as it reaches the end of the oviduct.....a “**blastocyst**”.

The **inner cell mass** will form the embryo, the outer cell layer (the “**trophoblast**”) will form the membranes around the embryo.



At the end of week one, “**implantation**” happens...the attachment of an embryo to the endometrium. The trophoblast cells secrete HCG, to maintain the corpus luteum and its progesterone production in the ovary for 3 weeks. This prevents menstruation. Home pregnancy tests detect HCG in moms urine.

Week 2 : the trophoblast cells begin to migrate inwards...and organize themselves into three germ layers.....now called a “**gastrula**”....creating an internal body cavity



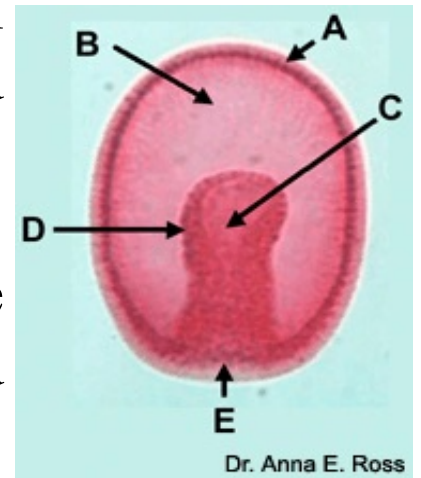
Ectoderm (outside cell layer) will form skin and the nervous system

Mesoderm (middle cell layer) forms internal organs...bone, blood vessels, skeleton, kidneys, sex organs

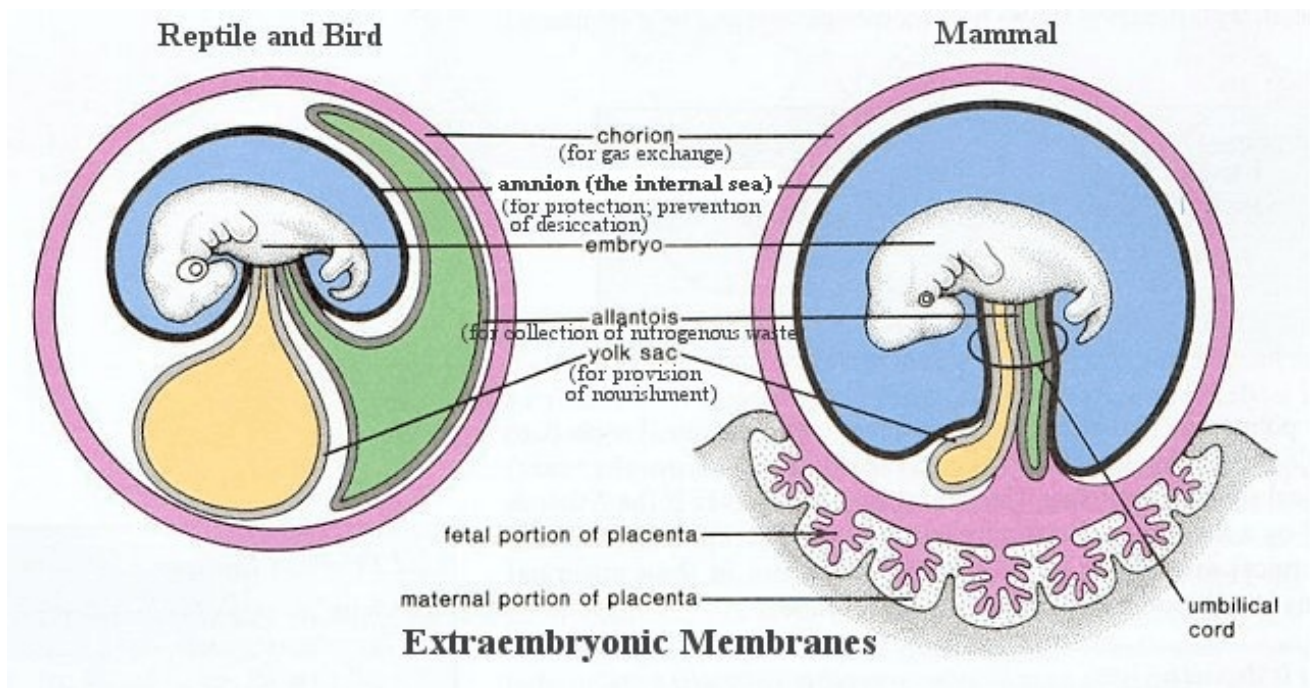
Endoderm (inside layer) will form the lungs and linings of digestive system

The outer trophoblast cells (“A”) will form 4 “primary membranes” around the developing embryo (“C”).

These are NOT actually part of the embryo, they support, nourish, and protect it.



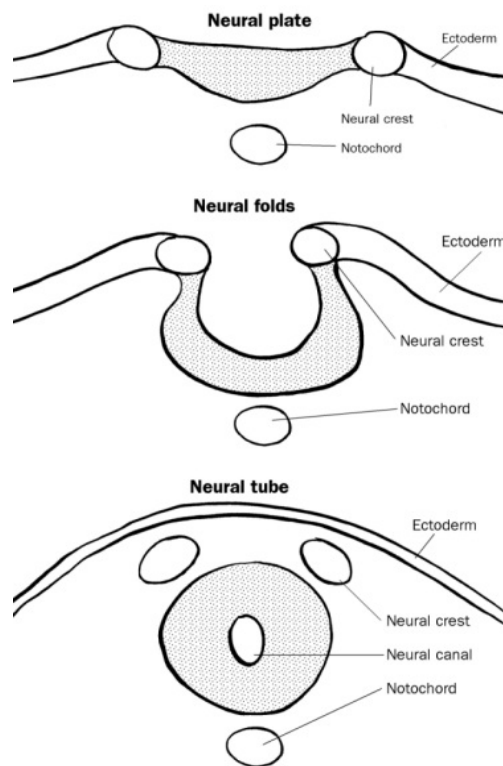
Chorion, amnion, allantois, and yolk sac



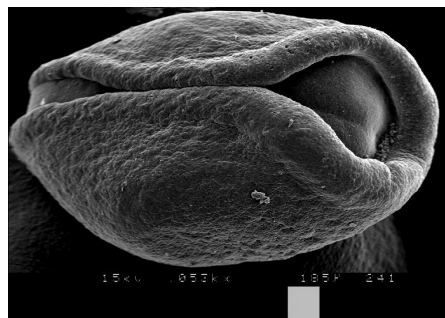
Placenta...

Umbilical cord...page 510

Week 3 : Mesoderm cells along the back (dorsal) surface of the embryo will begin to migrate and form a “neural tube”...which folds together and forms the spinal column (then called a “neurula”). Moms exposure to drugs now can be disastrous. She may not know she is pregnant yet.



tail end



head end