



# **Development & physiology of fetus.**

# Objectives

- on completion of this lecture the students will be able to
- Definition of conception
- Explain fetal membranes
  - Enumerate functions of Amniotic fluid
  - Describe the process of fertilization
- Describe growth & development of fetus by gestational weeks

# Pregnancy



## Pregnancy

- **Gestation**
  - Period of pregnancy
  - 40 weeks
- **Premature**
  - Birth before 37 weeks of gestation completed





# Fetal Membranes

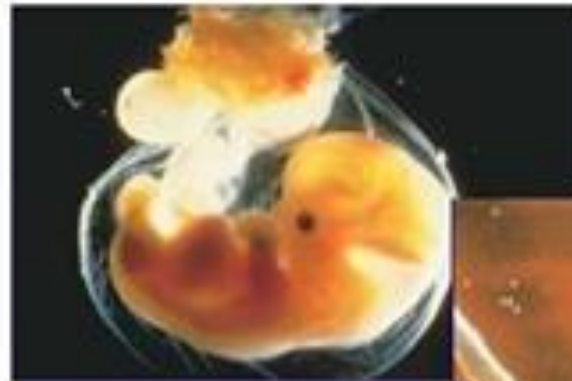
Infant is surrounded by two membranous sacs

## Amnion

- Inner sac
- Holds **amniotic fluid** in which fetus floats

## Chorion

- Outer sac
- Protective
- Forms part of placenta



# Amniotic fluid

- Amniotic fluid volume increases at an average rate of 25 ml per week during the first trimester and 50 ml per week during second trimester.
- –Full fetus is immersed in about 1000 ml (800-1200 ml) of clear, slightly yellowish liquid
- If more than 2L (2000ml ): polyhydramnios
- •If less than 300 ml: oligohydramnios

# Amniotic fluid Functions:

- Protects the fetus from direct trauma.
- •Separates the fetus from the fetal membrane.
- •Allows freedom of fetal movement
- •Facilitates symmetric growth and development of the fetus.
- •Protects the fetus from loss of heat and maintains a relatively constant fetal body temperature.

# Fertilization: The Beginning of Pregnancy

- more than 300 million sperms are ejaculated into the female vagina. By flagellar movement, the sperms make their way through the fluid of the cervical mucus, across the endometrium and into the uterine tube to meet the descending ovum in the ampulla of the tube .
- • **Conception**, the fusion of a sperm and an ovum (Oocyte) is a process that requires about 24 hours.

# Implantation

- •After conception, the zygote is propelled by ciliary action and irregular peristaltic contractions.
- •Then it starts to move through the uterine tube into the uterine cavity. During a 3-4 days period, it takes to travel down the uterine tube. The zygote goes into a process of rapid cell division called Mitosis "CLEAVAGE"



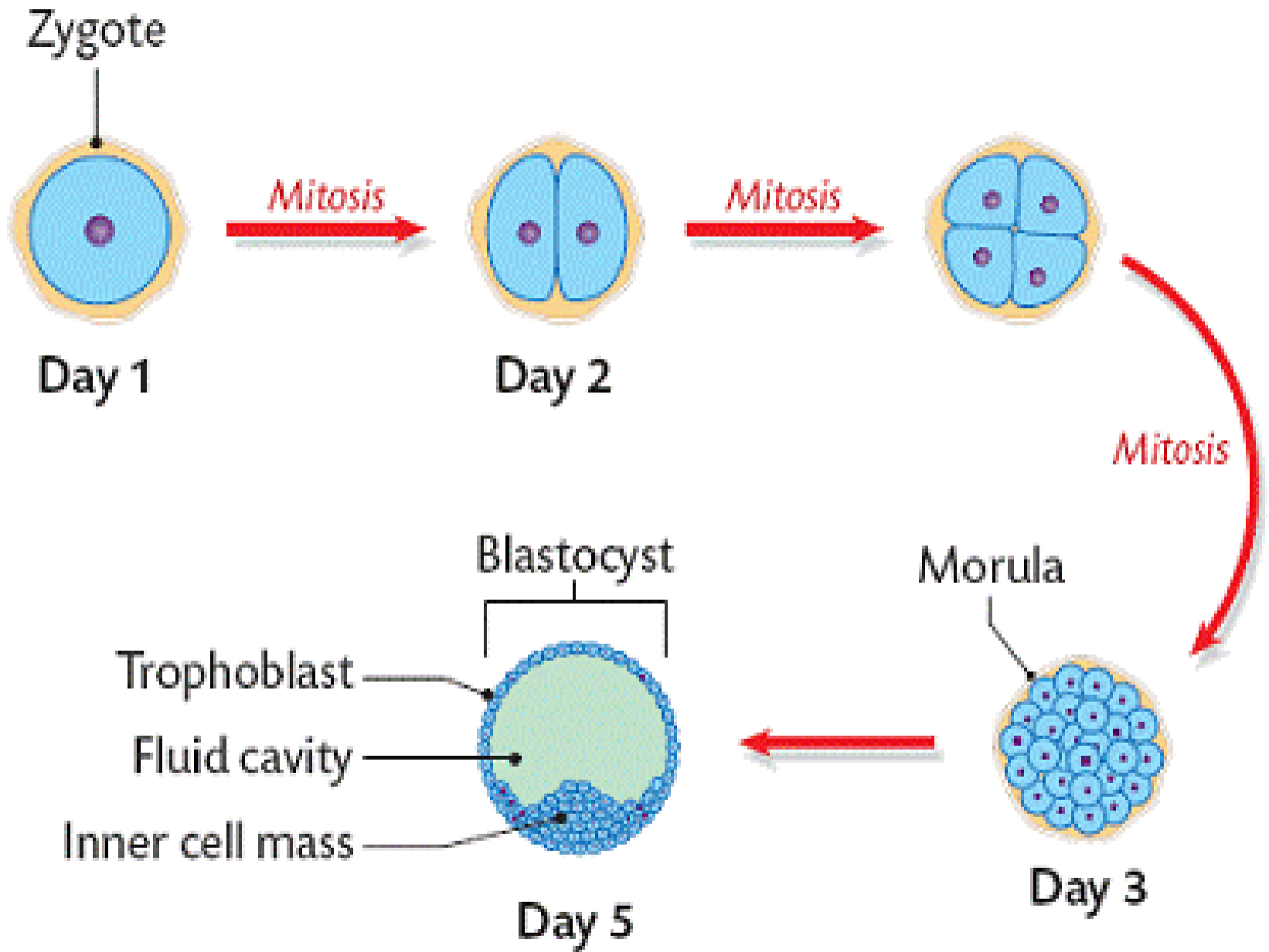
- The initial division of zygote results in 2 blastomeres, which subsequently divides into progressively smaller blastomeres.
- •-At the end of 3-4 days, the developing individual comprises about 16 blastomeres arranged in a ball-like structure called "MORULA".
- •-After the morula enters the uterus, a cavity formed within the dividing cells changing the morula into a blastocyst.
- •-The blastocyst remains free in the uterus for 1-2 days then **Develops into two masses:**
- •a) **trophoblast** (which develops into the placenta) implant generally in the endometrium of the anterior or posterior fundal region.
- •b) **embryoblast:** which develops into the embryo

**Hint**



The morula leaves the fallopian tube and enters the uterus.

This takes place about 3-4 days after fertilization.



**TABLE 9.1 \* Terms Used to Denote Fetal Growth**

<b>Name</b>	<b>Time Period</b>
Ovum	From ovulation to fertilization
Zygote	From fertilization to implantation
Embryo	From implantation to 5–8 weeks
Fetus	From 5–8 weeks until term
Conceptus	Developing embryo or fetus and placental structures throughout pregnancy



# 1- First trimester in the baby



- The baby's brain, heart and spinal cord have begun to form.
- Baby's heart starts to beat in the 8<sup>th</sup> week.
- The sex organs begin to form.
- The face starts to form.
- At the end of eight weeks, the baby is a fetus and looks more like a human, and about 2.5 cm.
- At 12 weeks we can see if he is a boy or girl. And the baby can make a fist.

## 2- Second trimester in the baby



- Muscle tissue and bone continue to form.
- Skin begins to form in the 16<sup>th</sup> week.
- The baby can hear and swallow at the 20<sup>th</sup> week.
- Real hair begins to grow on your baby's head at 24<sup>th</sup> week. The lungs are formed, but do not work.
- At the end of the trimester, the baby now about 30 cm.



### 3- Third trimester in the baby



- The baby's bones are fully formed at 34<sup>th</sup> week.
- The eyes can open and close and sense changes in light.
- By the end of 37 weeks, the baby is considered full term and the organs are ready to function on their own.
- Near the due date, the baby may turn into a head-down position for birth.

THANK  
YOU

