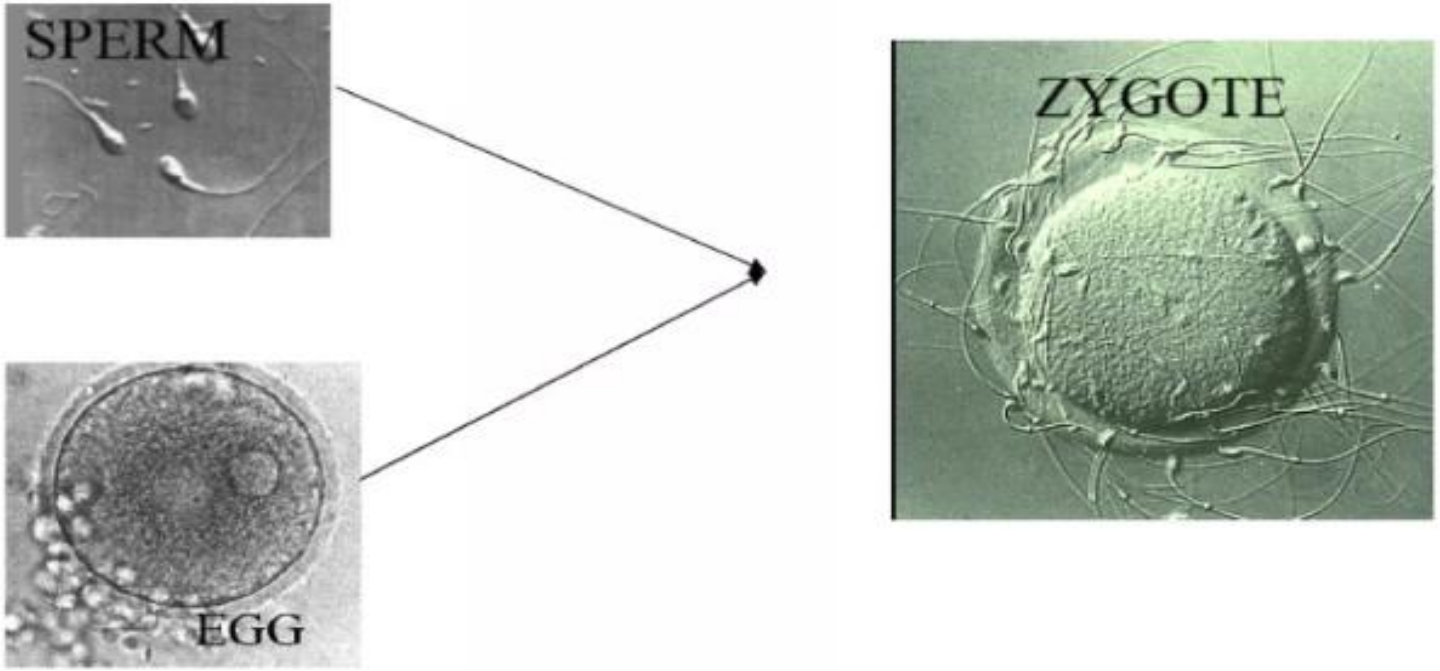
HUMAN REPRODUCTION

Stages of Pregnancy and Development

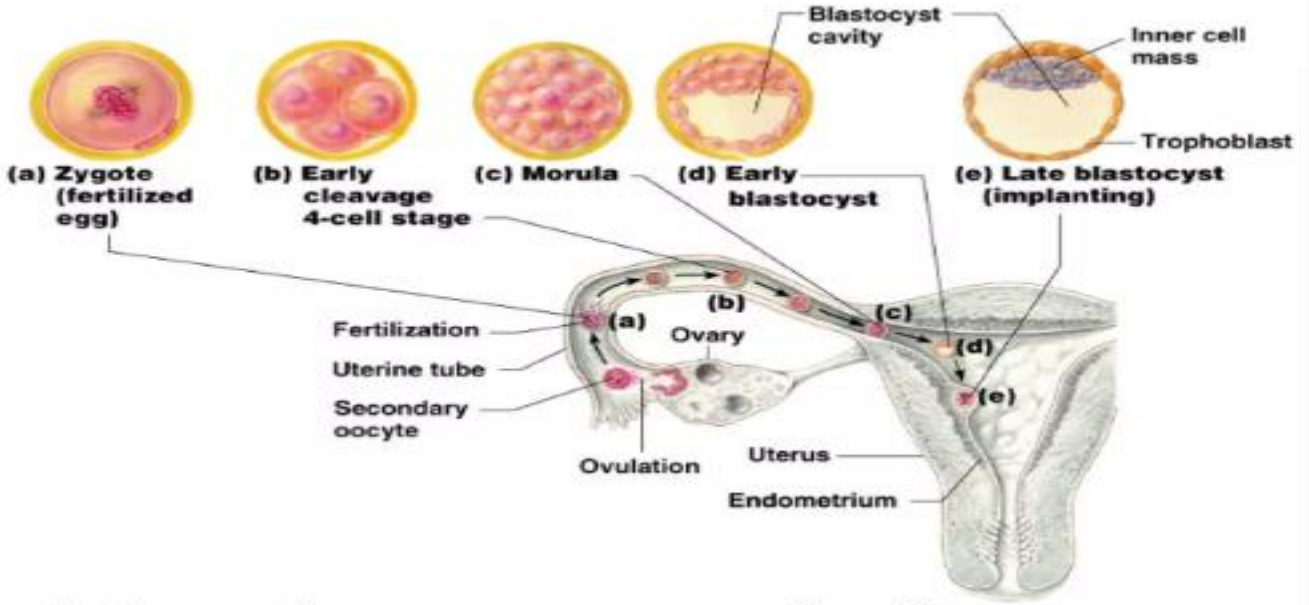
- Fertilization
- Embryonic development - Cleavage
- Fetal - Differentiation
- Growth – Development
- Childbirth

Fertilization



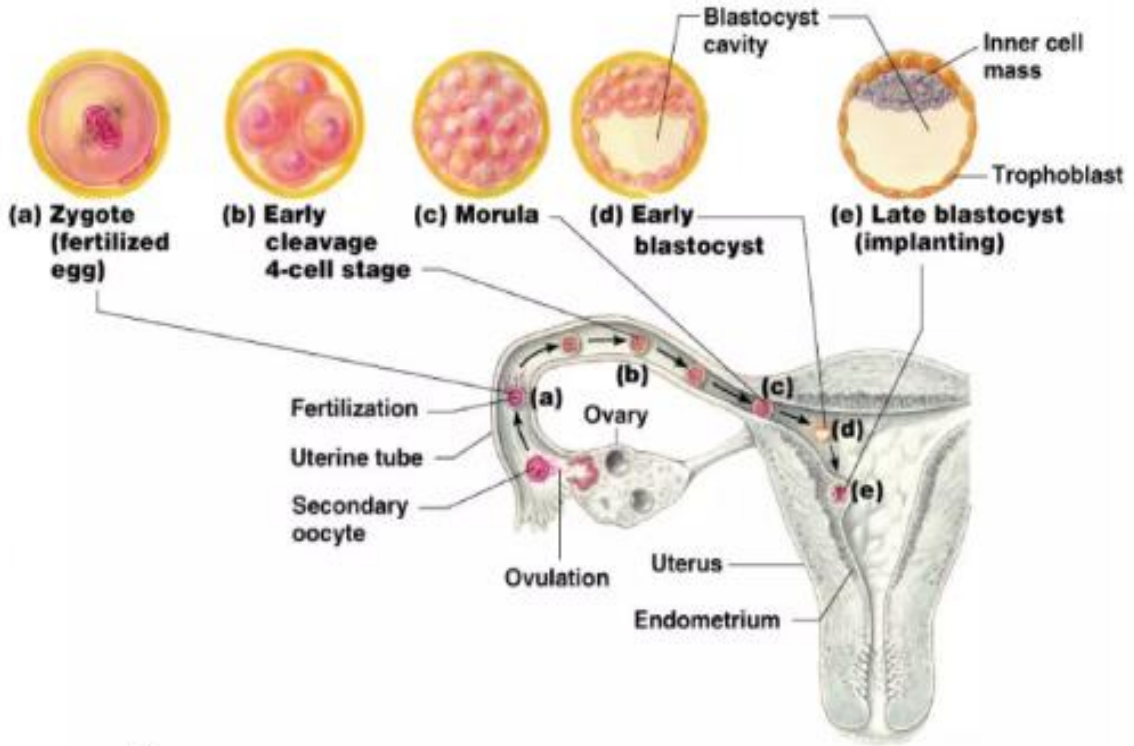
- The egg is viable for 12 to 24 hours after ovulation
- Sperm are viable for 12 to 48 hours after ejaculation
- Sperm cells must make their way to the uterine tube for fertilization to be possible

ZYGOTE



1. The sperm and egg join to form a zygote: the first cell of a new individual.
2. Zygote results of the fusion of DNA from sperm and egg

2. Fertilization occurs in the Fallopian Tubes
3. The zygote begins rapid mitotic cell division
4. Beginning of human development



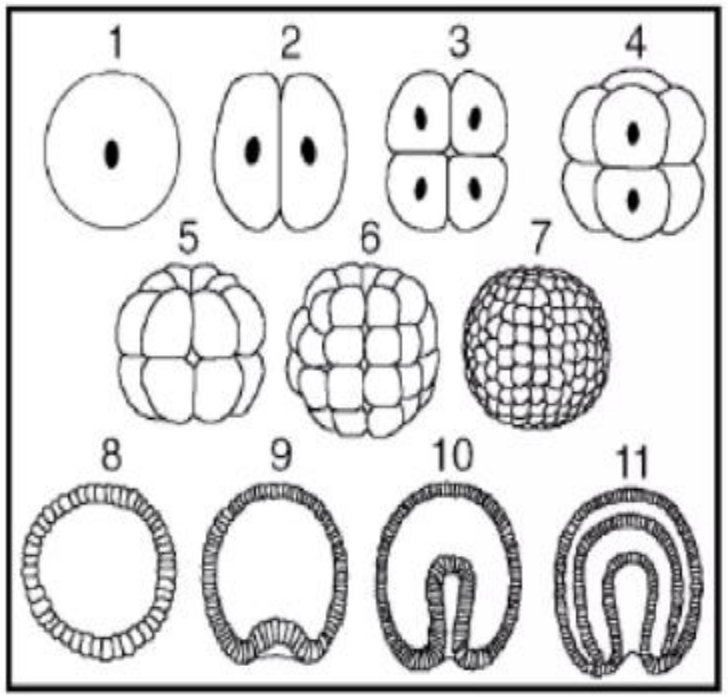
ZYGOTE

Only thirty hours after conception

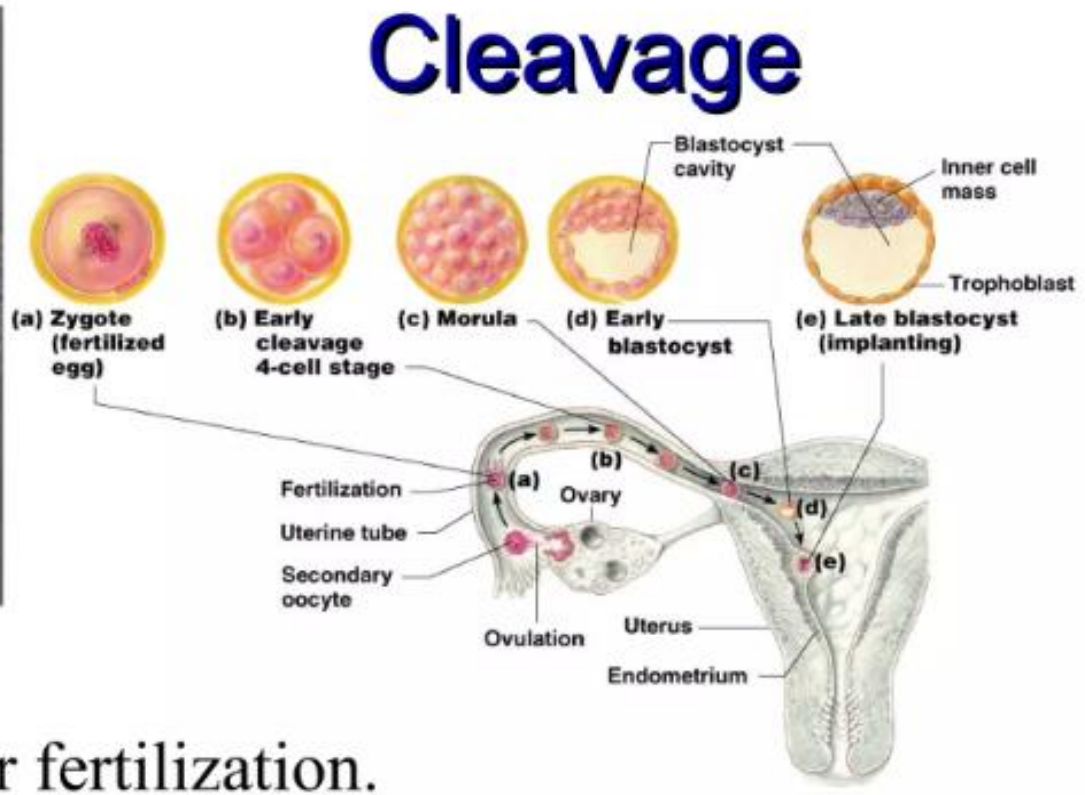
Size: no larger than the head of a pin

1. Still rapidly dividing
2. The zygote floats down from the fallopian tube and towards the uterus

Cleavage



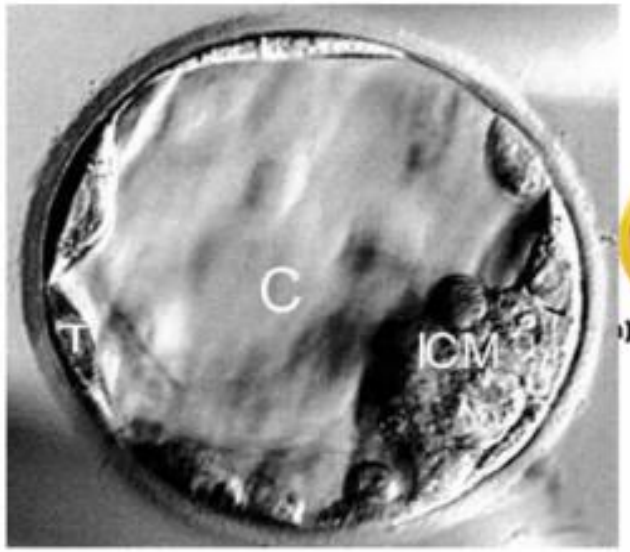
Cleavage is the mitotic division of cells in the early embryo

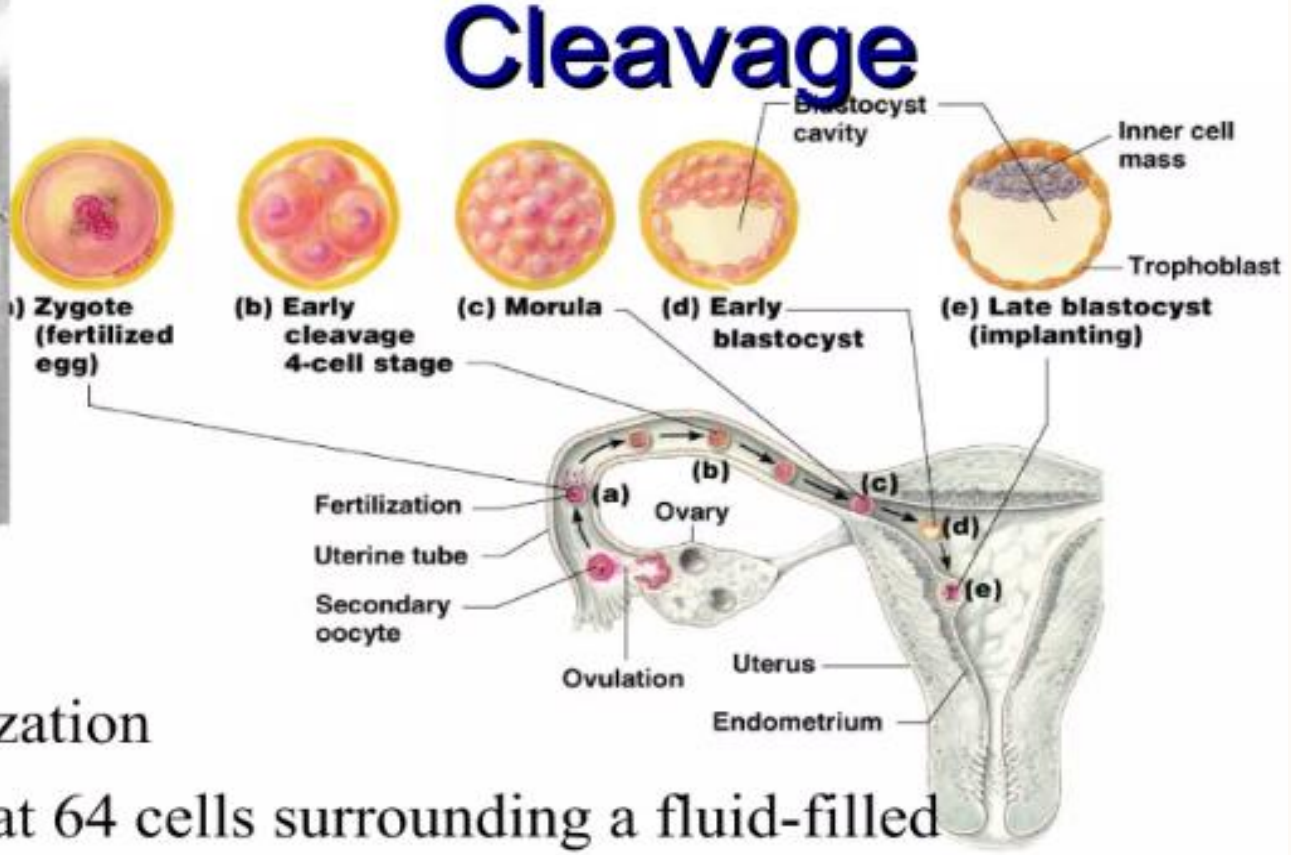


MORULA

About 96 hours after fertilization.

This picture shows a MORULA, a solid ball of 32 cells that resembles a raspberry.





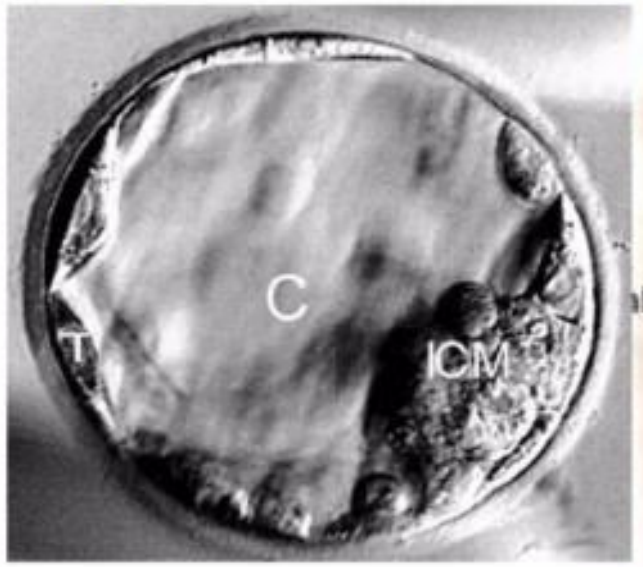
BLASTULA

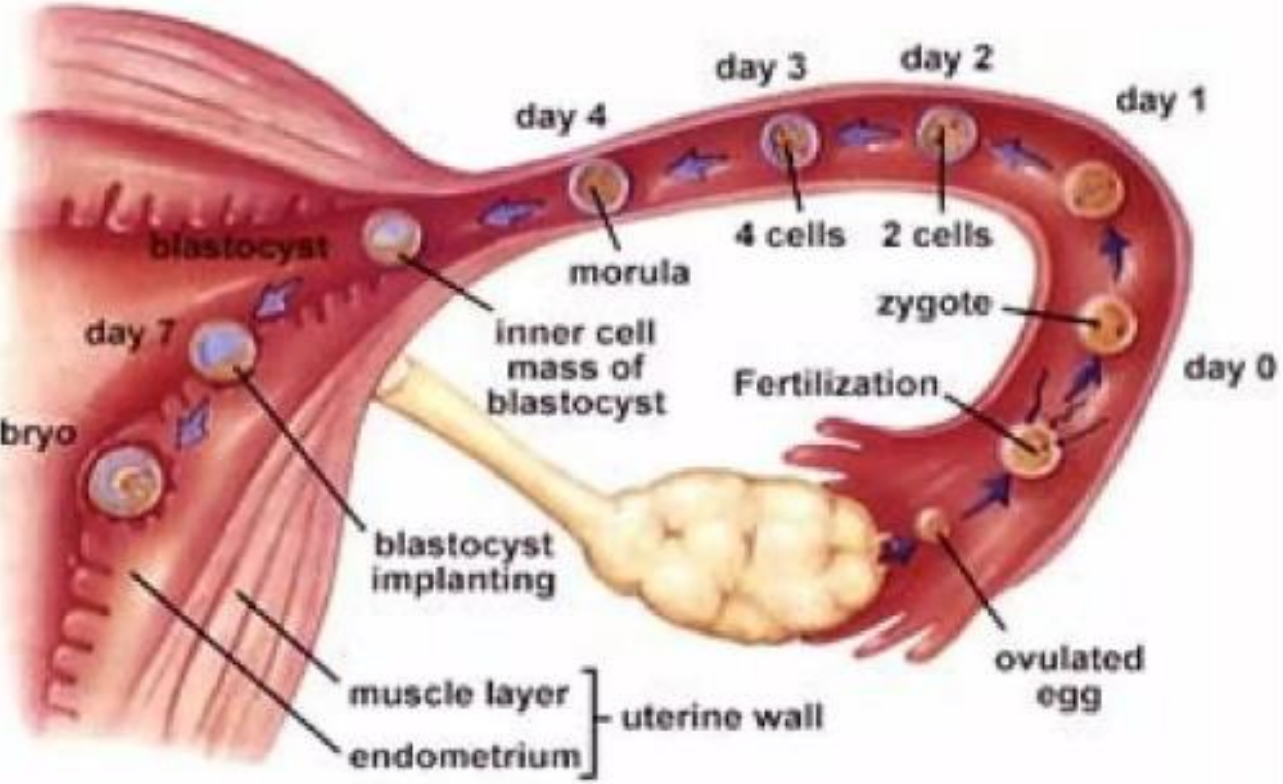
Five days after fertilization

1. A ball of more that 64 cells surrounding a fluid-filled cavity (the blastocele)
1. Blastula is produced by the repeated mitotic division of a zygote

Cleavage

Implantation

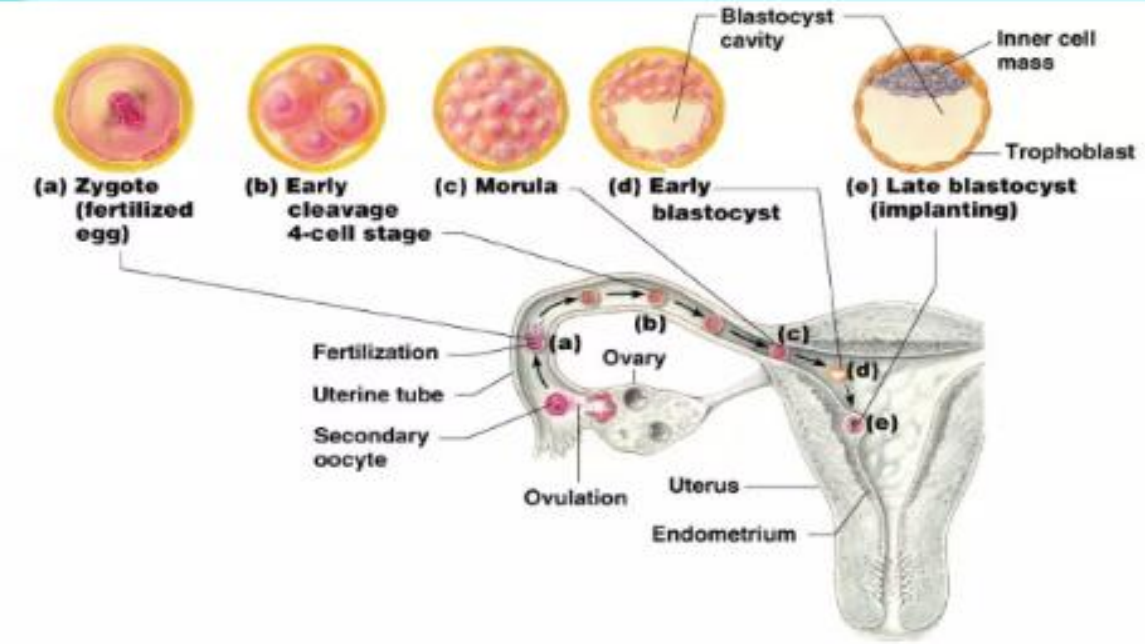




BLASTOCYST

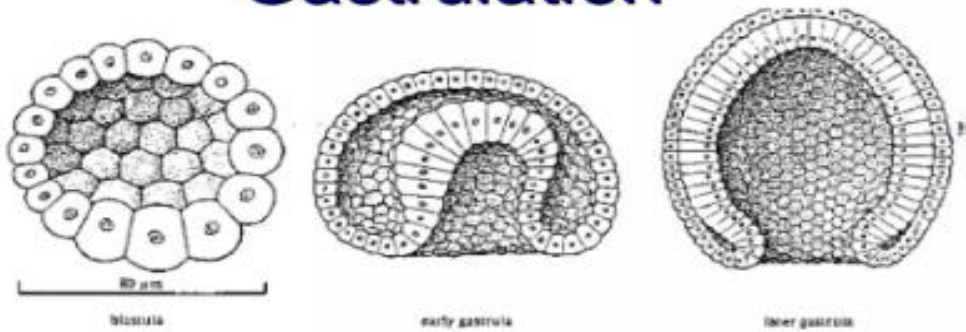
1. The fastening of the embryo to the wall of the uterus is called implantation
2. Implantation occurs seven days after fertilization
3. Implantation takes places in the uterus.

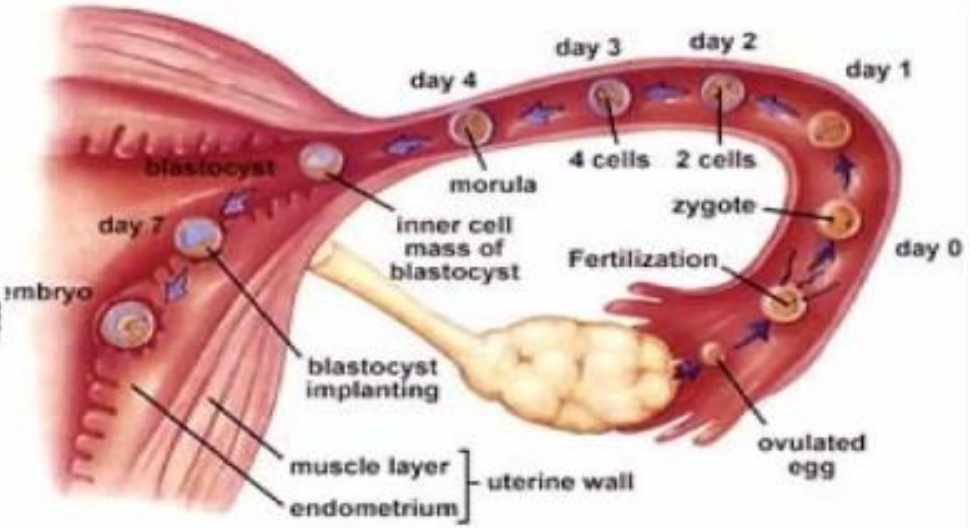
The Embryo



- The embryo is the developmental stage from the start of cleavage until the ninth week
- The embryo first undergoes division without growth
- The embryo enters the uterus at the 16-cell state
- The embryo floats free in the uterus temporarily
- Uterine secretions are used for nourishment

Differentiation
Gastrulation

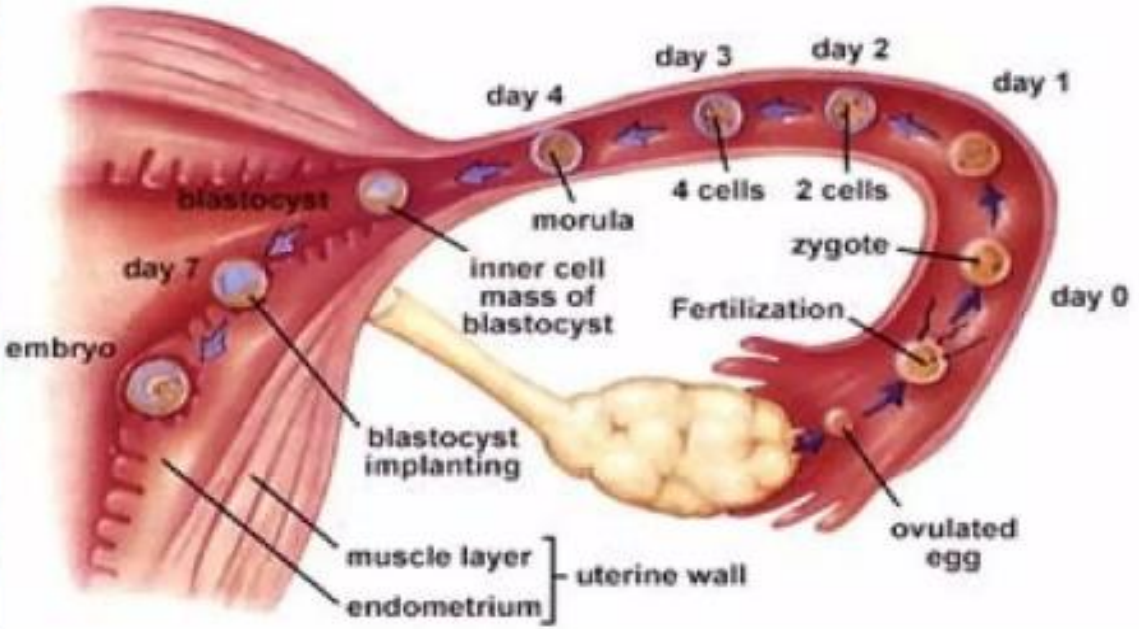




Gastrulation involves a series of cell migrations to positions where they will form the three primary cell layers.

- **Ectoderm** forms the outer layer. Ectoderm forms skin, hair, sweat glands, epithelium, brain and nervous system.
- **Endoderm** forms the inner layer. The endoderm forms digestive, respiratory systems, liver, pancreas, all bladder, and endocrine glands such as thyroid and parathyroid glands.
- **Mesoderm** forms the middle layer. The mesoderm forms body muscles, cartilage, bone, blood, reproductive system organs and kidneys

Differentiation



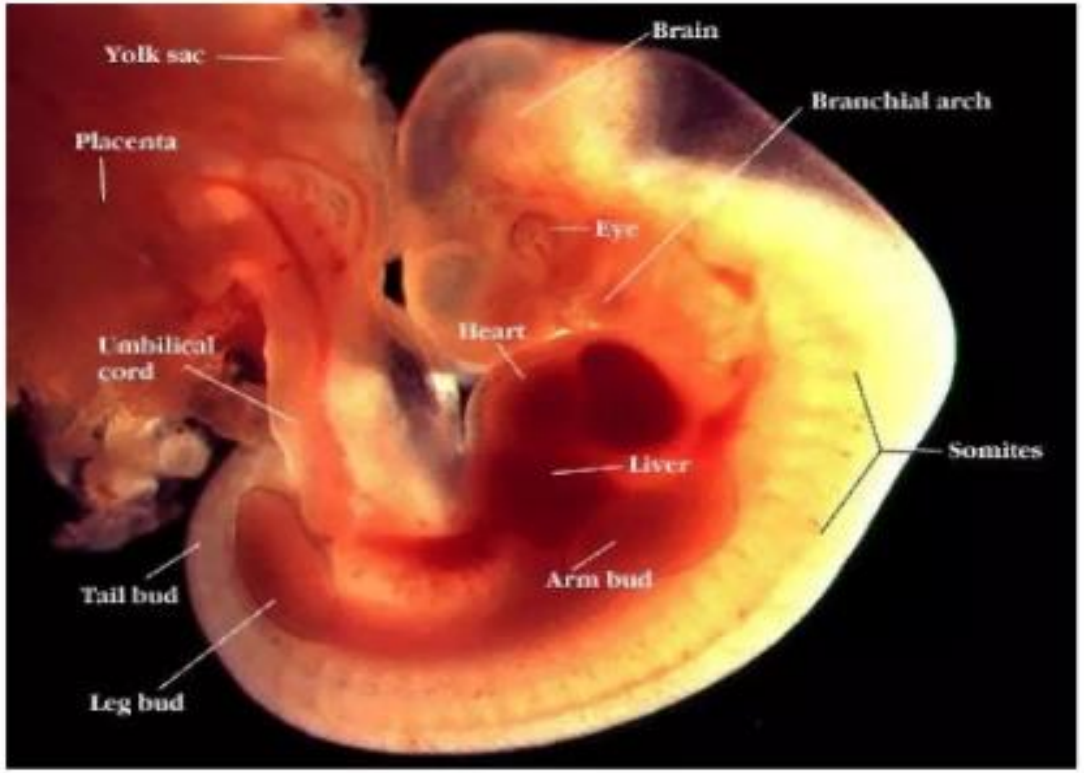
EMBRYO

0.5 cms

20 days after fertilization

- Embryo begins to form organs during the third week.
- Cannot tell if it is human or other vertebrate. Tall visible.

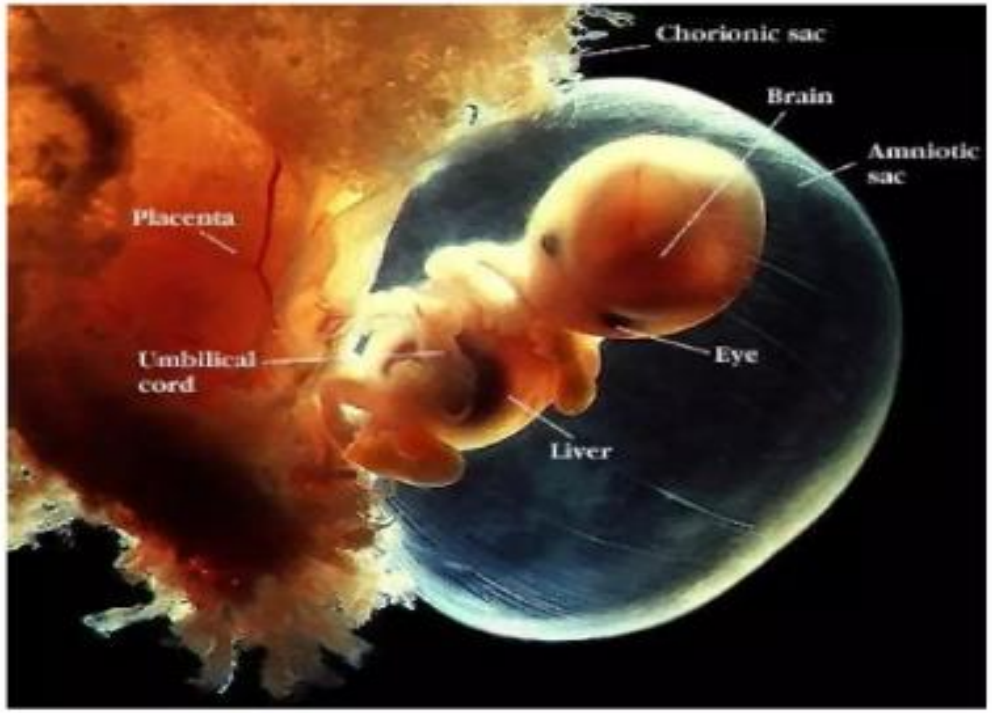
Differentiation



EMBRYO
1 months
0.6 cms

- Ears, nose and eyes not visible
- Small arm and leg buds, backbone seen
- Heart beats.

Differentiation



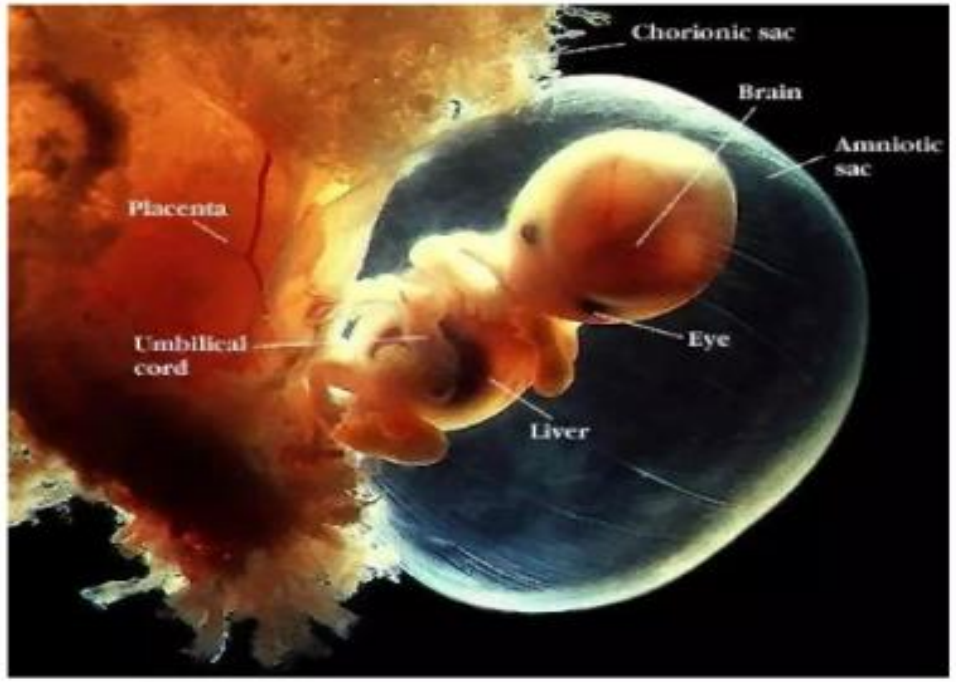
FETUS
2 months
3 cms

- During the second month most of the major organ systems form, limb buds develop.
- Limbs distinct with fingers and toes bones begin to form, eyes far apart.
- The embryo becomes a fetus by the seventh week.

Differentiation

- All organ systems are formed by the end of the eighth week
- Activities of the fetus are growth and organ specialization
- A stage of tremendous growth and change in appearance

Fetus at nine weeks
3 cm



Differentiation

FETUS
2 months
3 cms

- Beginning the eighth week, the sexually neutral fetus activates gene pathways for sex determination, forming testes in XY fetuses and ovaries in XX fetuses.
- External genitalia develop.

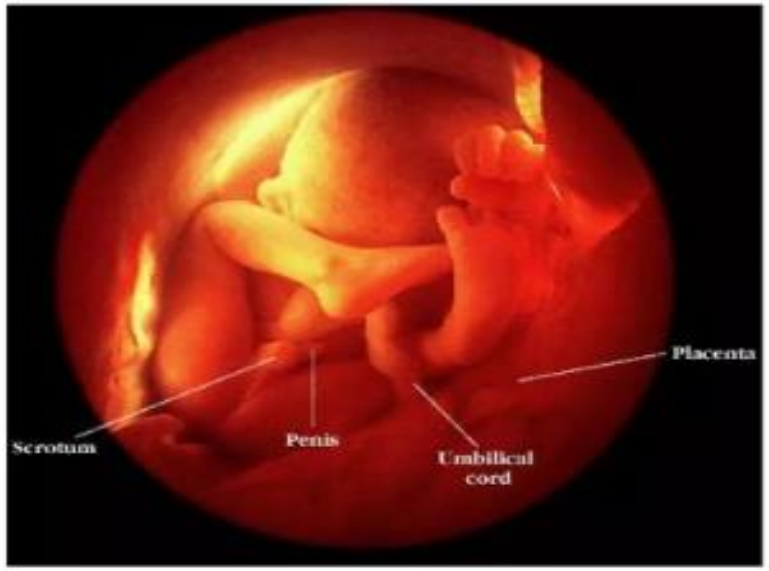
Growth

FETUS

7 months
About 40 cms

- During this trimester the fetus increases in size.
- Circulatory and respiratory systems mature in preparation for air breathing.
- Fetal growth during this time uses large parts of its mother's protein and calcium intake.
- Maternal antibodies pass to the fetus during the last month, conferring temporary immunity.

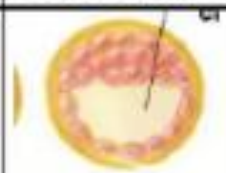
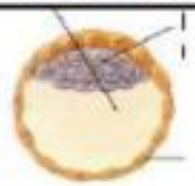
Growth



FETUS
About 50 cms
9 months

- Fat under skin, smooth wrinkles.
- Nails on fingers and toes completely formed.
- Baby at term.

Stages: CLEAVAGE, FERTILIZATION, GROWTH, DIFFERENCIATION
Name of embryo: GASTRULA, EMBRYO, MORULA, BLASTOCYST, ZYGOTE
Processes: NEURALTION, IMPLANTATION, , FERTILIZATION, MITOSIS
Where: UTERINE WALL, FALOPIAN TUBES, VAGINA, OVARIES.

Stages	Fertilization	Cleavage		Differentiation		Growth	
Name of embryo	Zygote	Morula	Blastocyst	Gastrula	Embryo	Fetus	Fetus
Pictures							
Timing	1 day	4 days	6 days	10 days	20 days	4 months	9 months
Processes	**Fertilization** Beginning of human development	**Mitosis** Multiplying until 64 cells	**Implantation** Blastocyst attaches itself to the wall of the uterus	Cells begin to move and specialize Three layers: • Endoderm, • Mesoderm, • Ectoderm.	**Neuralization** Beginning of development of the nervous system (spinal cord)	The fetus increases in size Bones, circulatory and respiratory systems mature	**Childbirth** Fetus is completely form
Where	**Fallopian tubes**	**Fallopian tubes**	**Uterine Wall**	**Uterine Wall**	**Uterine Wall**	**Uterine Wall**	**Vagina**

Childbirth (Partition)

- Labor – the series of events that expel the infant from the uterus
- Initiation of labor
  - Estrogen levels rise
  - Uterine contractions begin
  - The placenta releases prostaglandins
  - Oxytocin is released by the pituitary
  - Combination of these hormones produces contractions

Developmental Aspects of the Reproductive System

- Gender is determined at fertilization
  - Males have XY sex chromosomes
  - Females have XX sex chromosomes
- Gonads do not begin to form until the eighth week

Signs and symptoms that are usually noted by the patient, which impel her to make an appointment with a physician for confirmation of pregnancy .

DEFINITION OF PREGNANCY

It is the state of carrying a **developing embryo** or fetus within the female body from **conception to birth**. After the egg is fertilized by sperm and then implanted in the **lining of the uterus**, it develops into **placenta and embryo or fetus**.

DURATION OF PREGNANCY

1. Usually 40 weeks or
2. 280 days or 10 lunar months or
3. 9 months and 7 days, calculated from the first day of last menstrual period.

- **Beginning from the first day of last menstrual period , It is divided into three trimesters, each lasting three months.**
- **First trimester** (First 12 weeks)
- **Second trimester** (13-28 weeks)
- **Third trimester** (29-40 weeks)

1st TRIMESTER CHECKLIST

FIRST TRIMESTER PRESUMPTIVE SIGNS OR SUBJECTIVE SYMPTOMS

- AMENORRHOEA
- MORNING SICKNESS
- FREQUENCY OF MICTURITION
- BREAST DISCOMFORT
- FATIGUE
- FAINTING

End of first month

AMENORRHOEA

Absence of menstruation in woman of reproductive age.

Since nine months during pregnancy periods are not occurred .

If any type of bleeding is occurred during 9 months shou ' ' not be confused with the commonly met pathological bleeding .

E.g. – Threatened abortion.

MORNING SICKNESS

- It is present in about 50% cases, mostly during first pregnancy.
- Nausea and vomiting begins about 6 weeks after the last menstrual period and usually disappears by about 14 weeks.
- It is due to the high level of pregnancy hormones.

FREQUENCY OF MICTURITION

- Resting of bulky uterus on the fundus of the bladder because of anteverted position of uterus.
- It is present during 8-12 week of pregnancy and subside after 12 weeks.

BREAST DISCOMFORT

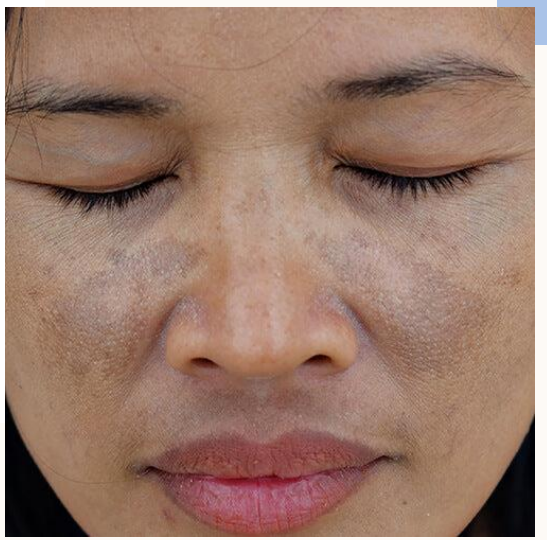
- It is present during 6th week in the form of feeling of :
  - * Tenderness.
  - * Tingling.
  - * Fullness.
  - * Increase in size.
  - * Pigmentation of areola.
  - * Pricking sensation.

Second Trimester of Pregnancy

SECOND TRIMESTER SUBJECTIVE SYMPTOMS

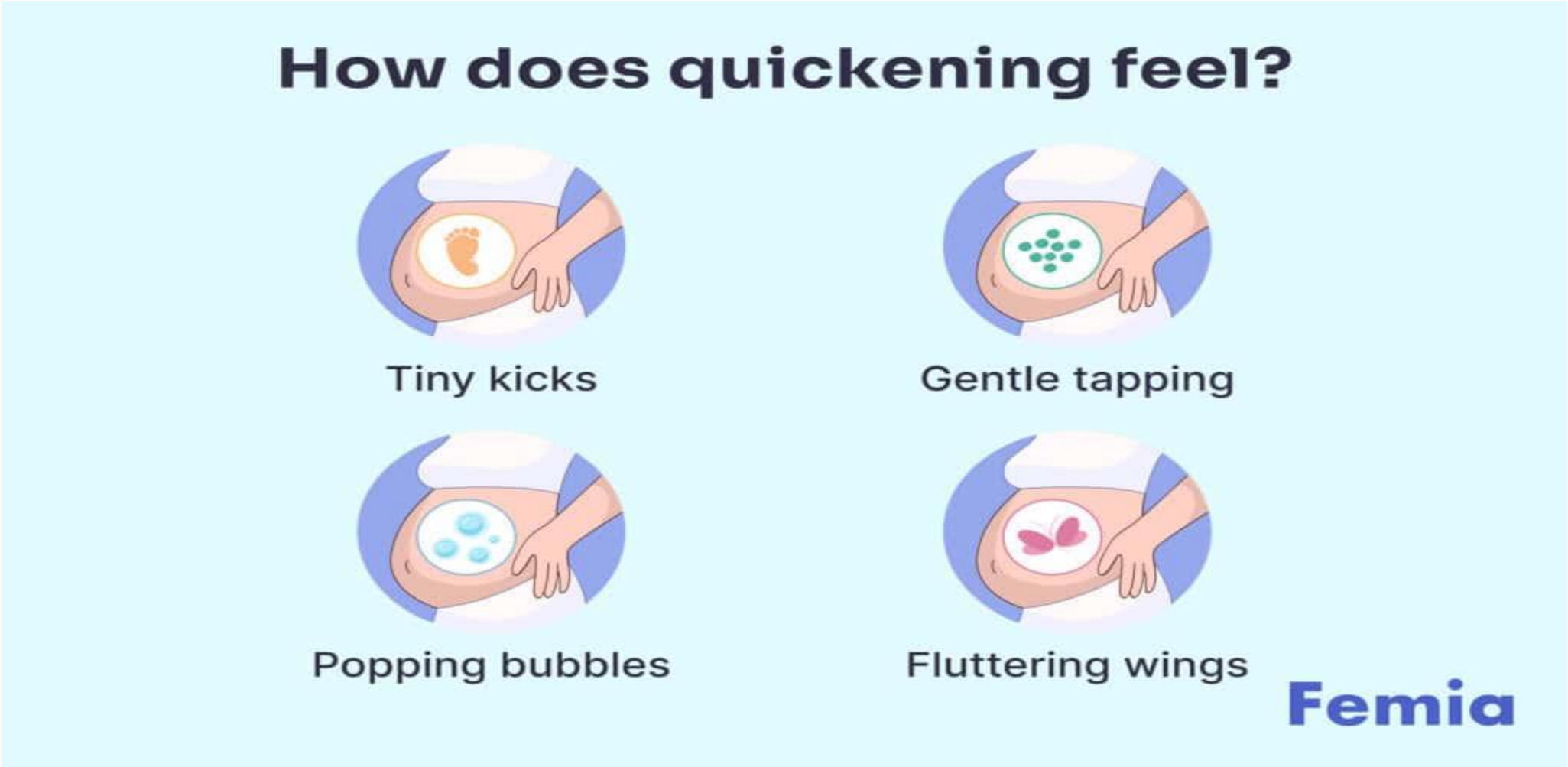
- AMENORRHOEA
- ENLARGEMENT OF LOWER ABDOMEN
- DECREASE MORNING SICKNESS
- DECREASE URINARY SYMPTOMS
- QUICKENING

STRIAE GRAVIDARUM



Cholasma gravidarum

Quickening is when a pregnant person starts to feel fetal movement in their uterus. It feels like flutters, bubbles or tiny pulses. Quickening happens around 16 to 20 weeks in pregnancy, but some people may feel it sooner or later.



3rd TRIMESTER CHECKLIST

Body changes

Some new body changes you might notice in the third trimester include:

-- Shortness of breath

-- Heartburn

-- Tender breasts, which may leak a watery pre-milk called colostrum (kuh-LOSS-struhm)

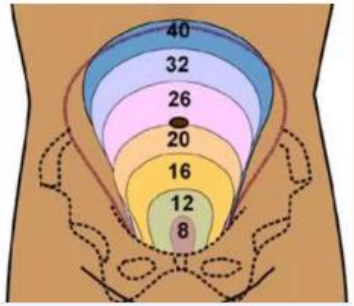
-- Your belly button may stick out

-- Trouble sleeping

-- The baby "dropping", or moving

FUNDAL HEIGHT

Pregnancy in weeks	Fundal height
At 32th week	Junction of upper and middle third of ensiform cartilage
At 36th week	Up to the level of ensiform cartilage.
At 40th week	Down to the 32th week due to engagement of presenting part.



-- Swelling of the ankles, fingers, and face. (If you notice any sudden or extreme swelling or if you gain a lot of weight really quickly, call your doctor right away. This could be a sign ofpreeclampsia.)

-- Hemorrhoids

Your baby's development

At 32 weeks:

-- Your baby's bones are fully formed, but still soft.

-- Your baby's kicks and jabs are forceful.

-- The eyes can open and close and sense changes in light.

-- Lungs are not fully formed, but practice "breathing" movements occur.

-- Your baby's body begins to store vital minerals, such as iron and calcium.

-- Lanugo begins to fall off.

-- Your baby is gaining weight quickly, about one-half pound a week. Now, your baby is about 15 to 17 inches long and weighs

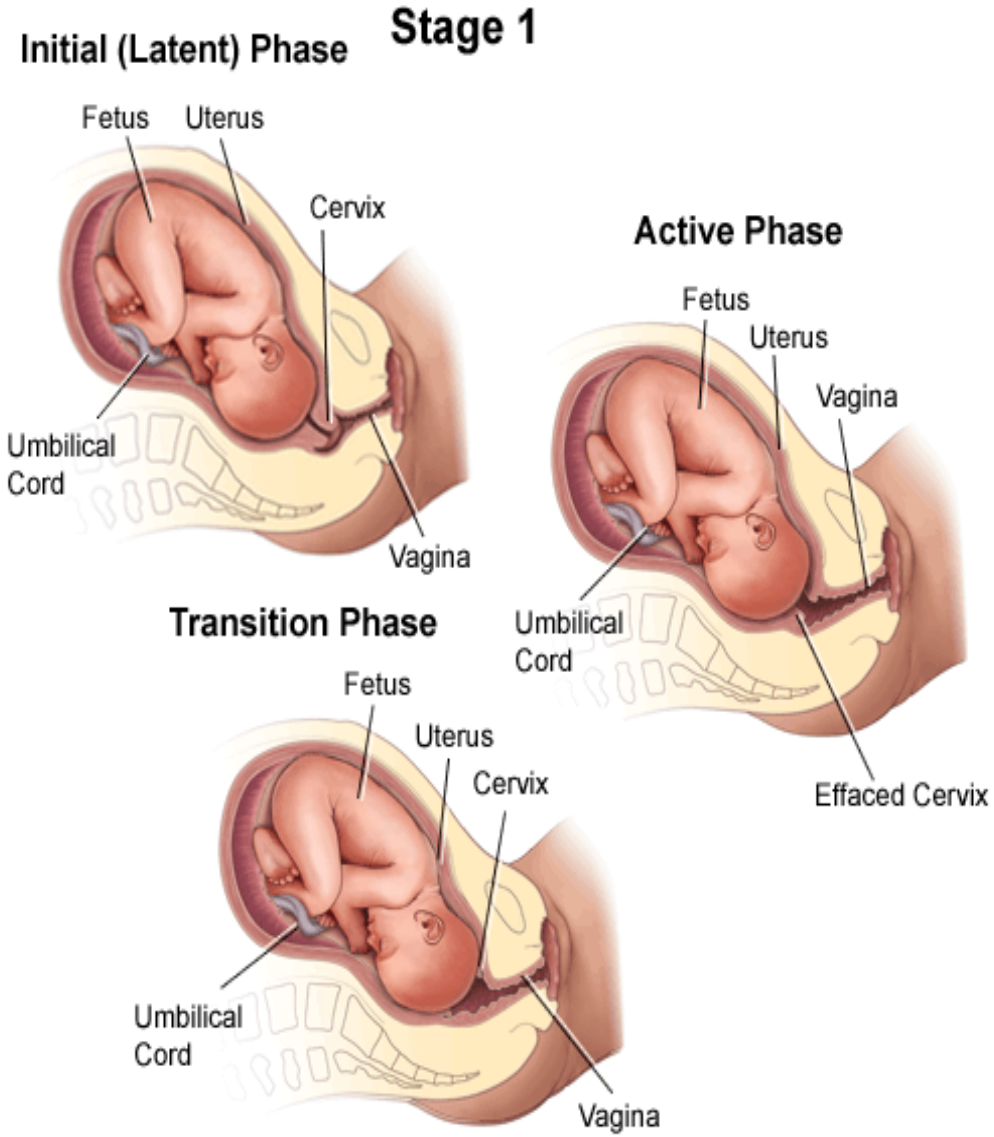
Weeks 37-40:

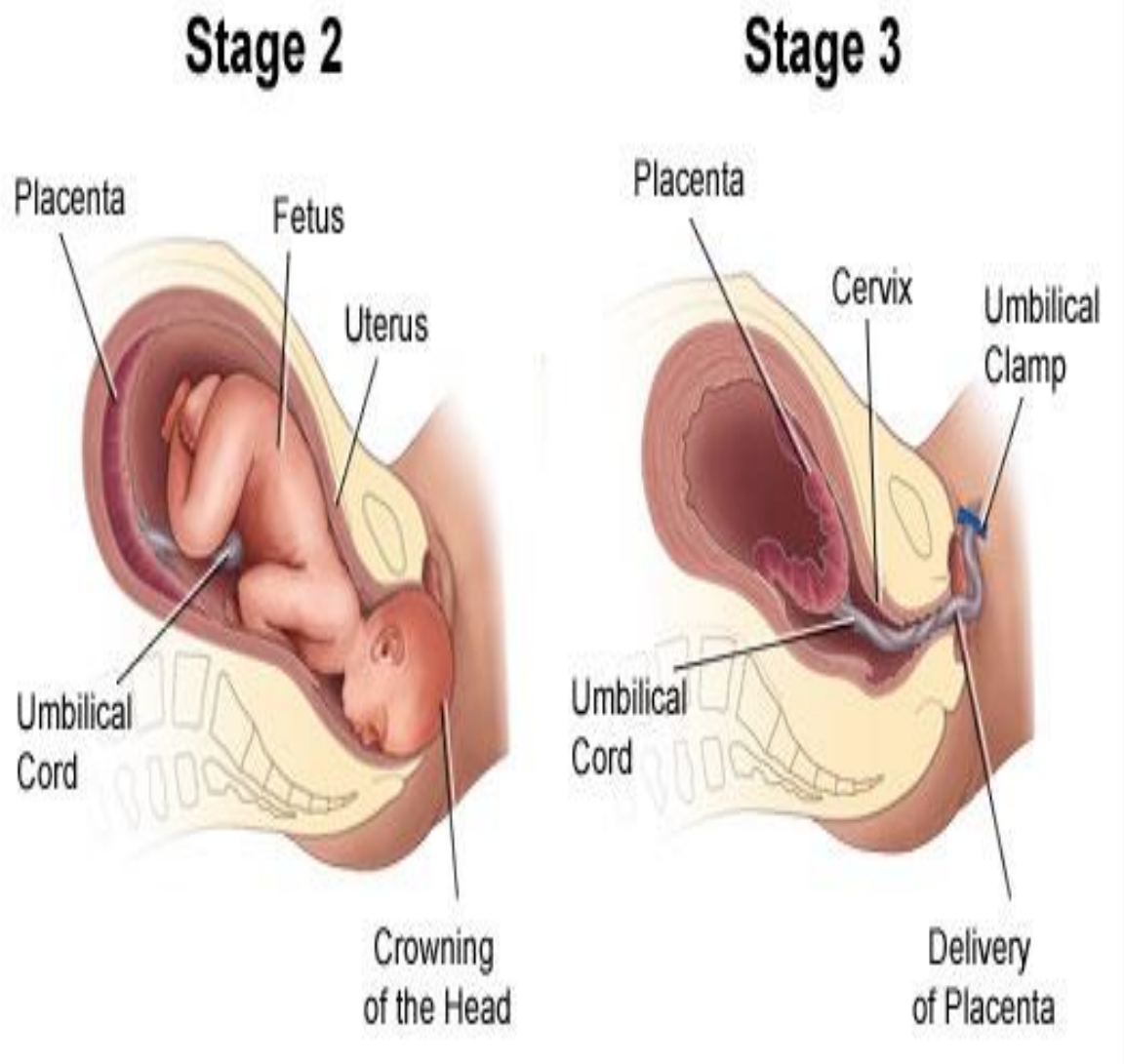
-- By the end of 37 weeks; your baby is considered full term. Your baby's organs are ready to function on their own.

LABOR IN PREGNANCY

Definition

- Series of events that takes place in the genital organ in an effort to expel the viable products of conception out of the womb through the vagina into the outer world is called labour.
- It may occur prior to 37 completed weeks, when it is called preterm labour.
- Delivery is the expulsion or extraction of viable fetus out of the womb.


Stage 1
Initial (Latent) Phase
Fetus
Uterus
Cervix
Umbilical Cord
Vagina
Active Phase
Fetus
Uterus
Vagina
Umbilical Cord
Effaced Cervix
Transition Phase
Fetus
Uterus
Cervix
Umbilical Cord
Vagina


Stage 2
Placenta
Fetus
Uterus
Umbilical Cord
Crowning of the Head
Stage 3
Placenta
Cervix
Umbilical Clamp
Umbilical Cord
Delivery of Placenta

The Stages of Labor

First Stage	Second Stage	Third Stage
• Mild and irregular contractions • Pain in the lower back • An urge to vomit • The discharge of blood-stained mucus, which is known as a 'show' • Breaking of the waters	• Nausea and vomiting • Increased pressure in the bottom region of the body • Longer contractions occurring within one to two minutes of each other • The desire to push • Burning sensations in the vagina	• The third and final stage involves the delivery of the placenta. There are usually two types of approaches, namely physiological and active management, that could be opted for if the mother is being assisted by a medical team or midwife.

Complications Of Pregnancy

- Complications of pregnancy are health problems that occur during pregnancy.
- They can involve the mother's health, the baby's health, or both
- Some women have health problems that arise during pregnancy, and other women have health problems *before* they become pregnant that could lead to complications.
- It is very important for women to receive health care before and during pregnancy to decrease the risk of pregnancy complications.

- Complications due to pregnancy includes:
  - Anemia.
  - Antepartum Hemorrhage.
    - Placenta Praevia.
    - Placental Abruption.
  - Breech Position
  - Cardiac Disease
  - DM
  - Ectopic Pregnancy
  - Fibroids
  - Genital Herpes
  - Gestational Diabetes
  - Intrauterine Death
  - HIV
  - Intrauterine Growth Retardation
  - Multiple Pregnancies
  - Oligohydramnios
  - Polyhydramnios
  - Pregnancy-induced Hypertension
    - Pre eclamsia
    - Eclamptic Toxaemia
    - Eclampsia
  - Sickle Cell Disease
  - Thalassaemias
  - Unstable Lie, Transverse Lie

HAFSA IMTIAZ

THANK YOU