


Anatomy & Physiology

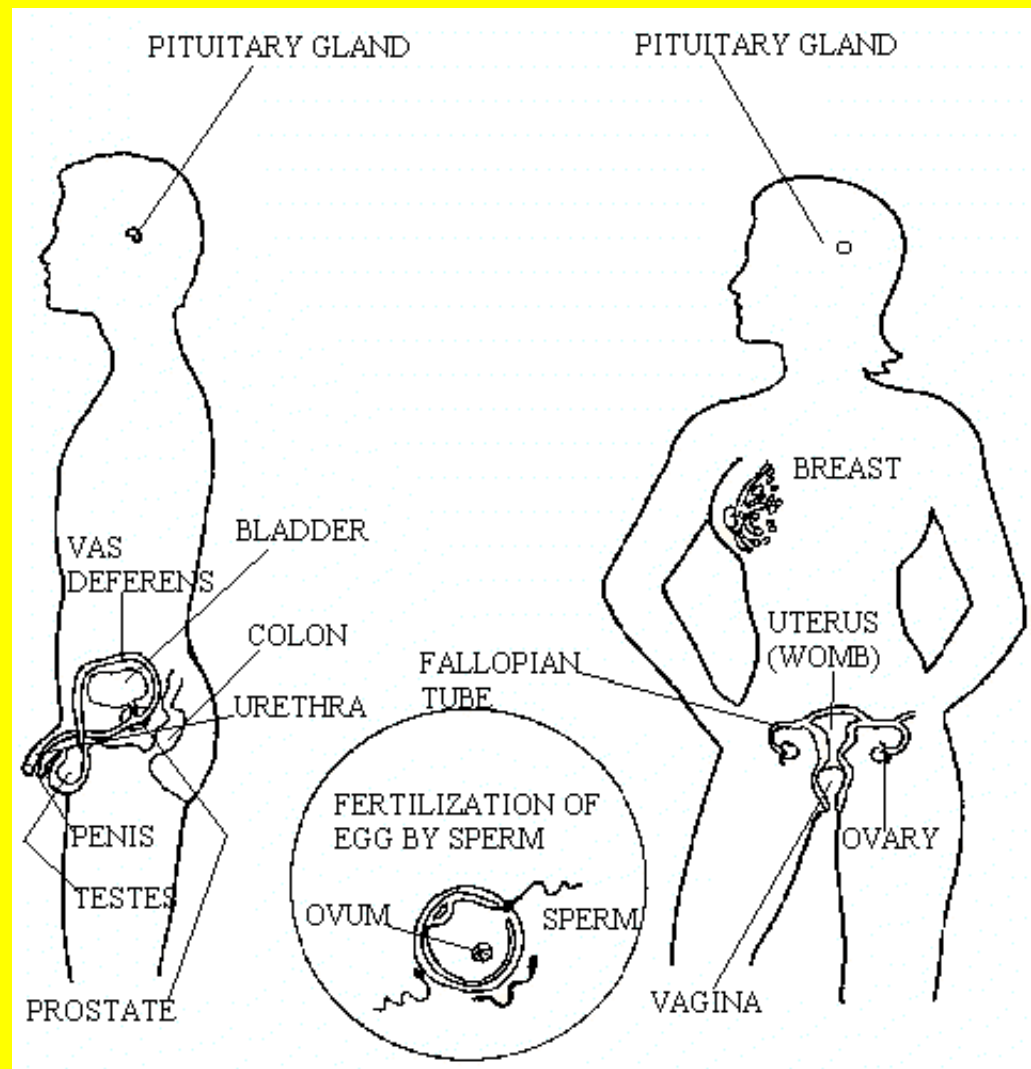
The background features a glowing blue wireframe of a human torso, with a prominent red heart in the center. Overlaid on the heart and torso are several bright blue ECG (heart rate) lines, creating a high-tech, medical aesthetic.

REPRODUCTIVE SYSTEM



What is the reproductive system?

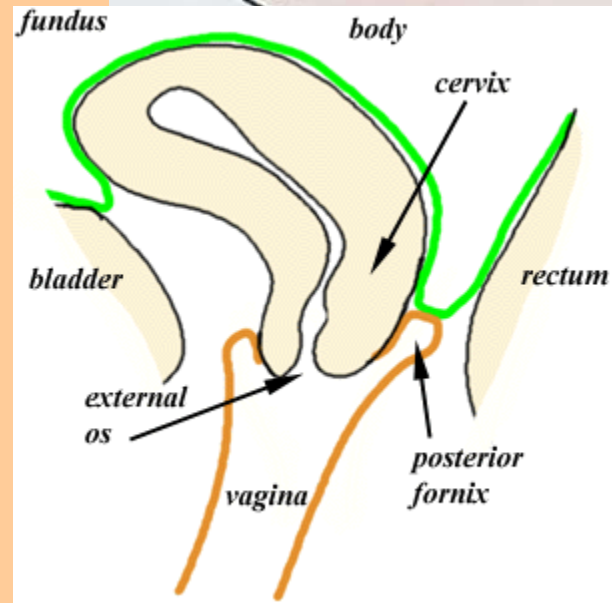
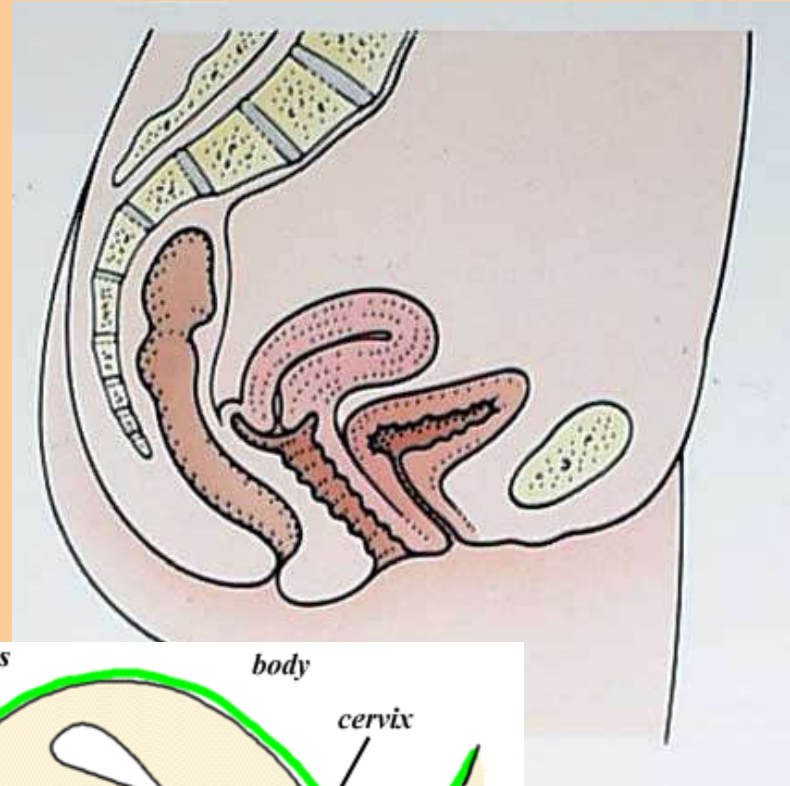
The reproductive systems in both the male and female consist of primary and secondary sex organs and sex glands.



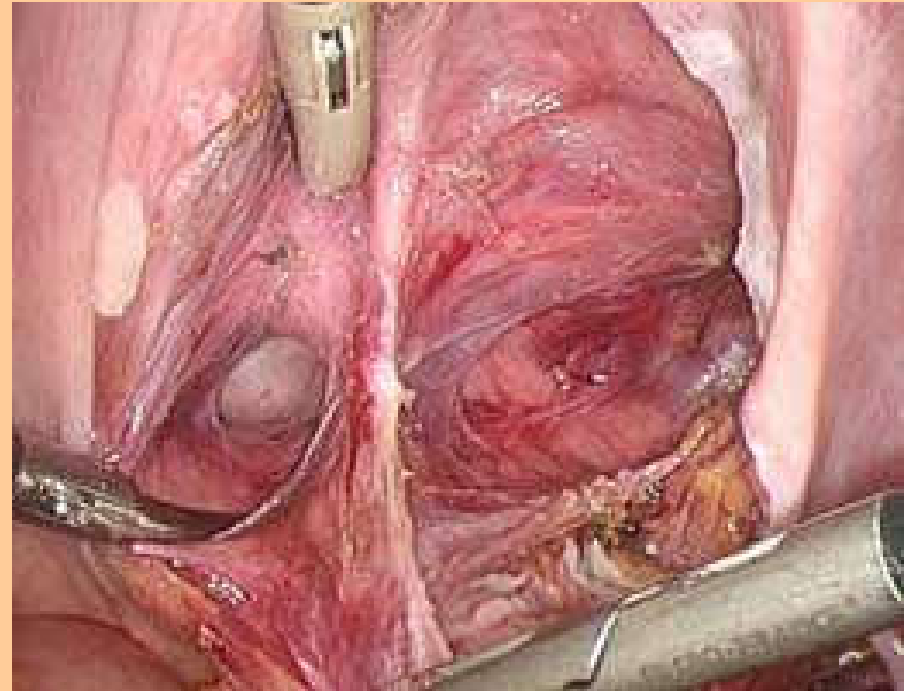
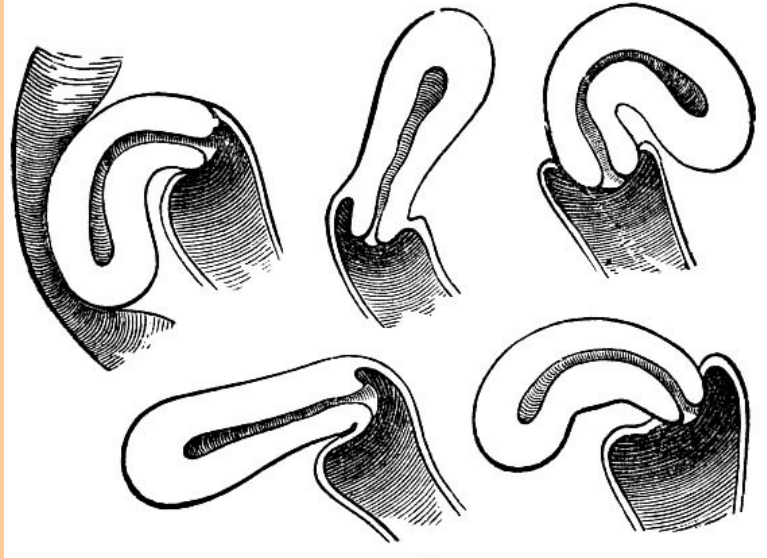
The primary function of the reproductive systems is to perpetuate the species through sexual or germ cell fertilization and reproduction.

Female reproductive system: the uterus...

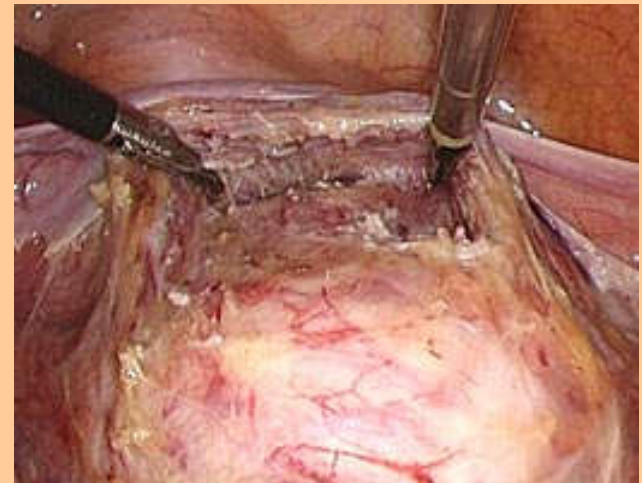
The uterus is a hollow, muscular, pear-shaped organ about the size of a woman's clenched fist. The top is tipped forward in a normal 'anteflexion' position. It can be divided into the body or corpus, and the bottom cervix. The rounded top portion, above the fallopian tubes, is called the fundus.



Female reproductive system: the uterus...

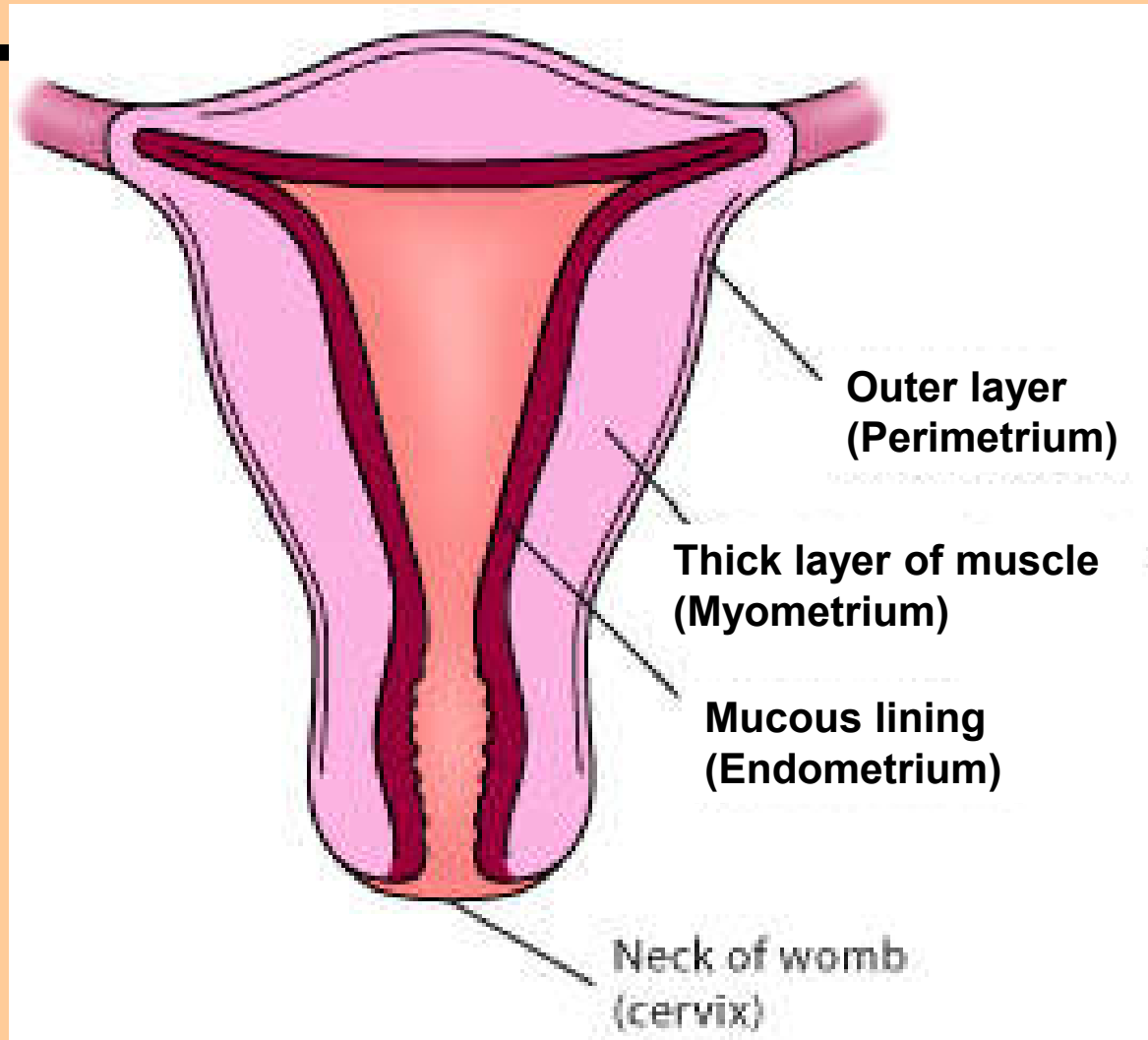


The uterus is supported and held in position by a number of ligaments. Trauma, disease, or multiple pregnancies can weaken these ligaments and result in abnormal positioning.



Female reproductive system: the uterus...

The uterus wall has 3 layers: the outside layer called the perimetrium, the muscular inside layer called the myometrium, and the mucous membrane lining the uterus called the endometrium.



The cervical opening is about the diameter of a pencil.

Female reproductive system: the uterus...

**The uterus has 3
functions:**

- 1. The endometrium sheds the lining of the uterus every 21 to 40 days by menstruation**
- 2. It provides a place for the protection and nourishment of the fetus during pregnancy**
- 3. It contracts during labor to expel the fetus**



Female reproductive system: the fallopian tubes...

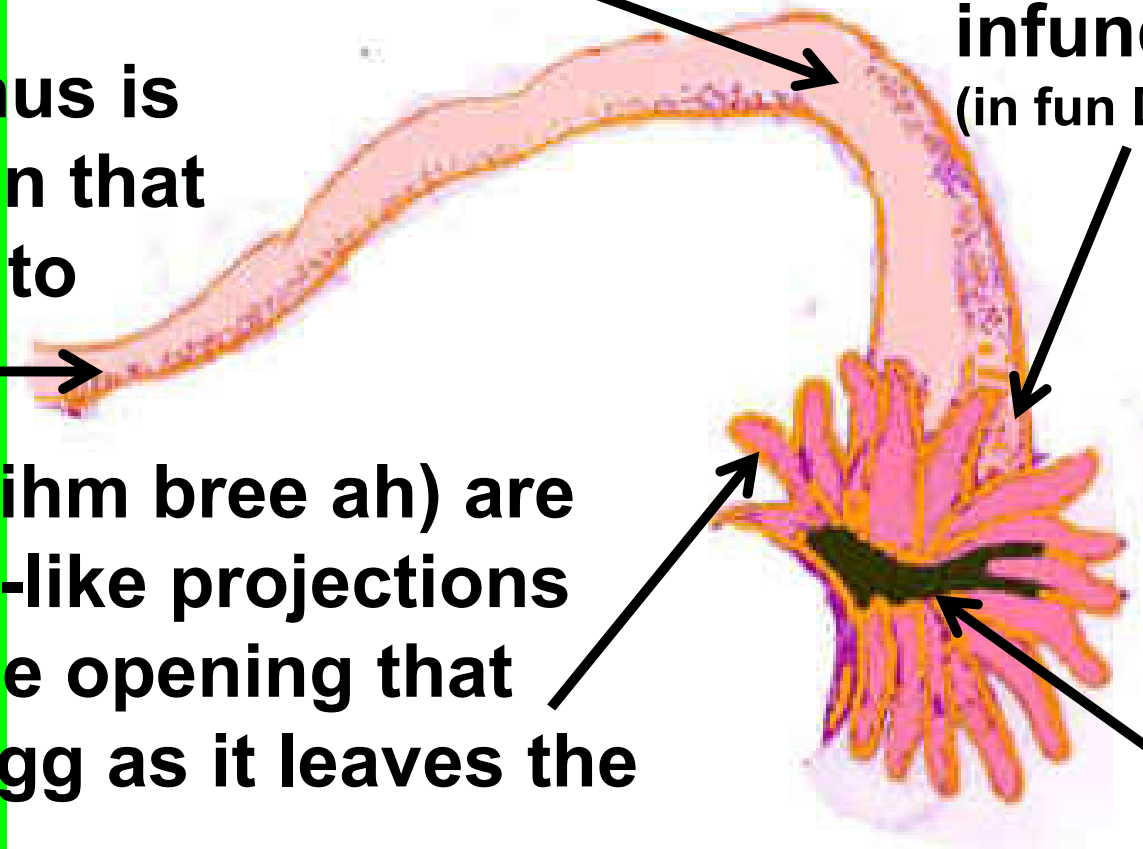
Tube widens to form the
ampulla (am pyu lah)

End of tube is
called the
infundibulum
(in fun DIB yū lum)

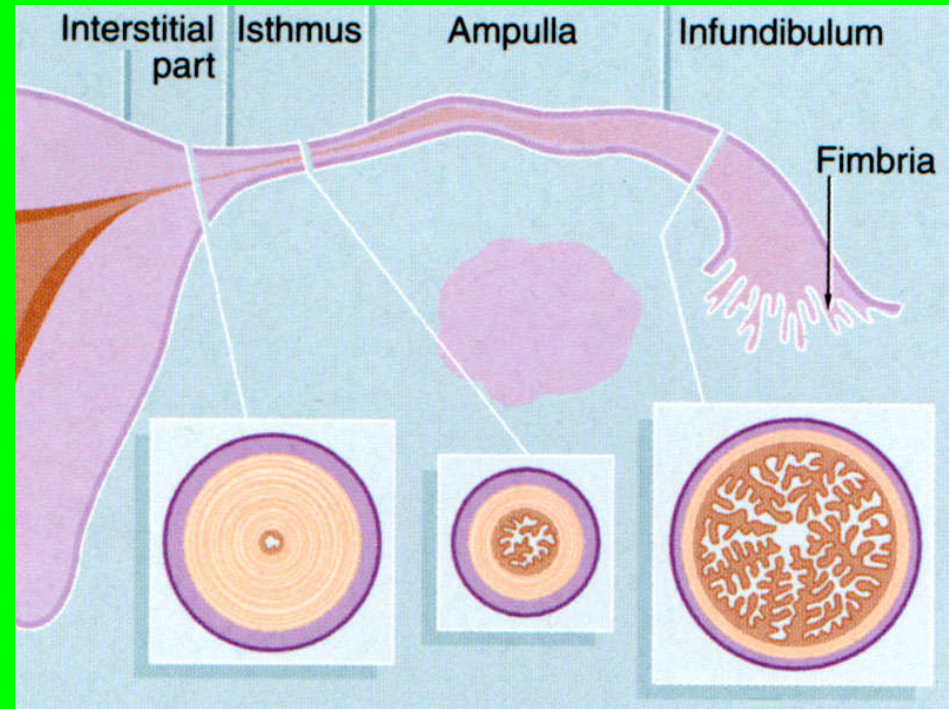
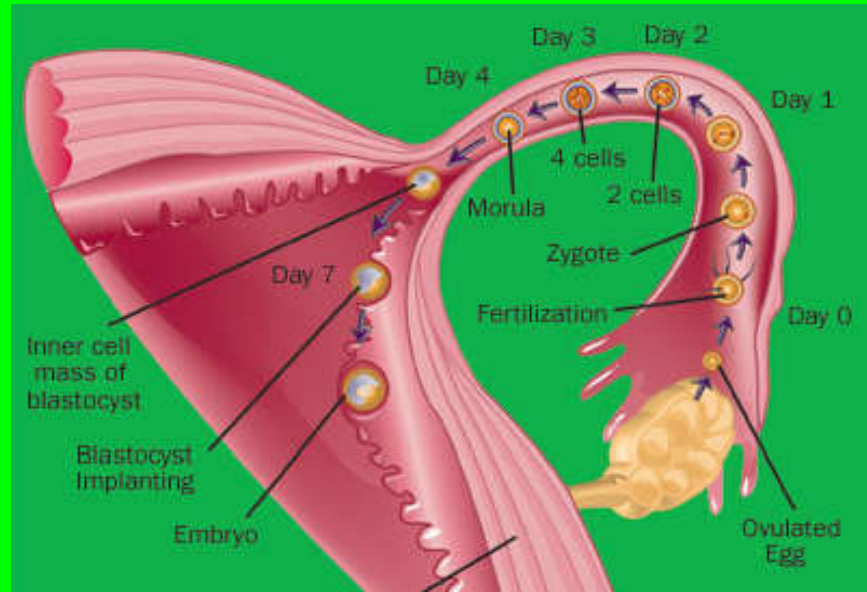
The isthmus is
the portion that
connects to
uterus

Fimbria (fihm bree ah) are
the finger-like projections
around the opening that
trap the egg as it leaves the
ovary

Opening
is called
the
ostium
(ah stē um)



Female reproductive system: the fallopian tubes...



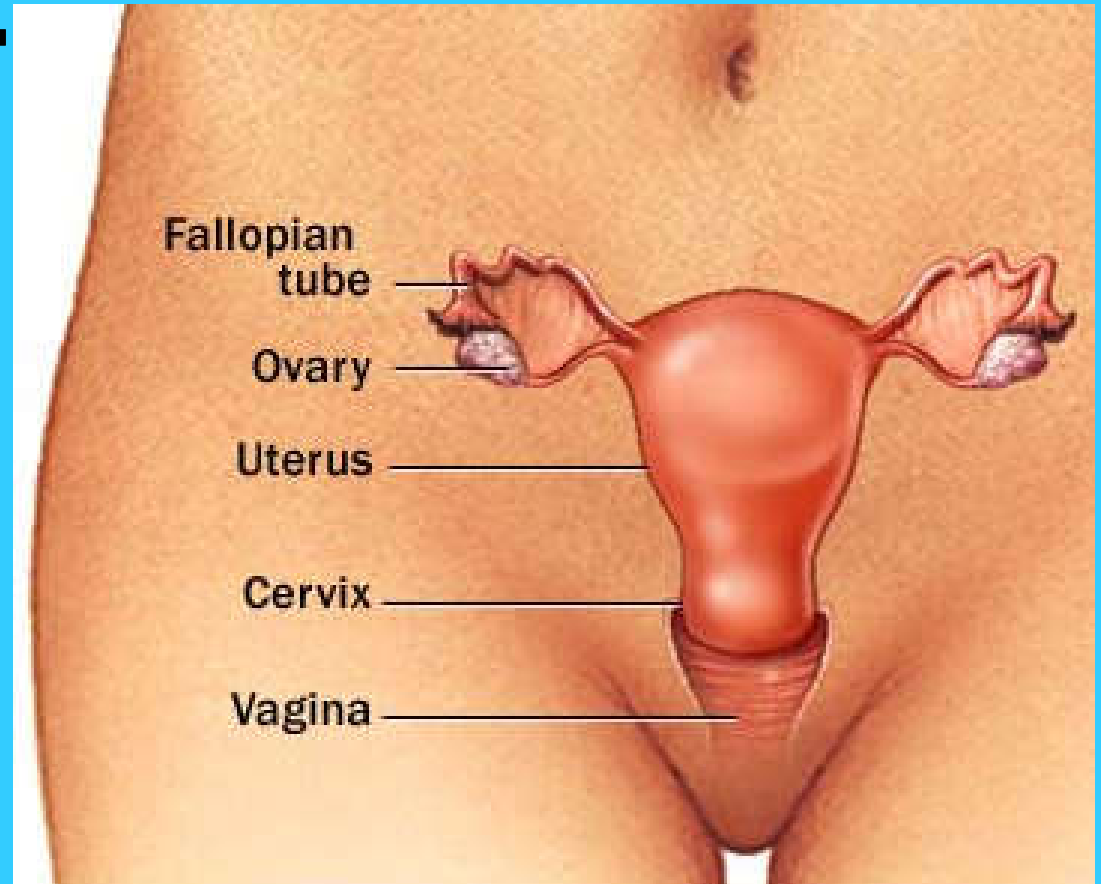
The fallopian tube is 4-6 inches long. The egg, released from the ovary, is captured by the fimbria and brought into the fallopian tube. The egg is moved along inside the tube by muscular contractions and the waving action of cilia. It takes an egg about 3-4 days to travel the length of the tube. If an egg is fertilized, it occurs here.

Female reproductive system:

the ovaries...

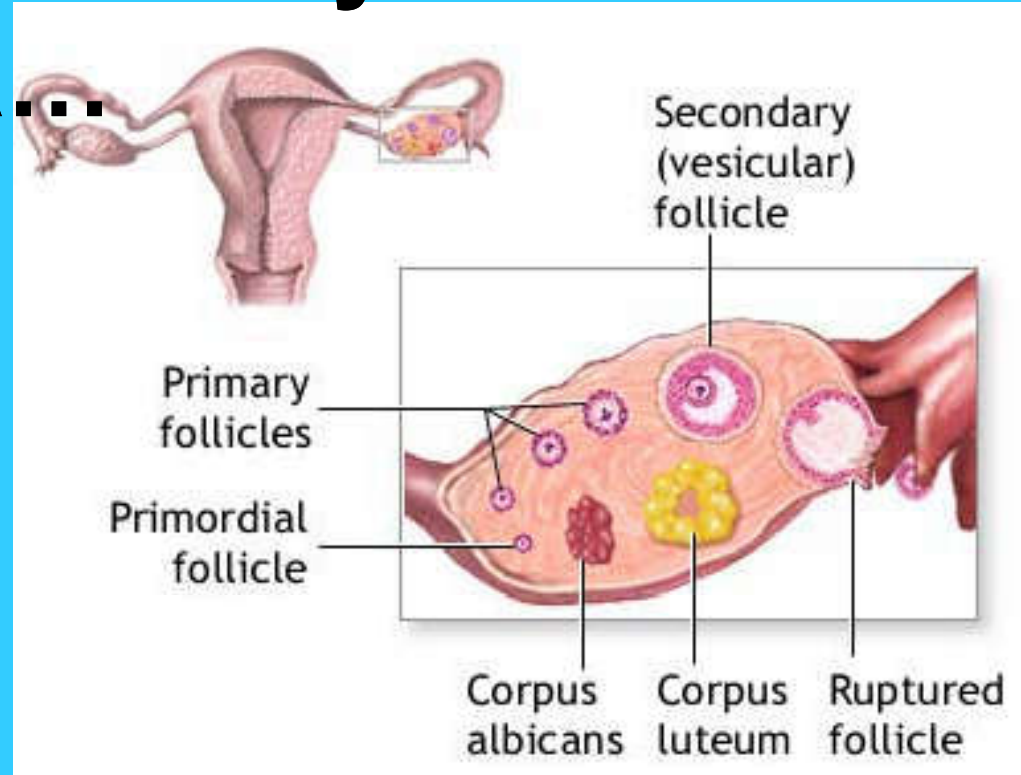
The two ovaries are attached to each side of the uterus by a ligament. They are oval-shaped, about the size of a large olive, and lie close to the fimbria at the end of the fallopian tubes.

Each ovary is filled, already at birth, with egg-containing sacs called follicles. Each egg is called an ovum.



Female reproductive system: the ovaries and ova...

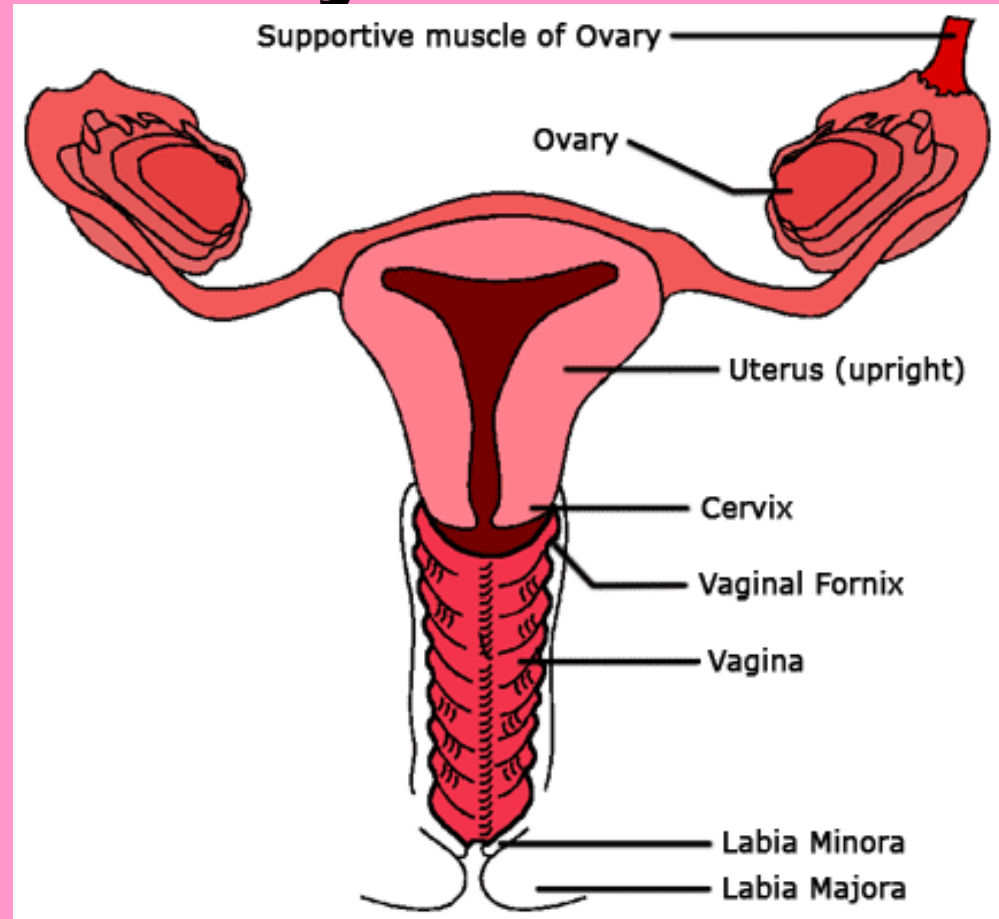
Once every 21 days, one follicle in one ovary ripens. This mature follicle is a graafian (GRAW fee un) follicle. The follicle ruptures in response to hormones from the pituitary gland, releasing the ovum/egg... a process called ovulation.



After the follicle ruptures, it becomes a mass of yellow cells called the corpus luteum. This is a temporary, progesterone-producing structure.

Female reproductive system: the vagina...

The vagina extends from the cervix to the outside of the body. It is a 3 ½ inch long muscular tube that expands in length and width during sexual arousal.

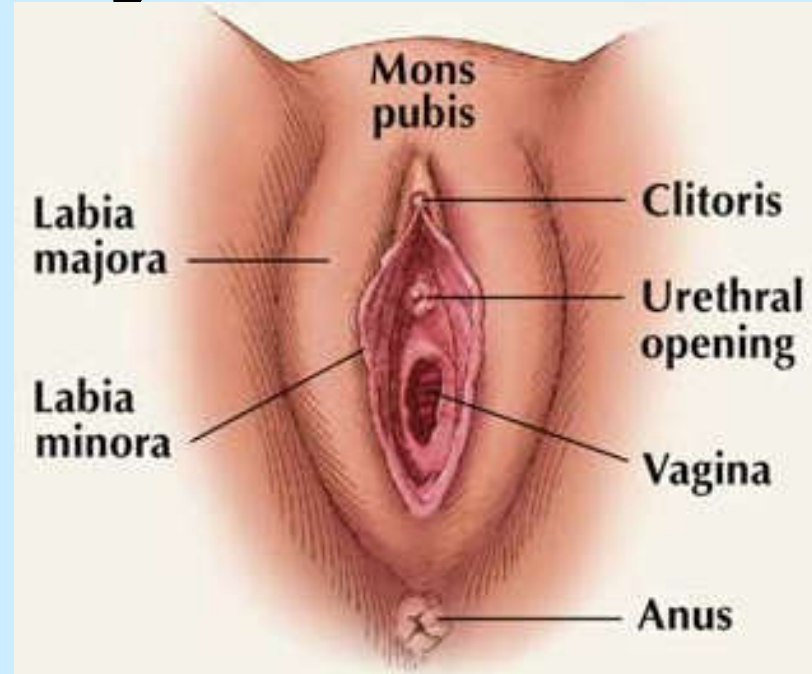


The vagina is the female organ for copulation (sexual intercourse), receiving the seminal fluid from the male penis. It is also a passageway for menstruation or the birth of a fetus.

Female reproductive system: the vulva...

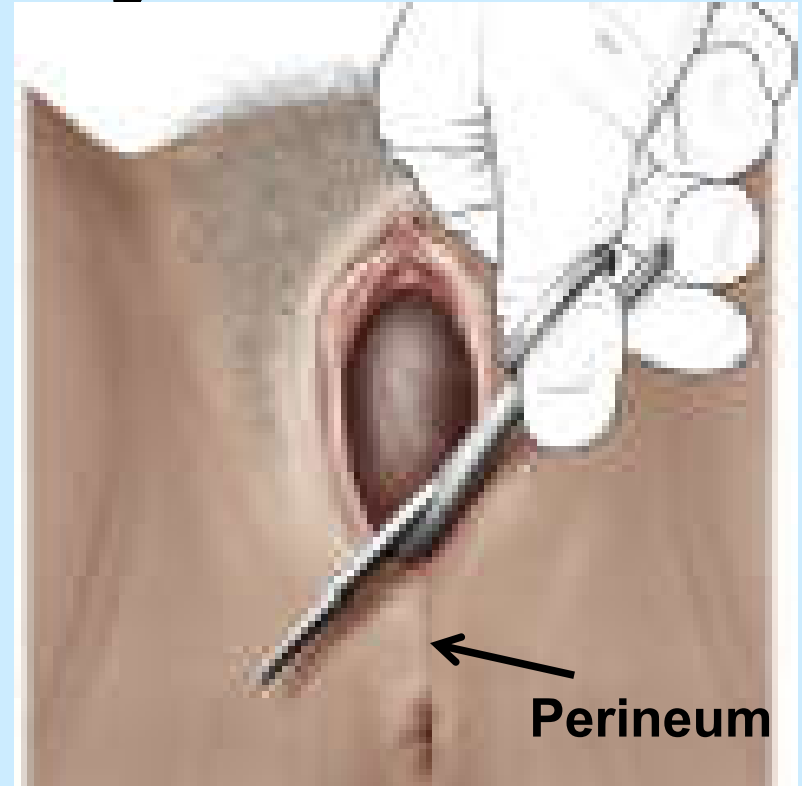
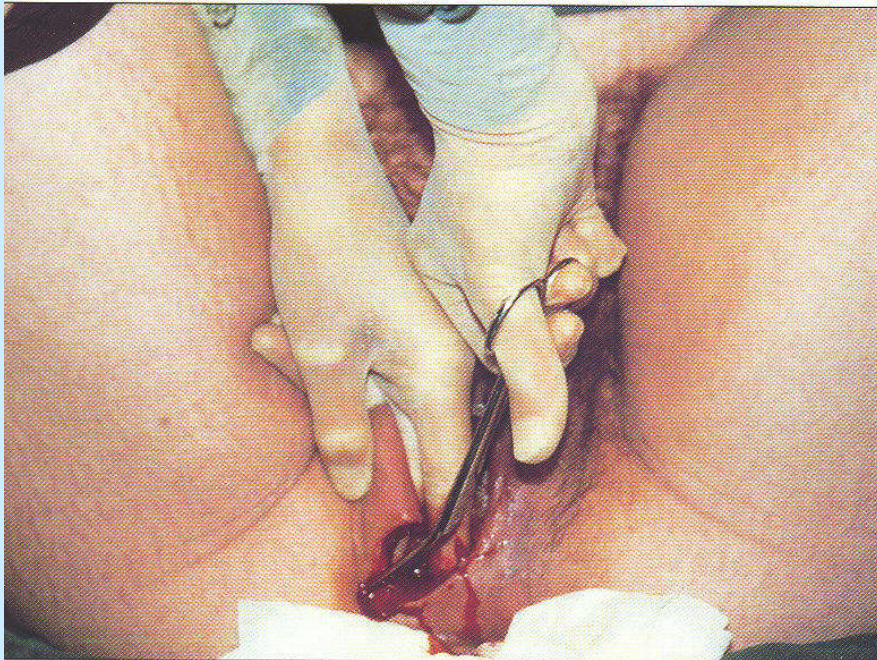
The vulva is 5 organs making up the external genitalia of the female:

1. **Mons pubis:** triangular-shaped pad of fatty tissue over the pubis bone, covered with pubic hair
2. **Labia majora:** 2 large folds of adipose tissue on the sides of the vaginal opening
3. **Labia minora:** 2 smaller folds of adipose tissue on the inside of the labia majora
4. **Vestibule:** area between labia with openings for the vagina, urethra, and two excretory ducts for Bartholin's glands (provide lubricant)
5. **Clitoris:** sensitive fold of tissue partially covered by hood



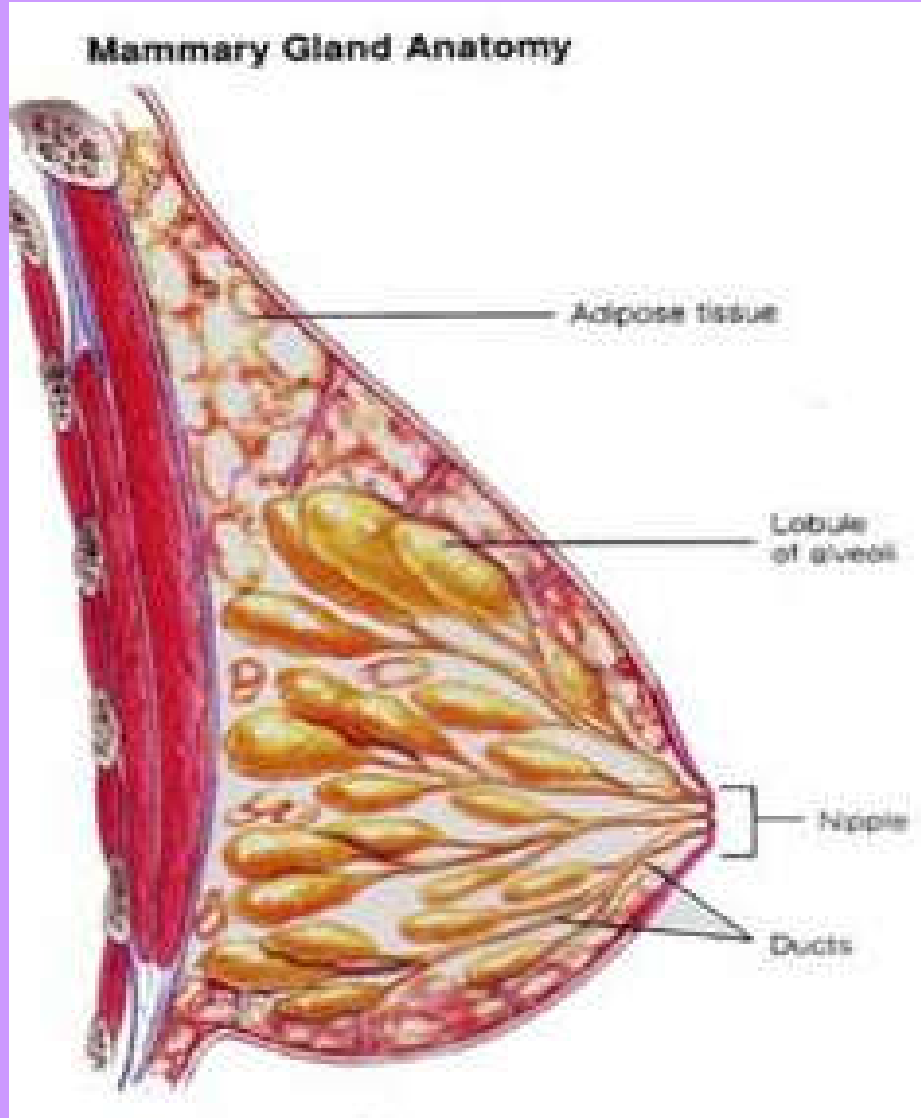
Female reproductive system: the vulva...

The perineum is the area located between the vaginal opening and the anus. It is a muscular sheet that can be torn during childbirth.



Some doctors avoid uncontrolled tearing of the perineum by making a surgical incision called an episiotomy.

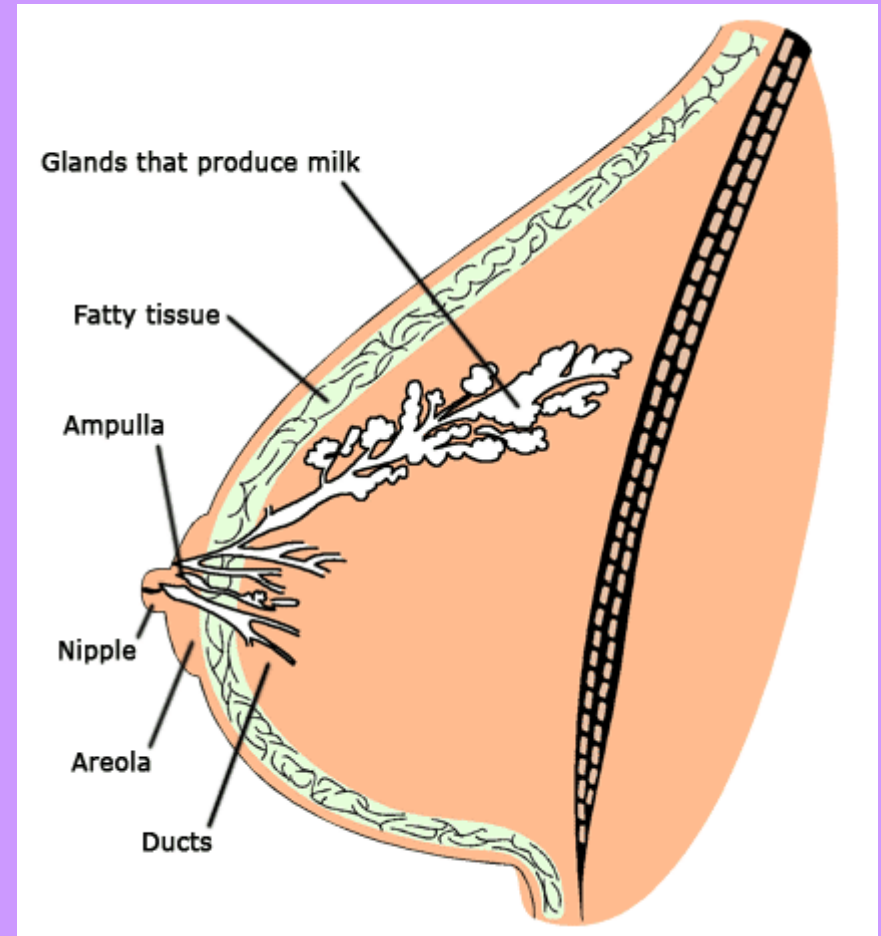
Female reproductive system: the breasts...



The breasts are the mammary glands, varying in size according to age, heredity, and the amount of fatty tissue present. Each breast has 15-20 glandular lobes separated by connective tissue. After childbirth, the pituitary gland stimulates these lobules with the hormone prolactin... and they produce milk.

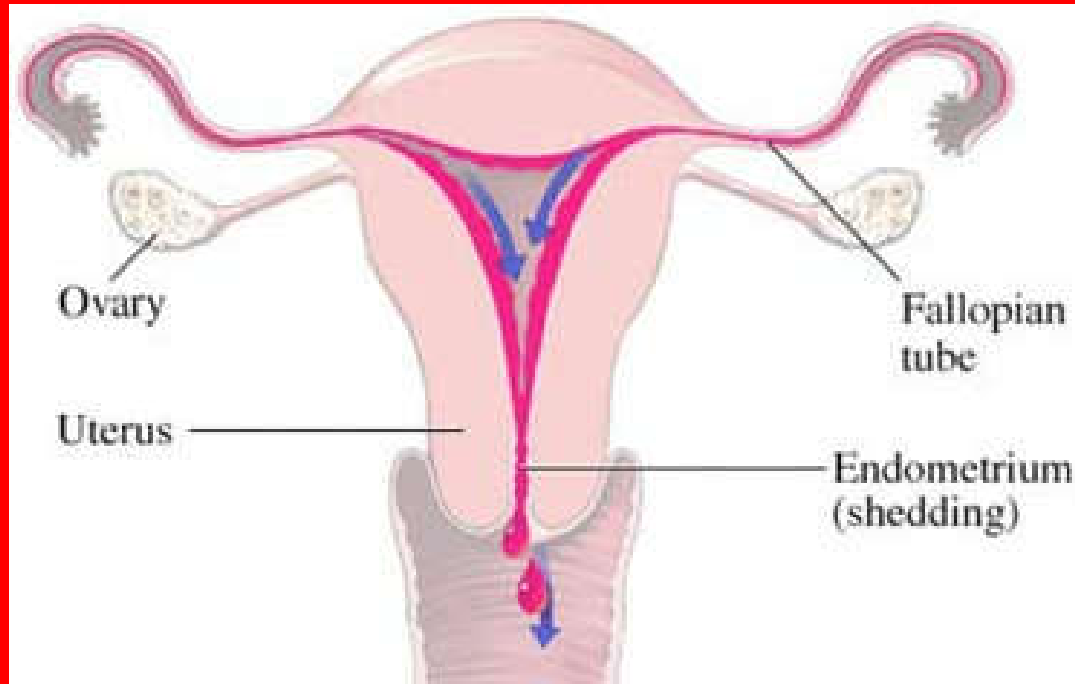
Female reproductive system: the breasts...

The dark-colored circle at the tip of the breast is called the areola (ah REE ah lah). It contains sebaceous glands to keep the skin conditioned. In the center is the nipple, where ducts from the lobules open. The first secretion from the breast is not a true milk, but a thin yellowish substance called colostrum.



Colostrum contains nutrients and the mother's immunities that can protect baby.

Female reproductive system: the menstrual cycle...

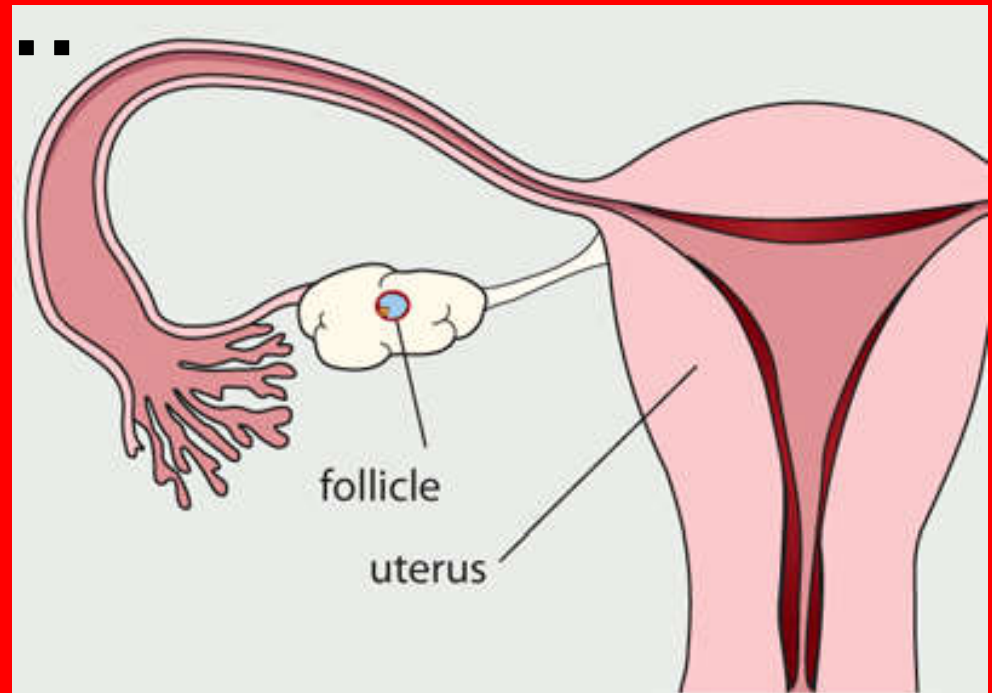


The onset of the menstrual cycle, or menarche, begins at puberty and ceases at menopause. The cycle has 3 phases:

The follicular phase is characterized by menstruation, when the thickened lining of the endometrium is shed because no egg was fertilized or implanted. Just prior to this phase is a premenstrual period characterized by hormonal and physical changes.

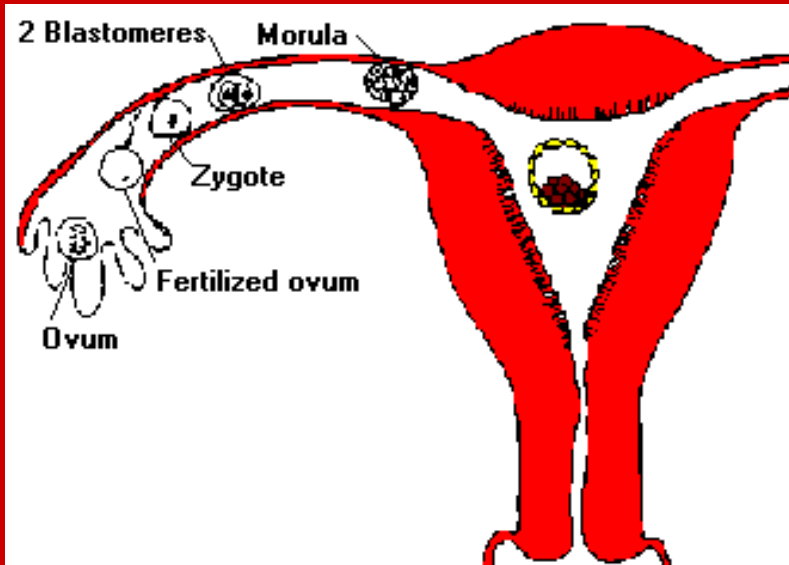
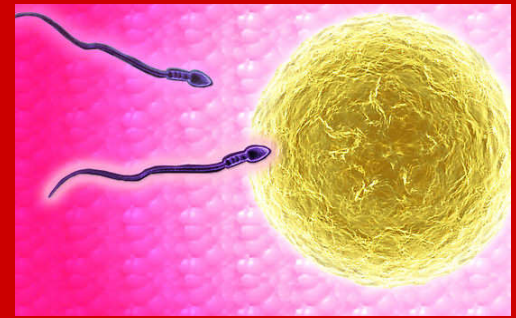
Female reproductive system: the menstrual cycle...

The ovulatory phase comes next. Estrogen is the hormone produced by the ovaries, which stimulates the maturation of a follicle and thickens the endometrium.



The luteal phase follows ovulation, and is characterized by the development of the corpus luteum, the secretion of progesterone, the preparation of the endometrium for implantation of a fertilized egg, and the formation of a thick mucus to block the cervix once the egg passes out of the fallopian tube.

Female reproductive system: pregnancy...



At the moment of conception, a single sperm with 23 chromosomes (carrying genetic information from the father) penetrates/fertilizes a single egg with 23

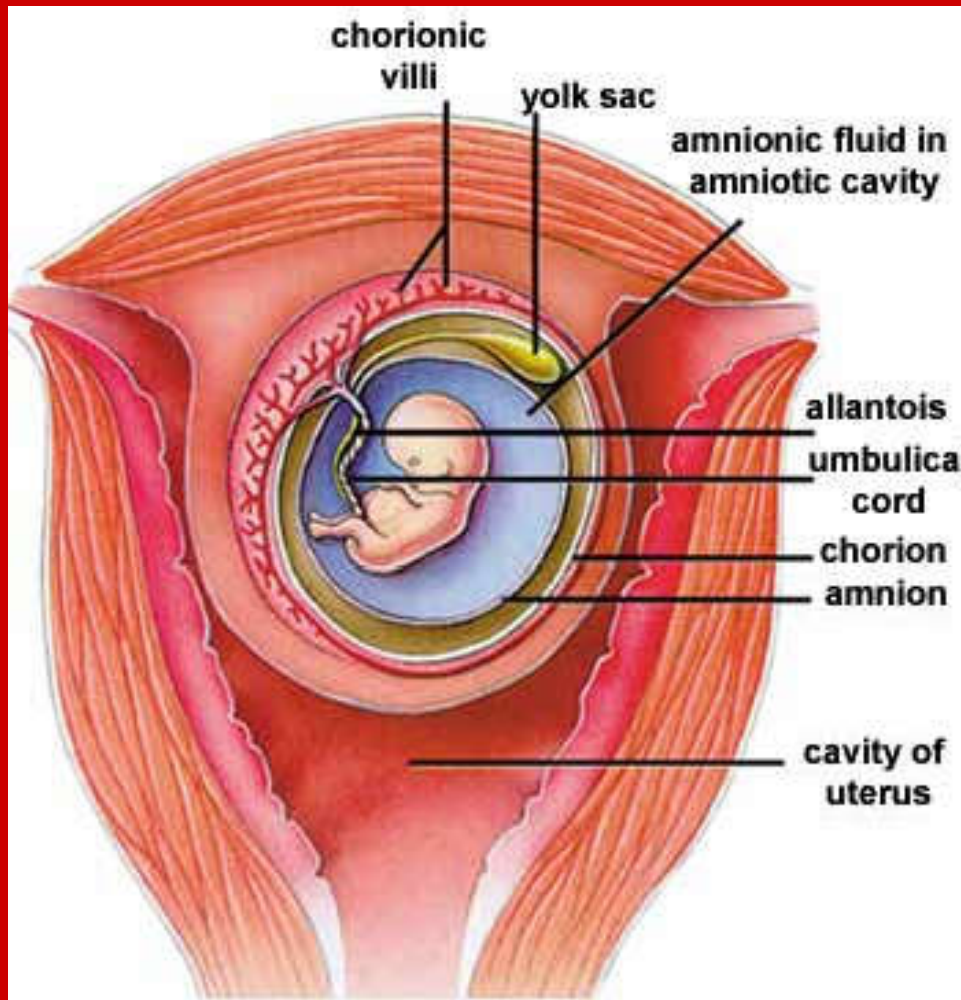
The fertilized egg implants in the uterus.

chromosomes (carrying genetic information from the mother).

Progesterone production increases to signal a pregnancy; it can be detected in urine and blood.

The resulting cell, a zygote, now has 46 chromosomes. The cell begins dividing and is also called a blastocyst. From week 2-8, it is called an embryo.

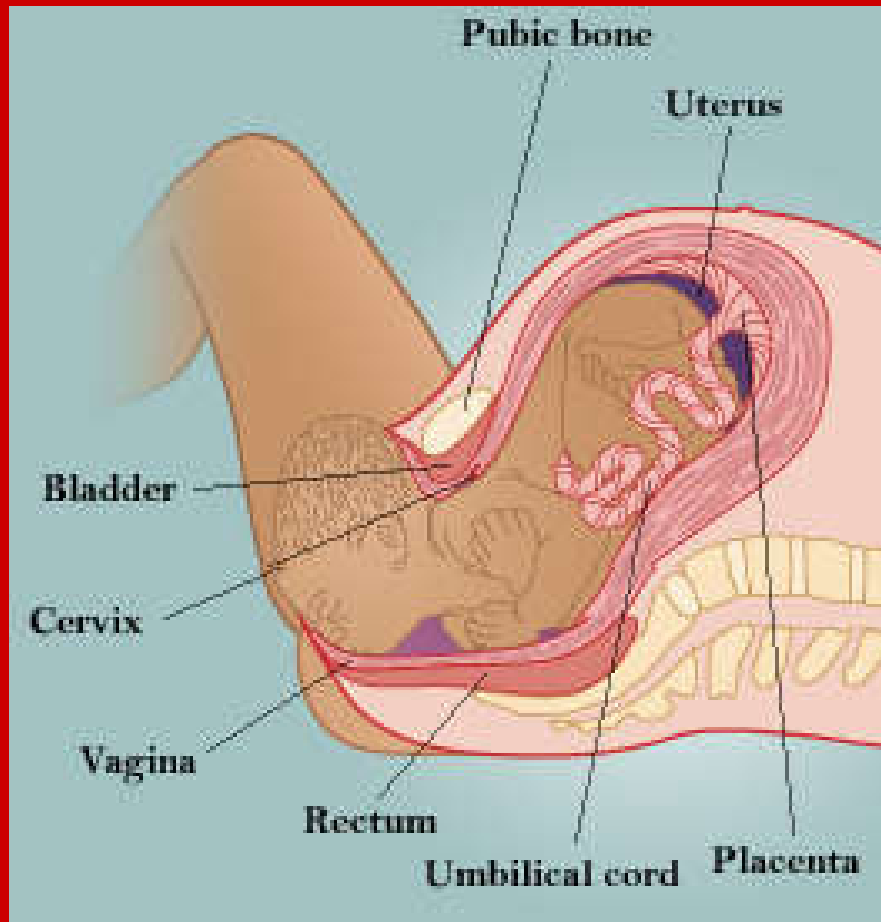
Female reproductive system: pregnancy...



The embryo is suspended in an amniotic sac surrounded by fluid during the 280 day gestation period. The umbilical cord attached at the navel connects it to the placenta, where it gets nutrients and oxygen. During the 1st trimester, all parts of the embryo are formed.

During the second trimester all parts start to function; during the last trimester the embryo is now called a fetus and the main task is growth.

Female reproductive system: pregnancy...



Labor, characterized by muscle contractions, dilation (to 10 cm) and effacement (thinning) of the cervix, and expulsion of the mucous plug that formed in the cervix, signals the onset of parturition... the childbirth process. The cephalic, or head-first delivery, is the most common. Breech is a backward presentation;

Caesarian is delivery through an incision in the abdomen.

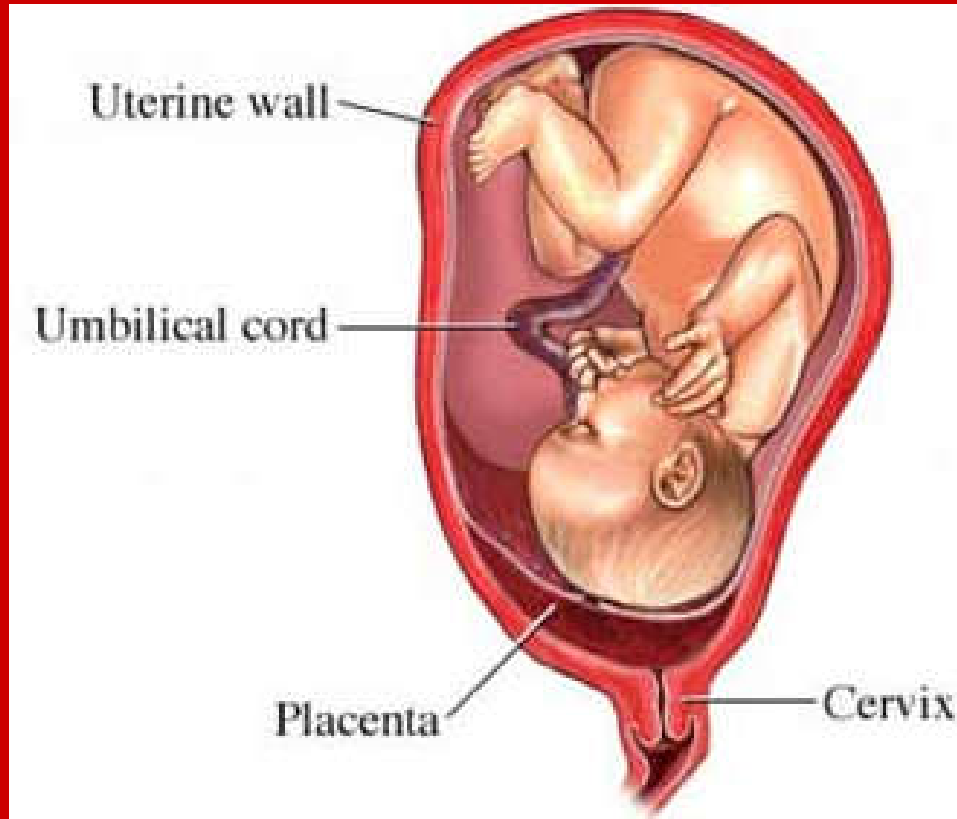
The umbilical cord is cut and clamped, and placenta (afterbirth) is delivered following birth of the baby.

Female reproductive system: pregnancy...



The newborn may be covered with traces of vernix caseosa (cheesy coating) or lanugo (downy hair) that protected the skin before birth. The health of the baby is immediately evaluated on the APGAR scale. Color, heartbeat, reflexes, muscle tone, and breathing are scored on a scale of 0-10.

Female reproductive system: pregnancy...

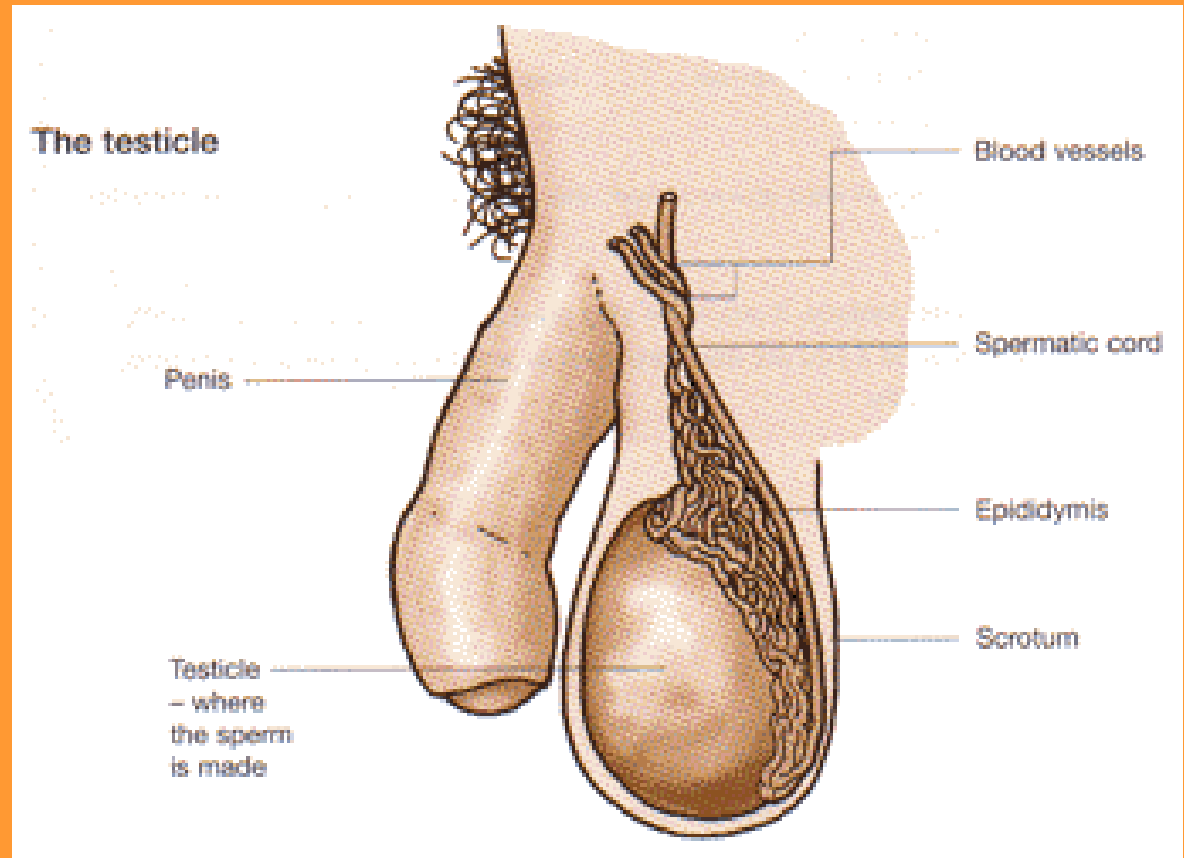


Pregnancy can be complicated by certain conditions:

1. Placenta previa is the development of the placenta over the opening of the cervix
2. Preeclampsia is a pregnancy- induced hypertension (high blood pressure)
3. Spontaneous abortion or miscarriage is the loss of a fetus during the first 20 weeks, often due to abnormalities, trauma, or lifestyle choices.

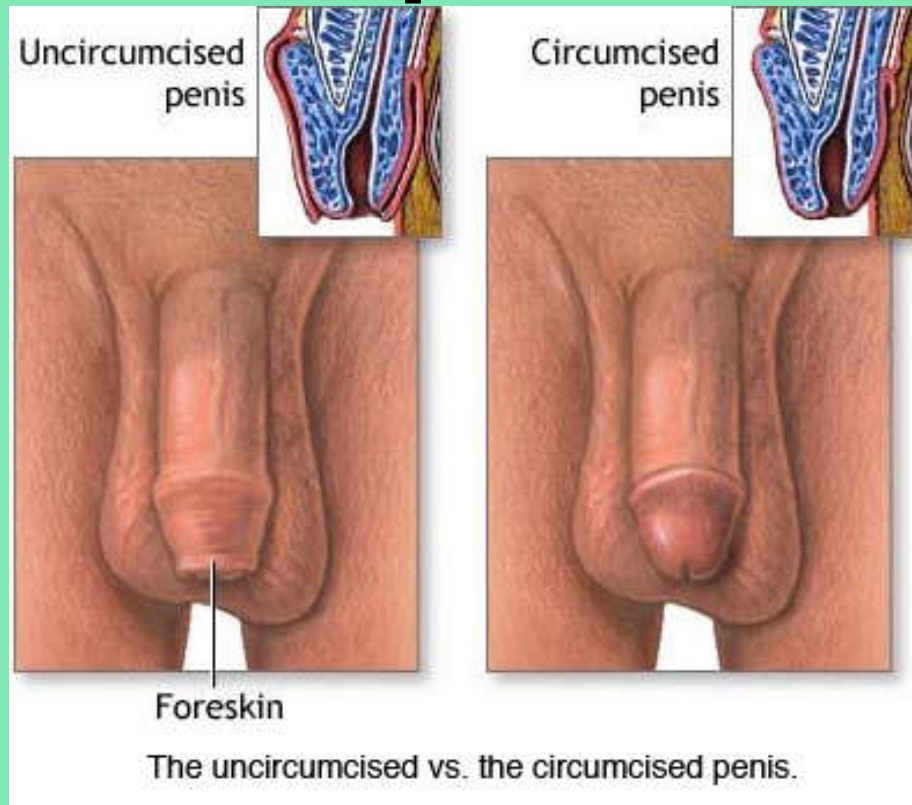
Male reproductive system: scrotum

The scrotum is a pouch of skin suspended from the perineal area and divided into two sacs... each containing one testicle and epididymis.



The scrotal tissue contracts in the absence of sufficient heat, pulling the testes up closer to the body where the temperature maintains the viability of sperm.

Male reproductive system: penis

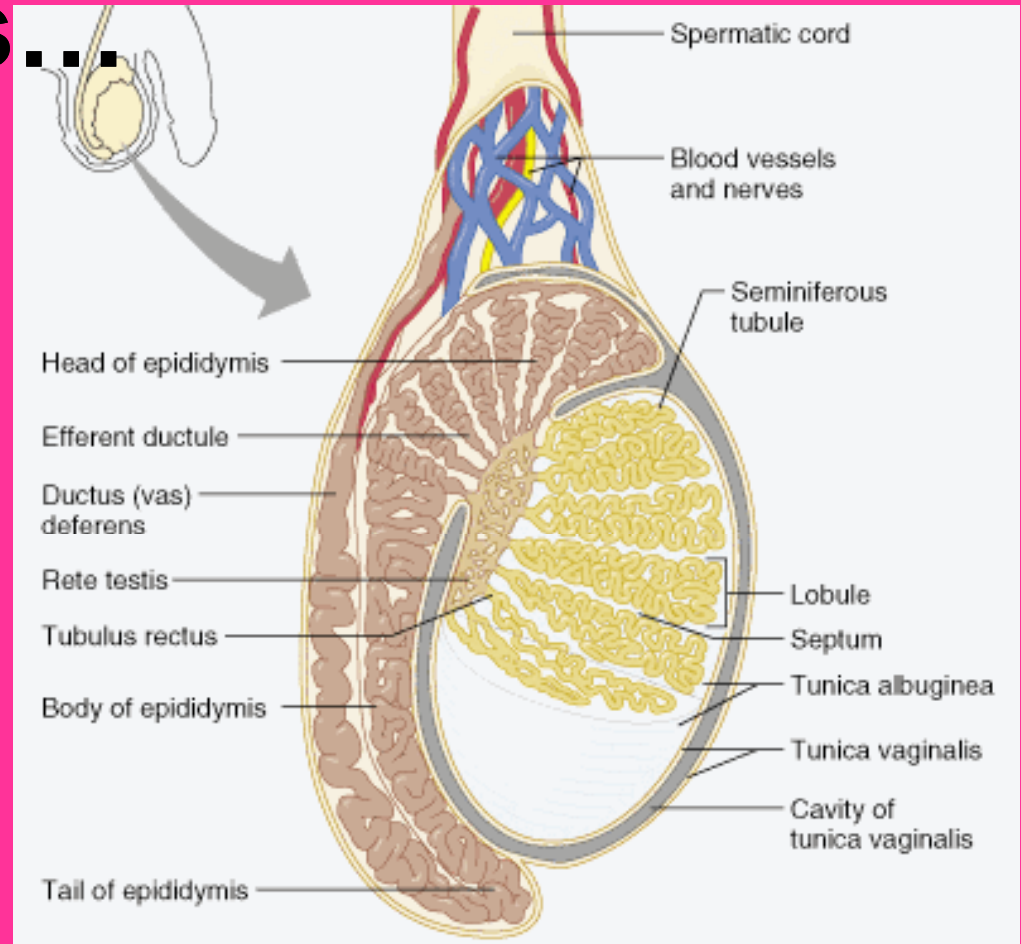


The urethra runs the length of the penis from the bladder to the meatus (me \bar{A} tus). The flaccid penis fills with blood during arousal, causing an erection and allowing for the function of copulation/intercourse.

A lubricant, smegma, is produced under the prepuce on the penis. This foreskin may be circumcised/removed for hygiene or religious reasons. It covers the glans/head that is filled with nerve endings.

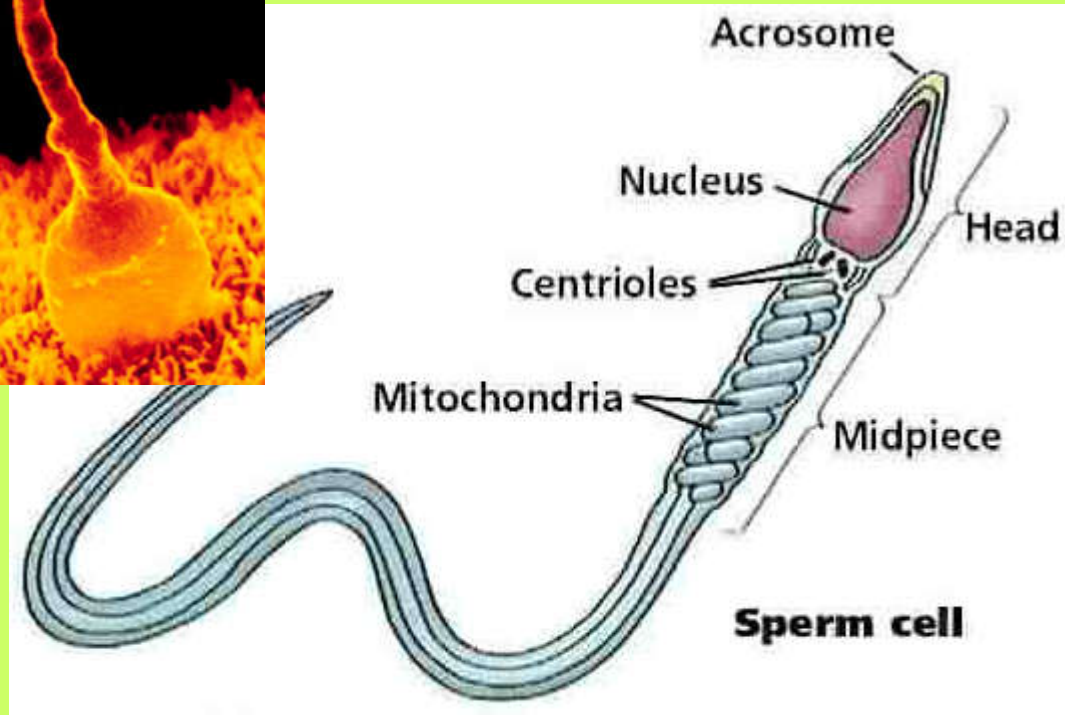
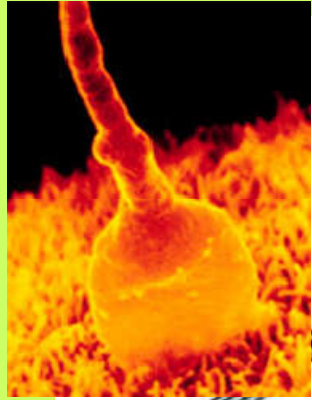
Male reproductive system: testes and epididymis

The oval-shaped testes are located in the scrotum, and are each divided into 250 lobules. Coiled within the lobule are seminiferous tubes where the sperm are formed.



The mature sperm are stored in the epididymis, a tube 13-20 feet in length, coiled and lying on the side of each testicle.

Male reproductive system: sperm...

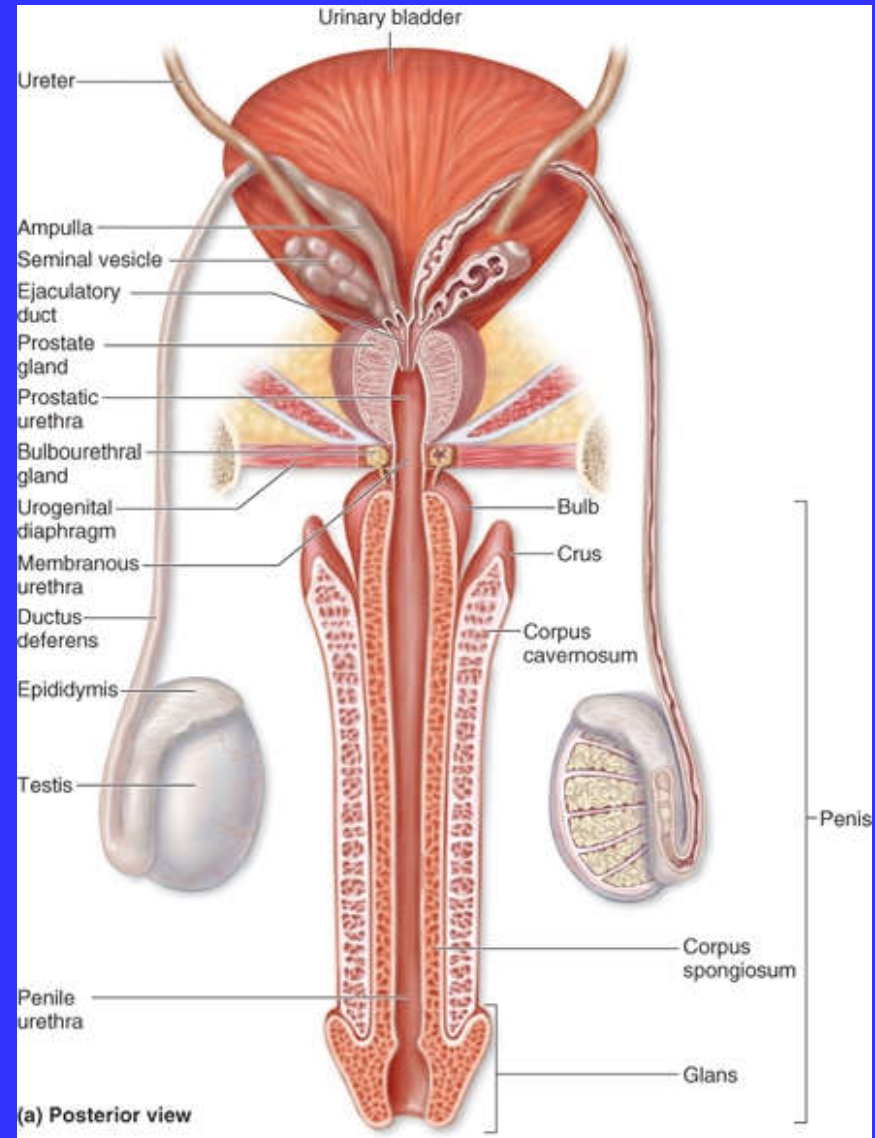


The acrosome (AK roh zome) covering the head of the sperm contains enzymes that help it penetrate the ova. The head carries the genetic material. The midpiece supplies energy. The tail or flagellum (flah JELL um) provides motility.

Sperm carry either an X/female OR Y/male chromosome. Since all ova carry the X/female chromosome, the male sperm does influence the baby's sex.

Male reproductive system: vas deferens and seminal vesicles...

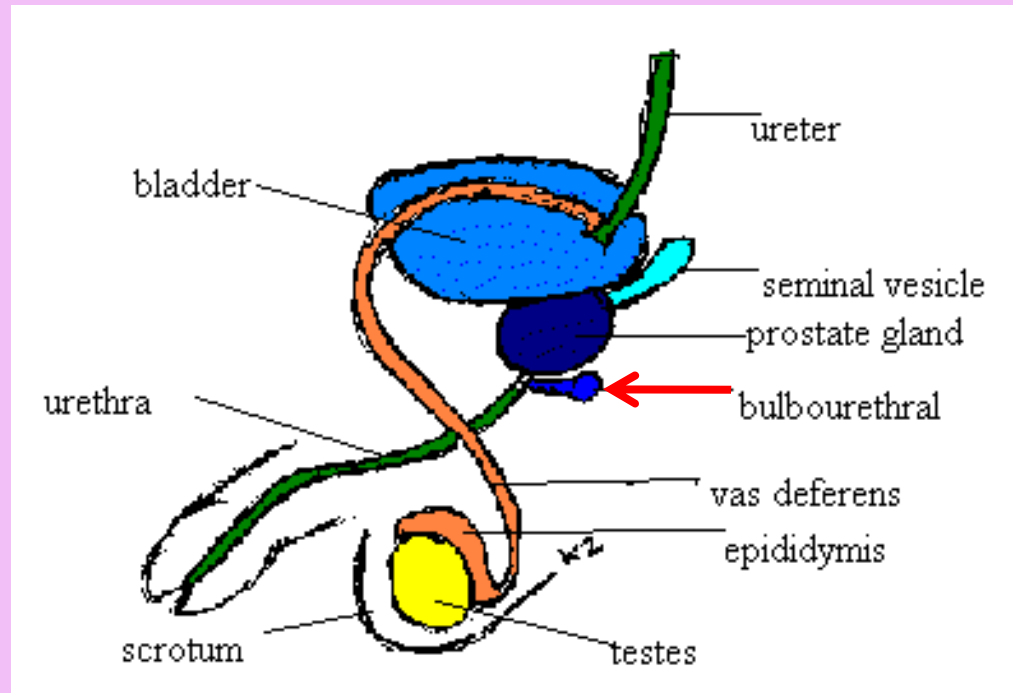
The vas deferens are muscular tubes transporting sperm from the epididymis to the seminal vesicles. The seminal vesicles produce a slightly alkaline fluid that mixes with the sperm and becomes part of the semen ejaculated during the male orgasm. It protects the sperm from the acidity of the urethra.



Male reproductive system: Prostate and Cowper's glands

The prostate gland also secretes an alkaline fluid that mixes with the sperm as part of the semen.

Enlargement of the prostate, benign prostatic hyperplasia, obstructs the flow of urine through the urethra.



The Cowper's or bulbourethral glands (bull boh yur REE thral) produce another mucous- alkaline secretion in the urethra, excreted from the glands just before ejaculation.

Anatomy & Physiology

THE END

REPRODUCTIVE SYSTEM

