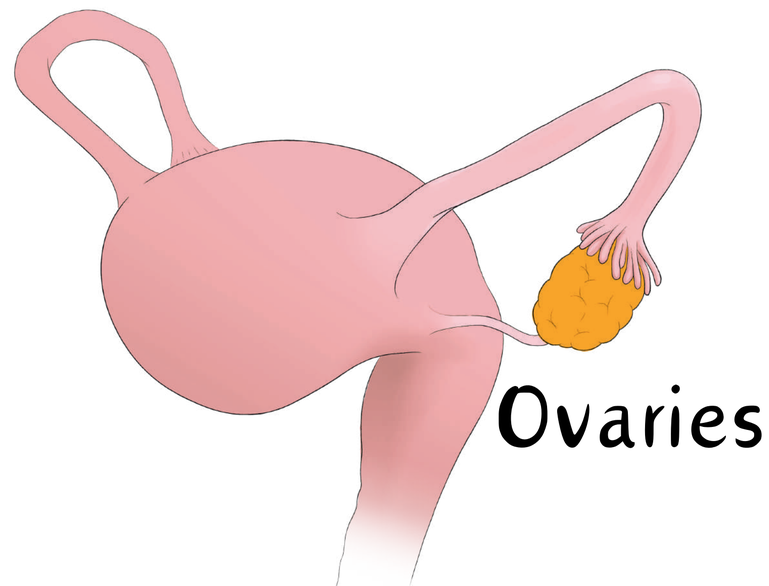
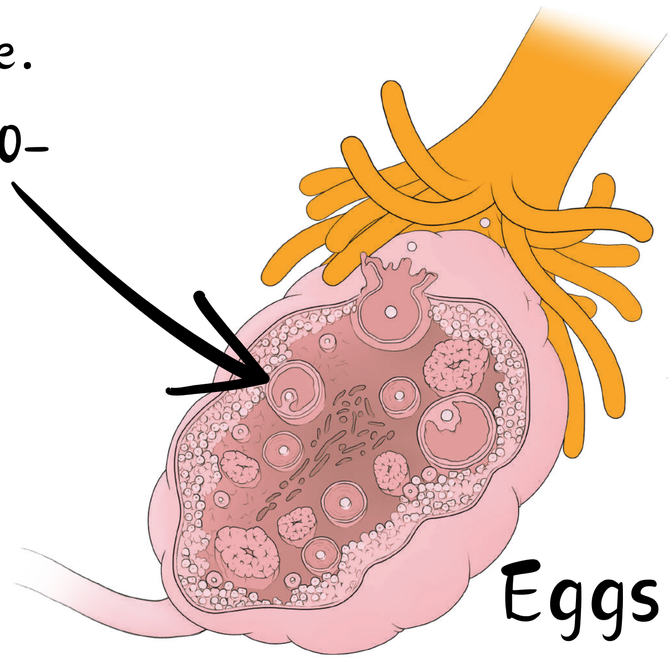
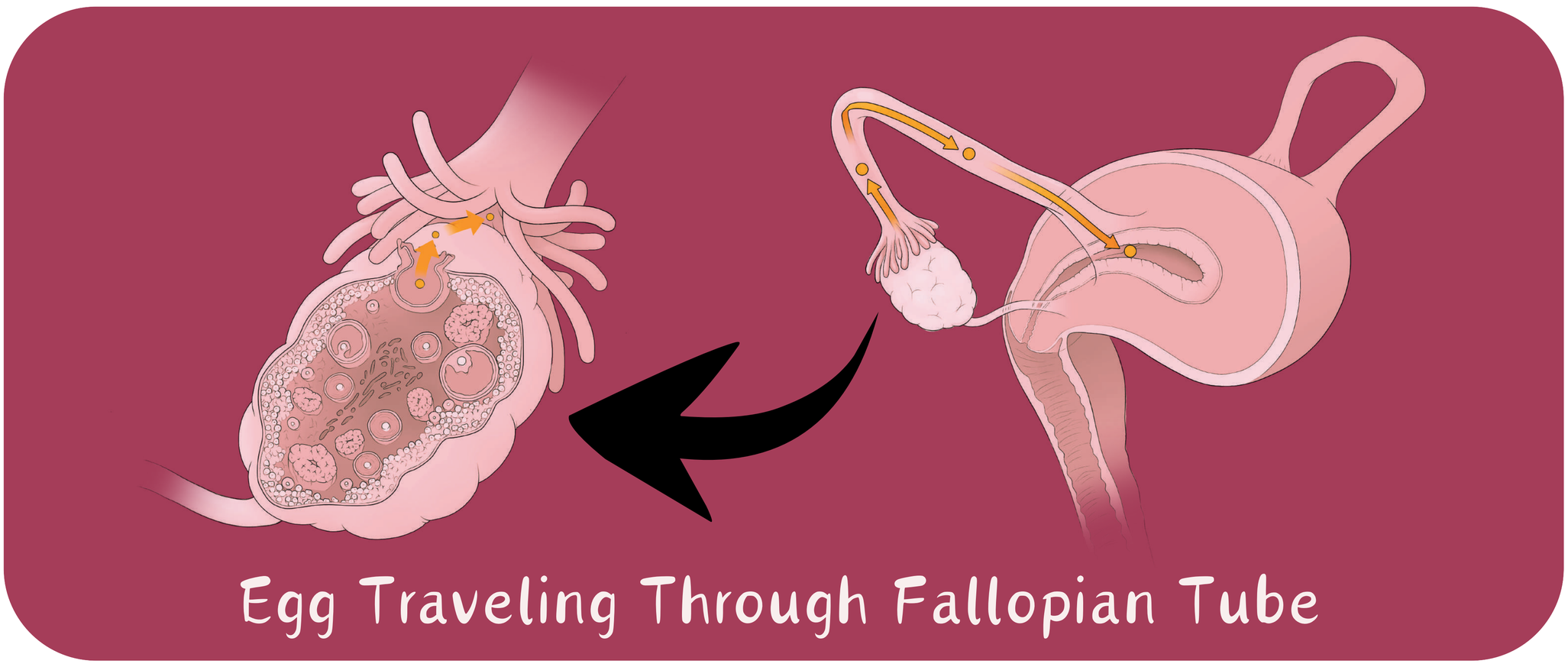
Mometrix
TEST PREPARATION

Reproductive System

- The female gonads, the ovaries, are responsible for producing estrogen.
- There are two small ovaries, one located on each side of the peritoneal cavity.
- These organs produce the eggs that the female carries and also play an important role in how the female body develops.
    - They are involved in hair distribution, breast development, widening of the hips, proportions, and a woman's cycle.
    - They hold 2–3 million eggs but only mature around 300–350 eggs in a lifetime.
- Connected to the ovaries are the fallopian tubes.
- These are narrow tubes that transport the eggs from the ovaries to the uterine body.
    - Surprisingly enough, fertilization often happens in these tubes.
    - The fertilized egg then travels through the uterine horn and into the uterus, where it implants into the wall of the uterus.

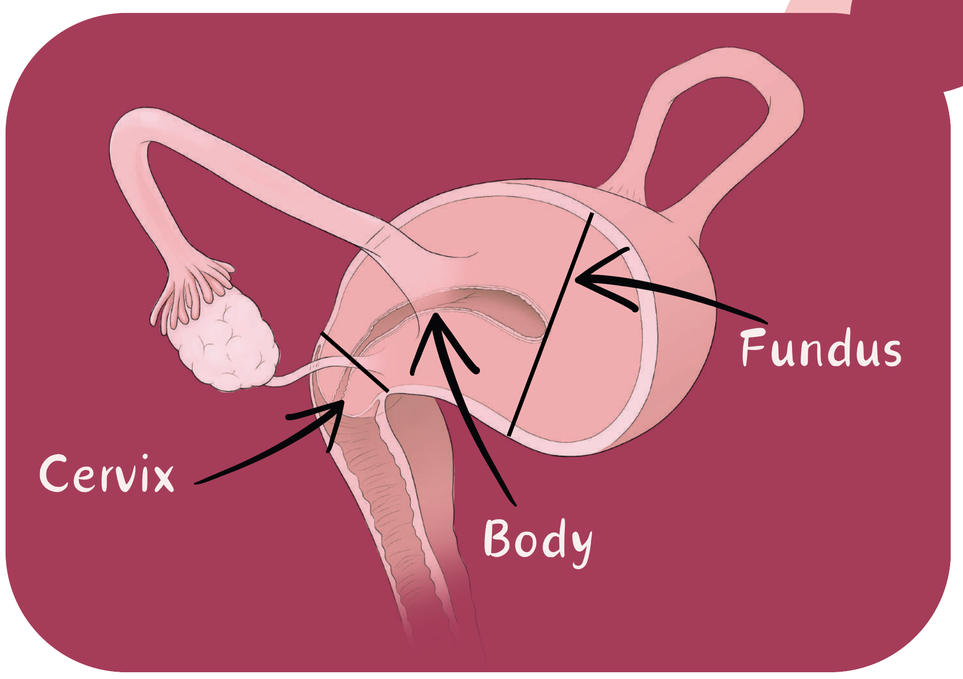




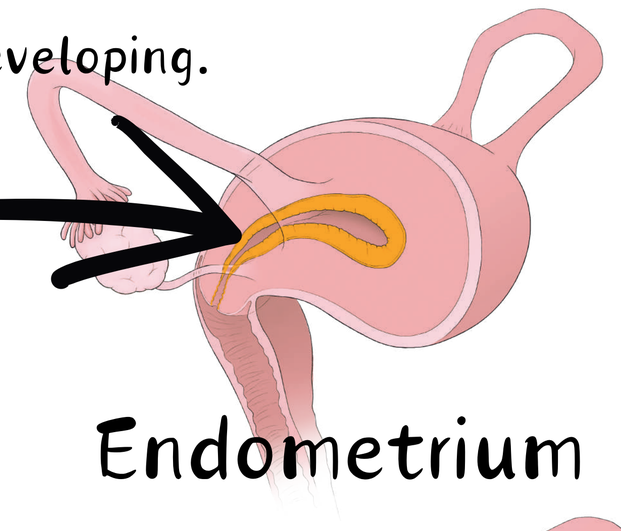


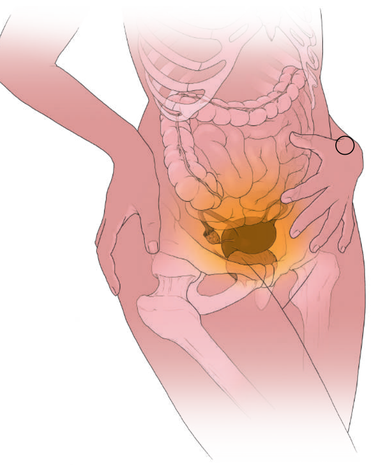
Reproductive System

- The uterus plays a vital role in the reproductive system.
    - This is where the embryo, zygote, and fetus mature.
    - The uterus is a pear-shaped organ that maintains pregnancy, carries out mensuration, and also preforms labor.
- There are three parts to the uterus: the fundus (the top of the uterus), the body (the main part of the uterus where the embryo implants), and the cervix (this is the narrow opening at the bottom of the uterus).

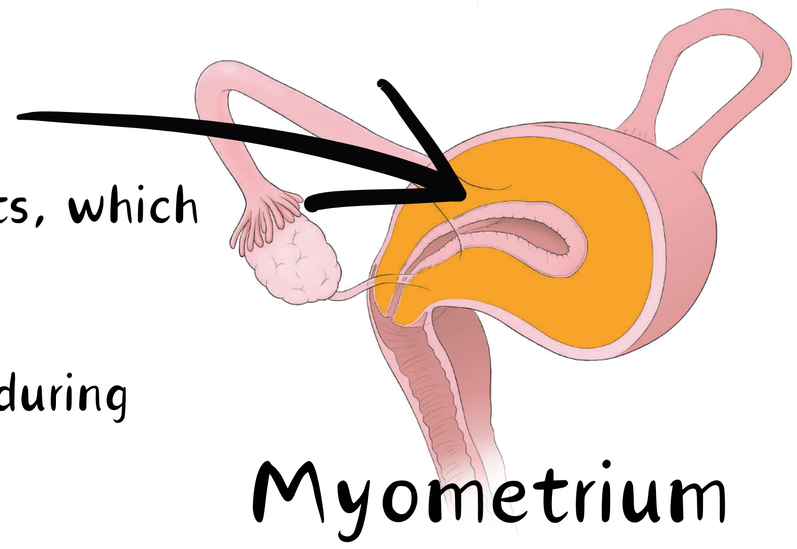


- The cervix needs to dilate to 10 cm for a woman to deliver vaginally.
    - Otherwise, the cervix remains closed completely.
        - This protects the fetus from exposure to infection and protects the amniotic sac from sources that may cause its rupture.
    - It holds the amniotic sac inside of a female while the child is developing.
- The uterus is made up of three layers.
    - The endometrium is the inner layer of the uterus.
        - This is the layer that sloughs off during a woman's menstruation.
        - It is also the layer where the embryo implants itself.

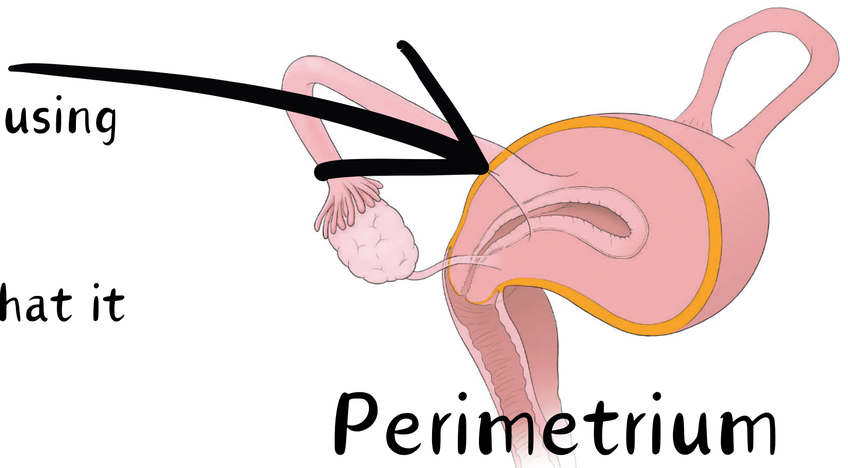




    - Then there is the myometrium, which is the middle layer.
        - This layer is made up of smooth muscle that contracts, which can cause cramps.
        - This is also the layer that preforms the contractions during labor.

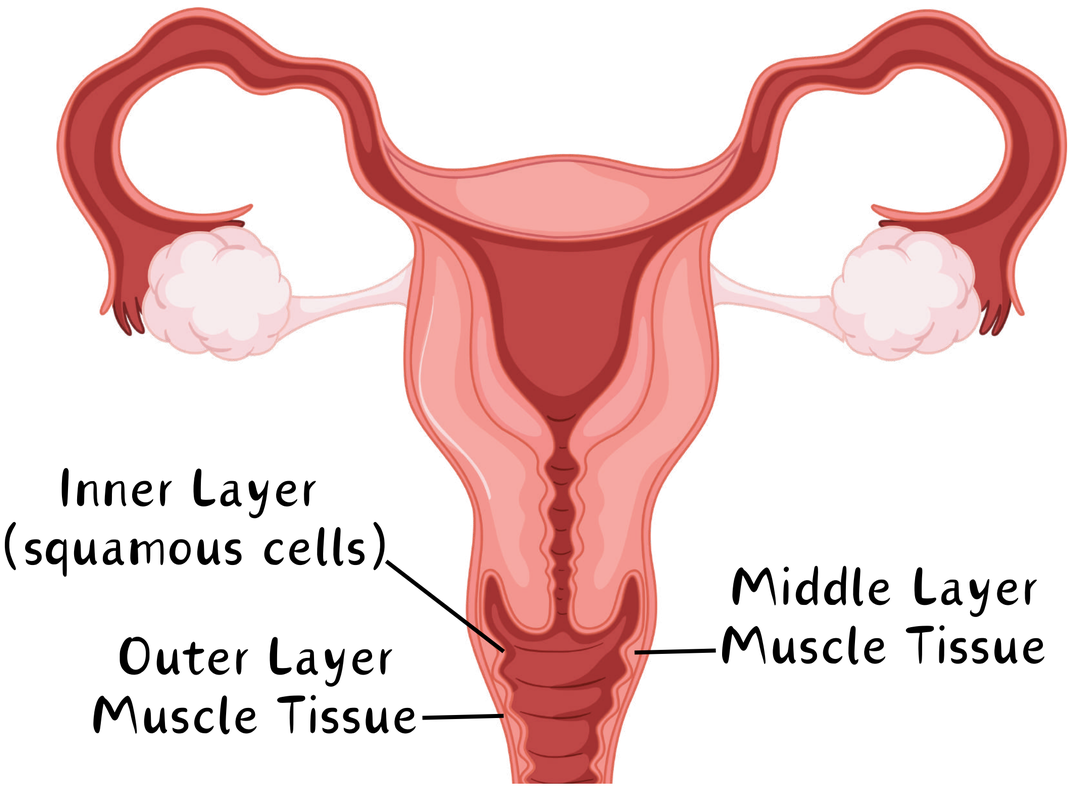


    - The outside layer of the uterus is the perimetrium.
        - This layer lubricates the uterus to protect from causing friction with the surrounding organs.
            - The uterus likes to move, so it is important that it doesn't cause damage to other organs.



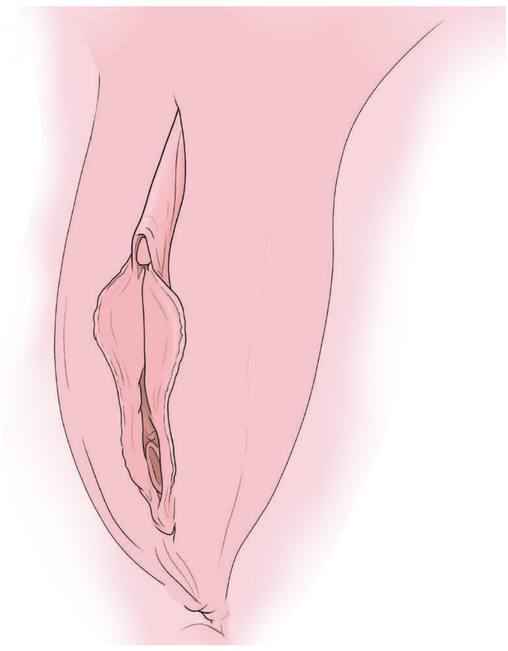
Reproductive System

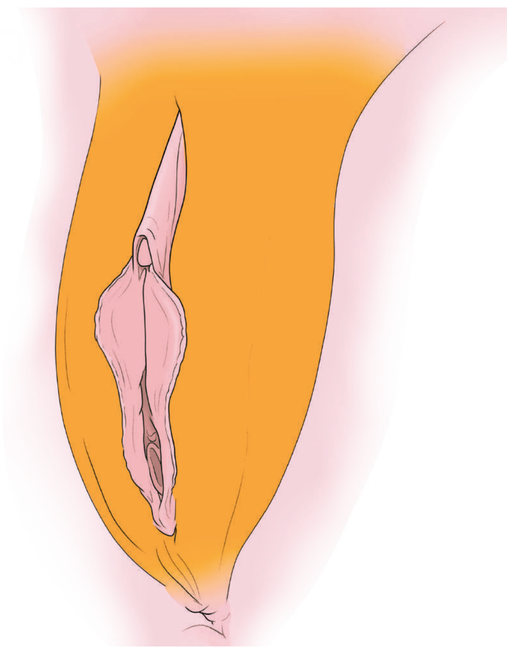
- The vagina is the copulatory organ for the female.
- This receives the male copulatory organ during intercourse and transfers the semen through the cervix into the uterus.
- There are three layers that make up the vagina
  - The inner layer of the vagina is made up of squamous cells (so it's tough) because it has to withstand the friction during intercourse.
  - The middle layer is made of muscle tissue
  - The outer layer is connective tissue.
- During intercourse, the vagina expands and turns a darker color.
  - It is the woman's version of an erection.
    - Once climax has been reached, the vagina shortens, shrinks back down, and lightens in color.
- The vagina is also called the "birth canal."
  - It is where the baby, menstruation, and ovulation discharge happen.
  - The vagina is a self-cleaning canal, and if someone tries to wash it then it will upset the perfect pH of the canal.



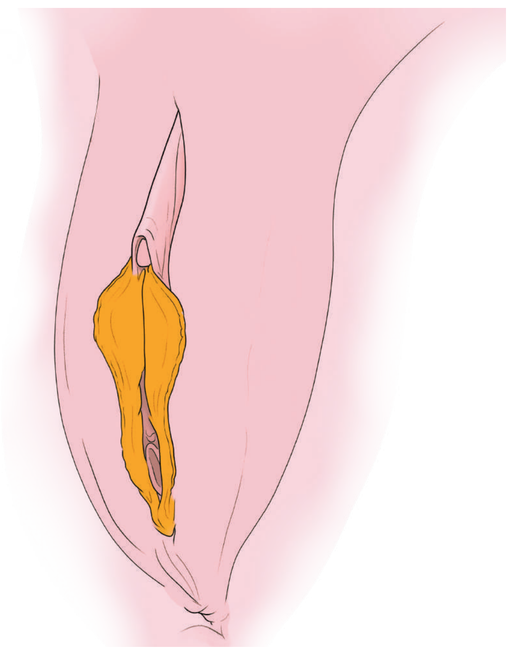
Reproductive System

- The vulva is the outside of the vagina.
  - This part helps protect the vagina and provide pleasure for the female during intercourse.
- The mons pubis is below the belly and provides padding for the pubic bones.

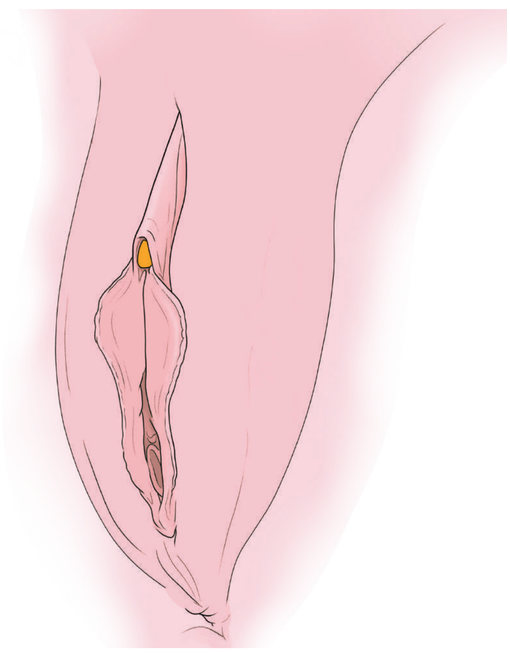




- The labia majora are the outer fold of skin on each side of where the urethra and vaginal opening are.



- The labia minora are the smaller folds that are specifically designed to protect the woman's openings.

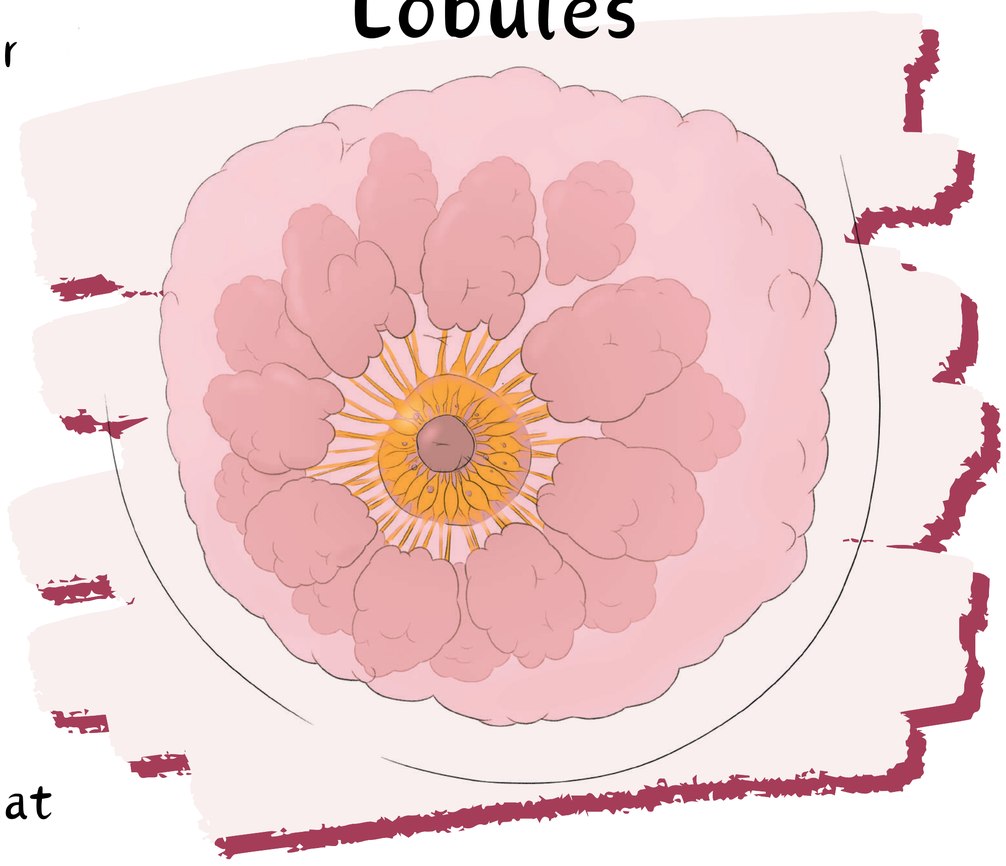


- The clitoris is right below the mons pubis and is the main source of pleasure for a female during intercourse.
  - It stimulates sexual arousal due to its 8–10 thousand nerve endings.

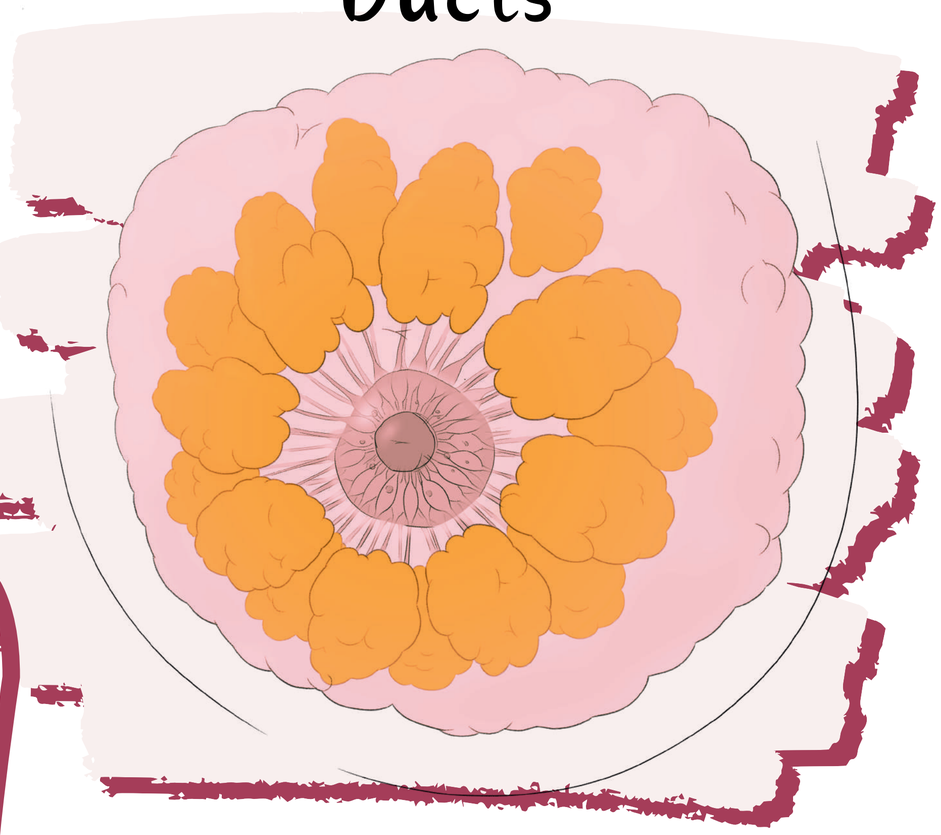
Reproductive System

- The breasts on a woman's chest are designed to feed the infant when pregnancy is over.
    - These are generally made of fat and glandular tissue.
    - There are lobules throughout the tissue that produce milk and send it along ducts to the nipple of the breast.
        - This is where the milk will pass through into the baby's mouth through several openings.
    - There is a dense layer of connective tissue that covers the breast tissue and connects it to the body.

Lobules

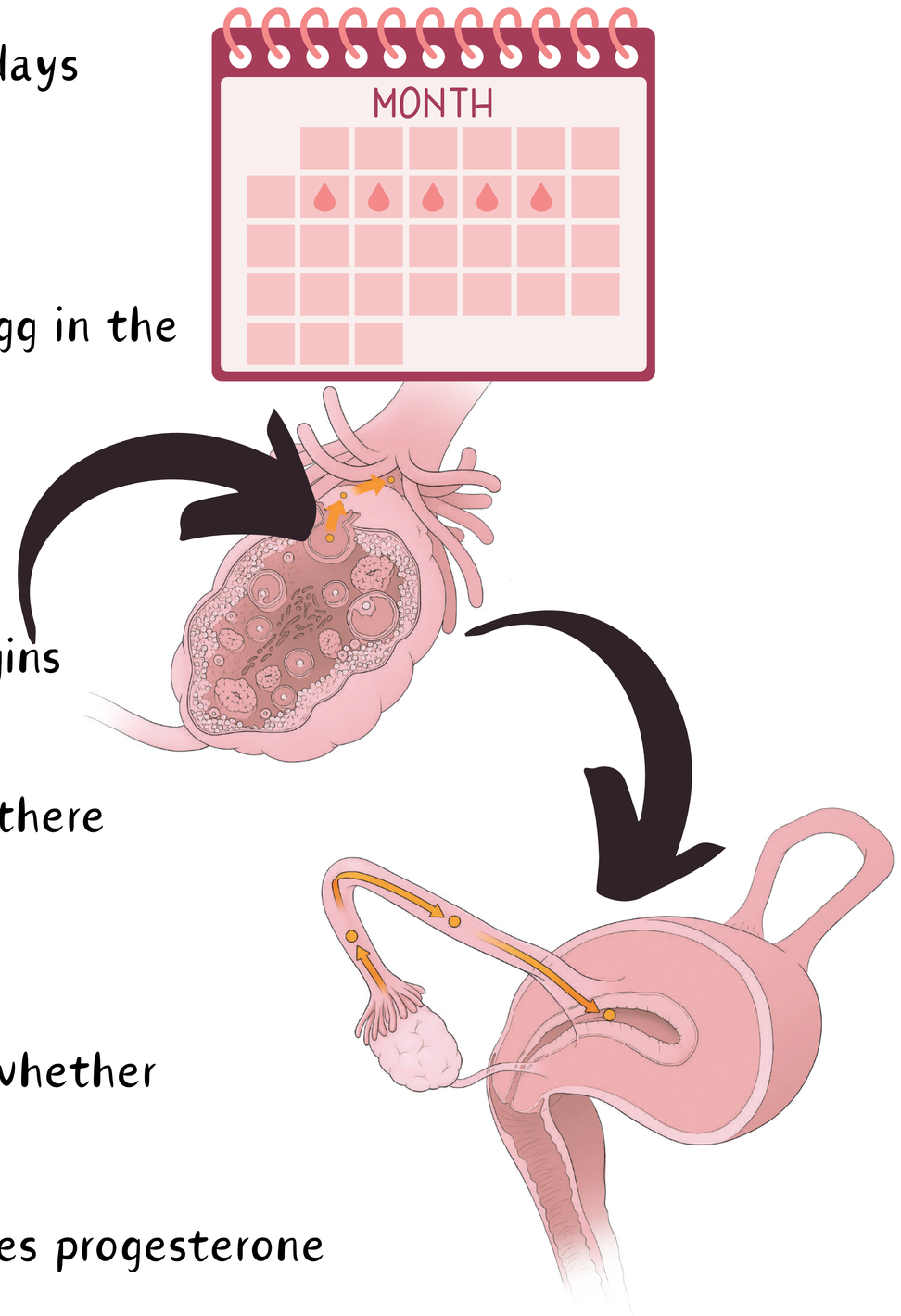


Ducts

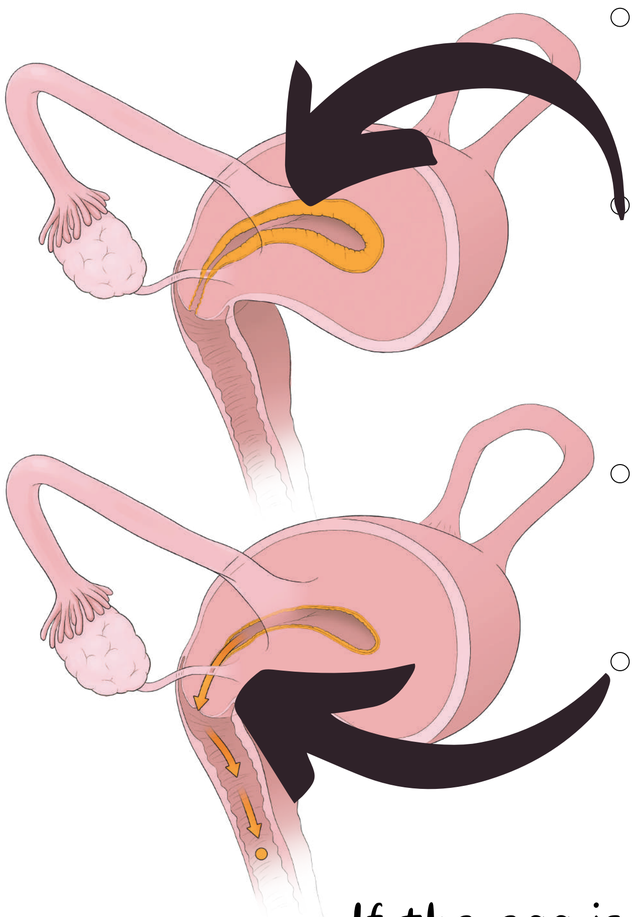


- The breasts change during pregnancy because of the major increase of hormones.
    - Estrogen creates more ducts (they look like flower petals) and makes them carry more milk for the child.
    - Progesterone increases the size of the lobules so that they can hold more milk. Prolactin is specifically for milk production (hence pro-lactin).
    - This preps the glands and gives them what they need to produce milk.
    - Oxytocin is the hormone released when a baby latches onto the nipple and begins to suck.
        - It causes a letdown of milk into the child's mouth.

Reproductive System



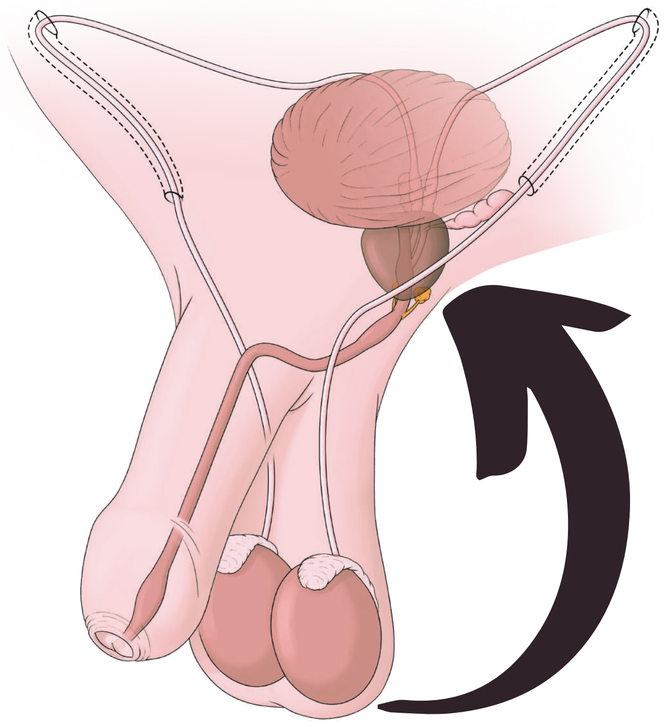
- A woman's cycle can last anywhere from 23 to 35 days (typically 28 days).
- The first part of the cycle is the follicular phase.
  - This is from the first day of menses until the egg in the ovary has matured and begins to ovulate.
  - This part typically lasts 13-14 days.
- Then there is ovulation.
- An eggs is released into the fallopian tubes and begins travelling to the uterus where it wants to implant.
  - If it gets fertilized on the way to the uterus, there will be a baby.
- After ovulation there is the luteal phase.
  - The luteal phase occurs regardless of whether fertilization has occurred.
  - This is when the mature follicle releases progesterone and causes the endometrial lining of the uterus to thicken and prepare for pregnancy.
  - If the pregnancy did not occur, the estrogen and progesterone levels fall below the requirement to keep the thick lining.
  - The lining begins to slough off and the woman bleeds around 80 mL of blood. That first day of her period marks the first day of a new cycle.

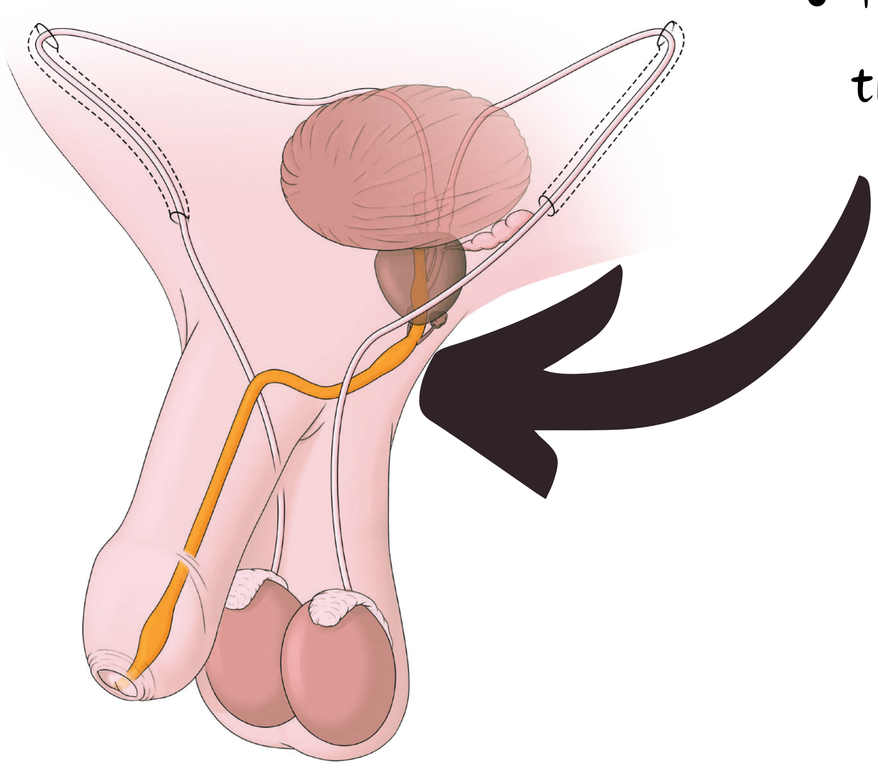


- If the egg is fertilized, then the merged egg and sperm immediately start meiosis.
- The cells begin to divide and form the embryo.
- The embryo then embeds into the lining of the uterus and begins to develop the placenta.
- The placenta holds the fetus and transfers oxygen, nutrients, etc. to the baby during development.
- The umbilical artery brings blood to the baby.

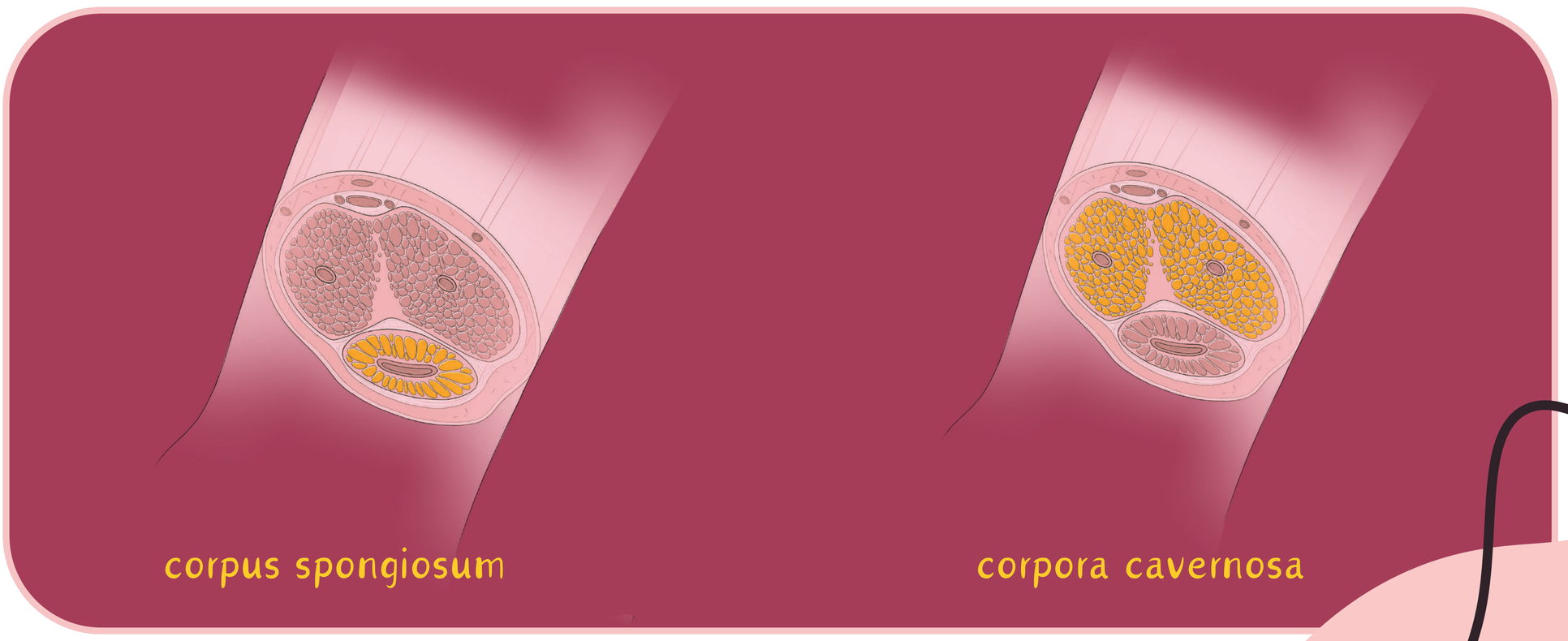
Reproductive System

- The male's copulatory organ is called the penis.
- This is the part of the male reproductive system that delivers the semen to the female's vagina.
- The penis's tip is called the glans penis (or the head). This is where all the nerve endings are that give the male pleasure during sexual intercourse.
- The base is made up of a mucous membrane and has sebaceous or bulbourethral glands that lubricate the glans.



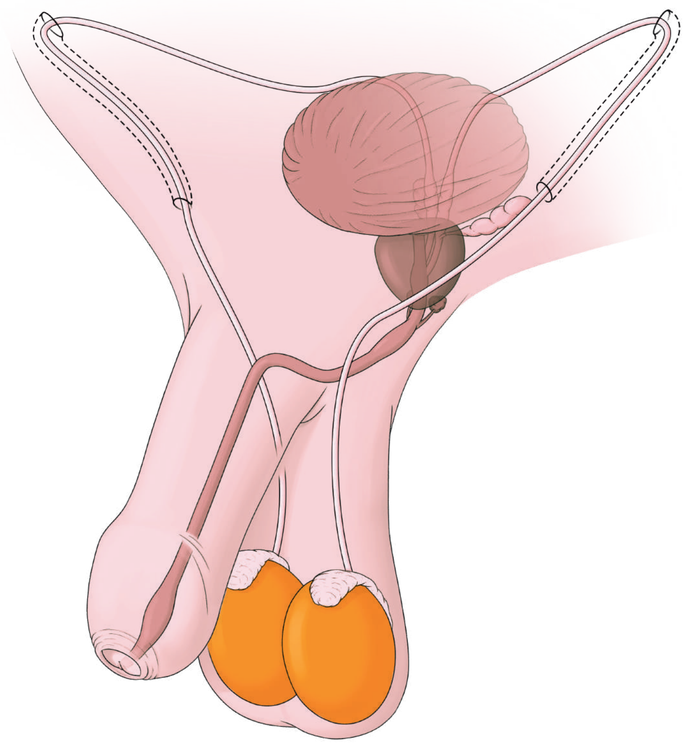


- Then there is the shaft of the penis that wraps around the urethra.
  - This portion of the organ is made of erectile tissue that will fill with blood when a man is sexually aroused.
  - There are two layers of corpora cavernosa and one layer of corpus spongiosum.
  - The urethra is the tube that expels urine and semen from the body.

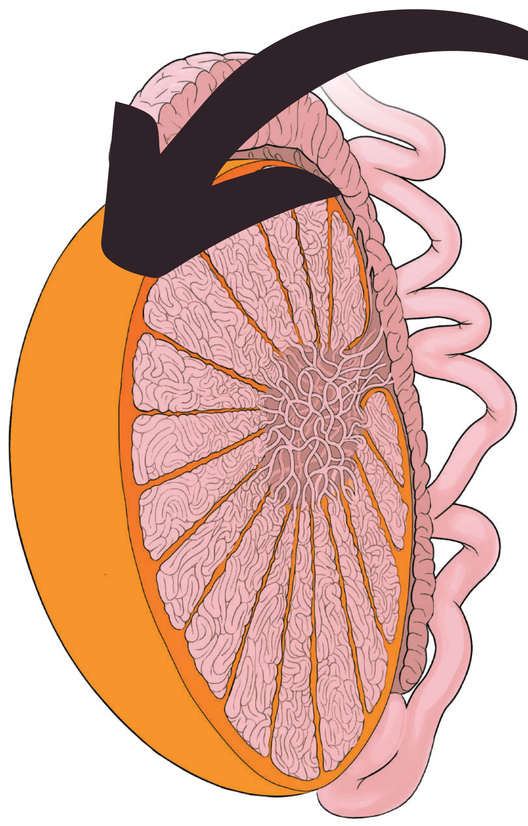


Mometrix
TEST PREPARATION

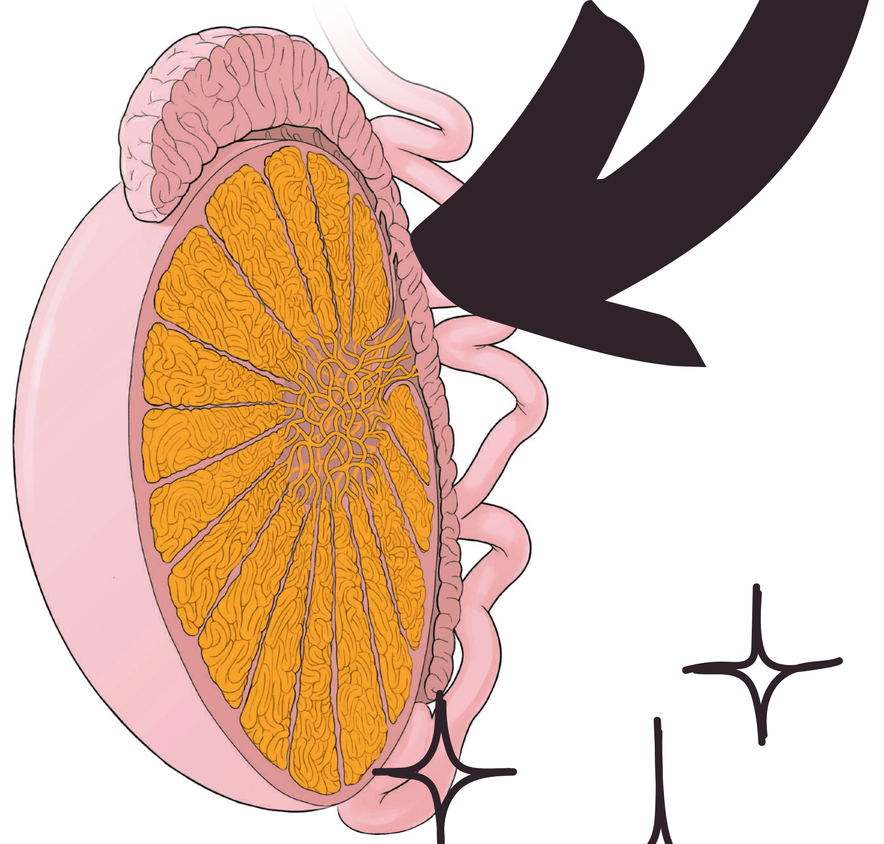
Reproductive System



- The next notable parts of the male reproductive system are the testicles.
  - These are large lobules that hang right outside the body in a sack called the scrotum.
  - They hang outside the body because sperm need a temperature that is slightly cooler than body temp.

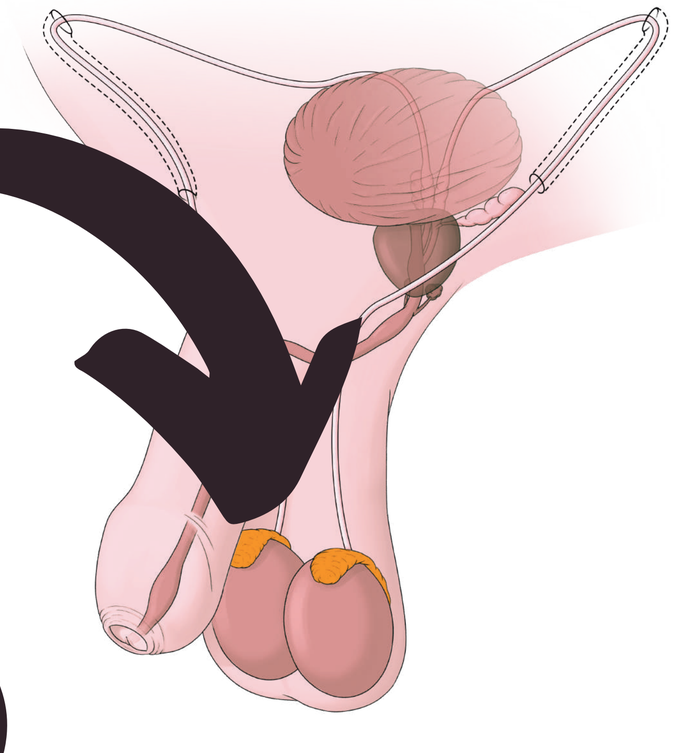


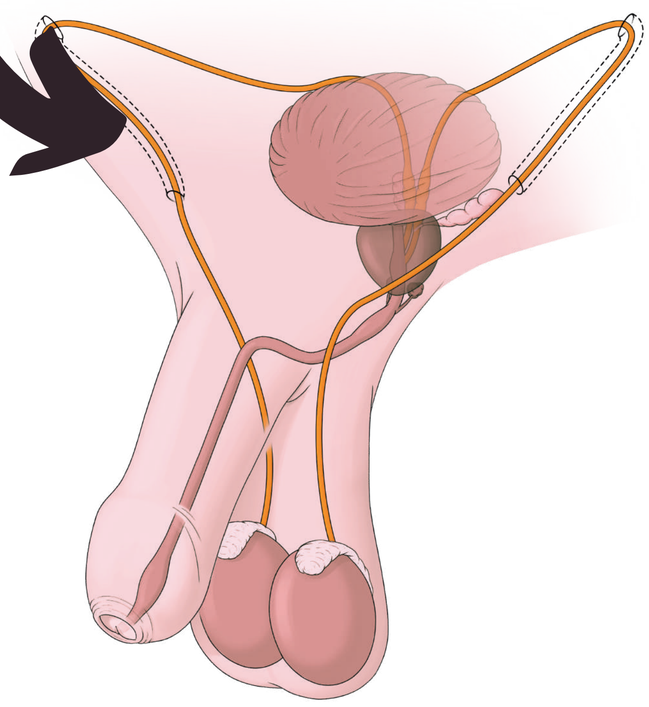
- Testes contain tunica albuginea and have around 250 lobules.
- There are several seminiferous tubules for each lobule that carry out spermatogenesis.
  - Spermatogenesis is the production of sperm.
  - There are Leydig cells located between the seminiferous tubules that are in charge of producing testosterone.
  - This is the male equivalent to estrogen.
  - Testosterone increases muscle and bone mass and changes the reproductive processes and features.
    - It also changes the way a male thinks.
      - If this hormone is low, it can result in more feminine features, low sperm count, and less aggression.

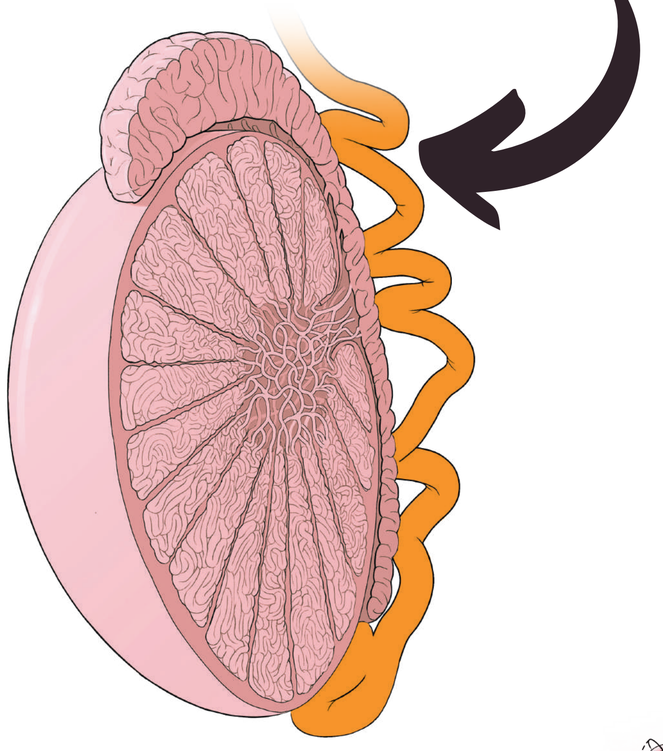


Reproductive System

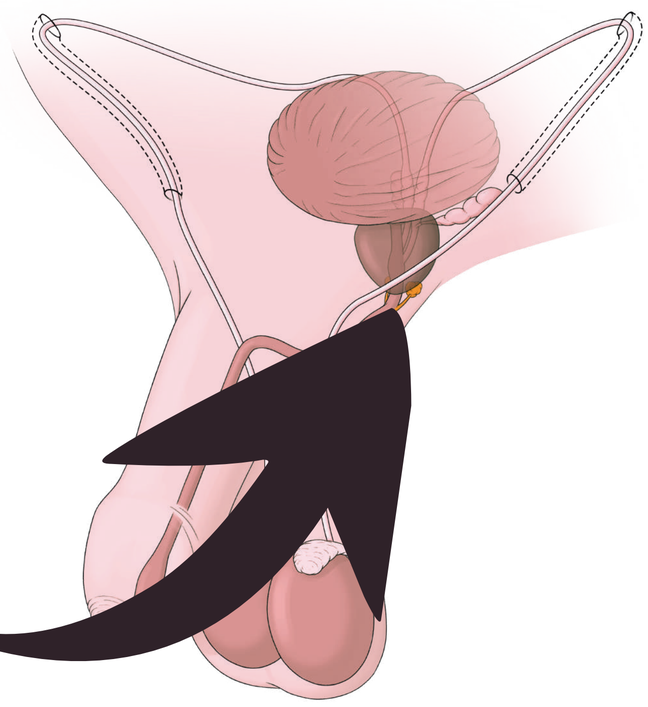
- Epididymis is a tube right next the testes that holds sperm until ejaculation happens.
- Sperm will mature in the epididymis.
- When sexual arousal happens, the epididymis contracts and begins forcing the sperm into the vas deferens.
- The vas deferens is the tube that sends the sperm to the urethra.







- This is around the area that seminal vesicles produce the fluid that the sperm live off of and swim in.
- The combination of sperm and the fluid is called "semen."



- There is one last gland called the prostate.
  - This is a donut-shaped gland that surrounds the urethra and contributes to the semen by producing an alkaline fluid.
- There is a spermatic cord that connects the testes to the body and supports the penis.
  - This cord also contains the necessary blood vessels and nerves for the penis to function.

Mometrix
TEST PREPARATION

Reproductive System

- Sperm have a head that contains the 23 chromosomes needed to fertilize an egg and complete the genetic makeup of a baby.
- The tip of the sperm is called the acrosome and contains the necessary enzymes to break down the barrier of the egg.
- The midpiece of a sperm contains a ton of mitochondria that produce the energy needed to swim all the way to the egg.
- The last part of a sperm is called the flagellum.
    - This tail-like attachment moves in a circular motion in order to propel the sperm to where it needs to go.
        - This movement is fueled by mitochondria.