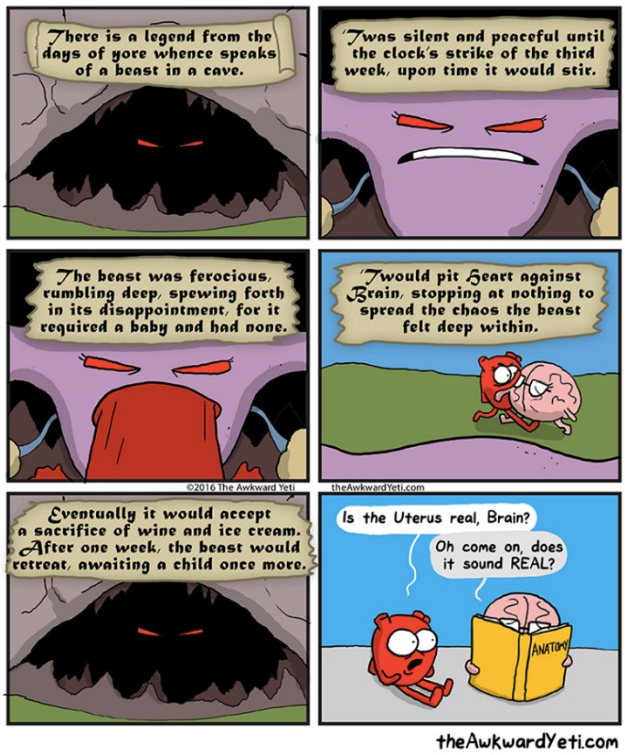
Reproductive system

Anatomy & Physiology 12

Ms Martel

AT THE END OF THIS UNIT STUDENTS WILL BE ABLE TO…

1. Describe the path of sperm from the testes to the urethra.
2. List the organs involved in seminal fluid protection.
3. Describe the roles of gonadotropin-releasing hormone, luteinizing hormone, follicle-stimulating hormone, and testosterone in male sexual reproduction.
4. Describe the relationship between the hypothalamus and the pituitary gland in the male reproductive system.
5. Describe where an oocyte ir produced and how it is transported to the uterus.
6. Describe the components of the female external genitalia.
7. Describe the events that occur during a female orgasm.
8. List the stages of the ovarian cycle and explain what is occurring in each stage.
9. Describe the process of oogenesis.
10. Summarize how estrogen and progesterone affect the uterus.
11. Describe changes that occur during menstruation, pregnancy, birth, lactation, and menopause.

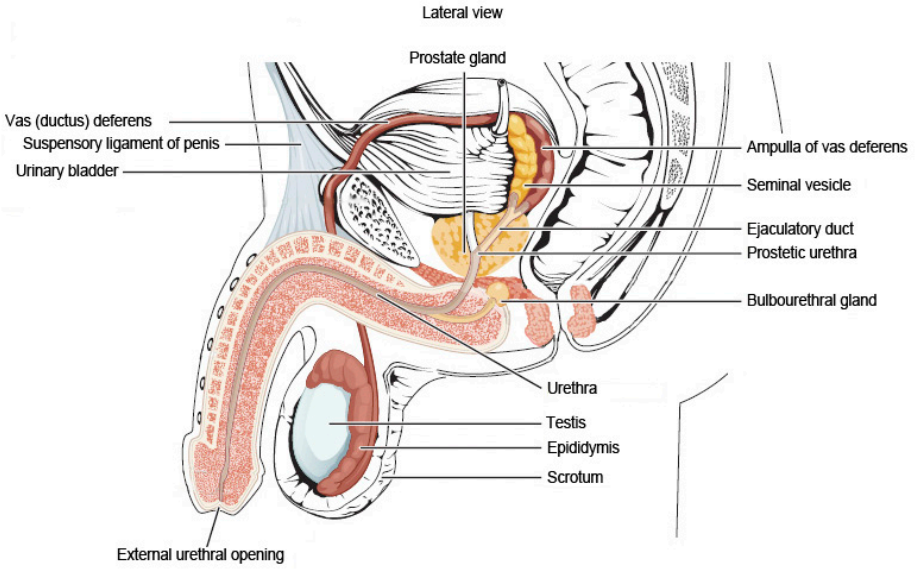


9.1 – MALE REPRODUCTIVE SYSTEM

- Organisms that carry out sexual reproduction _____
  - The reproductive system is _____

Genital Tract

- Sperm produced in the testes mature within the epididymides, which are _____ _____
  - Maturation seems to be required in order for _____
  - When sperm leave the epididymis, they enter a _____
  - Each vas deferens passes into the abdominal cavity, where it curves around the urinary bladder and _____
  - The ejaculatory ducts connect to the _____



  - During ejaculation, sperm leave the penis in _____
  - The combination of _____
  - The paired seminal vesicles lie at the base of the bladder, each has a _____ _____
- The prostate gland is a single, donut-shaped gland that surrounds the upper portion of the _____ _____
- Semen also contains prostaglandins that cause the _____
  - Scientists believe this may help propel the _____
- The penis is the male organ of _____
  - The penis has a shaft and enlarged tip called the _____
  - At birth the glans penis is covered by _____
  - Circumcision, the surgical removal of the foreskin is sometimes performed for _____ _____

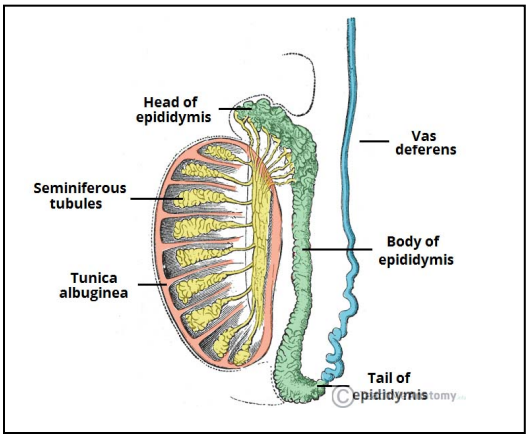
REPRODUCTIVE SYSTEM

Erection & Orgasm in Males

- Spongy erectile tissue containing distensible blood spaces _____
  - When a man is sexually excited, the arteries in the penis _____
  - Increased blood flow causes the penis to _____
- When sexual stimulation intensifies, sperm enter the _____
- During ejaculation, a sphincter normally closes off the urinary bladder so that _____ _____
- The contractions that expel semen from the penis are _____
- Following ejaculation, the penis returns to its _____
  - After ejaculation males typically experience a refractory period, during which time, _____ _____
  - There may be in excess of 400 million sperm in approximately _____

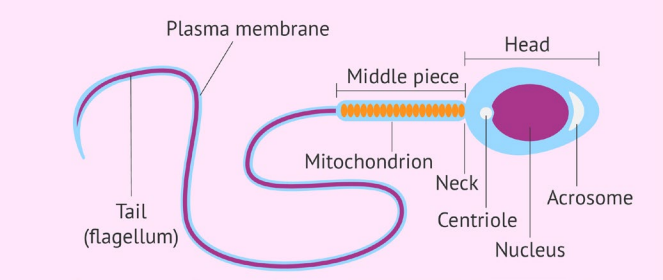
Male Gonads, the Testes

- The testes, which produce sperm as well as the male sex hormones, lie outside the abdominal cavity, _____ _____
  - The tested descend outside the abdomen because the internal temperature of the body is _____ _____



Seminiferous Tubules

- Testis are composed of compartments called lobules, each of which contains _____
  - Spermatogenesis is the production of _____
  - Sertoli cells support nourish, and regulate the _____
  - Mature sperm have a _____
  - Mitochondria in the middle piece is where ATP is produced so the tail(flagellum) _____ _____
  - The head contains a nucleus covered by a cap called the acrosome, which stores _____ _____

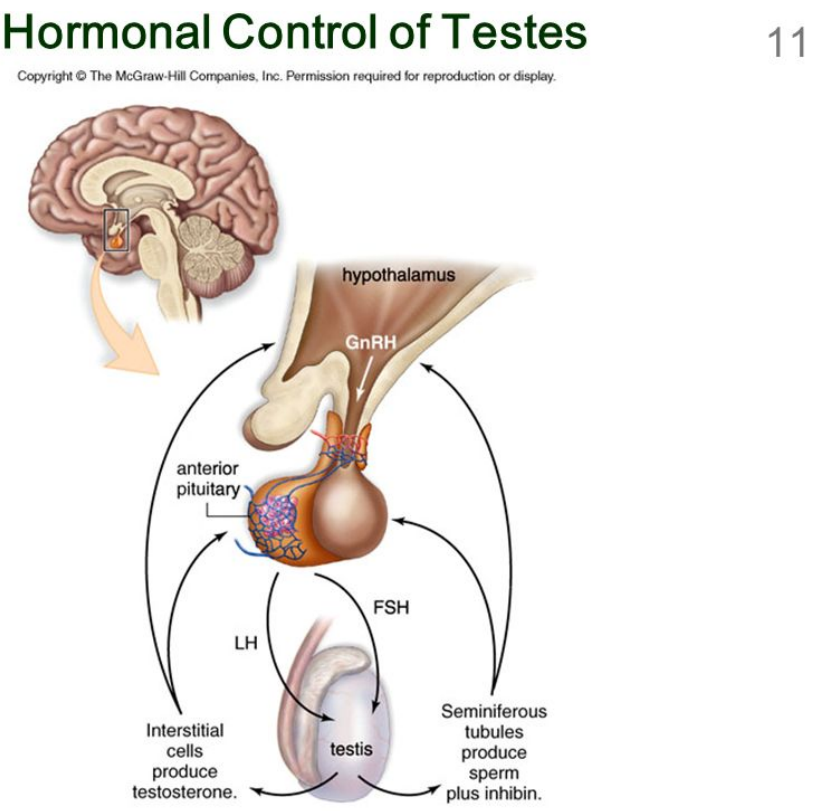


Interstitial Cells

- The male sex hormones are secreted by cells that lie _____
  - _____, testosterone is one of the hormones secreted here.

Hormone Regulation in Males

- The hypothalamus controls the _____
  - The pituitary is broken into the _____
- The hypothalamus has the ultimate control of the testes function because it secretes _____ _____ (GnRH).
  - This signals the anterior pituitary to secrete _____
- There are 2 gonadotropic hormones:
  - _____ (FSH)
  - _____ (LH)
- In males (FSH) promotes _____
  - Once enough sperm are produced, the hormone_____ inhibits further FSH release.
- LH in males controls the production of testosterone by _____
  - All these hormones are involved in a negative feedback relationship that maintains the _____
- Testosterone is the main sex hormone in males and is essential for the normal development and _____



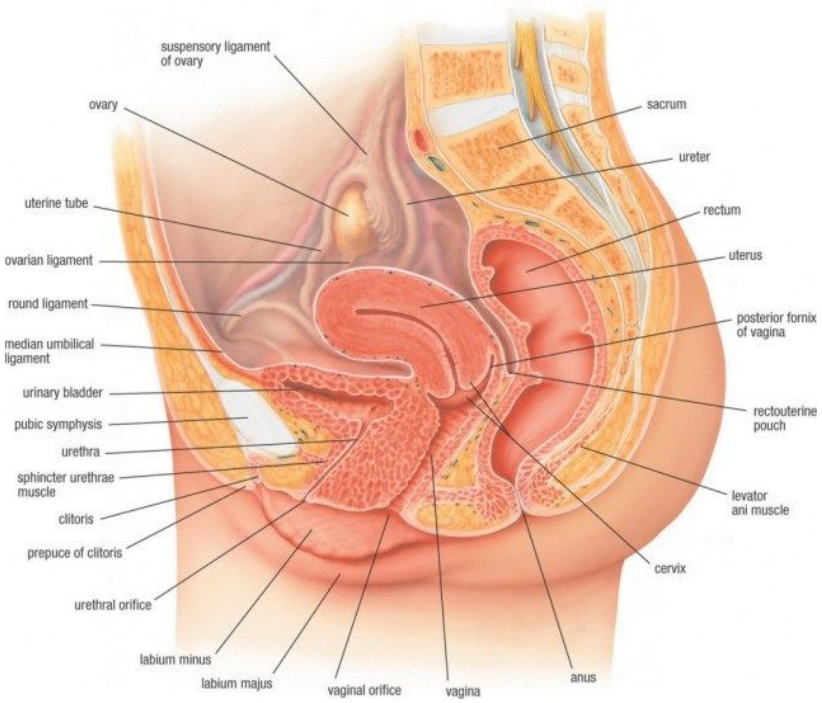
9.2 – FEMALE REPRODUCTIVE SYSTEM

- The female gonads are paired ovaries that are on each side of the _____
  - Oogenesis is the production of an egg, _____
  - The ovaries usually alternate in producing _____
  - Ovulation is the process by which an egg bursts from an _____

The Genital Tract

- Oviducts, or fallopian tubes, extend from the _____
  - However they are not attached to the ovaries, instead they have fingerlike projections called fimbriae that _____
  - Once the egg is in the oviduct it is propelled slowly by ciliary movement, it only lives approximately _____

FEMALE UROGENITAL SYSTEM (MIDSAGITTAL VIEW)

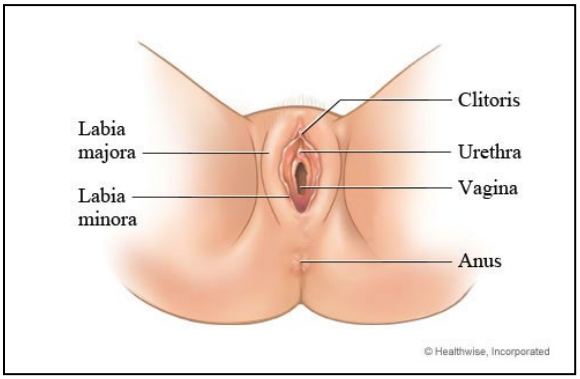


- Fertilization, or the formation of a zygote, takes place in the _____
  - The developing embryo normally arrives at the uterus after several days, and _____ _____
- The uterus is a thick-walled, muscular organ about the _____
  - The oviducts join the uterus at its upper end, at the lower end the cervix connects with the _____
- Development of the embryo normally takes place in the _____
  - The lining of the uterus, _____, participates in the formation of the placenta.
- A small opening in the cervix leads to the _____

- The vagina is a tube that lies at a 45 degree angle to the small of the back.
  - It serves as the _____ _____

External Genitals

- The external organs of the female are collectively known as the _____
  - There is the _____ _____
  - The _____ the external part of the clitoris.
  - Below the clitoris is the _____, and below that is the _____



- The urinary and reproductive systems in the female are _____
  - The urethra carries only urine, and the vagina serves only as the _____ _____

Orgasm in Females

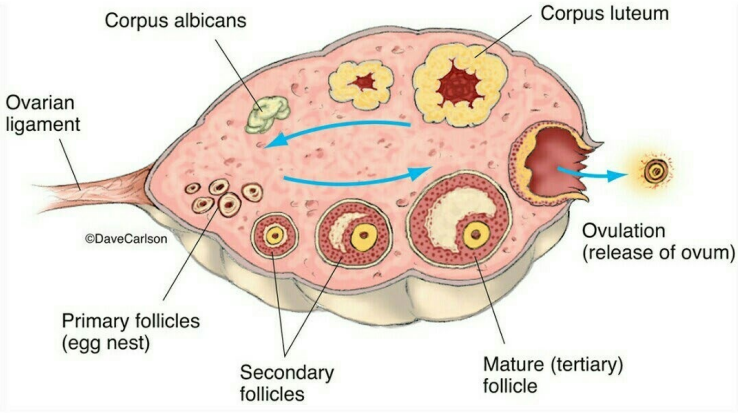
- Upon sexual stimulation, the labia minora, the vaginal wall, and the clitoris become _____ _____
  - The breasts also swell and the nipple become erect.
  - The vagina expands and elongates, blood vessels in the vaginal wall release _____ _____
  - Orgasm occurs at the _____

9.3 – OVARIAN & UTERINE CYCLES

- Hormone levels cycle in females on a monthly basis, and the _____

The Ovarian Cycle

- The ovary is made up of an _____
  - The cortex has many follicles that contain an _____
  - A female is born with all the ovarian follicles she will ever have, approximately _____
  - However only approximately _____
  - Because these immature eggs are present at birth _____
- The ovarian cycle occurs as a follicle changes from a _____
  - As a follicle matures, _____
  - The vesicular follicle bursts, releasing the secondary oocyte. _____
  - Once a vesicular follicle has lost the secondary oocyte, it develops into a _____

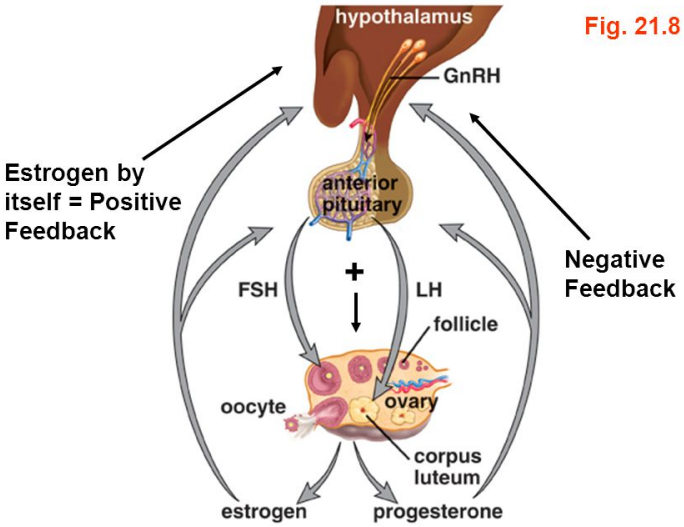


- The secondary oocyte enters a _____
  - If a sperm enters the secondary oocyte, _____
  - When the sperm nucleus unites with the egg nucleus, _____
  - If zygote formation does not occur, the corpus luteum begins to degenerate _____

Phases of the Ovarian Cycle

- The ovarian cycle is commonly divided into two phases.
  - The first half is the _____
  - The second is the _____
- During the follicular phase, FSH produced by the anterior pituitary, promotes the development of a _____, which secretes some _____
- As the estrogen level rises, it exerts negative feedback control over the secretion of FSH so the _____
  - An estrogen spike causes a sudden secretion of a large amount of _____ _____
  - This is positive feedback the leads to a surge of _____
- Now the luteal phase begins.
  - During this phase, LH promotes the _____, which secretes progesterone and estrogen.
  - As the level of progesterone rises, it exerts feedback over LH secretion so that the _____
  - As the luteal phase comes to an end, the low levels of progesterone and estrogen _____

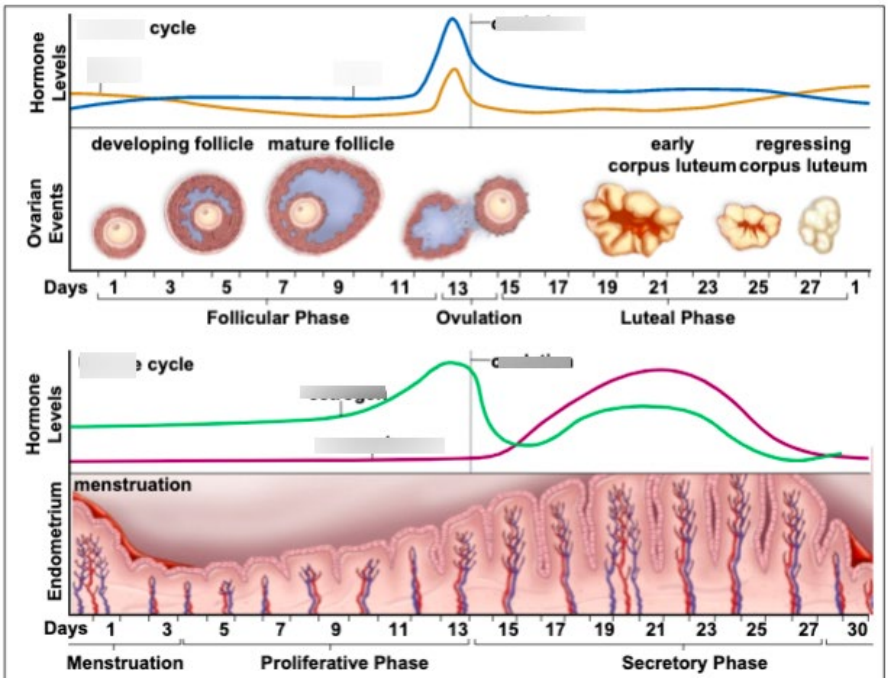
Hormonal control of ovaries



The Uterine Cycle

- The female sex hormones estrogen & progesterone have numerous functions.
  - One of their functions is to affect the _____, causing the uterus to undergo a cyclical series of events known as the _____
- _____ are divided as follows:
- ***Days 1-5***: a low level of female sex hormones in the body causes the _____ _____
  - On day 1 of the cycle, a flow of blood and tissues passes out of the vagina during _____
- ***Days 6-13***: increased production of estrogen by a new ovarian follicle in the ovary causes the _____
  - This is called the _____
- ***Day 14***: _____
- ***Days 15-28***: increased production of progesterone by the corpus luteum in the ovary causes the _____
  - This is called the _____ of the uterine cycle.
  - The endometrium is now prepared to _____
  - If this does not occur, the level of sex hormones results in the endometrium _____

Hormones in the ovarian and uterine phases



- Estrogen and progesterone affect not only the uterus but _____
  - Estrogen is largely responsible for _____ in females.
  - In general, females have a more rounded appearance than males because of greater _____
  - The pelvic girdle becomes _____
  - Both estrogen and progesterone are _____

Menstruation

- During menstruation, arteries constrict, and the _____
  - Blood spilling from the damaged vessels _____
  - Endometrium mucus, and blood descend from the uterus and through the vagina.
  - Normally menstruation lasts from _____
  - Some _____ are normal during the menstrual period.
- In the uterus, _____
  - They are implicated in the _____ of menstruation experienced by some women.

Fertilization & Pregnancy

- If fertilization does occur, an embryo begins development even as it travels _____ _____

- The endometrium is now prepared to receive the developing embryo and _____ _____
- The placenta, which sustains the developing embryo and later fetus _____ _____
  - At first the placenta produces _____ (HCG), which maintains the corpus luteum in the ovary until the placenta begins its own production of _____
- Progesterone and estrogen produced by the placenta have two effects:
  - They shut down the anterior pituitary so that _____
  - They maintain the endometrium so that the _____

Birth

- The uterus has contractions during the last trimester of the pregnancy.
  - The onset of true labour is marked by the uterine contractions that _____ _____
  - A positive feedback mechanism regulates the _____
  - Uterine contractions are induced by stretching of the cervix, which also brings about the _____
  - Oxytocin stimulates _____, which push the fetus downwards, and the _____
  - The cycle repeats itself until the _____

Lactation

- During pregnancy, the breasts enlarge as the _____
  - Usually no milk is produced during _____
  - The hormone prolactin is needed for _____
  - It takes a couple of days for milk production to begin after birth.
  - In the meantime, breasts produce colostrum:_____ _____

Menopause

- Menopause, the period in a woman's life during which the _____, usually between 45-55 years of age.
  - The ovaries become unresponsive and no longer secrete _____
  - A woman is not considered to have completed menopause until _____ _____
- The hormonal changes during menopause often produce physical symptoms such as:
  - _____