C. Tactile stimulation of the glans of the penis results in nerves to the ductus deferens, glands and the urethra being stimulated

D. These will all cause muscular contractions and ejaculation to occur

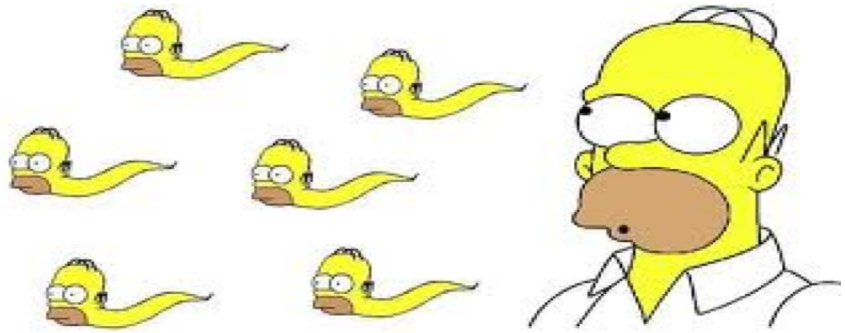
1. Sperm enters the ejaculatory duct
2. Seminal vesicles, prostate gland, and Cowper's gland release their secretions

E. Penis able to deposit the sperm at the cervix so that it has a shorter journey to the egg

F. Following orgasm and ejaculation the penile artery will constrict so that the blood flow exiting the penis is greater than that entering the penis and the organ returns to it flaccid state

G. "Refractory period" is typical time following ejaculation during which erection cannot occur

1. Time tends to increase as a man ages



Functions of Seminal Fluid

I. Seminal Fluid
   - A. Thick, whitish fluid SECRETIONS from three organs
     1. SEMINAL VESICLES
     2. PROSTATE GLAND
     3. BULBOURETHRAL GLANDS (COWPER'S Glands)

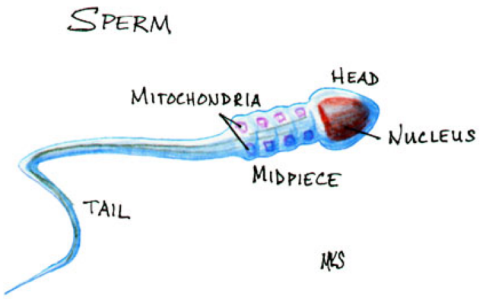
II. Semen
   - A. SEMINAL FLUID and SPERM
   - B. Passed out of the penis during ejaculation
   - C. Average about 20–150 million sperm per milliliter
   - D. 1.0–6.5 milliliters (mL) per ejaculation
   - E. Contains
     1. Basic fluids
     2. Fructose (sugar)
     3. Prostaglandins

III. Functions
   - A. Lubricate the vagina
   - B. Provide energy for swimming sperm (fructose)
   - C. Stimulate mild contractions of the vagina (prostaglandins)
   - D. Buffers to counteract acidity in vagina

I. Sperm Consists of 3 Regions

A. Head

1. Includes the 1N nucleus for fertilization and the ACROSOME
2. Acrosome
   a. An aggregation of lysosomes from the original cell
   b. Allows for penetration of the eggs membrane for fertilization to occur



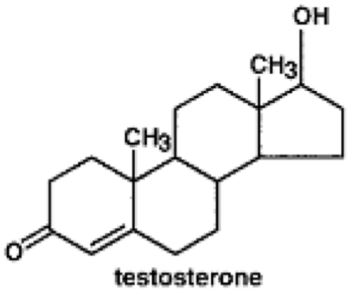
B. Middle piece

1. Has a concentration of mitochondria
2. Powers the tail region
3. Glucose (from seminal vesicle secretions) will allow the mitochondria to produce ATP to power the tail of the sperm

C. Tail

1. To propel the sperm up through the cervix, uterus and oviduct to the site of fertilization
2. Has the same structure as a flagella 9 + 2 microtubule arrangement

D. Normal male releases over 100 million sperm per ejaculation
E. Fewer than 100 reach vicinity of egg
F. Only one sperm can fertilize an egg
G. Egg is actually 100,000 times larger than a sperm



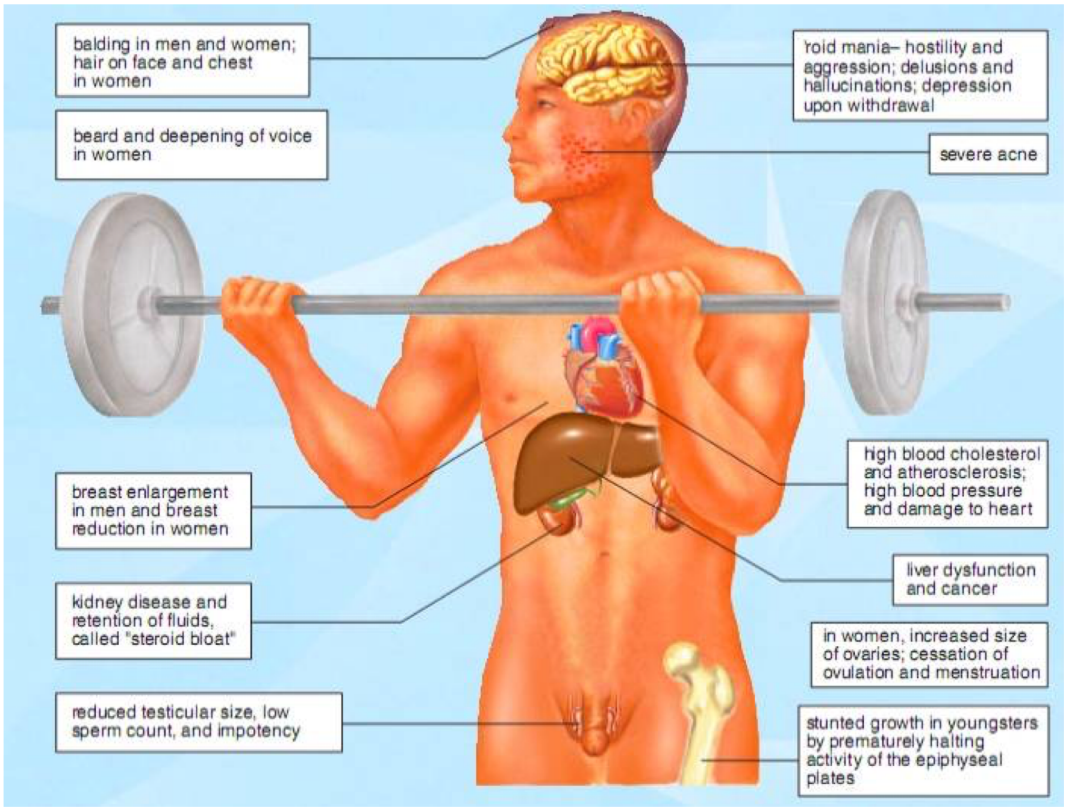
testosterone

Functions of Testosterone

I. Testosterone
   A. Is the major sex hormone of the male

II. Functions
   A. Promotes normal development and function of primary male sexual organs
      1. High levels of testosterone in puberty stimulate the maturation of the penis and testes
   B. Causes development of secondary sexual characteristics during puberty
      1. Second hair (facial hair, pubic etc.)
      2. Deepens voice
      3. Greater muscle growth
   C. Development of sperm
      1. FSH causes spermatogenic cells in testes to take up testosterone
      2. Causes these cells to produce sperm

D. Increases secretions from oil and sweat glands
   1. Contributes to acne and body odor
E. Contributes to male pattern baldness
F. Related to aggressiveness and aggressive behavior
G. Related to sex drive
H. Athletes use testosterone and other anabolic steroids to artificially boost their body's natural male hormone levels because testosterone causes an increase in muscle mass
I. Many negative side effects of anabolic steroids:



Control of Testosterone

I. Control of Testosterone

A. Interaction of hormones maintains fairly constant production of sperm and testosterone.

1. Four hormones involved

a. GONADOTROPIC-RELEASING HORMONE (GnRH)

b. FOLLICLE-STIMULATING HORMONE

c. LUTEINIZING HORMONE (LH) (also called INTERSTITIAL CELL-STIMULATING HORMONE - ICSH)

d. INHIBIN

B. Hypothalamus ultimately controls testes by secreting gonadotropic-releasing hormone (GnRH)

C. GnRH triggers anterior pituitary to produce two hormones

1. Follicle-stimulating hormone (FSH)

a. Released by the anterior pituitary

b. Promotes spermatogenesis in seminiferous tubules

i. Does this by entering the Sertoli cells and causing them to take up more testosterone

ii. This in, turn, enhances sperm production

c. Sertoli cells in the seminiferous tubules also release hormone inhibin as sperm is made

i. More sperm made, more inhibin released

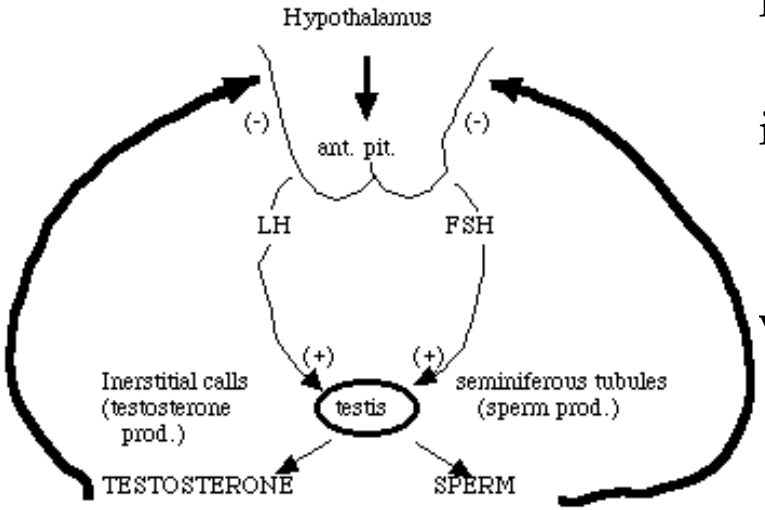
ii. Inhibin travels in the blood and is detected by the hypothalamus and anterior pituitary gland

iii. Inhibin levels in the blood are the keep track of sperm levels

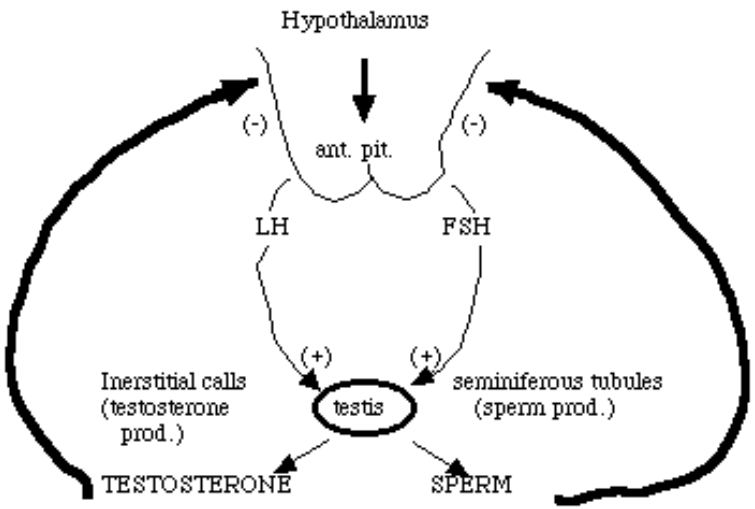
iv. As inhibin (and therefore sperm) levels rise, hypothalamus reduces the release of GnRH.

v. With less GnRH, the anterior pituitary to reduces FSH, which reduces the amount of sperm and inhibin being released

vi. Negative feedback cycle!



2. Luteinizing hormone (LH)/Interstitial cell-stimulating hormone (ICSH)
   a. Controls production of testosterone by interstitial cells
   b. LH causes increased testosterone levels in the blood
      i. High levels of testosterone is detected by the hypothalamus
      ii. Hypothalamus reduces its release of GnRH
      iii. Anterior pituitary reduces LH
      iv. Less LH cause less testosterone to be produce
      v. Another negative feedback loop!



Ted Talk "The Talk"
Ted Talk "Make Love Not Porn"
Ted Talk "Sex needs a new Metaphor"