

## Spermatogenesis and the Male Reproductive System :

### *Spermatogenesis...*

the term given to the process of making mature, sperm cells ( spermatocytes) using meiosis.

Begins with puberty around 13. *Puberty* is defined biologically as the time between reproductive hormones are being created, until the time the first “viable” sperm is made. From then on, a male can make sperm up until his death.

### An overview of the male system....

#### External parts

##### *Scrotum...*

external sac keeping a pair of testes outside the body, slightly below body temp for optimal sperm production rates

##### *Testes...*

clusters of long tightly coiled hollow *seminiferous tubules*...the site of spermatogenesis. The walls of these tubules are lined with *interstitial cells*, undergoing meiosis as they move towards the center of the seminiferous tubule. *Sertoli cells* support and feed the developing sperm cells.

### Epididymis...

A storage area for fully formed sperm that have moved out of the testes seminiferous tubules. Here they stage until they are released or disassembled.

### Penis....

Body organ that transfers sperm cells into the females reproductive tract during sex.

Stimulation positively reinforces the production of oxytocin in small amounts, leading to male arousal and blood shunting to increase blood pressure within the spongy expandable tissue of the penis itself. This

causes an **erection**. Orgasm and **ejaculation** occurs when the penis signals the CNS's vagus nerve system that it is stimulated by anything beyond its threshold stimulus level. Muscular contractions trigger sperm movement...interaction between sympathetic, parasympathetic, and somatic nervous subdivisions.

Epididymis ▶ vas deferens ▶ urethra → outside

A refractory period follows.

## Connecting Outside to Inside

**vas deferens** tubes...

A small tube leading sperm cells from each epididymis, up into the abdomen, where it converges with several other tubes near the bladder...each from the male's internal glands.

## Internal Parts

### Seminal vesicles...

A pair of glands located behind the bladder. Each has a tube connecting to the vas deferens tube. They make a thin mucus liquid that acts as a lubricant and contains levels of fructose sugar that serve as short term fuel for sperm once released.

### Prostate gland and Cowper's gland...

Located just under the bladder, each produces an alkaline fluid that is released prior to ejaculation. This helps neutralize the natural acidity of the female tract, to aid in sperm survival.

Sperm cells,

+ seminal vesicle secretions,

+ prostate gland secretions,

+ Cowper's gland secretions

= semen

## Male Sexual Hormones (androgens)...

- puberty starts with
  - release of GnRH from the hypothalamus
  - this stimulates the production of FSH and LH in ant. Pit gland
  - testosterone provides negative feedback
- sperm production begins, activity in sem. tubules also makes inhibin, antagonist to FSH, this loop controls speed of spermatogenesis
- LH ( leuteinizing hormone )...stimulates interstitial cells...they make antagonist testosterone. Sex characteristics develop....organ enlargement, larynx, muscle mass, body hair. Fat deposition is inhibited, muscle mass promoted.