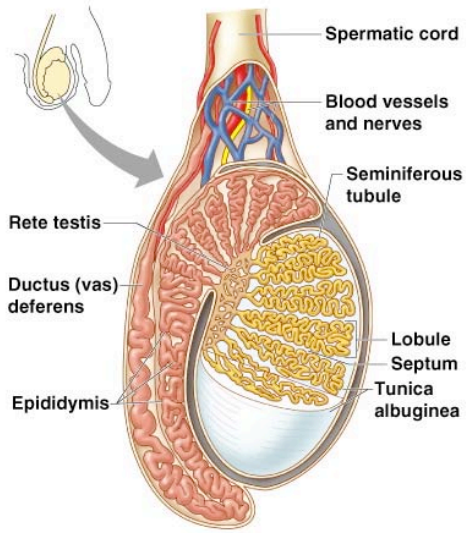
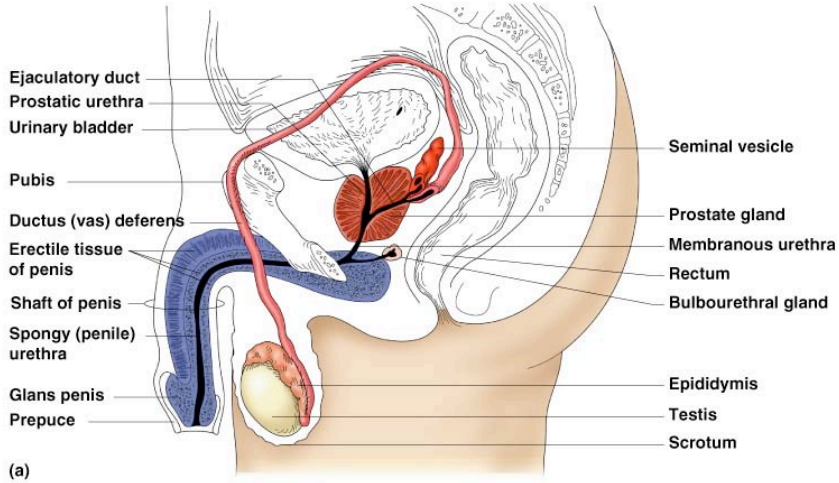
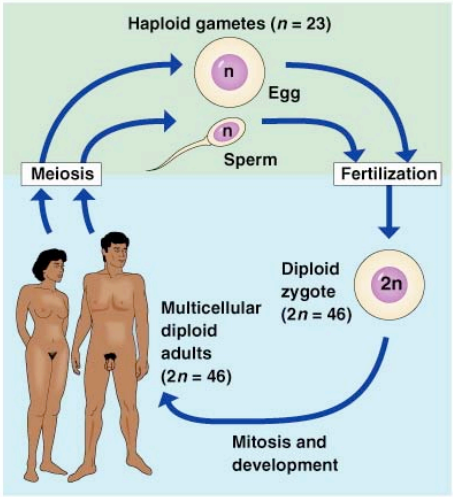


The duct system



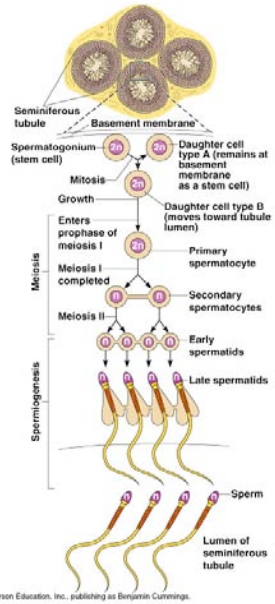
Human life cycle



Spermatogenesis

Takes place in seminiferous tubules of testes--entire process takes 64-72 days

At puberty, FSH is secreted by the anterior pituitary gland

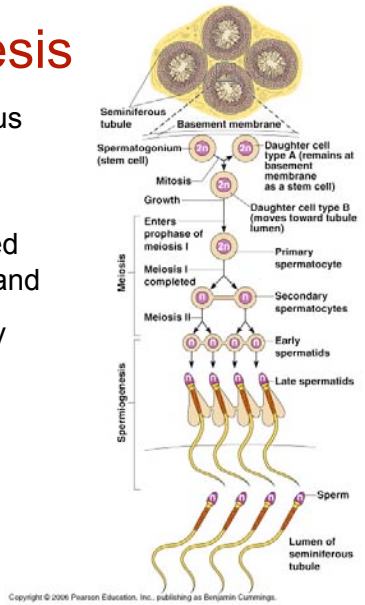


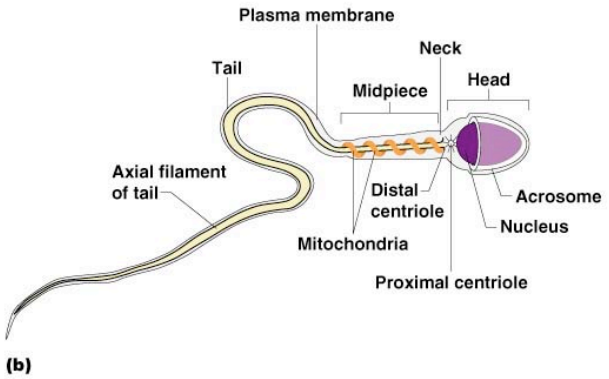
Spermatogenesis

Takes place in seminiferous tubules of testes--entire process takes 74-72 days

At puberty, FSH is secreted by the anterior pituitary gland

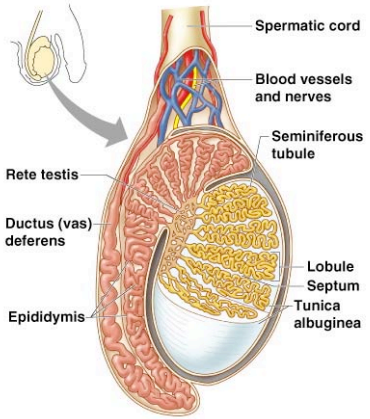
Spermatids are created by meiosis





Anatomy of the male

Interstitial cells lie between the seminiferous tubules; produce *androgens* (testosterone)



Testosterone and sex characteristics

Testosterone is produced continuously from puberty on

The rising blood levels stimulate growth spurts, and development of *secondary sex characteristics*:

- deepening of voice
- increased hair growth
- enlargement of skeletal muscles
- increased heaviness of skeleton

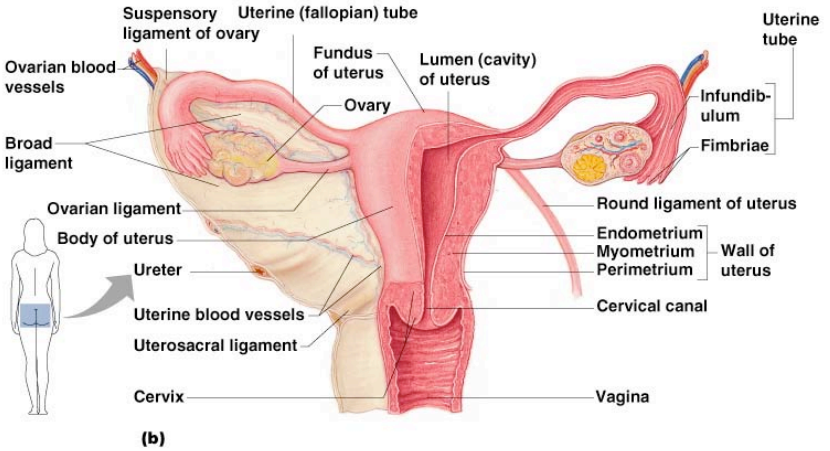
Accessory glands & semen

Seminal vesicles: produce about 60% of fluid volume of semen; rich in sugar, vitamin C that nourish sperm

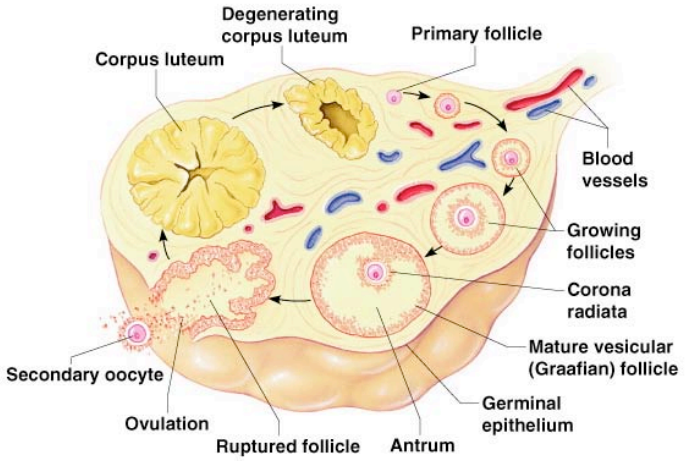
Prostate gland: secretes a milky fluid that plays a role in activating sperm

Bulbourethral glands: produces a clear fluid that passes down the urethra, cleansing it before semen is ejaculated

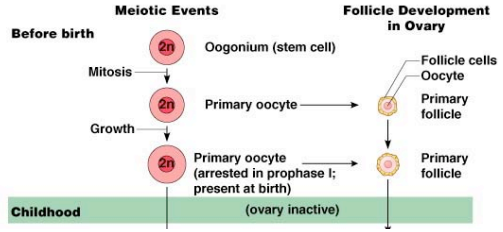
Female anatomy



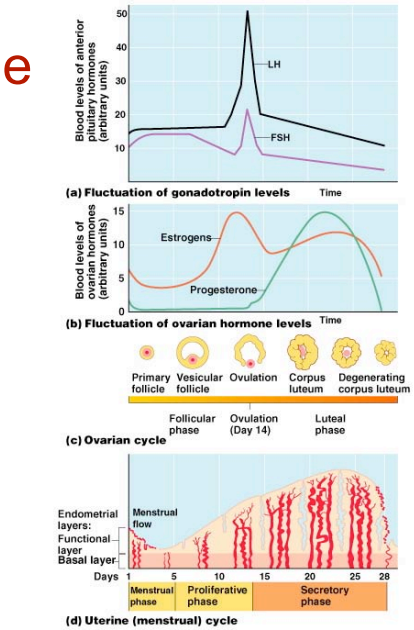
Ovaries



Oogenesis



Menstrual cycle



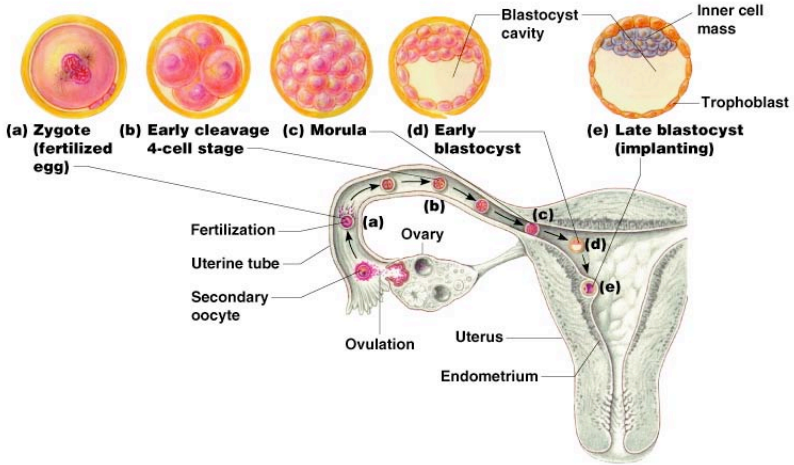
Estrogens and sex characteristics

In addition to the production of ova, the production of estrogens also begins at puberty

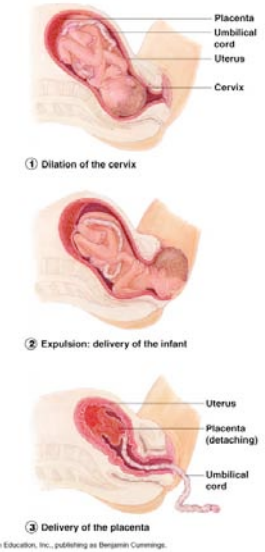
Female secondary sex characteristics include:

- Enlargement of accessory organs
- Development of the breasts
- Appearance of axillary and pubic hair
- Increased deposits of fat, around hips and breasts
- Widening and lightening of the pelvis
- Onset of menses

Fertilization



Parturition



Procreation

Coitus is divided into 4 phases:

- Excitement
- Plateau
- Orgasm
- Resolution

Excitement

Males:

Erection of penis

Females:

Erection of clitoris, vaginal lubrication

Orgasm

In both sexes: series of muscular contractions, pleasurable sensations, increased blood pressure, heart rate, respiration rate

In males: usually accompanied by ejaculation of semen from penis

In females: uterus and vaginal walls contract

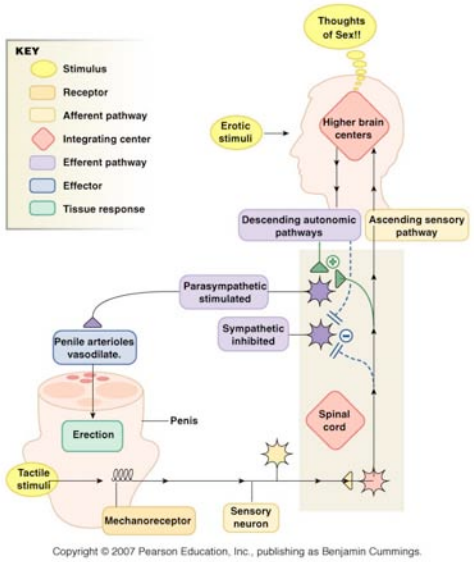
Erection & Emission

Parasympathetic vasodilation is stimulated, “flooding” the penis with blood

Passively compresses veins draining blood from penis

This accumulation of blood in the penis leads to erection in 5-10 seconds

Erection reflex



Erection & Emission

Emission = movement of sperm out of vas deferens into the urethra, where secretions from accessory glands make semen

Average semen volume is 3 ml, which is less than 10% sperm

During ejaculation, semen is expelled to the outside by a series of rapid muscular contractions

Erection & Emission

Both erection and ejaculation can occur in the absence of mechanical stimulation

Nonsexual penile erection accompanies REM sleep

Our general ‘themes’

1. The coupling of form with function
2. Emergent properties (emergence)
3. Integration of traits
4. Homeostasis
5. Proximate-ultimate causation
6. Human evolutionary history