

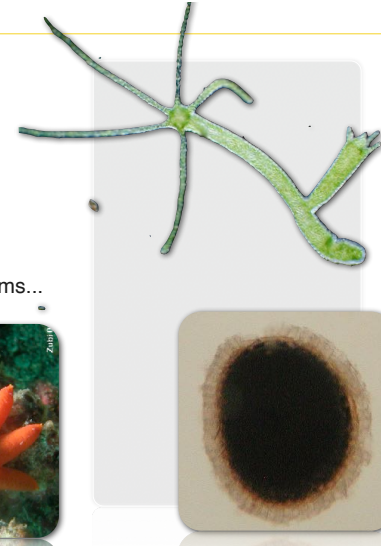
reproduction

chapter 47

asexual

• asexual reproduction

- methods:
 - Budding
 - Gemmules
 - Fragmentation/fission
 - regeneration
 - ex. planaria, sea stars, earthworms...



• Advantages of asexual reproduction:

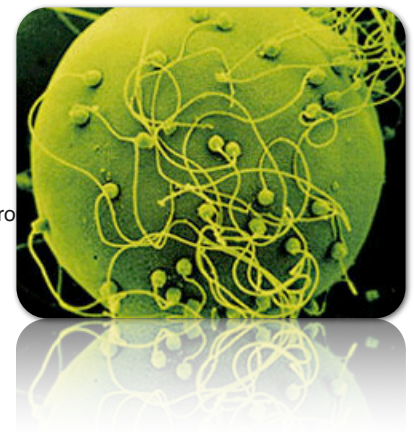
- no mate necessary
- many offspring in little time
- perpetuation of successful genotypes
- reduction of heterozygosity in population



sexual

• Sexual reproduction

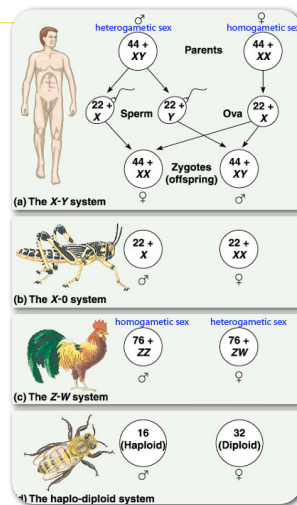
- fusion of haploid gametes
 - Ovum -- oocyte
 - Spermatozoon
- **advantages**
 - increases genetic variation
 - good in stochastic environments
 - good for motile organisms



sexual

- sex determination

- TSD
- GSD
- birds: W-Z; mammals: X-Y; some insects: X-O
- haplodiploidism



parthenogenesis

- Parthenogenesis

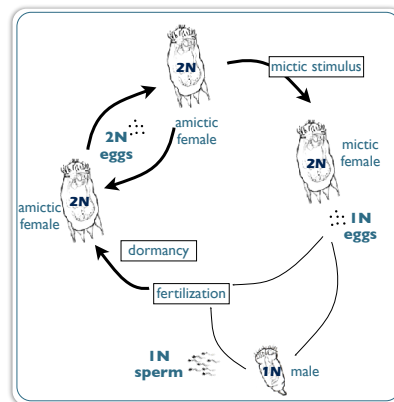
- using tools of sexual reproduction for asexual reproduction
- who needs males?
- not Cnemi's!
- Cnemidophorus sp.



bimodal

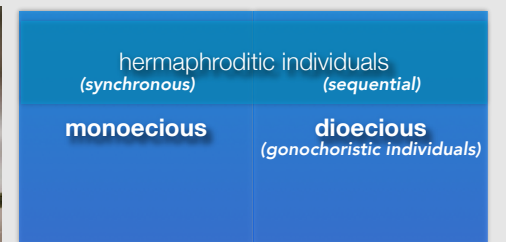
- splitting the difference

- alternating modes of reproduction
- environmental and hormonal cues
 - Rotifers (myxsis)
 - Daphnia



- Sexes -- terminology related to sexual reproduction

- monoecious
- dioecious
 - gonochorism
 - dimorphism?
- hermaphroditism
 - sequential hermaphroditism
 - synchronous hermaphroditism



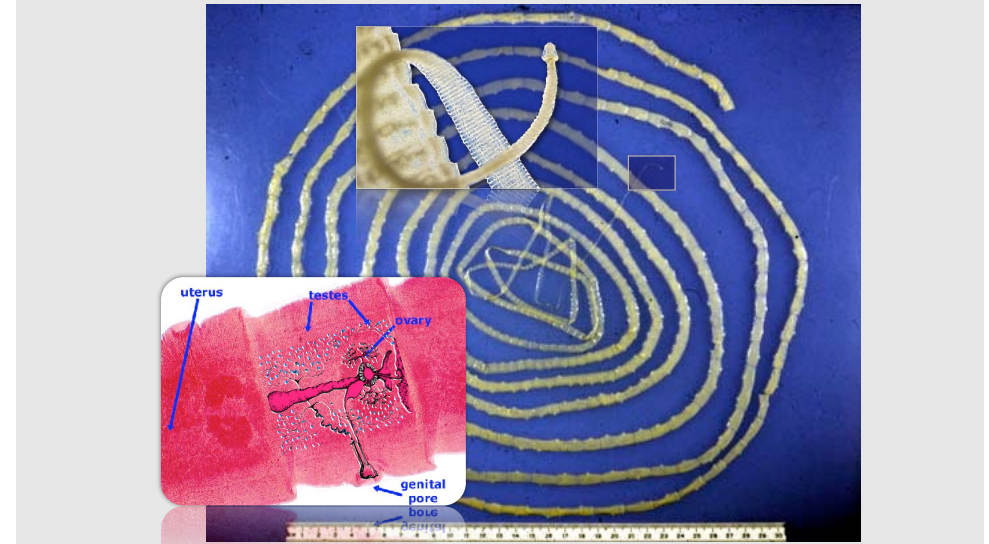
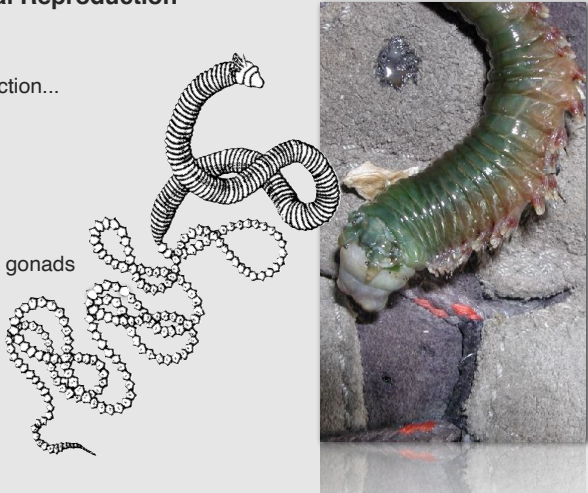
• Mechanisms of Sexual Reproduction

- external fertilization
- moist habitat
- synchronous reproduction...

- internal fertilization
- cooperative behavior
- Pheromones
- male attractants

• reproductive organs

- Polychaete worms lack gonads
- atoke - epitoke
- tapeworms



• spiders (arthropod ex.)

- dioecious
- pedipalps
- epigynum
- spermatheca
- sexual cannibalism
- courtship displays



modes

• Reproductive modes of vertebrates

- ovipary
 - many fish, many reptiles, birds, monotremes
- ovovivipary (lecithotrophic vivipary)
 - some reptiles, some amphibians, some fish
- vivipary
 - some fish, some amphibians, some reptiles, most mammals
 - marsupials
 - placental mammals



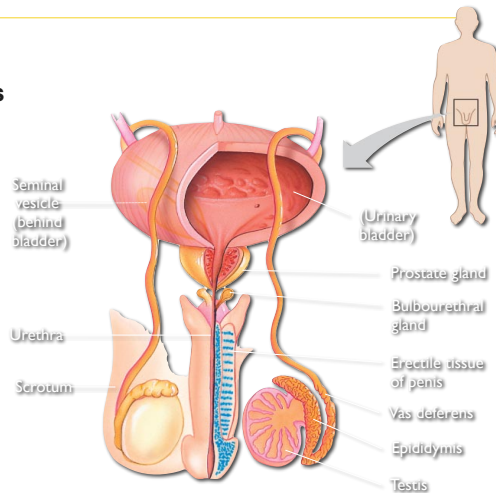
human anatomy

• male internal reproductive organs

- Testes (sing. testis)
 - seminiferous tubules
 - Leydig cells
- epididymis
- seminal vesicles
 - Prostaglandins
- prostate gland
 - anticoagulant enzymes and citrate
- bulbourethral glands

• penis

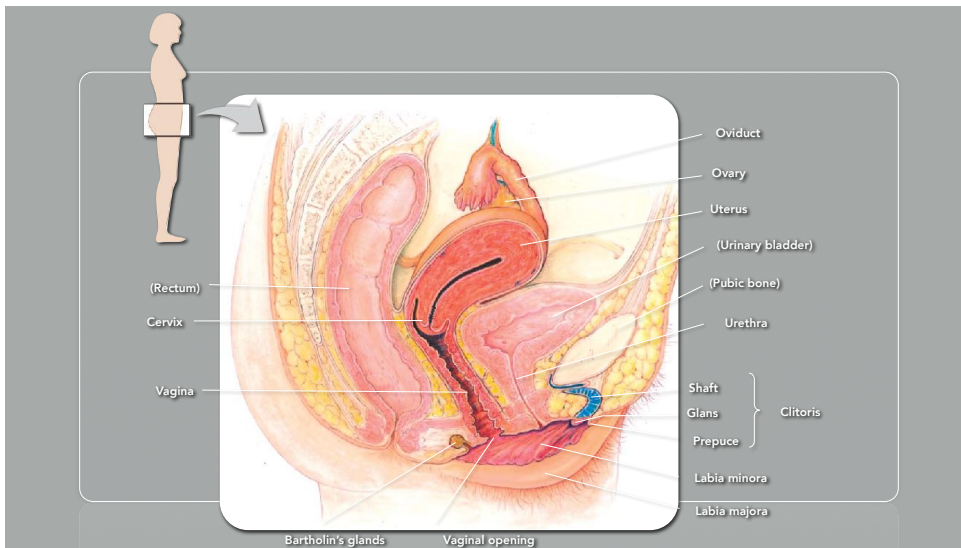
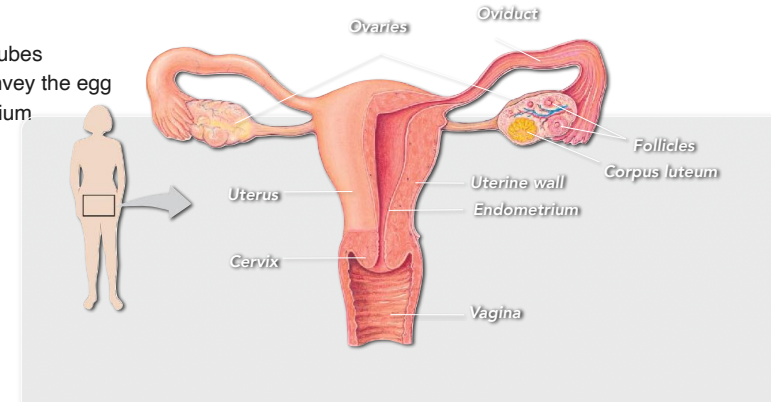
- spongy erectile tissue
- baculum



human anatomy

• female anatomy

- Ovaries
 - follicles.
- fallopian tubes
 - Cilia convey the egg
- Endometrium



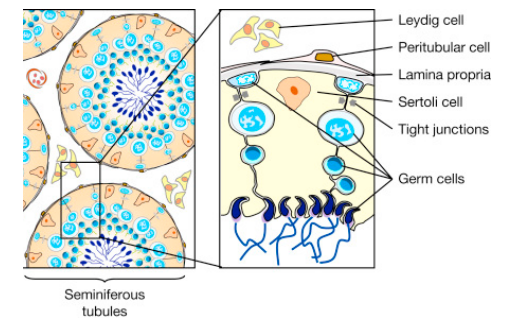
hormones

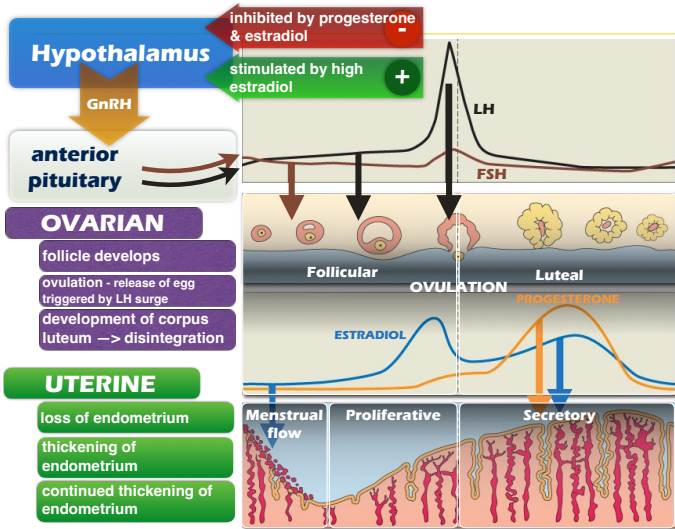
• Gonadotropin Releasing hormone (GnRH)

- secreted by hypothalamus - targets anterior pituitary
- anterior pituitary releases primary gonadotropins (LH and FSH)

• Male hormonal regulation. (human)

- Leydig cells
- Androgens
- Primary sex characteristics:
 - internal reproductive structures
 - external reproductive structures
- Sperm production
- testosterone and aggression?





hormones

- Female pattern (cyclical)
 - most mammals
 - Estrus cycle
 - primates
 - Menstrual cycle
 - uterus
 - ovarian cycle
 - corpus luteum

STIs/birth control

- prevention of STIs and pregnancy...
 - anal sex?!
 - “myth of oral sex”
 - birth control pills do not prevent STIs
 - condoms! abstinence?
 - Contraception methods
 - Prevent release of eggs or sperm.
 - Barrier methods
 - Prevent implantation
 - Abort the embryo
- Fertilization can also be prevented by:
 - rhythm method -- doesn't work well
 - Withdrawal -- doesn't work well

