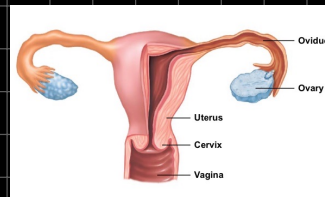


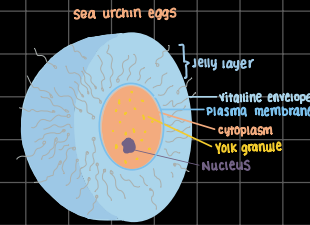
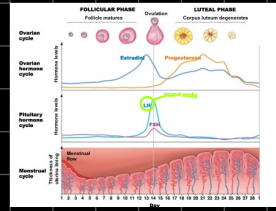
Reproduction in Animals

2 ways to reproduce



The mammalian internal female reproductive system has 2 functions:

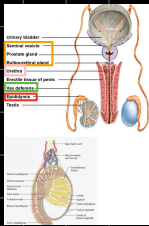
1. Production & transport of eggs
→ produced in the ovaries
→ during ovulation, an egg is expelled from the oviducts (fallopian tubes), where fertilization may take place
→ Fertilized eggs are then transported to the uterus
2. Development of offspring
→ embryonic development takes place in the uterus
→ the developed fetus passes through an opening in the cervix & into the vagina



3 main types of asexual reproduction

1. Budding — The offspring forms within or on the parent
2. Fission — An individual splits into 2 or more descendants
3. Parthenogenesis — The female produces an offspring without any genetic contribution from the male

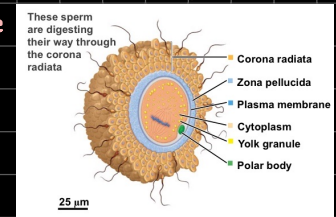
MALE REPRODUCTIVE SYSTEM



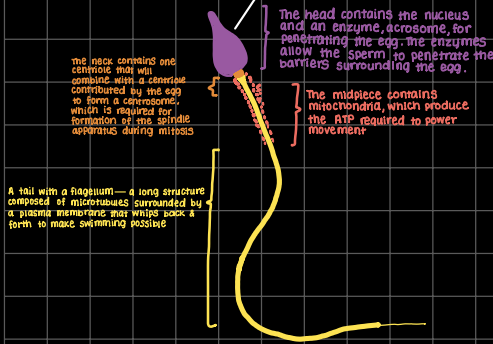
- **Spermatogenesis & sperm storage** — sperm are produced in the testes and stored in the nearby epididymis
- **Production of accessory fluids** — complex solutions are formed in the seminal vesicles, prostate gland, and bulbourethral gland are added to sperm to form semen
- **transport & delivery** — the vas deferens are tubes that transport sperm from the epididymis to the ejaculatory duct.
→ semen then enters the urethra, a long tube that passes through the penis & services both the reproductive system & urinary system in males
→ the semen is expelled during ejaculation

In most mammals, the mature egg cell is a membrane-bound structure consisting of

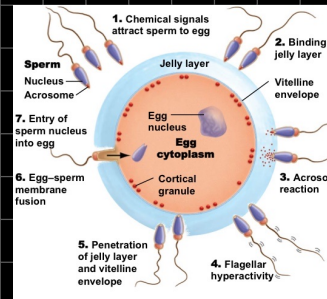
- A haploid nucleus
- A full complement of other organelles
- A large supply of nutrients provided by yolk — a fat & protein-rich cytoplasm



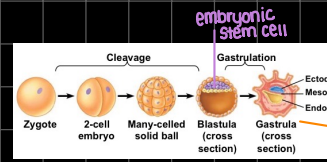
chromosomes in the head



- sperm cells have fluids that help them survive like:
- ↳ sugar: energy to swim
 - ↳ alkaline: bring pH up (urethra & vagina are acidic)
 - ↳ antimicrobial: prevents infection from bacteria



- What prevents more than one sperm from entering the egg?
- 1.) A wave of Ca^{2+} release spreads from the site of sperm nucleus entry
 - 2.) The fertilization envelope prevents the entry of more than one sperm nucleus

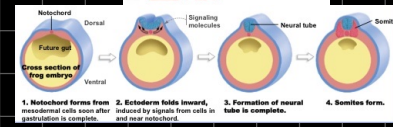
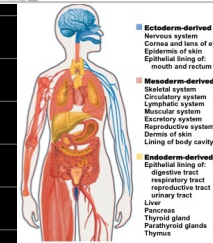
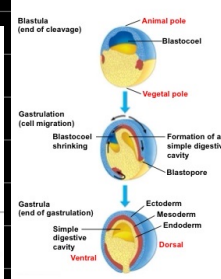
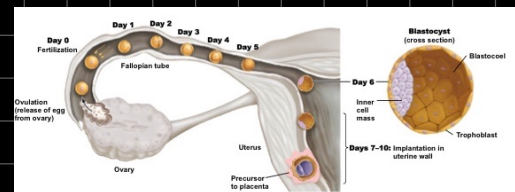
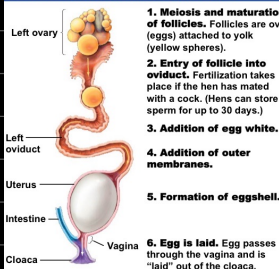


tissue start forming

FEMALE REPRODUCTIVE SYSTEM

- Most important part of the female reproductive system is the ovary, where meiosis occurs and mature eggs are produced
- Birds are **oviparous** vertebrates; they lay an amniotic egg protected by a shell
↳ many release their eggs into the environment, the parents provide no further care
↳ birds incubate their eggs & feed their young after hatching
- Most mammals are **viviparous**, and embryonic development takes place entirely within the mother's body
↳ the embryo attaches to the reproductive tract of the mother & receives nutrition directly from her

PROCESS: MATURATION OF A BIRD EGG



Reproduction in Plants

- Many plants can reproduce asexually to produce clones — genetically identical copies of the parent plant
 - Rhizomes are underground stems that can produce new individual plants
 - Corms are modified underground stems that function in plant propagation
 - Piantlets may form along the margins of plant leaves
- Mature seeds can form without fertilization by apomixis (formation of a seed from only the maternal tissues)

Fruits have 2 basic functions:

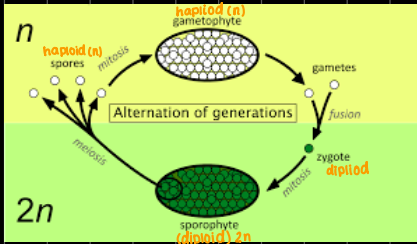
- They protect seeds from physical damage and seed predators
- They aid in seed dispersal

At germination

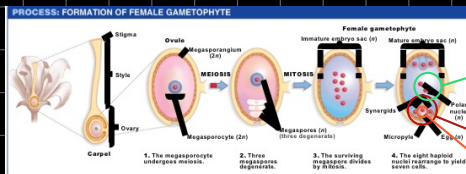
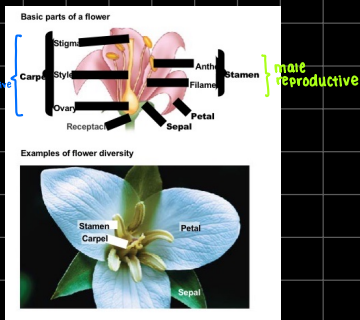
- a seed takes up water
- restarts the growth & development that was temporarily suspended during seed dormancy

LOOK AT PLANT ANATOMY NOTES

zones, apical / lateral growth

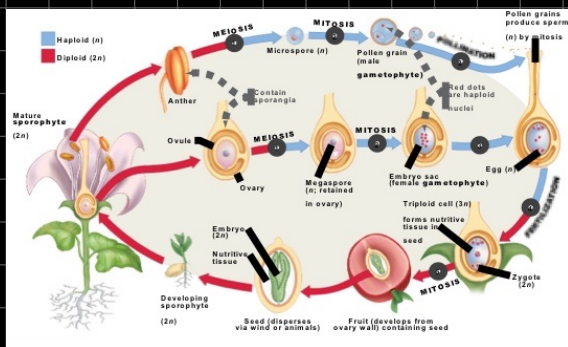
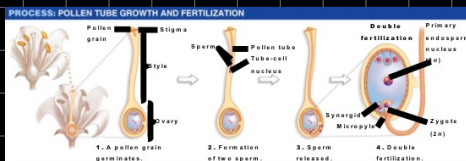
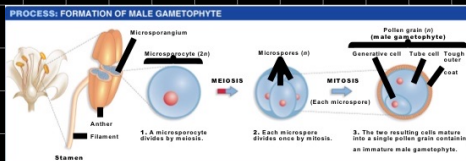


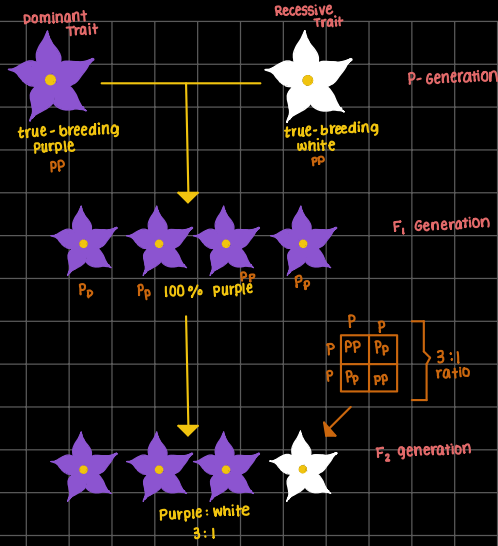
In plants, meiosis & fertilization occur in different phases



develop into endosperm; stockpile of nutrients in the seed for the embryo to develop

release signal to tell pollen tubes where to go becomes the embryo





of possible gametes = 2^n
ex.) AaBbCc $\rightarrow 2^3 = 8$

degrees of Dominance

- Complete Dominance — when phenotypes of the heterozygote & dominant homozygote are identical (ex.) PP & Pp give purple flowers)
- Codominance — 2 dominant alleles affect the phenotype in separate, distinguishable ways
- Incomplete dominance — the phenotype of F₁ hybrids is somewhere between the phenotypes of the 2 parental varieties

