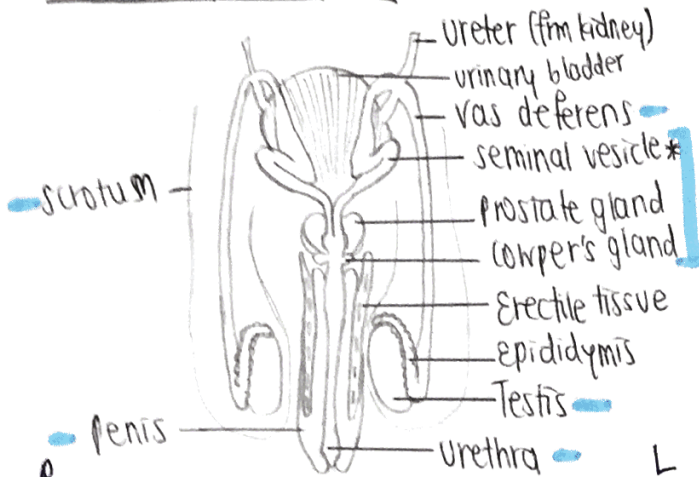


Sexual Repro

Overview

- The fusion of nuclei of male & female gametes to form zygote (single cell) — $2n$
 (gonads) sperms (Testes) ova (ovaries)
- Meiosis → Gametes, Mitosis → Somatic cells

Male repro. system



* Under bladder, near prostate gland

Testes (pl)	- Prd. sperms & testosterone	Path of sperm
Testis (s)	- Connected to epididymis (coiled tube to store inactive sperms)	

Scrotum	- Pouch-like sac to contain testes - Lie outside body cavity → ↓ temp. for optimum sperm dev.
---------	---

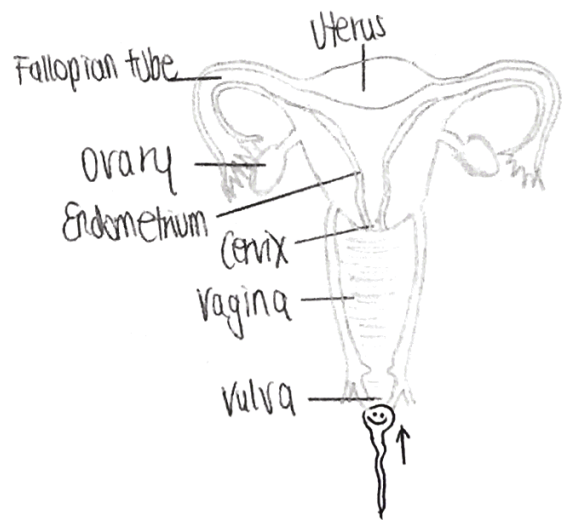
Vas deferens/sperm ducts	- Transport sperms from epi. → Urethra ③
--------------------------	--

Seminal vesicles, prostate & Cowper's glands	- Secrete slippery fluid to mix w/ sperms = semen (pH 7.5-8) nutrients & enzymes to activate & nourish
--	---

Urethra	- Tube to transp. urine & semen out ④
---------	---------------------------------------

Penis	- Erectile organ to deposit spm into vag. during intercourse
-------	--

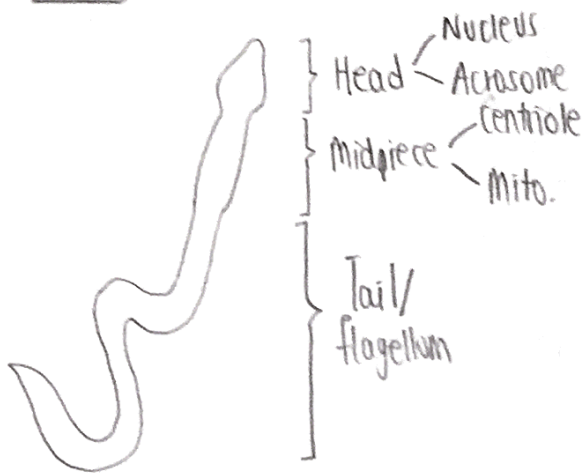
Female Repro. System



Ovaries (pl) Ovary (s)	- Prd. eggs (ova), oestrogen & progesterone
Oviducts/ Fallopian tubes	- Site of fertilisation (muscular tube)
Uterus/womb	- Site for fetal dev. (muscular & elastic walls) - Inner lining soft & smooth (endometrium) for embryo implantation
Cervix	- Dilates/enlarges — passage of fetus during birth (circular ring of muscle at base of uterus)
Vagina	- Site of deposit of semen during sex. intercourse

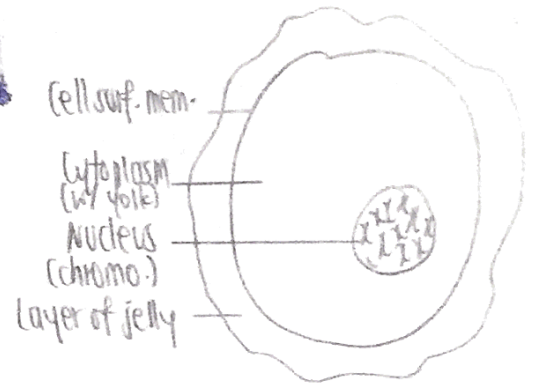
PS: Sphincter muscles contract during ejaculaⁿ to prevent

Male



1. Head ⁽ⁿ⁾
 - Large nucleus, little cytoplasm
 - Acrosome (jelly) has enzymes to break down ovum membrane for penetration
2. Middle piece
 - Many mito. for aerobic resp. to provide energy to swim to ovum
3. Tail/flagellum
 - Motile due to beating movement to move forward

Female



* Females born w/ all potential eggs (500 mature / 1000)

- Spherical
- Large nucleus (n), abundant cyto. w/ small amt. of yolk
- Cell s.m. surr. by outer membrane (jelly)

[Fun fact: sex organs mature & begin prodⁿ of gametes
Secondary sexual characteristics also appear]

Menstrual Cycle (endometrium breaking down)

- Factors affecting menses: Stress, tiredness, malnutrition
↳ Irregular, complete stop or change of intervals
- Ovaries have many dev. follicles (potential egg cell) → Primary follicles (surr. layer of follicle cells)
- In one month,
 - ① 1 Primary follicle ^{mature} → Graafian follicle (G.F.)
 - ② G.F. ruptures & release ovum into fallopian tubes during ovulaⁿ, remains of G.F. dev. into corpus luteum (prod. hormones)
 - ③ No fertilisaⁿ, corpus luteum persists, then degenerates

Day	Stage
1-5	Menstrual phase
6-13	Follicular ...
14	Ovula ⁿ
15-28	Luteal ...

Hormones involved:

- ① Follicle-stimulating hormone (FSH)
 - By anterior pituitary gland into bloodstream
 - Dev. growth of egg follicles in ovaries

Follicles secrete → (a) Oestrogen

- High conc. inhibits secretion of FSH / no more follicle growth

estro.!

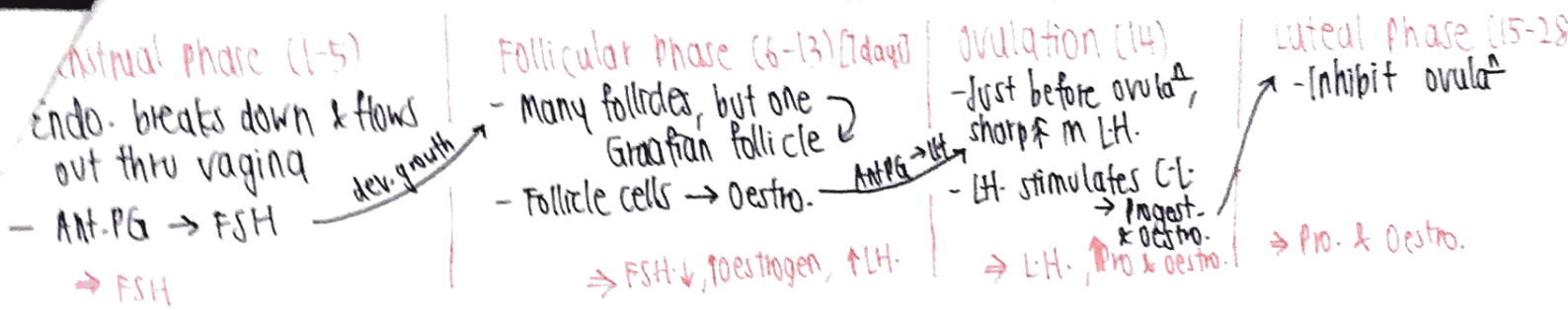
Ant. P. G. →

(c) Progesterone (& oestrogen)

- Inhibits FSH & LH (ovarian)
- Works t/gt. w/ oestrogen to maintain thickness of endo & supply more blood cap.

- ② Luteinising hormone (LH)
 - Repair & growth of endometrium becomes thick & spongy
 - causes ovulaⁿ
 - Formation of corpus luteum from empty follicle

C-L



Fertile period is 11-17, ovum (14-16), sperms → 2-3D
 eg. Sperms on D11 can fertilise egg on D14

After fertilisation ... (fusion of haploid gametes to form diploid zygote)

- Sperms swim thru cervix to fallopian tube where ovum is
- Acrosome releases enzymes to disperse surr. follicle cells & digest outer membrane of ovum to penetrate ovum
- 1 sperm nucleus enters ovum & ovum membrane changes
- Haploid nuclei fuse...



Implantaⁿ

- Cilia lining F. tubes sweep zygote along F. tubes
- Zygote divides mitotically to form ball of cells (embryo ≥ 2)
- Reaches uterus after 5 days & embeds in endometrium 2 days later
- Cell div. continues

Placenta

- 2 weeks after fert., villi grow from embryo to endo
- Placenta = Embryonic + Endo. villi

- Embryo separates from placenta, via umbilical cord

exchange of subm. in placenta {
 - umbilical arteries transport deoxy. blood & waste prod. from fetus to placenta
 - umbilical vein ... oxy blood from placenta to fetus

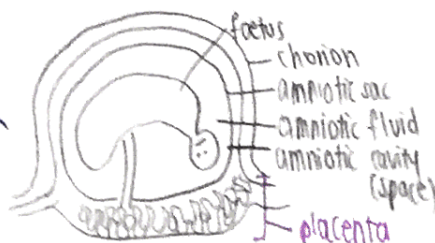
- Prd. progesterone to main endo.
- Exchange O_2 , dissolved food sub. (glu & a-a) & antibodies

maternal blood spaces in placenta → umbilical vein → fetal cap → via diffusion

* Not vein or artery as walls are too thick

Amnion/Amniotic sac

- Amniotic fluid: supports & cushions fetus before birth
- ↳ Incompressible as it absorbs shock & protects injury
- ↳ Lubricates & reduce fricⁿ in vagina
- ↳ Buoy's fetus to allow to move freely



THE ONO^(s) OF SEX

HIV - Human Immunodeficient Virus → advances to AIDS - Acquired Immunodeficiency Syndrome

↓ via
 Sexual intercourse w/ infected ppl, hypodermic needles, blood transfusions, mom → kid

↓ what?
 Chronic &/or persistent fever, pneumonia

↓ How to prevent
 Abstinence, promiscuity, contracepⁿ (basically prevent the above)

Methods (all unless genderspecific)

Rhythm method (F), Abstinence
 Condoms, Diaphragms (F), Intra-Uterine Device (F) (copper/plastic)
 Spermicide (F), Birth control pills (F) combi. of oestro & progest.
 Tubal ligation (F), Vasectomy (M)