

# Reproduction:

- ↳ No. of individuals will increase
- ↳ It is necessary for, specie survival; it's not human <sup>need</sup>

Asexual

Sexual:

→ ♂ & ♀

→ Unisexual & Bisexual  
↓  
separate sexes

→ Gametogenesis

→ Fertilization.

## Human Reproductive System:

↳ Unique System:

↳ Separate in ♂ & ♀

↳ Active at puberty;

↳ Sex hormones.

other II system activates by birth

↳ Human → Unisexual.

Primary sex  
Organs

→ gametogenesis

→ Sex-hormone

Testes

Ovaries.

Secondary sex  
Organs.

→ not involved in gamete-  
genesis & hormone production  
Ducts, glands, other structures

Primary sex  
characters:

→ At birth → sex organs

Secondary sex  
characters:

→ At puberty →

## Male Reproductive System.

Purpose: spermatogenesis.

Hormones

Safe Insemination.

1: Testes:

Palp (scrotum → pouch)

↓  
outside → 38°C

cryptorchidism

↳ scrotum  
inside

Interstitial cells → Interstitial cells

V. differentiate

250-300 lobules

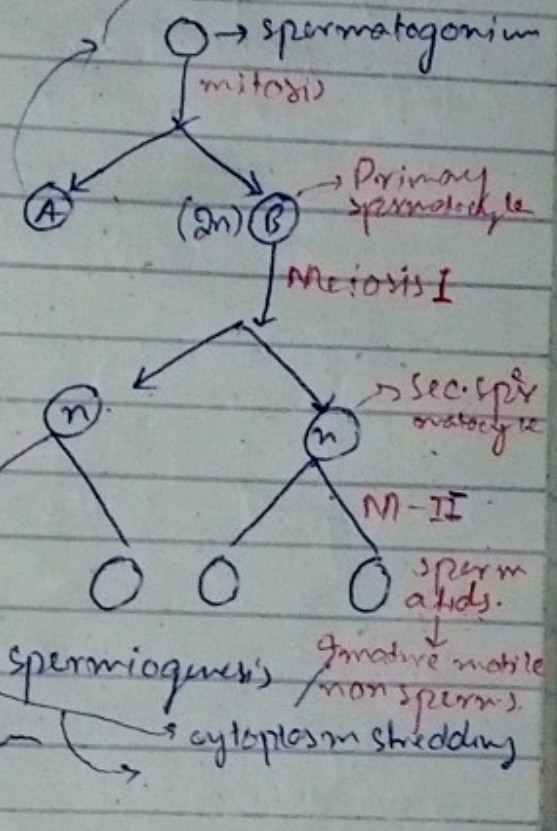
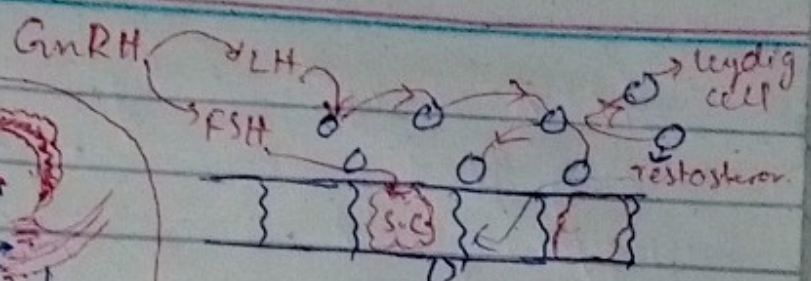
1-4 seminiferous tubules

→ Rete testes

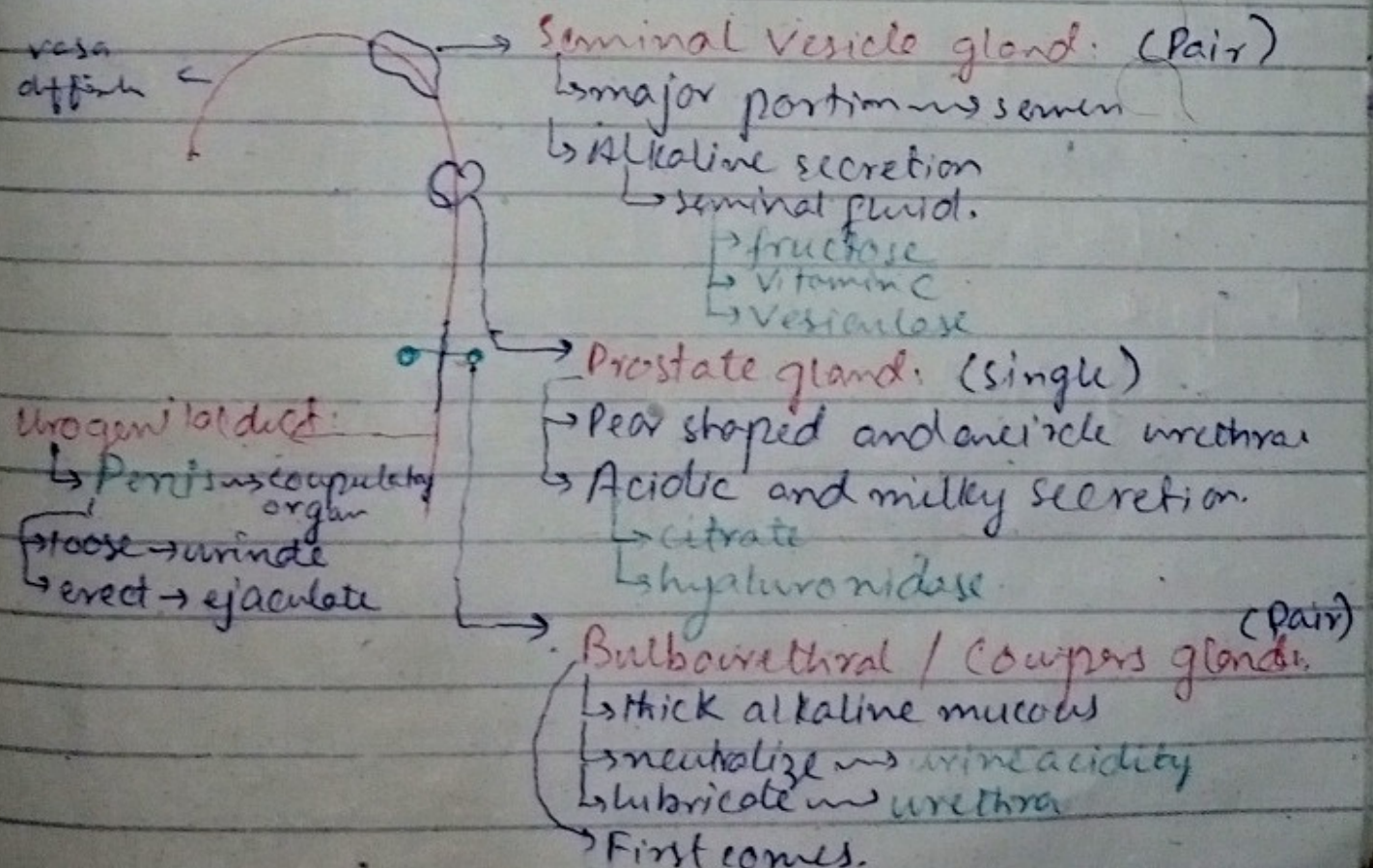
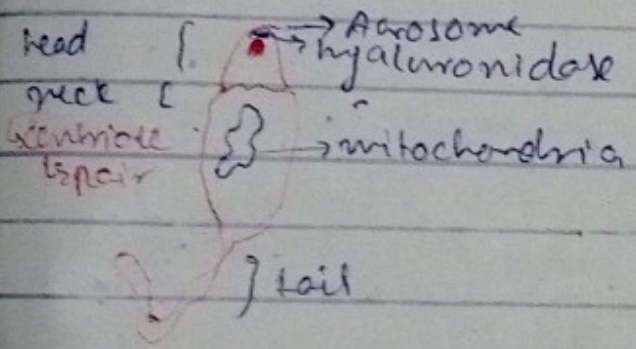
→ V. efferentia

epididymous

↳ highly coiled structure  
↳ 6 meter (20 feet)



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Semen: white sticky substance

→ medium → sperm  
→ food, protection.

→ 90% → fluid

→ 10% → sperm

→ per ejaculation → 2ml - 5ml

→ 4ml → 20 - 150 million sperms.

seminiferous tu  
↓  
rete testes  
↓  
vasa efferentia  
↓  
epididymus  
↓  
vasa deferentia  
↓  
urogenital duct.

→ total 4 glands → testes,

1 endocrine

↳ testes

3 exocrine

↳ prostate

↳ seminal vesicle

↳ coagulum.

10 spermatogonium or 10 sper primary spermatocyte  
how many sperms?  
↳ 40

10g DNA in primary spermatocyte. How much  
in sperm?

↳ 5g.

↳ spermatid → seminiferous tubule  
↳ sperms → epididymus

## Female Reproductive System:

'> far more complex.

Purpose:

→ Oogenesis

→ Sex hormones.

→ Fertilization

→ Implantation.

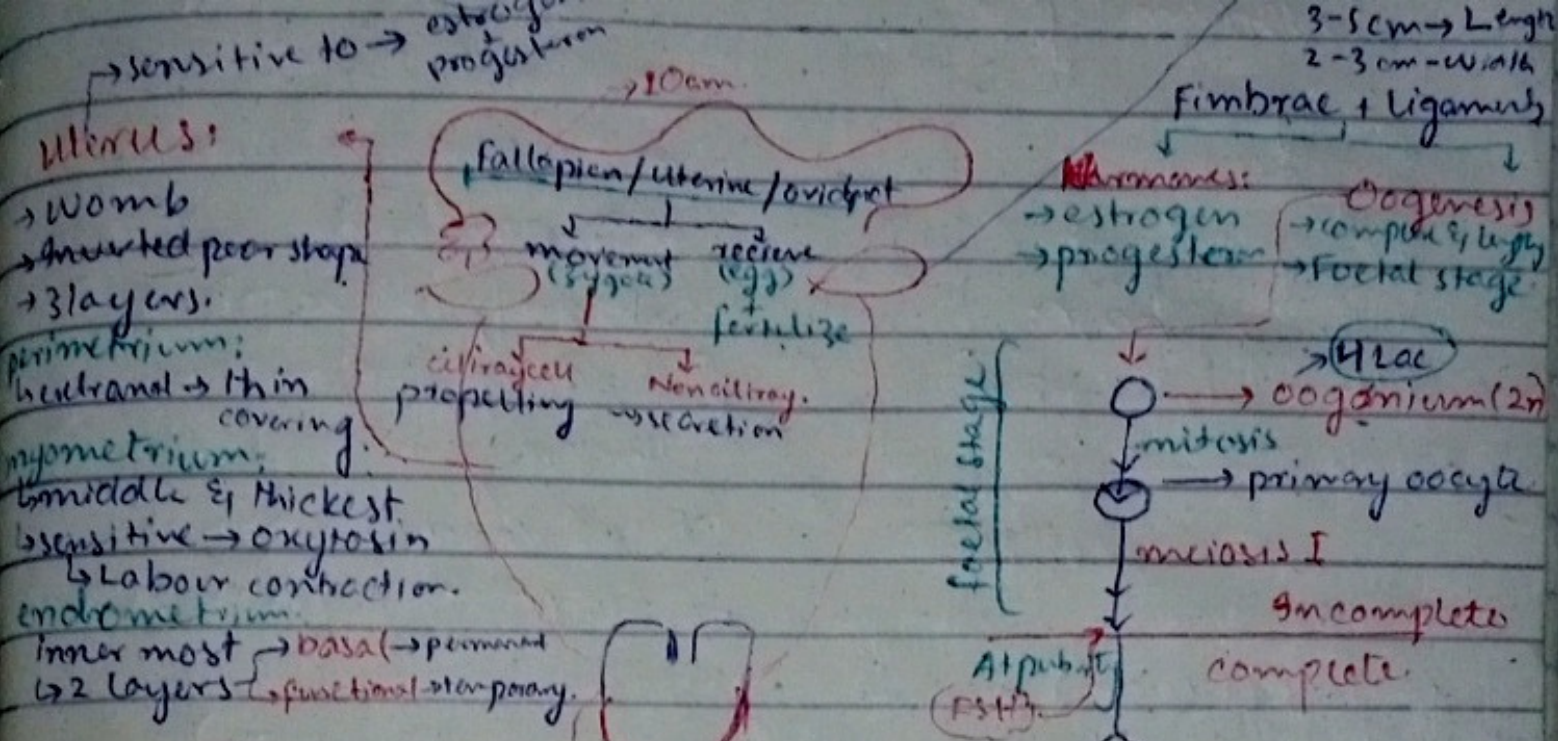
→ Nourishment

→ Protection.

→ Safer birth

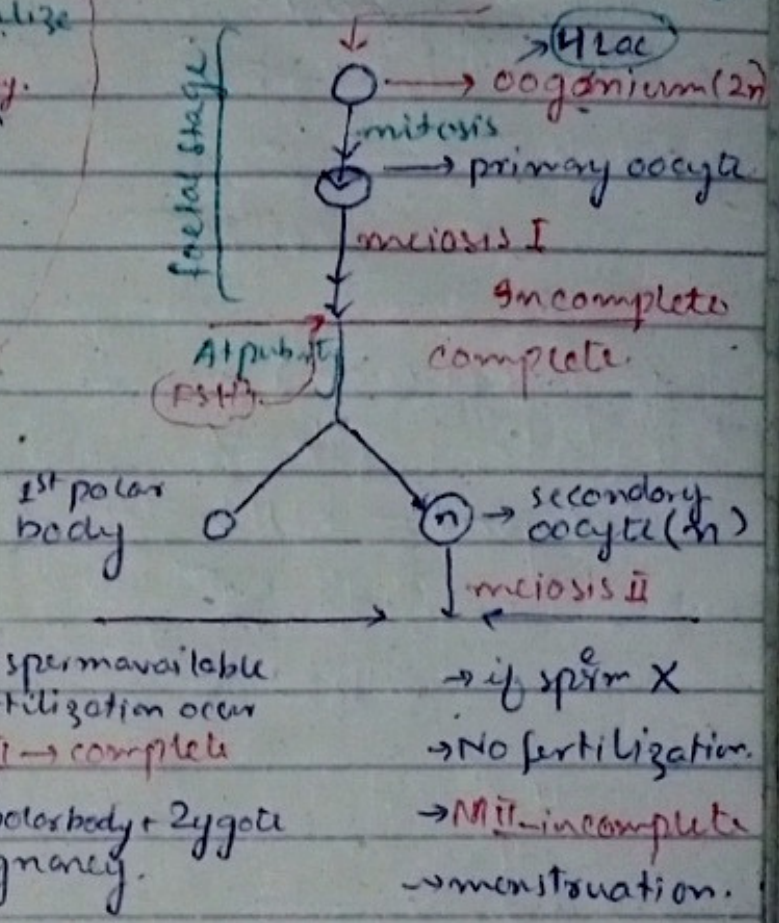
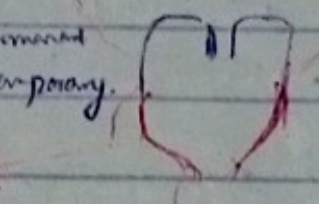
↳ feeding.

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**Cervix:**  
 → narrow structure  
 → opening to uterus  
 → thick walled  
 → mechanoreceptor  
 → thick mucus plug.

**Vagina:**  
 → thin and sensitive  
 → 8-10 cm  
 → menstruation  
 → site of sperm lodging  
 → Birth canal  
 → sexual arousal



**Male**  
 Urogenital: → Separate opening.

**Spermatogenesis**  
 → Puberty  
 → Continuous  
 → 1-2-4  
 1° 2° sperms

**Oogenesis**  
 → foetal stage  
 → menopause / cyclic  
 → 1-1-1  
 1° 2° oocyte

## Human Female Reproductive Cycle

**Intro:**  
 → Pubert  
 → Monthly cycle  
 → 1st → menarche  
 → till → menopause

**Purpose:**  
 → oogenesis  
 → prepare for pregnancy

→ 28 days → average

→ Secondary sex character

# Ovarian Cycle

- Ovary
- Oogenesis
- Independent (Pre-ovulatory phase) (14 days)
- 1. Follicular Phase:
  - GnRH → Anterior pituitary → FSH
  - Pri-follicle maturing → single follicle mature → Graafian follicle
  - remaining follicles degenerate (F. Atresia) (Luteal phase) (Post-ovulatory phase)
  - Estrogen ↑ → FSH ↓ = LH
  - oocyte ovulation → Corpus luteum

- follicular // proliferative
- ovulatory // secretory
- X // menstrual phase

\* next cycle starts by negative feedback (menstrual phase → hormone ↓)

\* Ovulation → 14<sup>th</sup> day

\* Secretory phase → constant and it last for 14 days

Q. If menstrual phase is of 36 days? When will ovulation occur?

→ 22 day → Secretory phase - 36 days  
 $14 - 36 = 22$  days

→ Short cycle → less than 28 day → ~~less~~ more than 12 per year

→ Long cycle → more than 28 days → less than 12 per year

no cycle → amenorrhea

# Uterine Cycle

- Uterus
- Prepare → Uterus
- Dependant
- 1. Proliferative phase: 14 days
  - Functional Endometrium → rest
  - Thickening → restart
  - Blood vessels → grow
- 2. Secretory phase: 14 days
  - Further thickening → functional endometrium
  - max thickness (2mm)
  - velvety appear
  - glycogen secreting glands → Food for embryo
  - Vasculization ↑

- Sperm ✓ → Fertilization → C. luteum → retain → continue to secrete progesterone ↑ → pregnancy
- Sperm X → No fertilization → C. luteum → degenerate → progesterone ↓ → endometrium shed

# Menstrual Phase (1-5d)

- Functional endometrium → shed
- glycogen secreting glands, blood vessels + secondary oocyte → menstrual discharge
- Vagina → expel → menstrual flow

poly ~~of~~

cycle