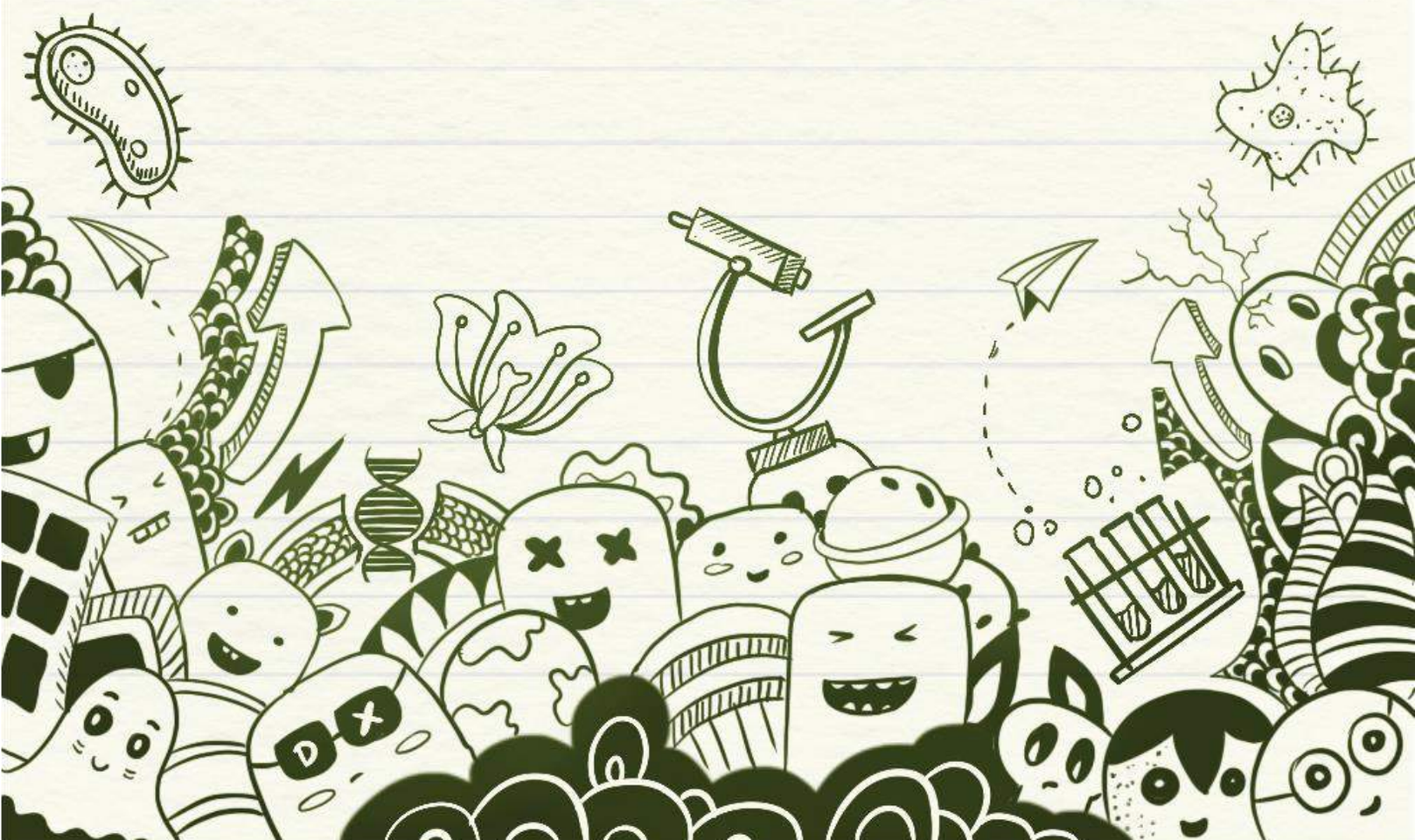
BIOLOGY

BYJU'S
POST CLASS NOTES

How do Organisms Reproduce?



Topics

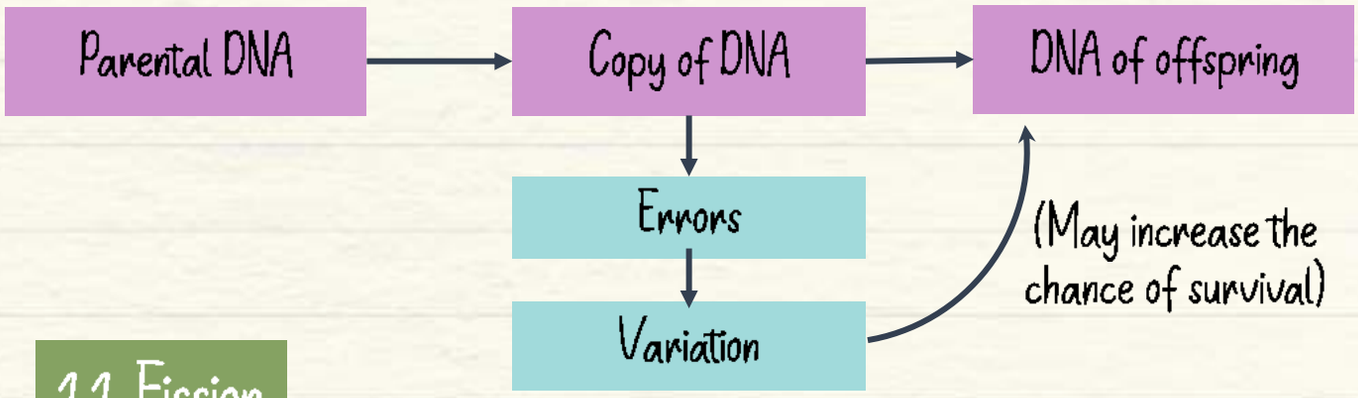
1. Asexual Reproduction
2. Sexual Reproduction
3. Reproductive Parts in Plants
4. Reproductive System in Humans
5. Secondary Sexual Characters
6. Asexual Vs Sexual Reproduction
7. Reproductive Health

Reproduction

- Production of organisms of similar kind
- Required for survival of species

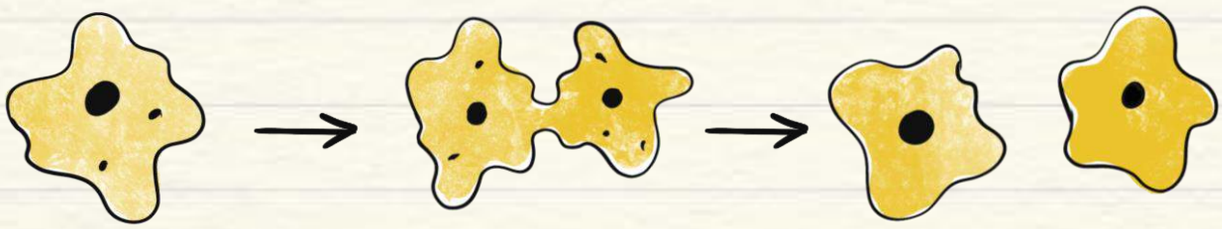
1. Asexual Reproduction

- Only one parent is involved
- DNA copying is the 1st step



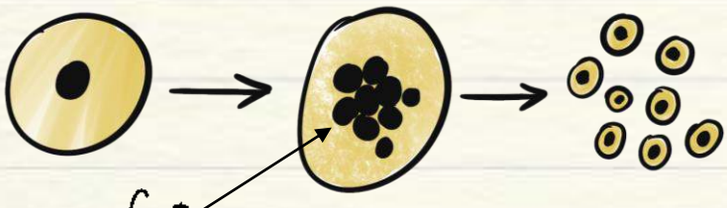
1.1. Fission

- Binary fission: One parent → 2 offspring



E.g. Amoeba, Leishmania

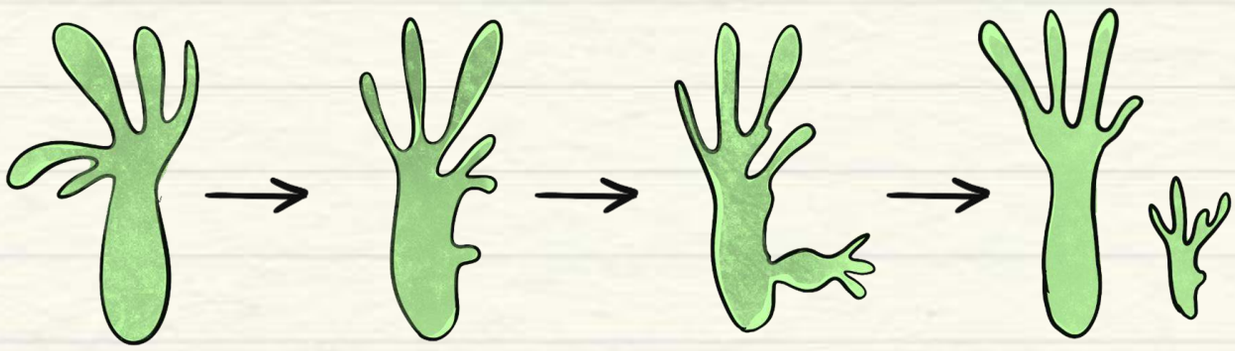
- Multiple fission: One parent → Many offspring



E.g. Plasmodium

1.2. Budding

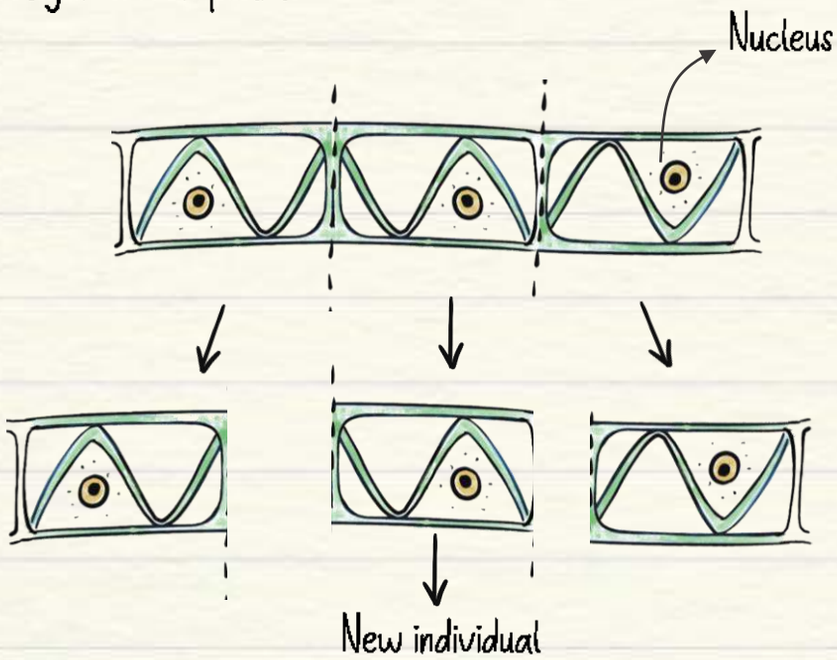
- Development of bud → Mature bud detaches → Independent offspring



E.g. Hydra

1.3. Fragmentation

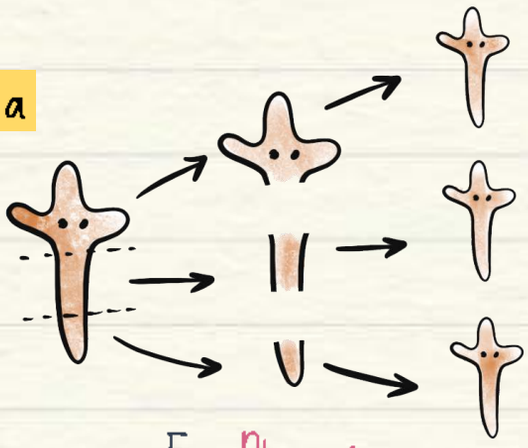
- Splits into fragments → One fragment, one individual
- Takes place mostly in lower plants



E.g. Spirogyra

1.4. Regeneration

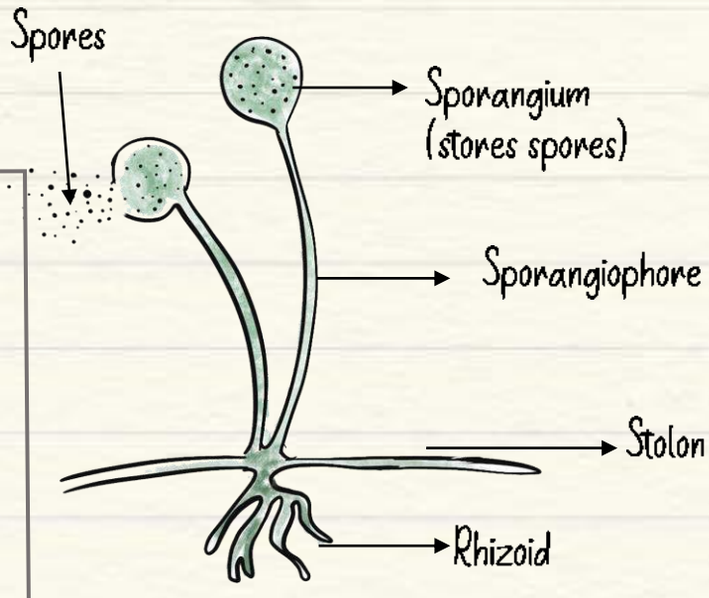
- Parent is cut → Each piece becomes a new individual
- Takes place mostly in animals
- Regrows the missing part



E.g. Planaria

1.5. Spore Formation

- Spore formation → Release of spore → Growth of offspring
- Spores can survive in unfavorable conditions



E.g. Rhizopus

1.6. Vegetative Propagation

- Specific to plants
- New plants are grown from stems, roots, and leaves

E.g. Stem → Potato
Leaf → Bryophyllum
Root → Grass

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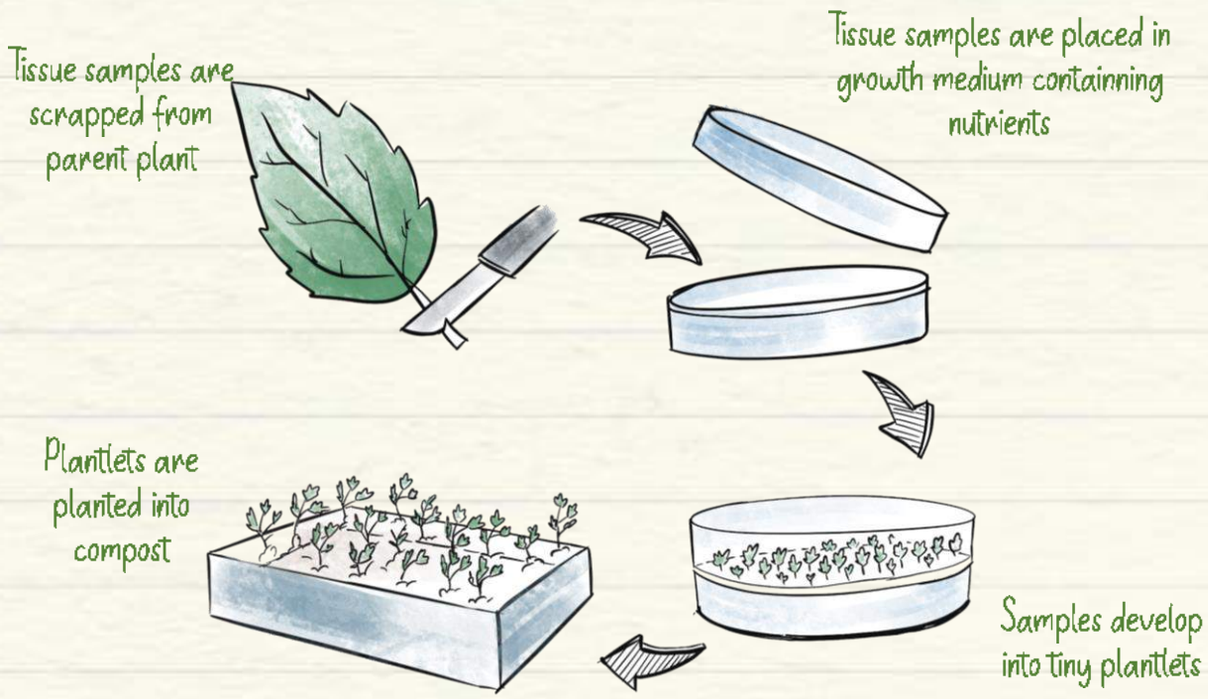
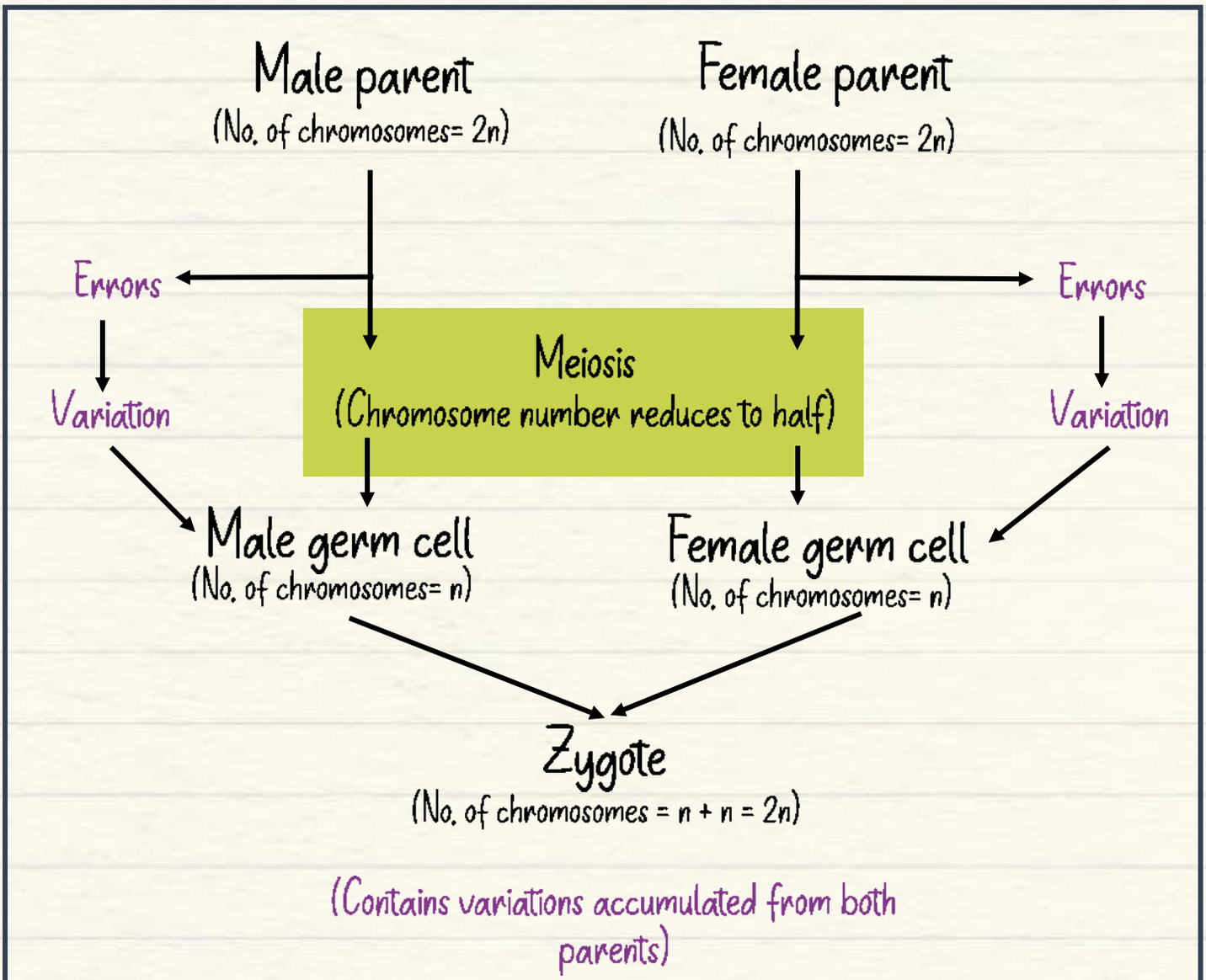
1.6. (a) Tissue Culture

- New plants are grown from cells or tissues of parent plant
- Can be used to grow disease-free plants



2. Sexual Reproduction

Two parents are involved



(Contains variations accumulated from both parents)

- Male germ cell : Male gamete:
  - Small and motile

  Plants: Present in pollen

  Humans: Sperm
- Female germ cell : Female gamete
  - Big and non-motile

  Plants: Egg cell

  Humans: Ovum/Egg

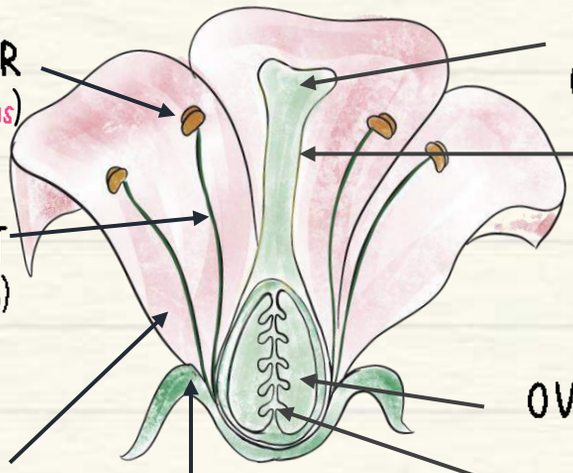
3. Sexual Reproduction in Flowering Plants

3.1. Parts of a Flower

STAMEN: Male reproductive part

ANTHER
(Produces pollen grains)

FILAMENT
(Holds anther high up)



STIGMA
(Receives the pollen)

STYLE
(Holds stigma high up, provides path for pollen tube growth)

OVARY (Hosts ovule)

OVULE (Has female gamete)

PISTIL: Female reproductive part

PETAL
(Colourful, attracts insects)

SEPAL
(Protects the bud)

Bisexual Flower

Contains both pistil and stamen
E.g., Hibiscus, mustard

Unisexual Flower

Contains either pistil or stamen
E.g., Papaya, watermelon

3.2. Pollination

Transfer of pollen from anther to stigma

Self-pollination: Same flower / different flower of same plant

Cross-pollination: Different flower of different plant

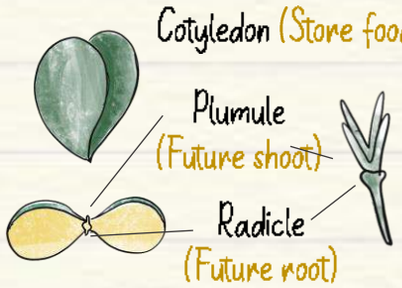
Agents: Wind, water, animals

3.3. Fertilisation

Pollination
↓
Growth of pollen tube
↓
Fusion of male gamete (in pollen) and female gamete (in ovule)
↓
Formation of **zygote**

3.4. Post-Fertilisation

Zygote → Embryo
Ovule → Seed



Ovary → Fruit
Petals, sepals → Fall off

Germination: Growth of seedling from a seed

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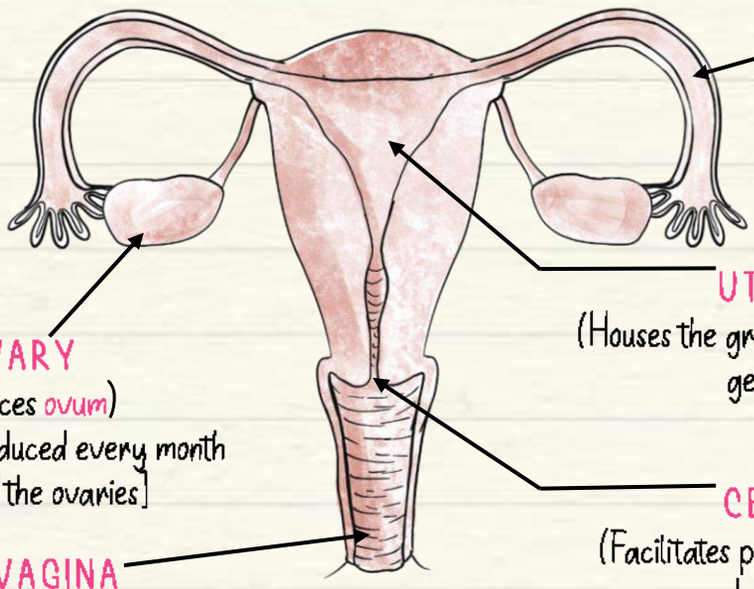
4. Sexual Reproduction in Humans

4.1. Female Reproductive System



FALLOPIAN TUBE / OVIDUCT
(Carries egg towards the uterus)

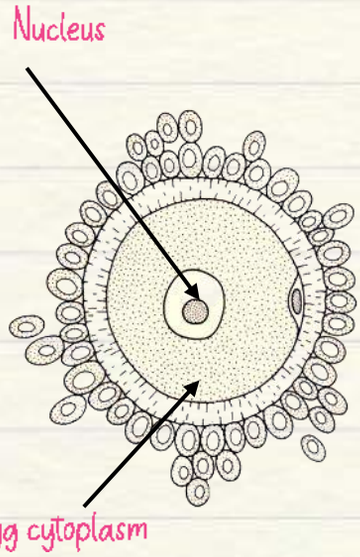
UTERUS
(Houses the growing foetus during gestation)

OVARY
(Produces ovum)
[One egg is produced every month by one of the ovaries]

CERVIX
(Facilitates passage of sperms and childbirth)

VAGINA
(Receives sperm and facilitiitate childbirth)

Gamete: Ovum



Path of the Gamete

Ovary → Fallopian tube → Uterus → Cervix → Vagina

[as zygote after fertilisation and as ovum without fertilisation]

[as zygote / foetus during gestation and as ovum without fertlisation]

[As mature foetus during birth and as ovum without fertilisation]

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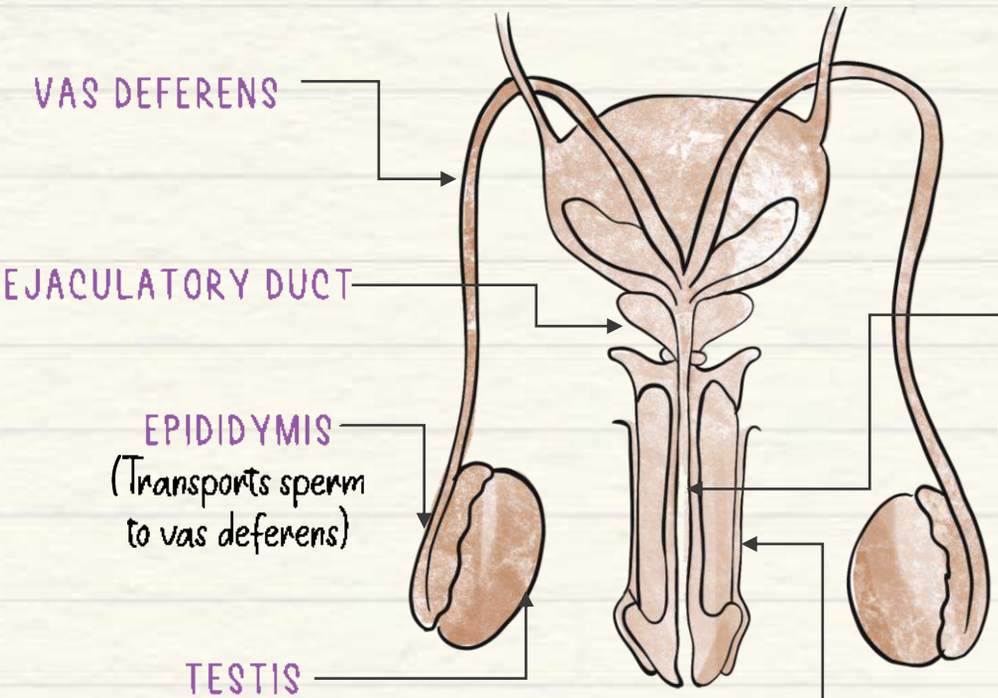
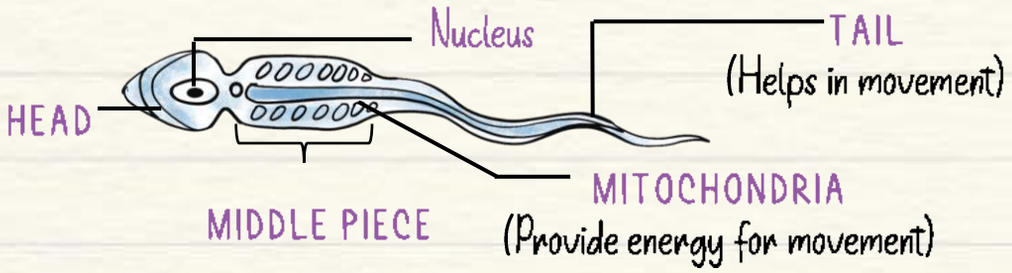
4.2. Male Reproductive System



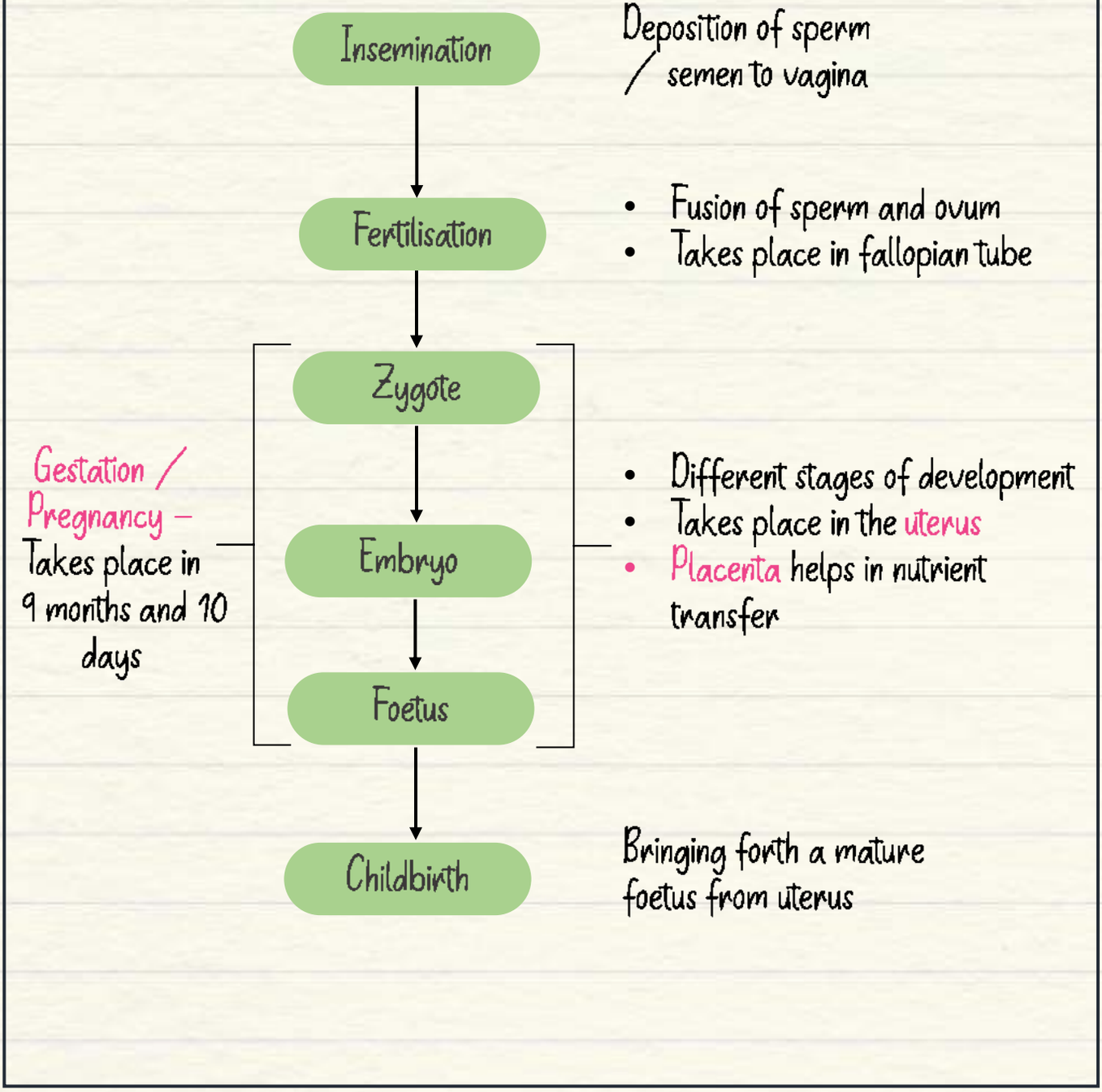
Gamete: Sperm



Path of the Gamete

Testis → Epididymis → Vas deferens → Ejaculatory duct → Urethra → [after insemination] Vagina → Cervix → Uterus → Fallopian tube

4.3. Process of Sexual Reproduction



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5. Secondary Sexual Characters

COMMON

- Hair growth: In armpits, limbs, pubic area
- Oily skin and development of pimples
- Development of germ cells

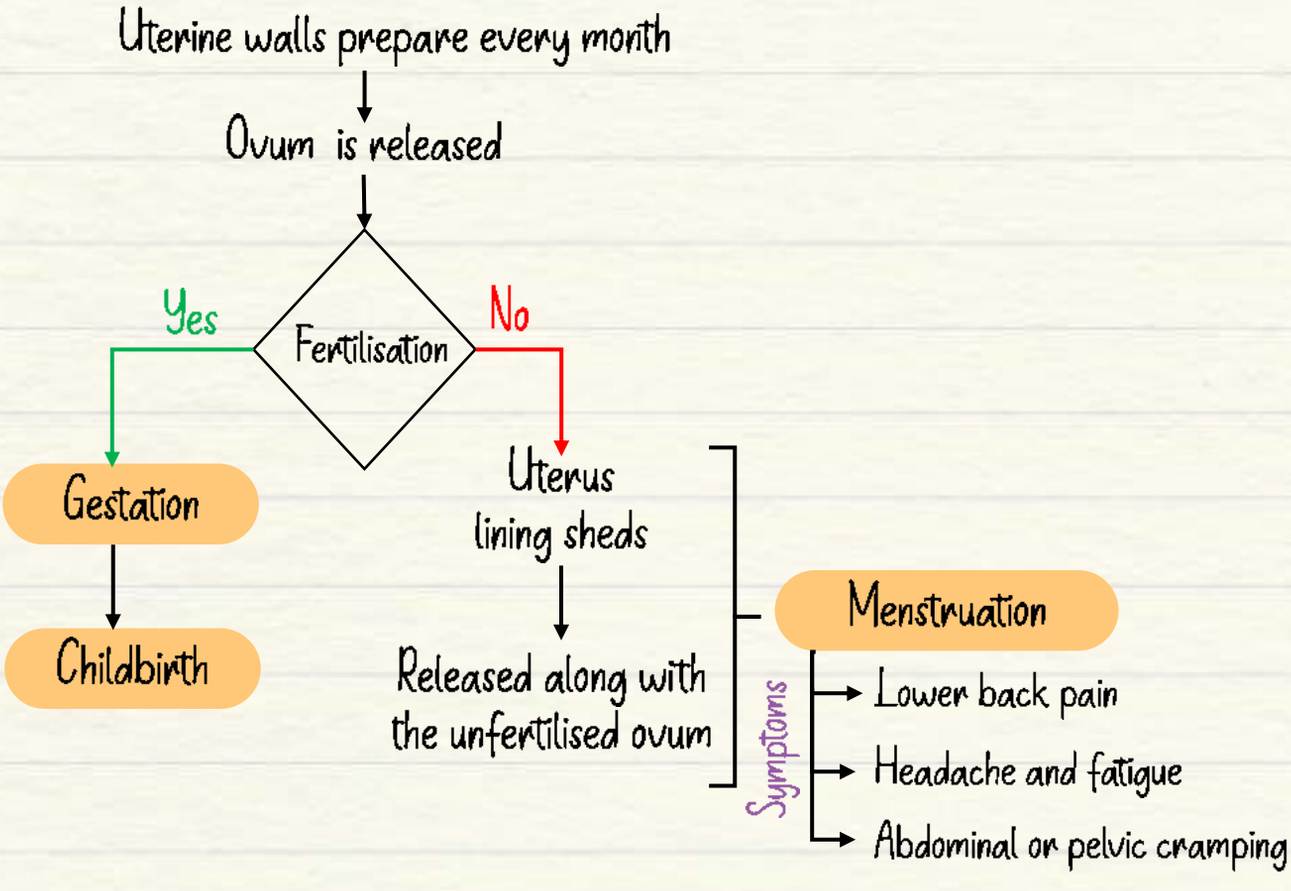
IN FEMALES

- Start of menstruation
- Development of breasts
- High pitched voice

IN MALES

- Growth of facial hair
- Cracking of voice
- Enlargment of larynx

5.1 Menstrual Cycle



6. Asexual Vs Sexual Reproduction

Asexual

- Only one parent is involved
- Chance of variation is less
- Common in simple organisms

E.g., Bacteria, fungi, spirogyra

Sexual

- Two parents are involved
- Chance of variation is more
- Common in complex organisms

E.g., Plants, animals, humans

7. Reproductive Health

7.1. Sexually Transmitted Diseases (STD)

DISEASE	ORGANISM	AFFECTED ORGANS	TREATMENT
Gonorrhoea	*Neisseria gonorrhoeae* (Bacteria)	Urethra, rectum and cervix in females	Antibiotics
Syphillis	*Treponema pallidum* (Bacteria)	Reproductive organs, brains, nerves, heart, blood vessels	Antibiotics
AIDS (Acquired Immunodeficiency Syndrome)	Human Immunodeficiency Virus (HIV)	Immune system	Anitretroviral therapy

7.2. Contraceptive Methods

WHY?

- Avoiding unwanted pregnancies
- Family planning
- Maternal health

CONTRACEPTIVE METHODS

Birth control pills

- Contain chemicals to inhibit pregnancy
- Most effective

Intrauterine devices

- Made of plastic and copper
- Can be used upto 10 years
- Used by females

Barriers

- Prevent the gametes from meeting
- Thin latex sheath cover penis in males
- Thin latex sheath placed inside vagina in females

Surgery

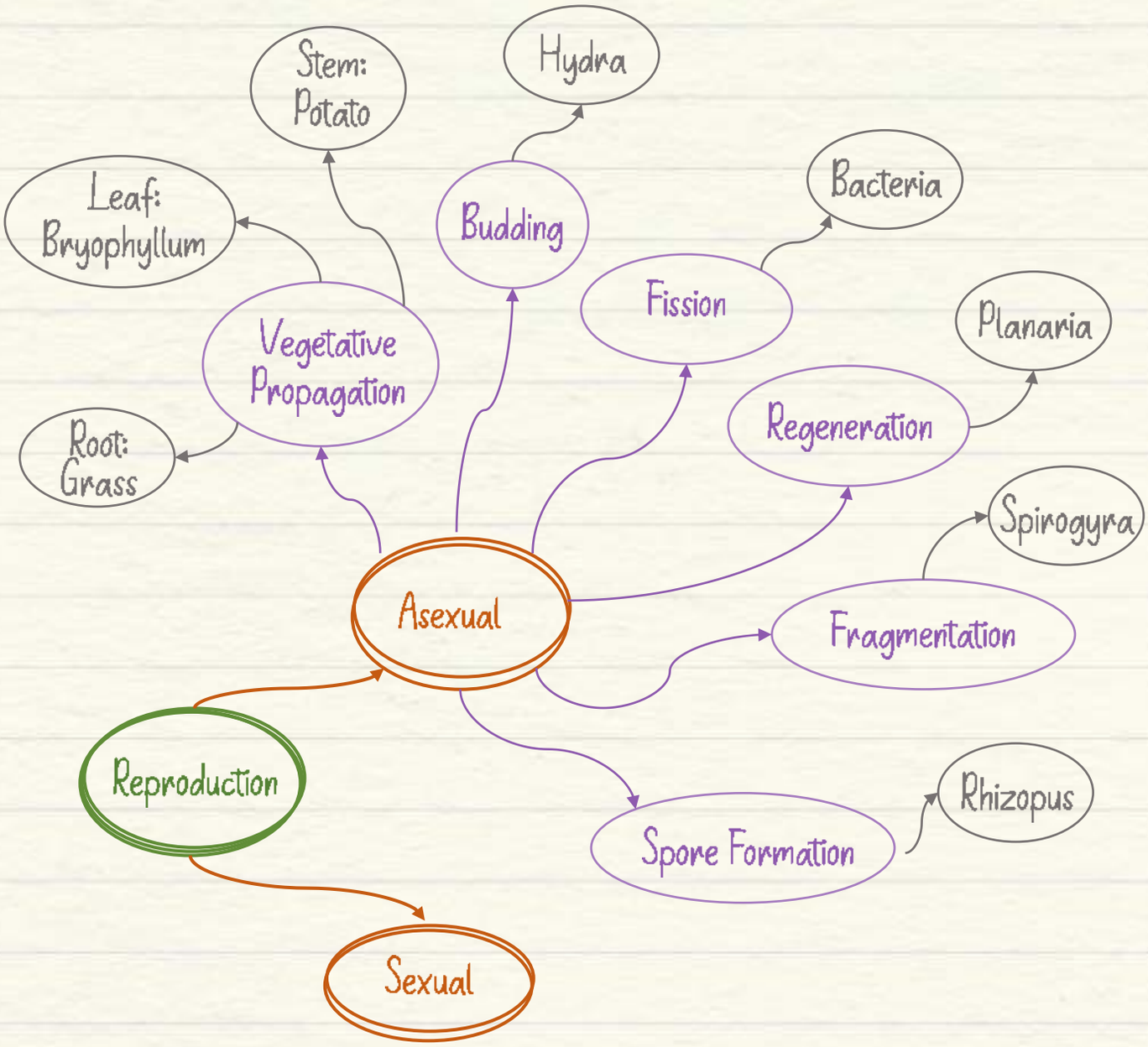
In females

- Tubectomy
- Fallopian tubes are blocked

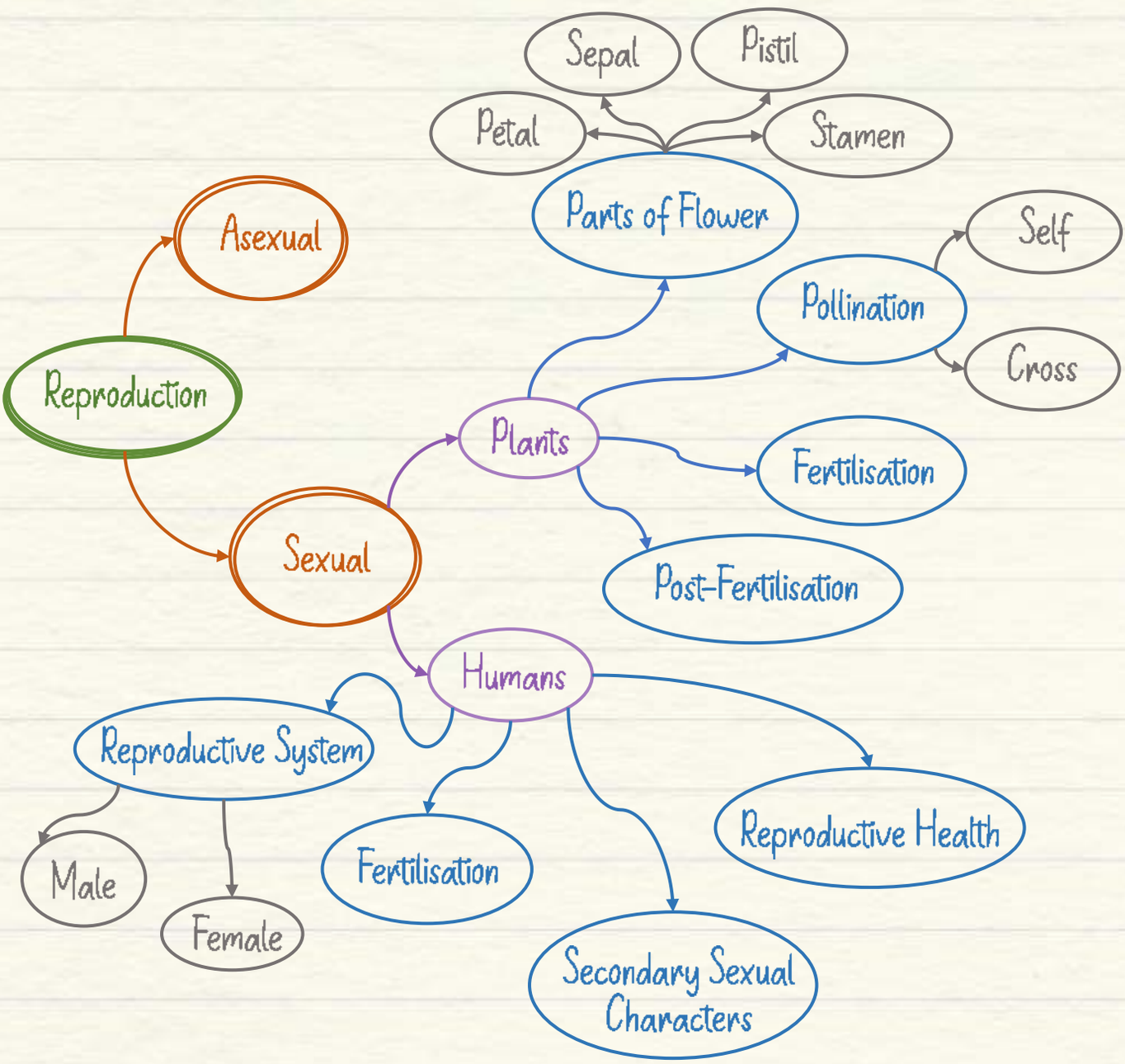
In males

- Vasectomy
- Vasa deferentia are blocked

Mind Map


Reproduction
Asexual
Sexual
Vegetative Propagation
Stem: Potato
Leaf: Bryophyllum
Root: Grass
Budding
Hydra
Fission
Bacteria
Regeneration
Planaria
Fragmentation
Spirogyra
Spore Formation
Rhizopus

Mind Map


Reproduction
Asexual
Sexual
Plants
Parts of Flower
Sepal
Pistil
Petal
Stamen
Pollination
Self
Cross
Fertilisation
Post-Fertilisation
Humans
Reproductive System
Male
Female
Fertilisation
Secondary Sexual Characters
Reproductive Health