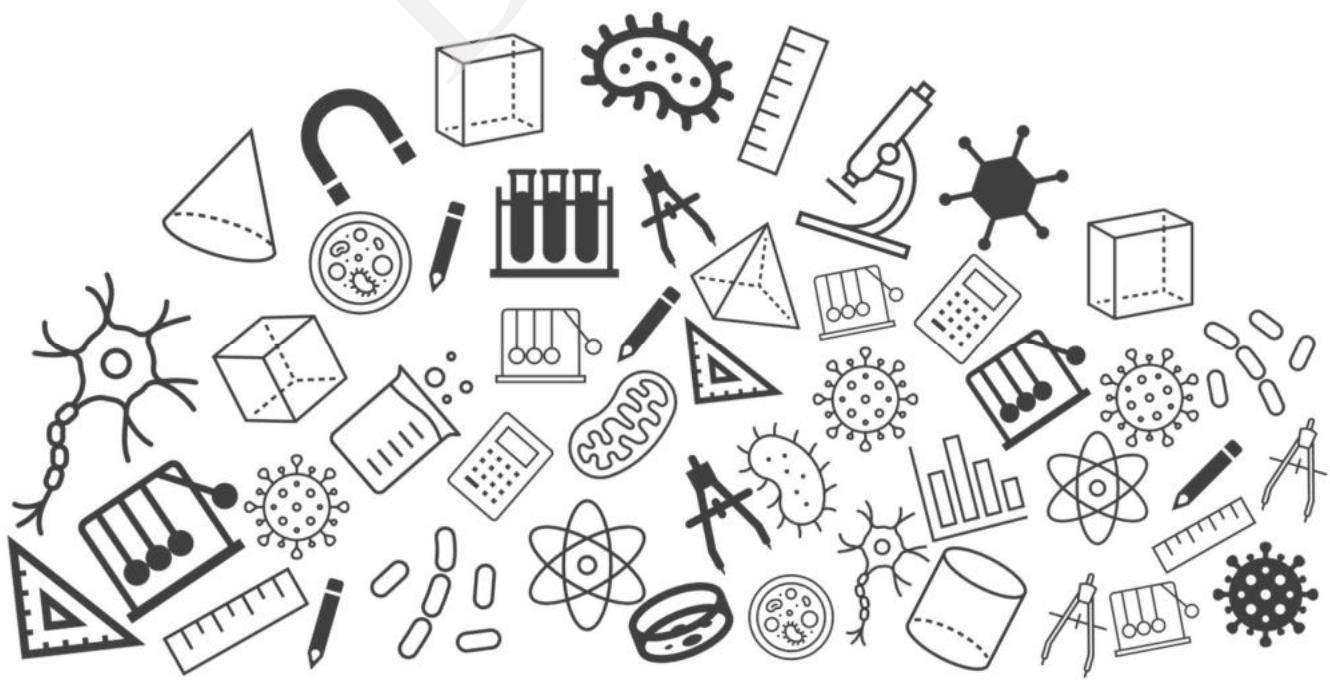




Grade 10: Science Chapter Notes



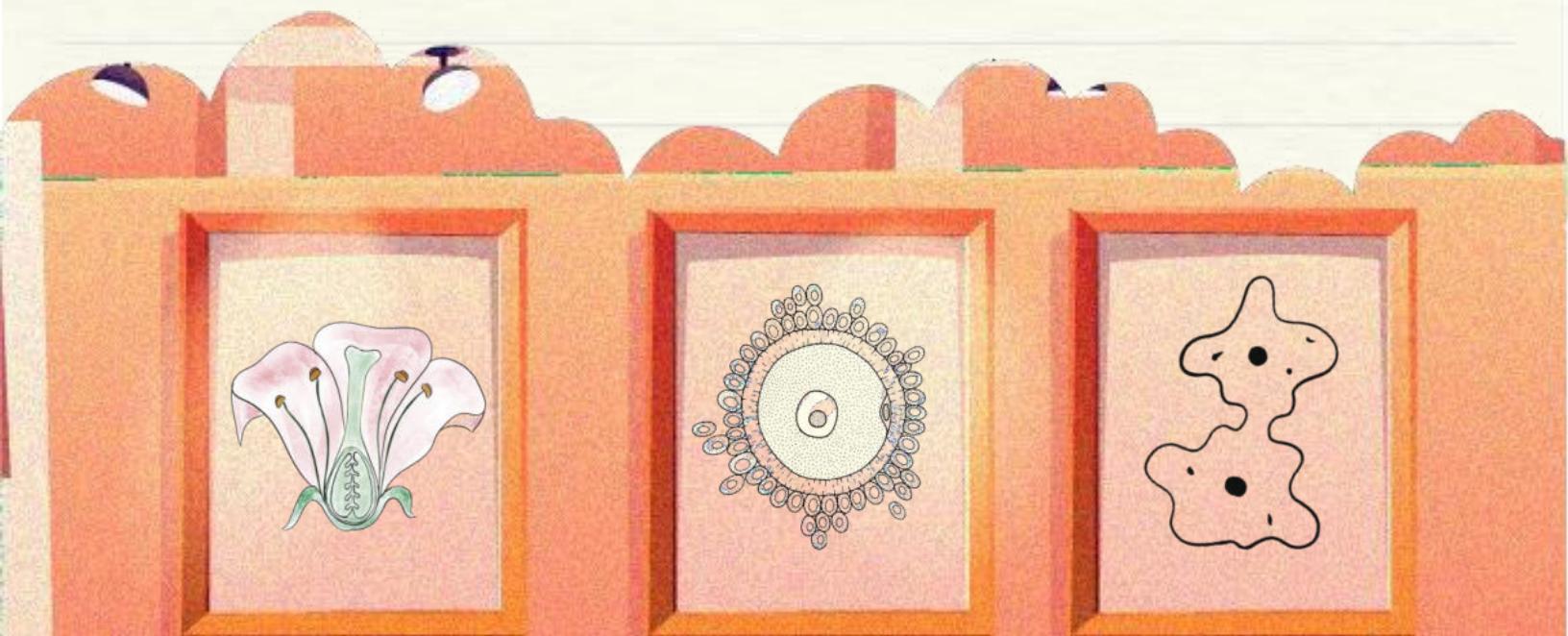
How do Organisms Reproduce?



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



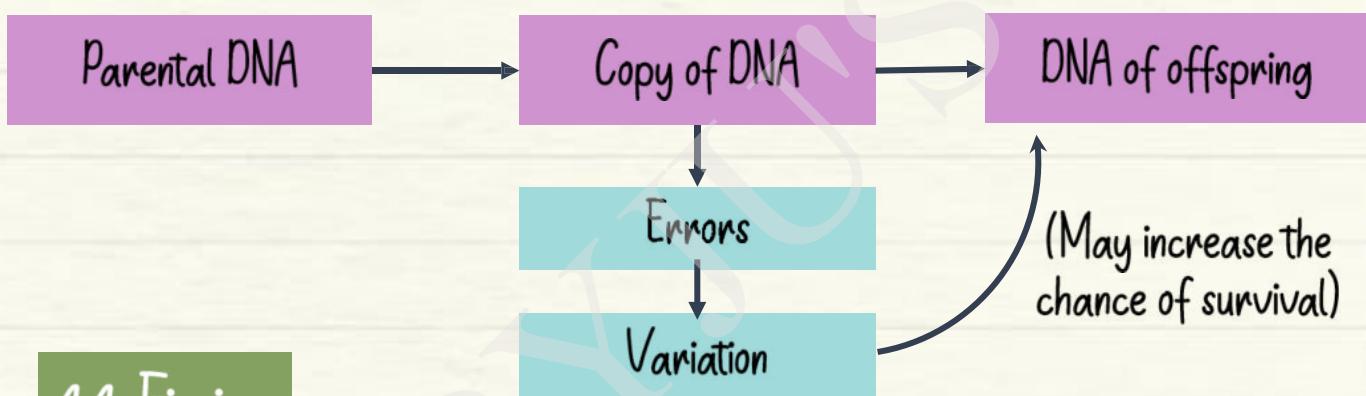
Reproduction



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

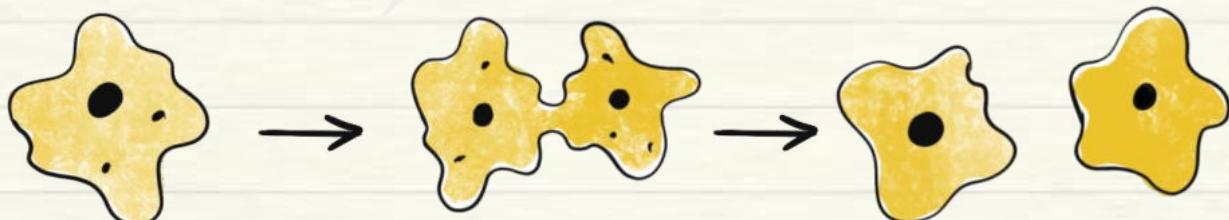
1. Asexual Reproduction

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



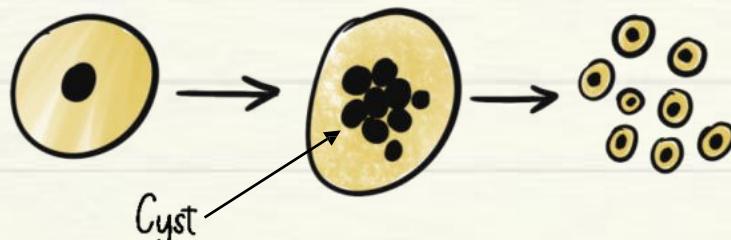
1.1. Fission

- ★ Binary fission: One parent → 2 offspring



E.g. Amoeba, Leishmania

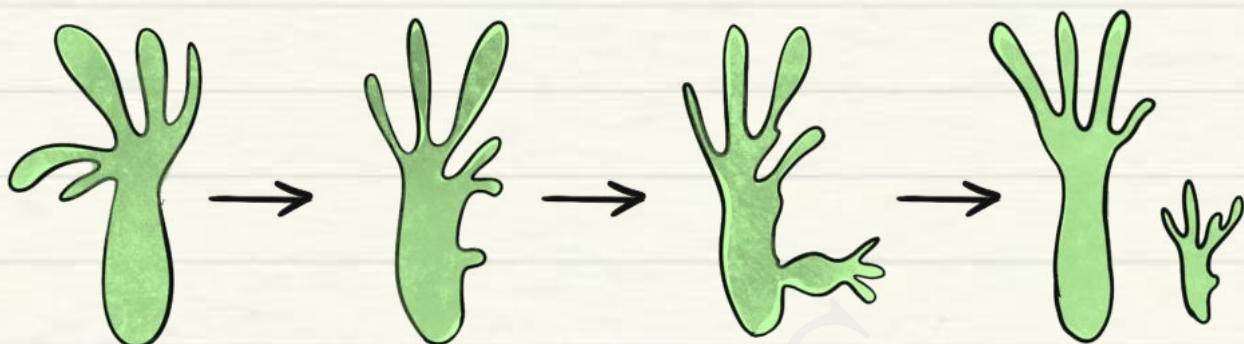
- ★ Multiple fission: One parent → Many offspring



E.g. Amoeba, Plasmodium

1.2. Budding

- ★ Development of bud → Mature bud detaches → Independent offspring

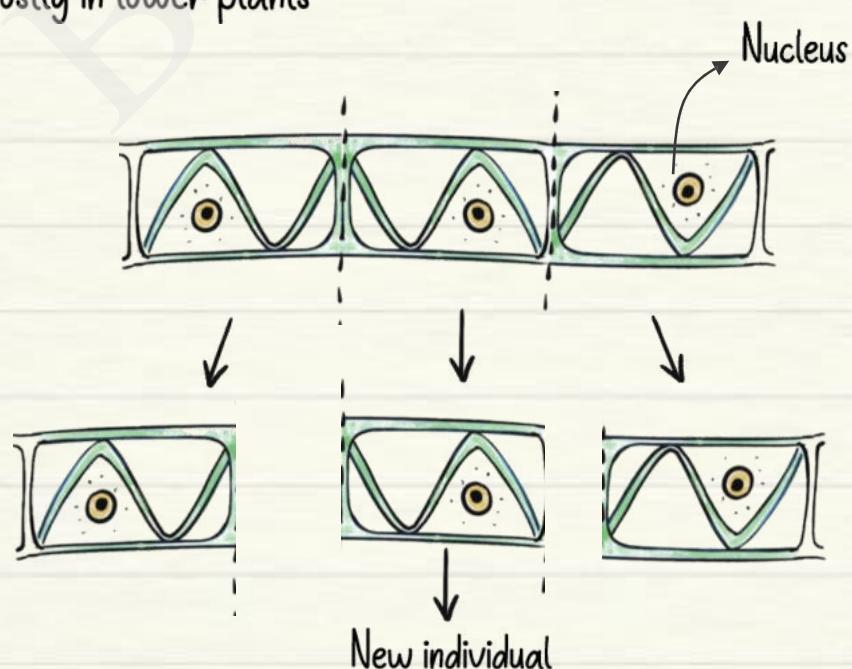


E.g. Hydra

1.3. Fragmentation

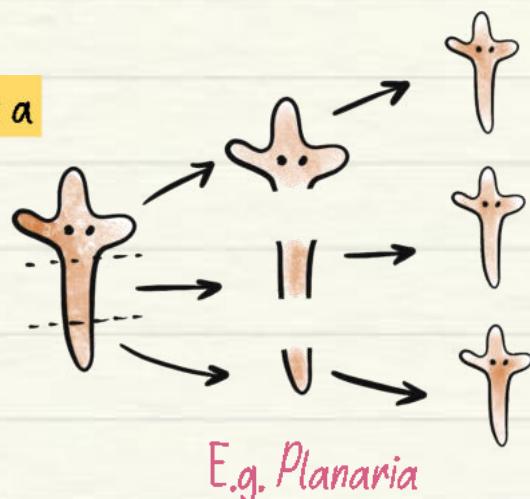
- ★ Splits into fragments → One fragment, one individual
- ★ Takes place mostly in lower plants

E.g. Spirogyra



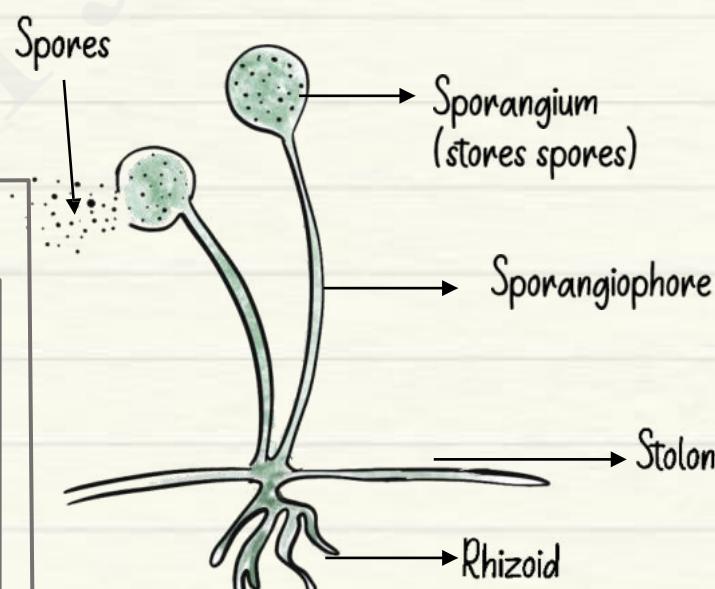
1.4. Regeneration

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



1.5. Spore Formation

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



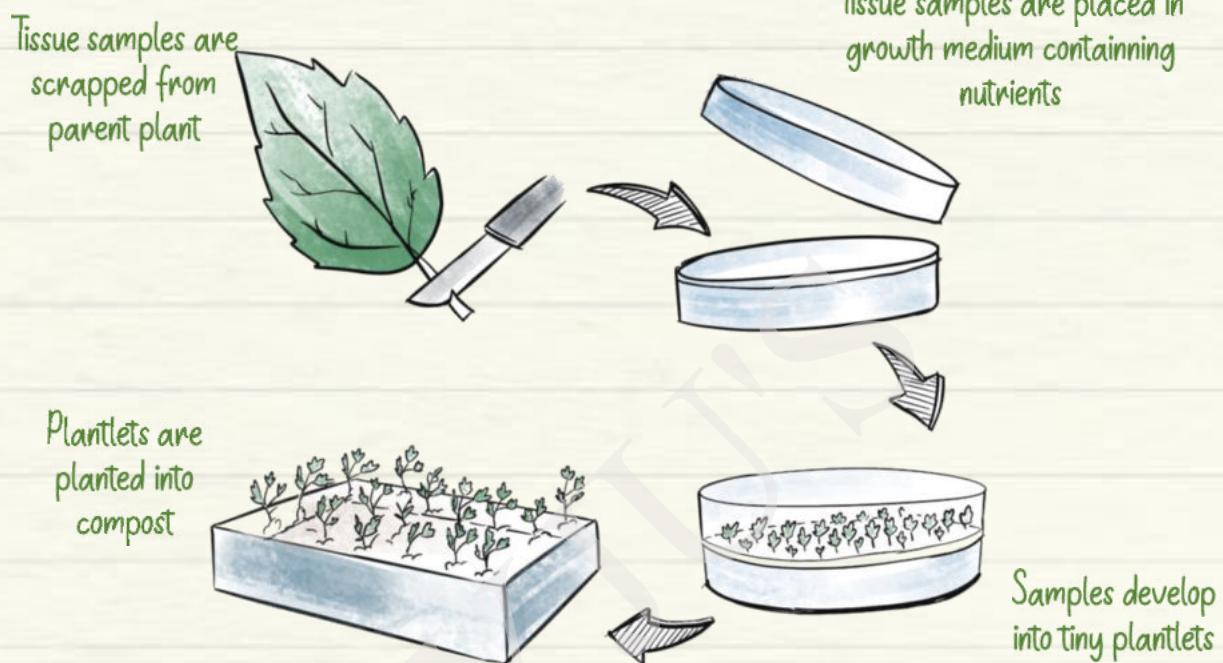
1.6. Vegetative Propagation

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

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

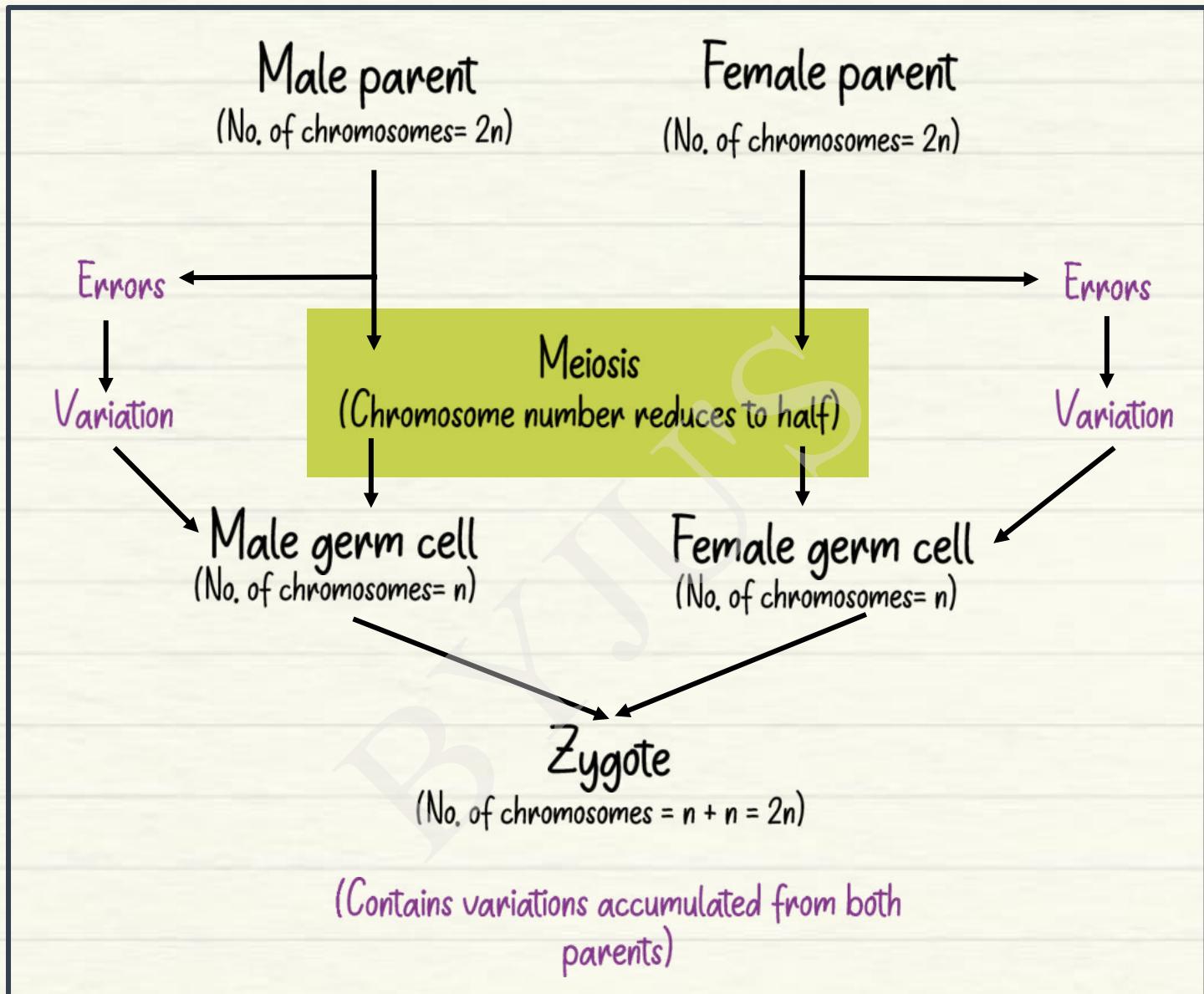
1.6. (a) Tissue Culture

- ★ 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



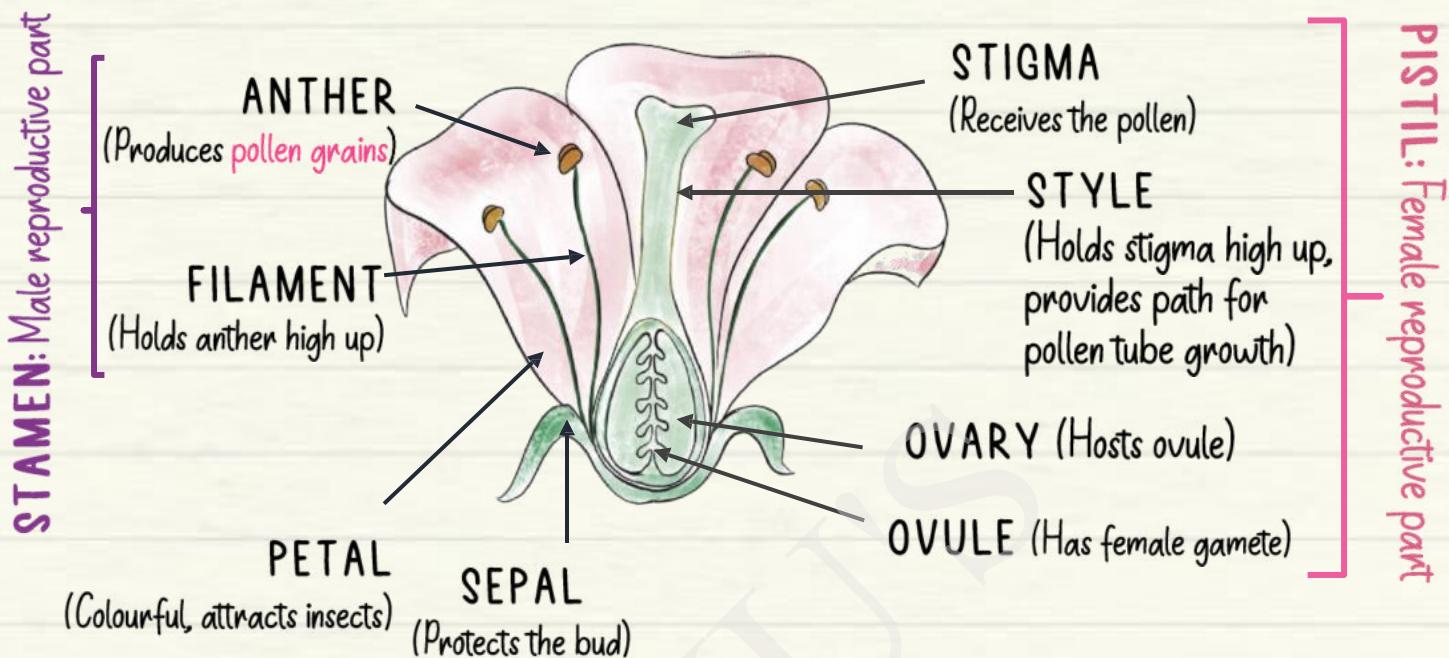
- Male germ cell : Male gamete:
 - Small and motile

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



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

Growth of pollen tube after pollination

Fusion of male gamete (in pollen) and female gamete (in ovule)

Formation of **zygote**

3.4. Post-Fertilisation

Zygote → Embryo
Ovule → Seed

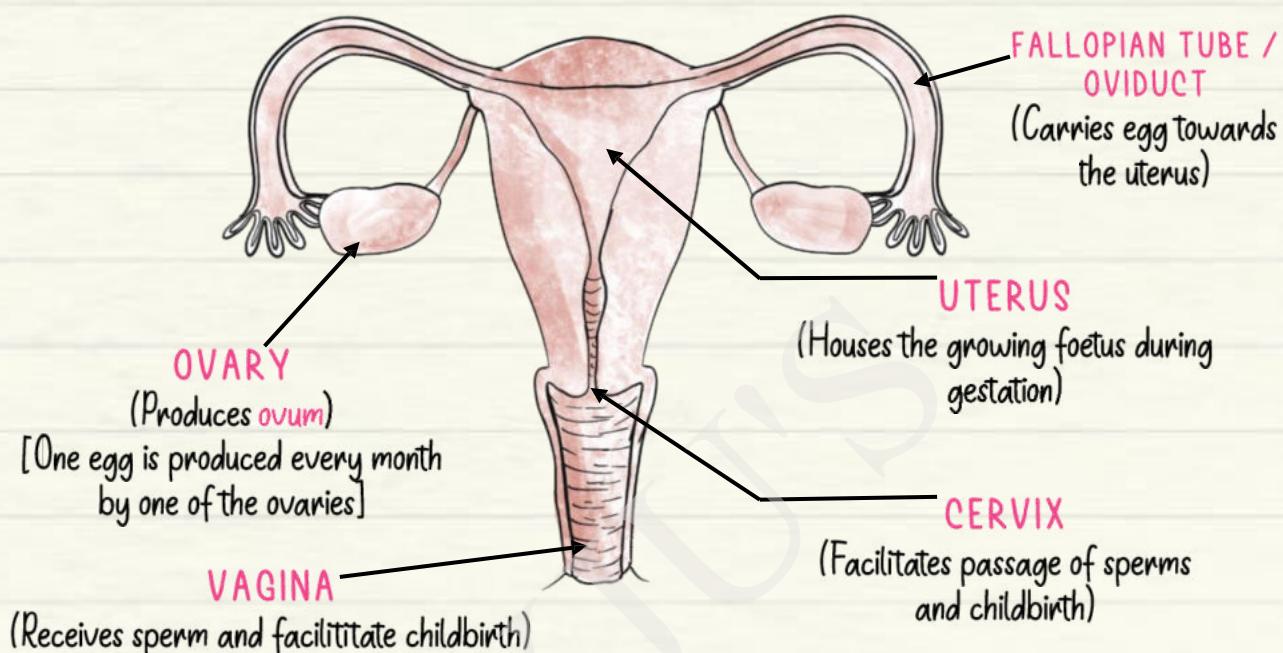


Ovary → Fruit
Petals, sepals → Fall off

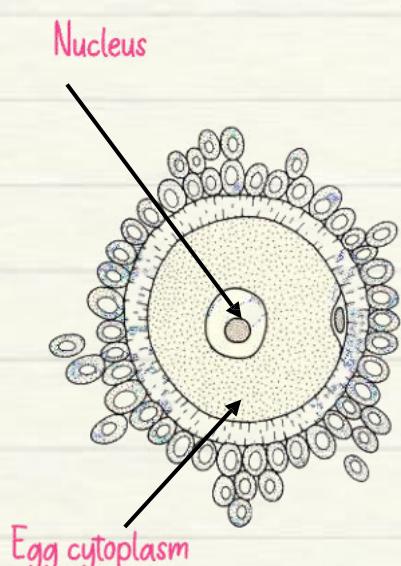
Germination: Growth of seedling from a seed

4. Sexual Reproduction in Humans

4.1. Female Reproductive System



Gamete: Ovum



Path of the Gamete

Ovary → Fallopian tube

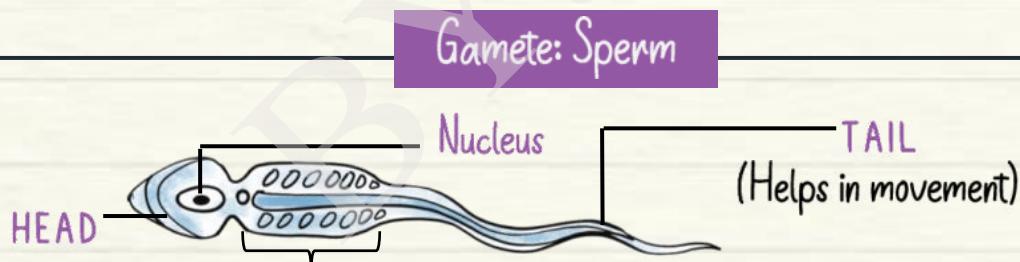
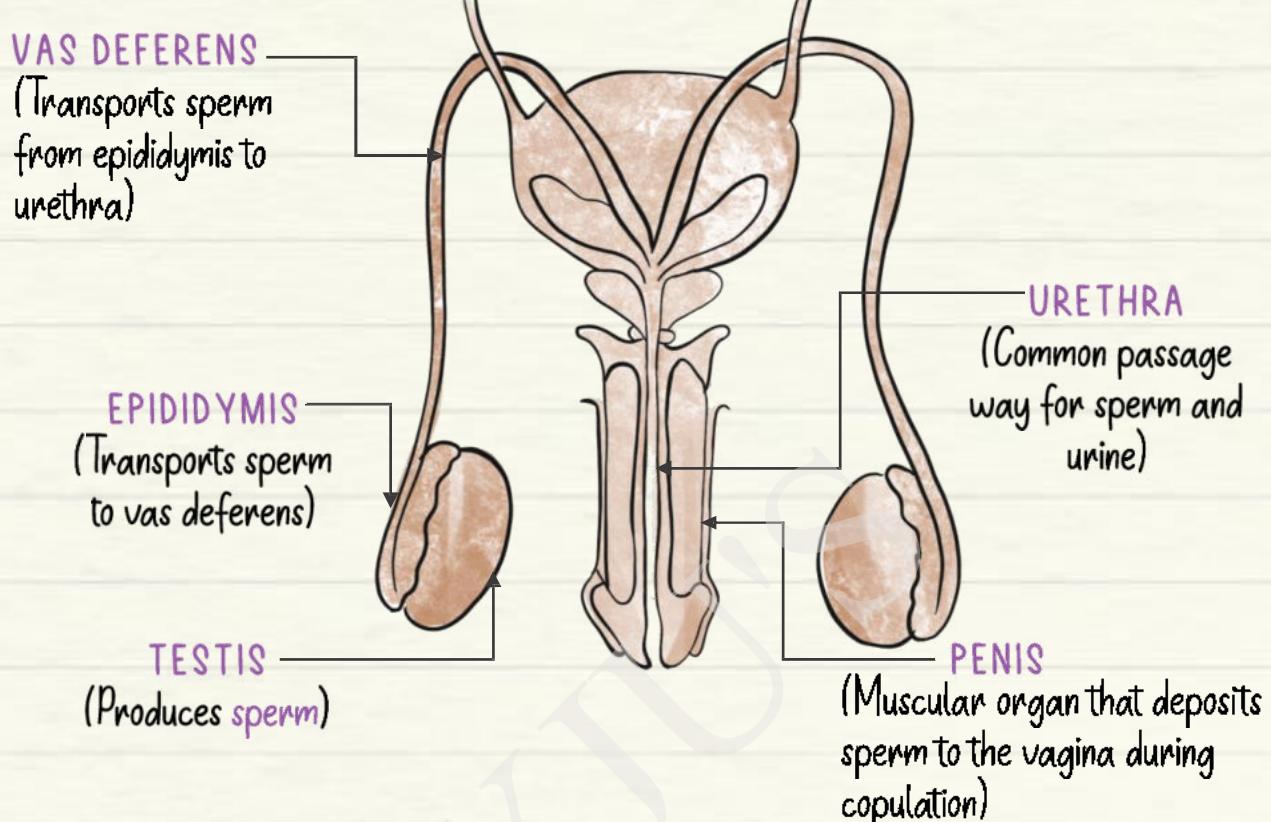
[as zygote after fertilisation and as ovum without fertilisation]

Vagina ← Cervix ← Uterus

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

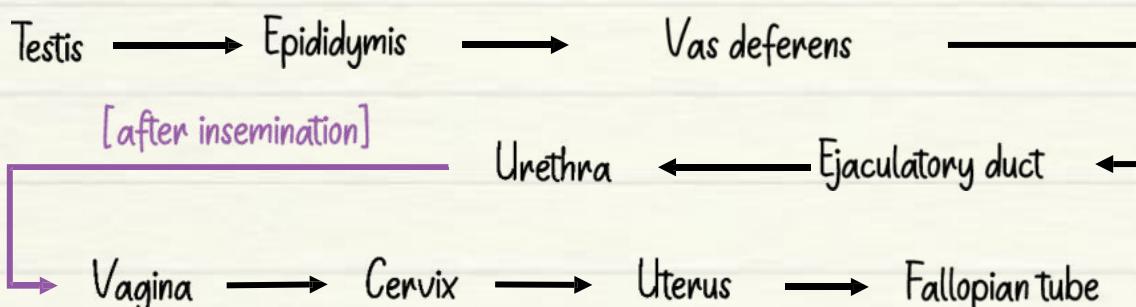
[as zygote/foetus during gestation and as ovum without fertilisation]

4.2. Male Reproductive System

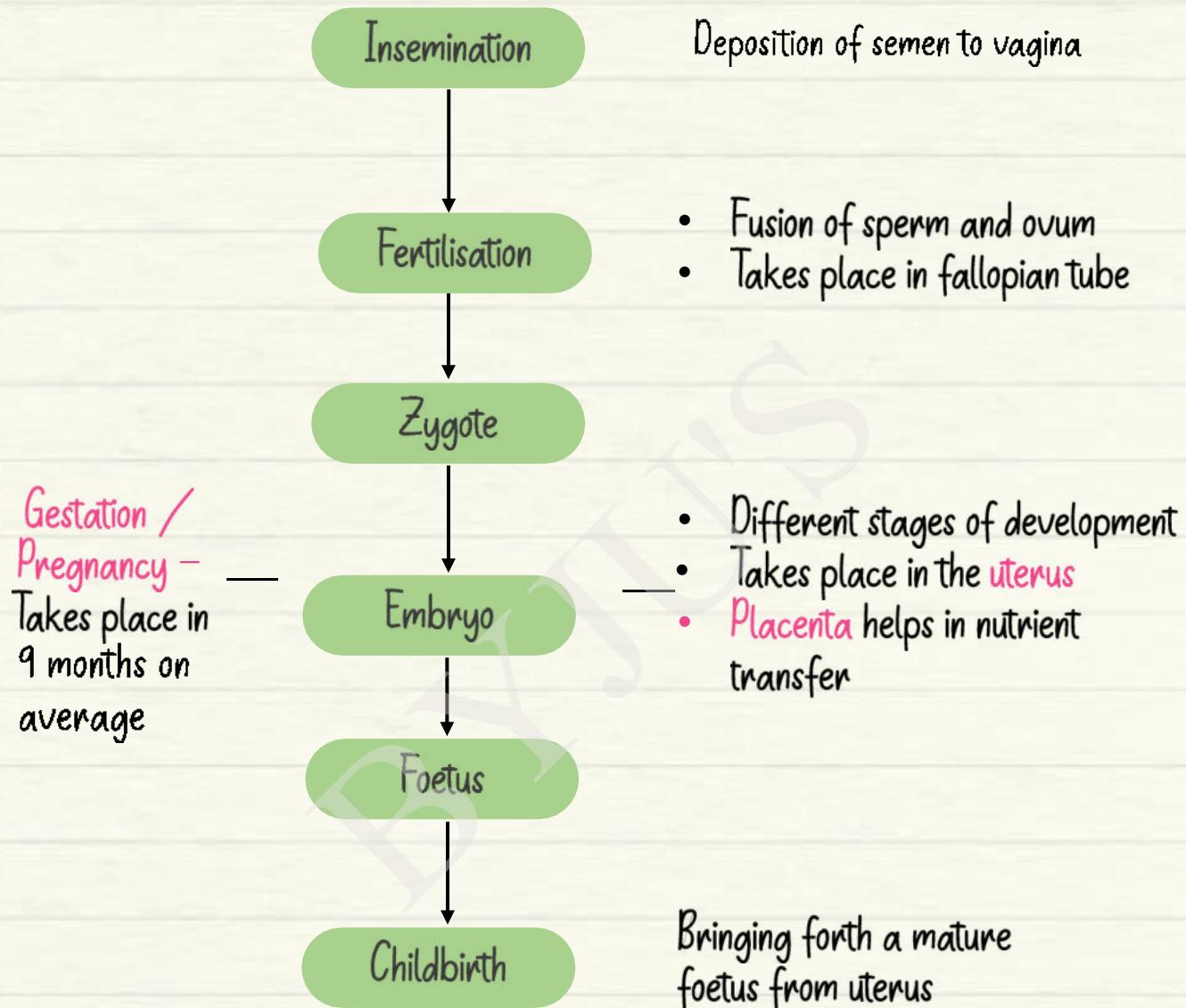


MIDDLE PIECE (Contains mitochondria that provide energy for movement)

Path of the Gamete



4.3. Process of Sexual Reproduction



5. Secondary Sexual Characters

COMMON

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

IN FEMALES

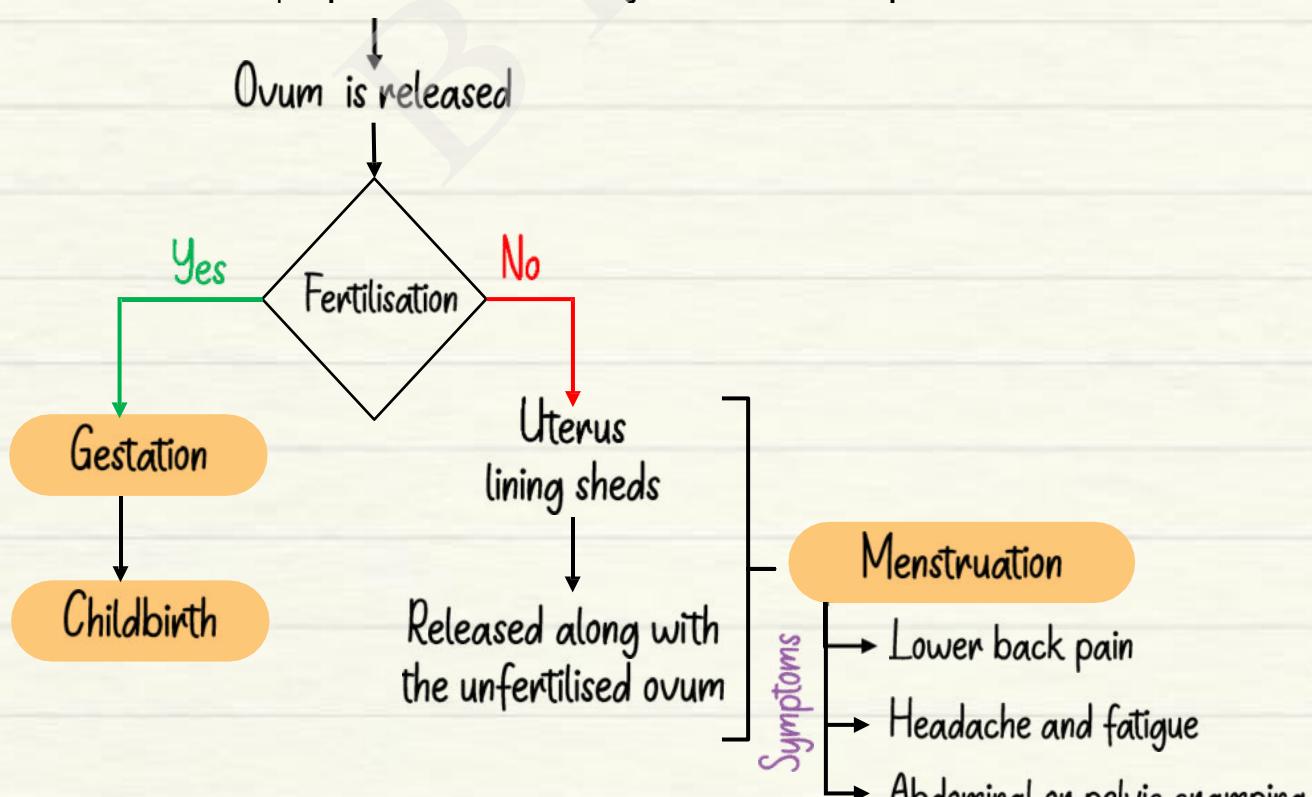
- Start of menstruation
- Development of breasts
- High pitched voice

IN MALES

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

5.1 Menstrual Cycle

Uterus walls prepare (thicken) every month for conception



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)

Diseases that are transmitted from an infected person to a healthy person through sexual contact

| DISEASE | ORGANISM | AFFECTED ORGANS | TREATMENT |
|--|---|---|-------------------------------|
| Gonorrhoea | <i>Neisseria gonorrhoeae</i> (Bacteria) | Urethra, rectum and cervix in females | Antibiotics |
| Syphilis | <i>Treponema pallidum</i> (Bacteria) | Reproductive organs, brains, nerves, heart, blood vessels | Antibiotics |
| AIDS (Acquired Immunodeficiency Syndrome) | Human Immunodeficiency Virus (HIV) | Immune system | Symptoms managed by medicines |

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

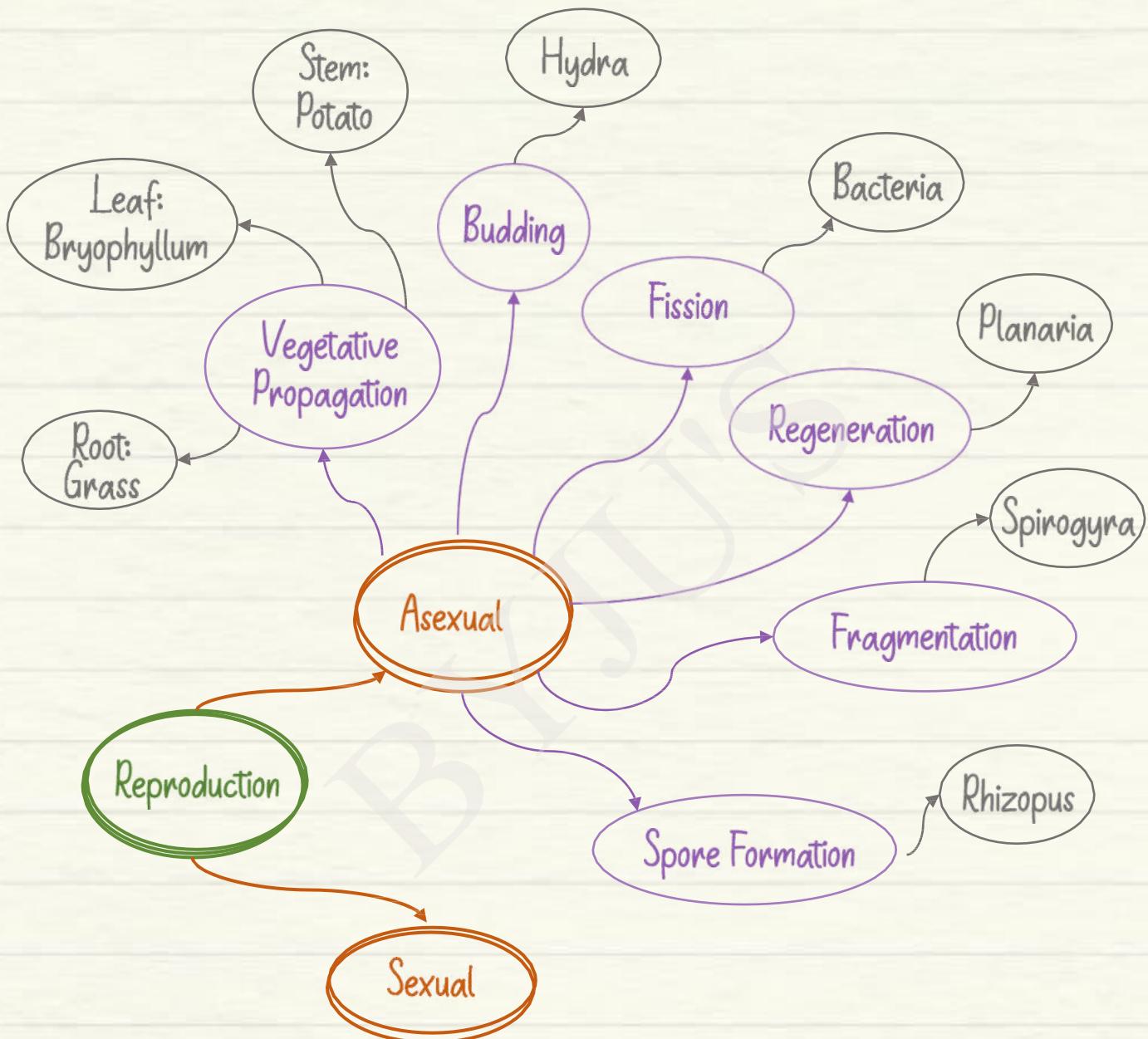
- Tubectomy
- Fallopian tubes are blocked

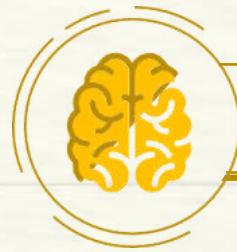
In males

- Vasectomy
- Vasa deferentia are blocked



Mind Map





Mind Map

