

Reproduction Notes

General

- There are two types of reproduction – **sexual and asexual**.
- **Sexual Reproduction** has **variations and diversity**, as genes are unique, especially good for **survival**.
 - o However, it is **slow**, with **little offspring** and more **time and energy** to find a mate.
 - o It requires an **agent**, such as water, wind or insects, for cells to travel.
 - o It requires **protection** to offspring, as they are often vulnerable.
- **Asexual Reproduction** has **no variation** as offspring are genetically identical to its **one parent**.
 - o It saves **time and energy**, and can produce a **large amount of offspring**.
 - o However, it has **no variation**, meaning **no survival** if there is change in environment.
- Asexual reproduction can be classified further by **internal** and **external** fertilisation.
- **Internal fertilisation** indicates it is done inside the body, taking place in the female body.
 - o There are **fewer gametes produced**, and a higher chance of **survival** due to parental care.
- **External fertilisation** occurs when it is done outside the body, in the **environment**.
 - o Places include **water**, as it is **moist** to prevent **desiccation** (drying out).
 - o There are **more sex cells by both sexes** for survival and **lower parental care**.
- Contraception is the prevention of pregnancy.
 - o **Tubal ligation**, where the female’s fallopian tube is cut and tied back.
 - o **Vasectomy**, where the sperm duct is cut.
 - o **Condom**, where it prevents sperm escaping.
- Other techniques include the **pill**, a **diaphragm** and **spermicide jelly**, which kills sperm.

Sexual Reproduction

Terms

- Gamete – sex cell, e.g. sperm/egg
- Ovum (sing) /Ova (pl.) – egg
- Gametogenesis – production of gametes
- Fertilisation – union of two sex cells to become one
- Zygote – unfertilised egg
- Haploid – cell containing 23 chromosomes
- Diploid – cells containing 2 sets of chromosomes (46 in total)
- Embryo – clump of cells that form parts of the body
- Foetus – after embryo, where human features are distinct

Male Reproductive System

Part	Description
Left/Right Ureters	Carry urine from kidney to bladder
Bladder	Pouch that stores urine temporarily
Left/Right Seminal Vesicle	Adds fluids to sperm
Prostate Gland	Secretes fluid that is slightly alkaline
Right/Left Epididymis	Stores sperm from testis
Scrotum	Holds testes outside body
Foreskin	Loose skin protecting tip of penis

Glans	Tip which is very sensitive
Erectile Tissue	Contains blood vessels and can be filled with blood
Sperm Duct	Carries sperm from epididymis to penis
Urethra	Carries semen and urine to the penis

Female Reproductive System

Part	Description
Left/Right Ureters	Carry urine from kidney to bladder
Bladder	Pouch that stores urine temporarily
Urethra	Carries urine to the outside
Left/Right Ovaries	Produces and releases eggs
Vagina (birth canal)	Open to outside, semen/sperm deposited
Left/Right Oviduct (Fallopian Tube)	Carries eggs from ovary to uterus
Uterus/Womb	Fertilised egg implants itself here and starts to grow
Cervix	Muscular opening between vagina and uterus

Hormones

- For males, **testosterone** is produced.
- For females, **oestrogen and progesterone** for the different parts of the menstrual cycle.

Fertilisation and Implantation

1. Male ejaculates sperm into vagina
2. Sperm swim up through the cervix
3. After about 24 hours, sperm reach oviducts
4. After 30 hours, sperm arrive at right ovary
5. Ovulation – egg bursts from ovary
6. Fertilisation – sperm surround egg, and one sperm enters egg
7. Zygote starts dividing to form 2 cells. If they separate then they form twins.
8. More divisions of the egg continue as it goes further down the oviduct
9. Embryo arrives at the uterus
10. During the monthly cycle, oestrogen and progesterone cause uterus lining to grow and thicken
11. Embryo sticks onto the uterus's lining

Pregnancy

- **Amnion** is the pouch that is filled with water and the baby. It holds and cushions the baby – the water /inside is called **amniotic fluid**.
- **Umbilical Cord** is the cord which provides a connection with the baby and the placenta.
- The **placenta** is an organ that supplies food that is filtered into the cord, and also removes waste. Since the baby is fragile, it also lowers blood pressure before supplying it to the baby.

The Menstrual Cycle

- There are three parts of the menstrual cycle: **menstruation, pre-ovulation** and **post-ovulation**.
- Menstruation occurs when the **walls of the uterus** break down for up to **5 days**.
- Pre-ovulation occurs when the egg is **in the ovary, beginning to mature**. The **linings** begin to **thicken**, and on the 14th day, an egg is released into the oviduct.
- Post-ovulation occurs when the wall continue to thicken, **waiting for a fertilised egg**. If the egg does not arrive, then the **wall collapses**, and the **cycle begins again**.
- Most cycles take around **28 days**.

Asexual Reproduction

- Plants mostly **asexually** reproduce. This means, there are a **large amount of offspring**.

Plant's Life Cycle

- Germination – seeds and sprouts begin to grow
- Plant Growth
- Flower Production
- Pollination – the transfer of pollen from an anther to a stigma
- Fertilisation
- Fruit development
- Fruit disposal

These steps repeat.

Dissection of a Flower

