

Reproduction

IGCSE Biology ■ Topic 16

IGCSE Biology



Reproduction

What we will cover

- 1 Asexual vs sexual
- 2 Flowers & pollination
- 3 Fertilisation in plants
- 4 Human reproduction
- 5 Pregnancy & hormones
- 6 STIs

1 Two kinds

Asexual vs sexual reproduction

asexual 无性生殖

one parent; identical **clones** 克隆;
fast but **no** variation

sexual 有性生殖

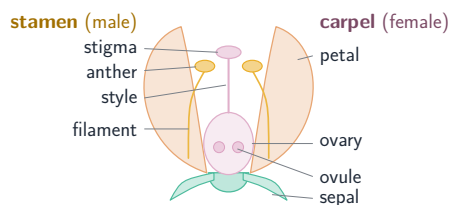
two parents; **gametes** 配子
fuse at **fertilisation** 受精;
gives **variation** 变异



Flowers are reproductive structures

2 Plants

Parts of a flower

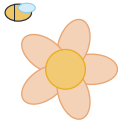


- **insect-pollinated** flowers have bright petals, scent and nectar, and sticky or spiky pollen, to attract insects and stick to them.
- **wind-pollinated** flowers have small dull petals, anthers and stigmas that hang outside, and light, smooth pollen that blows in the wind.

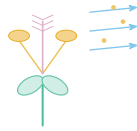
Pollination

Pollination 传粉: pollen moves from anther to stigma.

- **insect** – bright petals, scent, sticky pollen
- **wind** – small dull flowers, light pollen



insect-pollinated
bright petals, scent + nectar;
sticky, spiky pollen



wind-pollinated
small dull petals; anthers &
stigma hang out; light pollen

Fertilisation in plants

fertilisation

a **pollen tube** 花粉管
grows down the style; nu-
clei fuse in the **ovule** 胚珠

germination 萌发

a seed needs water, oxygen
& a suitable temperature

3 Humans

Human reproductive systems

male

testes 睾丸 make **sperm** 精子;
sperm ducts → **urethra** 尿道 → penis

female

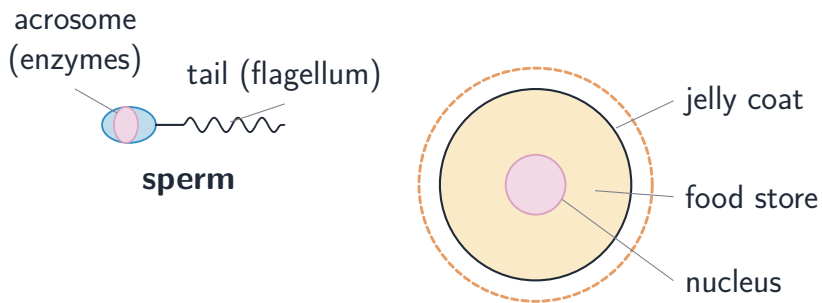
ovaries 卵巢 make **eggs** 卵细胞;
oviduct 输卵管 → **uterus** 子宫

Gametes: sperm and egg

■ **sperm** 精子 – small, many, swims (**flagellum** 鞭毛)

■ **egg cell** 卵细胞 – large, few, stores food

Fertilisation = the two nuclei fusing.



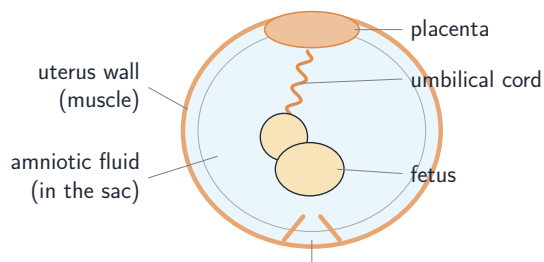
Pregnancy and the fetus

The **fetus** 胎儿 grows in the uterus:

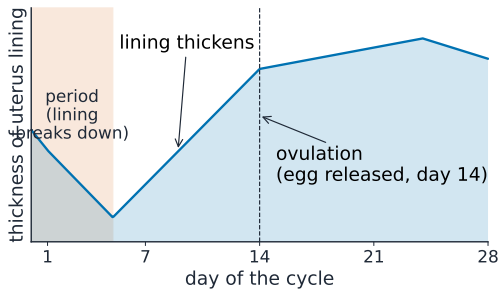
■ **placenta** 胎盘 – exchanges food, gases & waste

■ **umbilical cord** 脐带 – joins fetus to placenta

■ **amniotic sac** 羊膜囊 – fluid cushions it



Puberty and the menstrual cycle



At **puberty** 青春期, sex hormones bring **secondary sexual characteristics** 第二性征.

The ~28-day cycle: lining thickens → **ovulation** 排卵 (day 14) → a period if no pregnancy.

Sexually transmitted infections

HIV / AIDS

a **virus** 病毒 spread in body fluids; can lead to AIDS

control

condoms, fewer partners, testing & treatment, no shared needles

4

Recap

Worked example – wind or insect pollinated?

A flower has small dull green petals, no scent, and feathery stigmas hanging outside. How is it pollinated?

- No bright petals and no scent $\Rightarrow$ nothing is **attracting an insect**.
- Feathery stigmas **hanging outside** are built to **catch pollen from the air**.
- Anthers will also hang out, releasing large amounts of light, smooth pollen.
- So: **wind pollinated**.

Insect-pollinated: big bright scented petals, nectar, sticky pollen, **enclosed** anthers/stigmas. Wind: small, dull, **exposed**, huge amounts of light pollen.

Topic 16 – key takeaways

1 Two kinds

asexual: clones; sexual: variation

2 Flowers

stamen male, carpel female;
insect/wind

3 Gametes

sperm small & many; egg large & few

4 Cycle

lining thickens, ovulation day 14, period

Check yourself

- 1 Which reproduction gives variation?
- 2 Which flower part makes pollen?
- 3 How is a sperm cell adapted to move?
- 4 On about which day is an egg released?



Answers 1. sexual reproduction 2. the anther 3. it has a tail (flagellum) 4. about day 14