

Reproduction

Advantage of asexual reproduction

Reproduction

Advantage of sexual reproduction

Reproduction

**Roles of meiosis and fusion of gametes
in a sexual life cycle**

Reproduction

**Prime difference between male and
female sexes**

Reproduction

**Functions of the epididymis and
seminal vesicle**

Reproduction

**Functions of the oviduct and
endometrium**

Reproduction

Source and role of FSH

Reproduction

**Positive feedback in the menstrual
cycle**

Offspring have new gene combinations, giving the variation needed for adaptation to a changed environment.

Produces genetically identical offspring of a parent already adapted to an existing environment.

The male gamete travels to the female gamete, so it is smaller with less food reserves than the egg, and many more are produced.

Meiosis breaks up parental combinations of alleles and halves the chromosome number; fusion of gametes (fertilization) produces new combinations and restores diploid.

Oviduct: carries the egg to the uterus; site of fertilization. Endometrium: blood-rich uterus lining where the embryo implants.

Epididymis: stores sperm while they mature. Seminal vesicle: secretes fluid with fructose and mucus into semen.

High oestradiol before ovulation stimulates the pituitary to release more LH (and FSH): the LH surge triggers ovulation.

Anterior pituitary. Stimulates follicle development and oestradiol secretion by follicle cells.

Reproduction

Role of progesterone in the cycle

Reproduction

Final stage of fertilization in humans

Reproduction

Two hormonal steps at the start of IVF

Reproduction

Where are the gametes of a flowering plant?

Reproduction

Why is reproduction in a hermaphrodite plant still sexual?

Reproduction

Two features of an insect-pollinated flower and their functions

Reproduction

Three methods that promote cross-pollination

Reproduction

How does self-incompatibility work?

Nuclear membranes of sperm and egg nuclei dissolve; all condensed chromosomes join one mitosis, producing two diploid nuclei.

Secreted by the corpus luteum; maintains the endometrium and inhibits FSH and LH (negative feedback).

Male gametes inside pollen grains; female gametes (egg cells) inside ovules in the ovary.

Normal secretion of hormones is suspended (down-regulation), then artificial doses of FSH induce superovulation.

Large coloured, scented petals attract insects; nectaries give a sugary reward; sticky stigma catches pollen from insects.

Haploid male and female gametes still fuse at fertilization, giving a zygote with a new combination of alleles.

Pollen carrying an S allele matching the receiving plant is rejected: it fails to germinate or its tube stops growing, so gametes come from different plants.

Pollen and stigma mature at different times; separate male and female flowers or plants; pollen carried between plants by animals or wind.

Reproduction

Why is inbreeding a disadvantage?

Reproduction

Seed dispersal versus pollination

Reproduction

Mobilization of food reserves in germination

Reproduction **HL only**

What triggers puberty?

Reproduction **HL only**

Four stages common to spermatogenesis and oogenesis

Reproduction **HL only**

Why does oogenesis give one egg but spermatogenesis four sperm?

Reproduction **HL only**

Acrosome reaction

Reproduction **HL only**

Cortical reaction

Dispersal moves seeds away from the parent after fertilization; pollination moves pollen from anther to stigma before fertilization.

It decreases genetic diversity and vigour, as harmful recessive alleles become homozygous more often.

Increased GnRH release by the hypothalamus in late childhood, raising LH and FSH release, which increases sex hormone production.

Water uptake; gibberellin stimulates amylase production; starch digested to sugars, proteins to amino acids; transported to the growing embryo.

In oogenesis both meiotic divisions divide the cytoplasm unequally, giving one large egg and polar bodies; spermatogenesis divides equally.

Mitosis, cell growth, two divisions of meiosis, differentiation.

After fusion, cortical granules release enzymes by exocytosis that alter the zona pellucida so no more sperm can pass through.

Acrosome releases enzymes that digest a path through the zona pellucida, letting the sperm reach the egg membrane.

Reproduction **HL only**

Blastocyst and implantation

Reproduction **HL only**

What does a pregnancy test detect, and with what?

Reproduction **HL only**

Key structural feature of the placenta

Reproduction **HL only**

Why is having a placenta an advantage?

Reproduction **HL only**

What triggers childbirth?

Reproduction **HL only**

Why was the HRT-CHD correlation not causal?

hCG from the embryo or developing placenta, using monoclonal antibodies that bind to hCG.

Hollow ball of cells (trophoblast, inner cell mass, cavity) formed by about day 5; implants in the endometrium at about day 7.

The foetus can be retained in the uterus to a later stage of development than in mammals without a placenta.

Placental villi give a large surface area for exchange between maternal and foetal blood.

HRT users had higher socioeconomic status, which itself lowers CHD risk. Randomized controlled trials showed HRT slightly increases CHD risk.

A fall in progesterone allows oxytocin secretion to rise; oxytocin causes contractions, which stimulate more oxytocin (positive feedback).