

| Key Words | | | |
|------------------------------|--|-----------------------------|---|
| Aerobic Respiration | Glucose and oxygen react together in cells to produce carbon dioxide and water and releases energy. | Sexual Reproduction | Gametes from two parents fuse during fertilisation to form a zygote. This will develop into an embryo that will be genetically different to both parents. |
| Anaerobic respiration | During hard exercise, not enough oxygen can reach your muscle cells. So anaerobic respiration takes place. This does not need oxygen for it to happen. | Asexual Reproduction | One parent cell divides by binary fission to produce an identical copy of itself. |
| Lactic Acid | A chemical produced in muscles by anaerobic respiration, it causes cramp. | | |
| Smoking | Breathing tobacco smoke into the lungs. | | |
| Reproduction | The process of making new individuals (offspring). Can be sexual or asexual. | | |

Subject: Physiology
Year: 8
Term: 1b

Lesson Sequence

1. Anaerobic Respiration
2. Impact of Smoking – 1
3. Impact of Smoking – 2
4. Asexual Reproduction
5. Sexual Reproduction
6. Sexual Reproduction in Plants
7. Pollination

Key Equations

Aerobic Respiration

Word Equation: Oxygen + Glucose → Carbon dioxide + Water Vapour

Symbol Equation: $6O_2 + C_6H_{12}O_6 \longrightarrow 6CO_2 + 6H_2O$

Anaerobic Respiration: Glucose → Lactic Acid + Energy released

Recovery: Lactic Acid + Oxygen → Carbon dioxide + Water

Key Assessments

EA Exam 2

Core Texts

SMART Science

BBC Bitesize KS3 Science

Anaerobic Respiration

Anaerobic respiration produces much less energy than aerobic respiration.

The waste product, lactic acid, builds up in the muscles causing pain and tiredness. This leads to cramp. Lactic acid is only broken down when you start aerobic respiration again.

| Similarities between aerobic and anaerobic respiration | How is anaerobic respiration different |
|--|--|
| Releases energy | Produces lactic acid |
| Uses glucose | Does not need oxygen |
| Happens in cells | Produces less energy |

Impact of Smoking

Smoking is very harmful to health. It's estimated that nearly one in every five deaths (of adults aged over 35 in England) is connected to smoking.

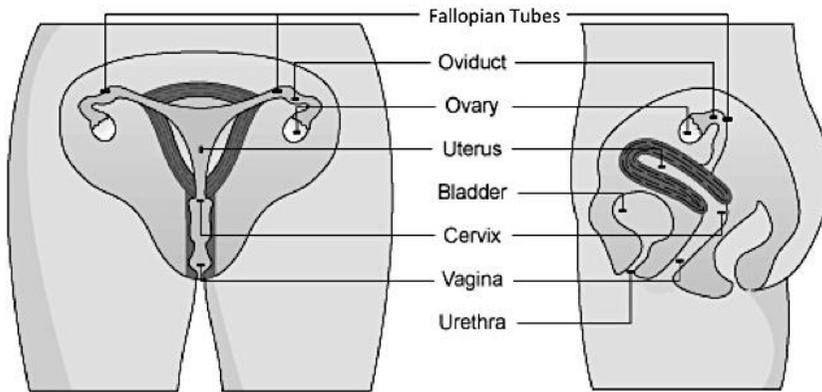
Tobacco smoke contains many harmful substances. These include:

- tar
- nicotine
- carbon monoxide

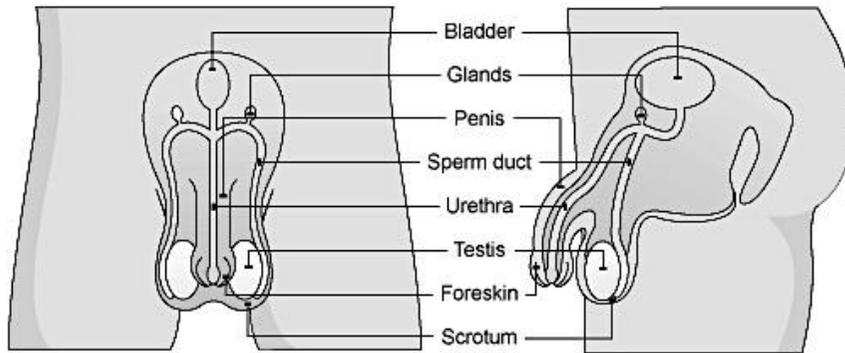
Hot smoke and tar from smoking damages the cilia. As a result of this, smokers cough to move the mucus and are more likely to get bronchitis.

90% of lung cancer cases are caused by smoking. Smoking also increases the risk of other cancers such as mouth, throat, kidney, bladder and more.

The Human Reproductive system (Female)

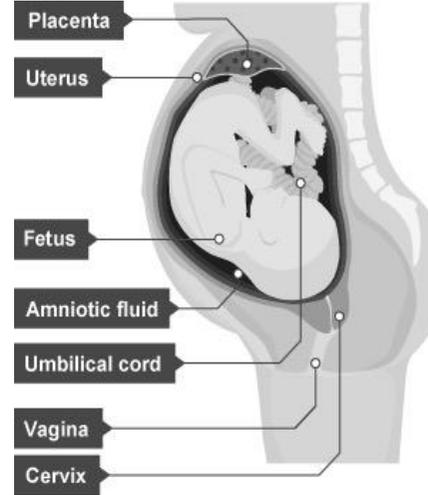


The Human Reproductive system (Male)



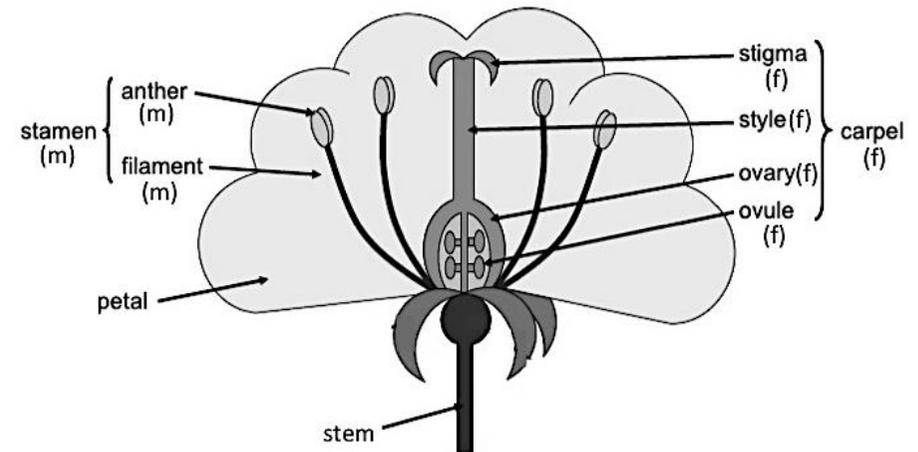
- The male gamete is called sperm, it is produced in the testes (Testes is plural, testis is singular).
- The penis enters the vagina during sexual intercourse and delivers millions of sperm cells into the woman's body. Sperm cells swim through the cervix and into the uterus.
- The female gamete is an egg; it is produced in the ovaries in a monthly process called ovulation. Ovaries contain thousands of egg follicles.
- Each month, one egg cell follicle matures and is released from one of the ovaries. This egg cell travels down the fallopian tube towards the uterus.
- If a sperm and an egg cell meet, fertilisation is said to have occurred and a zygote is formed. Fertilisation occurs in the fallopian tubes.
- The zygote divides several times to form an embryo. The embryo travels further down the fallopian tube and implants into the lining of the uterus. This is where the embryo will develop into a foetus.
- An egg cell is released from an ovary each month, if fertilisation does not occur then lining of the uterus breaks down and passes out of the vagina in a process called menstruation.

Pregnancy



- The length of a pregnancy is different for each animal species. A human pregnancy lasts approximately 9 months.
- Gametes → Fertilisation → Zygote → Embryo → Implantation → Blastula → Foetus → Birth (labour) → Baby
- The umbilical cord connects a developing foetus to its mother via the placenta. After birth the umbilical cord is cut, forming a 'belly button' or navel.
- Blood passes through the placenta and umbilical cord to the foetus. The mother passes sugar, amino acids and oxygen to the foetus and urea (waste) and carbon dioxide are passed back from the foetus to the mother.
- The foetus is in a fluid filled bag, called the amnion. It protects the foetus from being damaged by knocks and bumps whilst in the womb (uterus).

Plant Reproduction



- A single flower contains both male sex organs (stamen) and female sex organs (carpels).
- Male plant gametes (pollen) are located on the anther. They cannot move on their own and must be transported by insects or the wind.
- The stigma, the top part of the female sex organ, is sticky and designed to catch pollen grains.
- When a male pollen grain reaches the stigma pollination is said to have occurred.
- The pollen grain germinates and digs a tube (pollen tube) through the style down to the ovule (the female gamete).
- The male gamete (pollen) joins with the female gamete (ovule) in the ovary and fertilisation occurs.