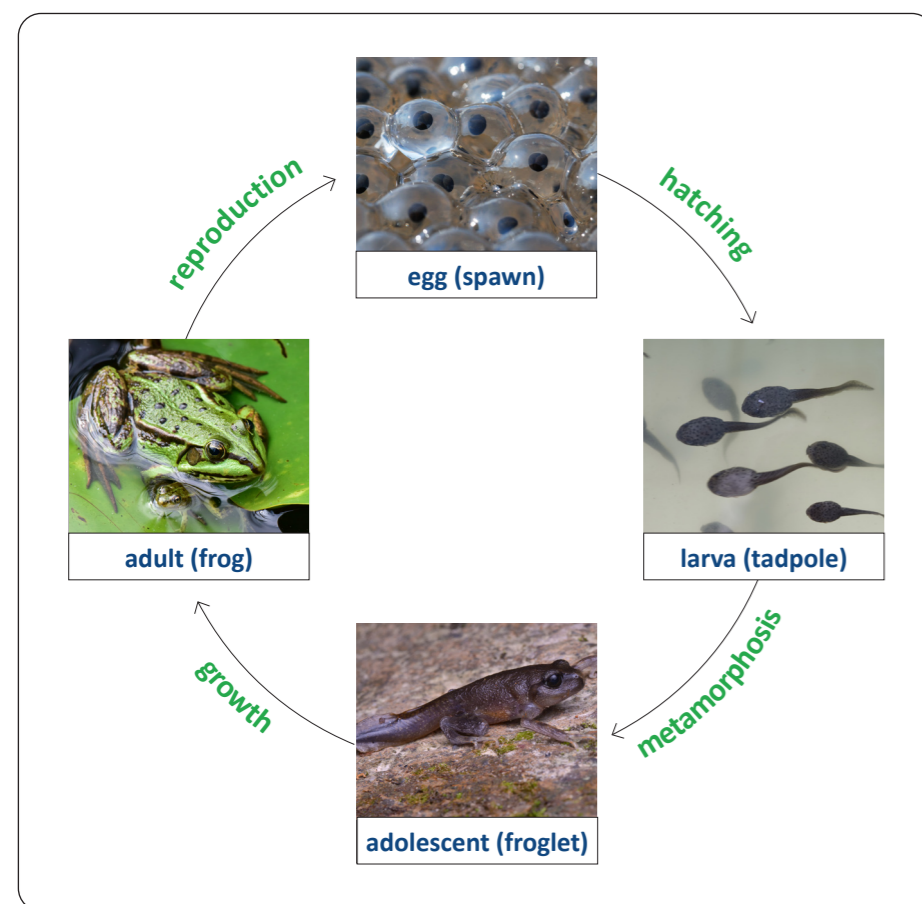


# Human Reproduction and Ageing

Reproduction is the process of producing offspring, which is vital for the survival of all plant and animal species. All living things go through a series of changes during their life cycle, where they grow, mature, reproduce and age. As living things age, they gradually decline and then die.

## Life cycles

A life cycle is a series of changes that happen to a living thing during its lifespan. The events happen in a set order as the animal or plant grows and develops. A life cycle is presented on a circular diagram to show the main developmental **stages** of a plant or animal's life and the **processes** between these stages. All living things eventually die, but reproduction starts the life cycle again.



Life cycle of the common frog.

## Mammals

Mammals are a group of vertebrate animals, which means they have a backbone. Mammals have several characteristics that make them different from other vertebrates. These include:

- producing milk to feed their young
- being warm blooded
- giving birth to live young
- having fur or hair
- breathing air with lungs



brown bear



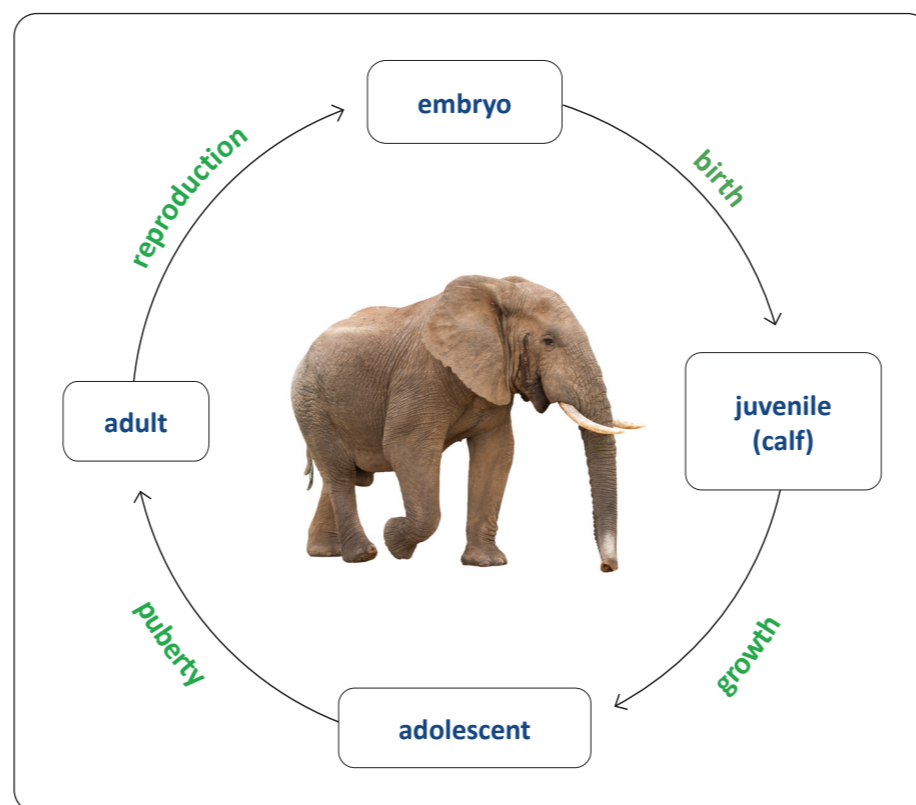
Bengal tiger



human

## Mammalian life cycle

There are four stages and four processes in the mammalian life cycle.



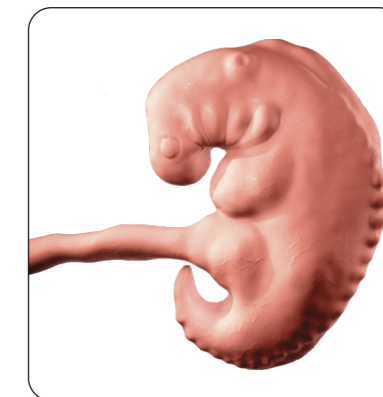
The length of each stage varies for different animals. For example, the European hamster has a 2–3 week juvenile stage, but the same stage is 10 years for an African elephant.

## Human life cycle

The human life cycle has the same stages and processes as other mammalian life cycles.

### Embryo

The embryo stage takes around 40 weeks. This is called the gestation period.



### Juvenile

During the juvenile stage, the child grows and develops rapidly until around 12 years old.



### Adolescent

The adolescent stage ends at around 19 years old. The process of puberty enables an adolescent to develop into an adult and be able to reproduce.



### Adult

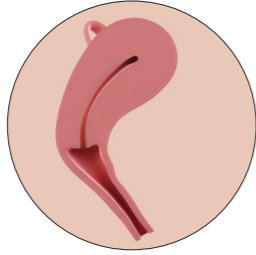
A person is a fully developed adult at around 20 years old and may choose to reproduce, which starts a new human life cycle.



## Human gestation timeline

### 4 weeks

At four weeks after fertilisation, the embryo has developed into the size of a poppy seed.



### 16 weeks

At 16 weeks, the embryo has developed into a foetus the size of an avocado. Its nervous system and skeleton have become stronger.



### 32 weeks

At 32 weeks, the foetus is about the size of a coconut. It moves and sucks its thumb.



### 39 weeks

At 39 weeks, the foetus is the size of a small pumpkin. Its lungs are fully formed, ready for birth.



### Birth

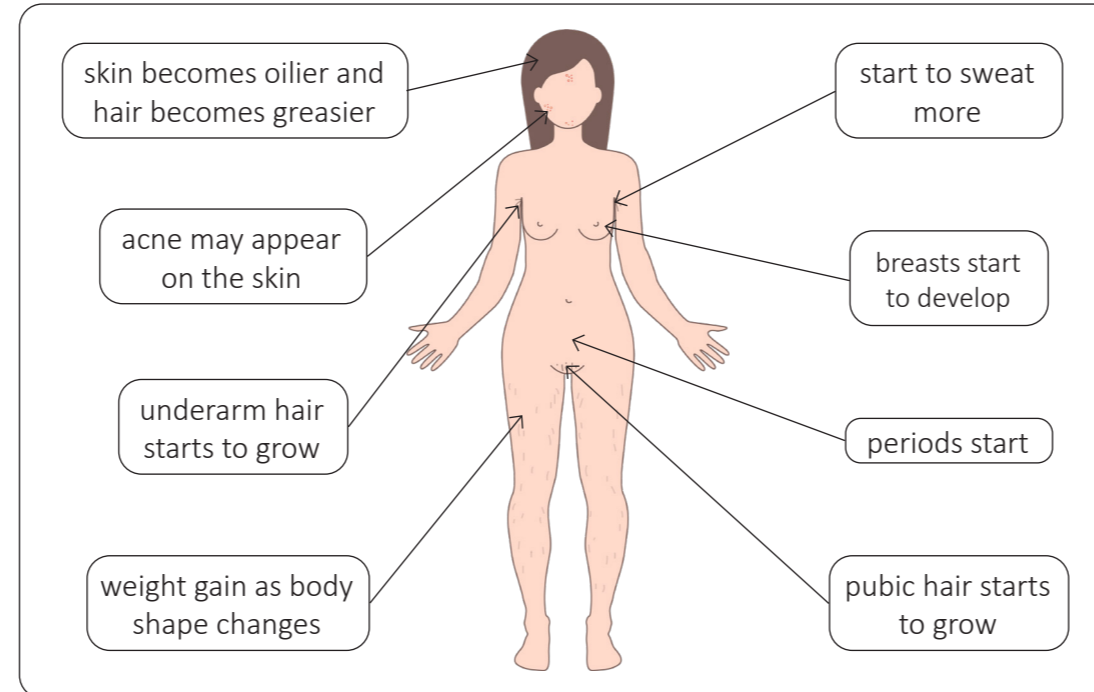
When the baby is born, it cries, takes its first breath and its umbilical cord is cut.



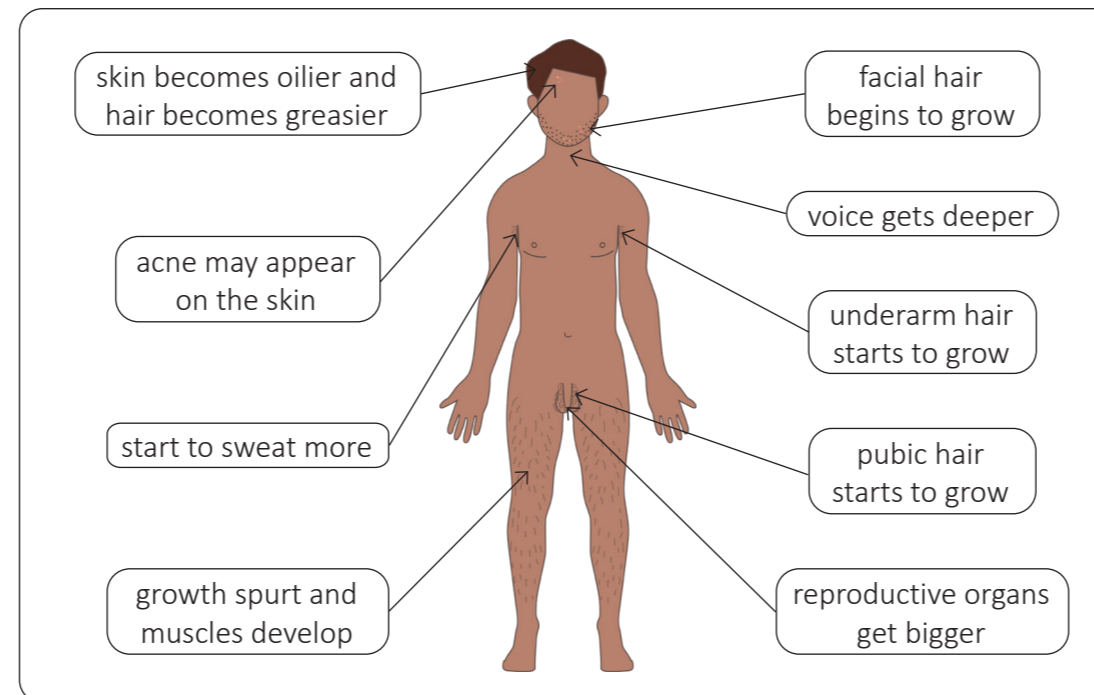
## Puberty

Puberty is when a child's body changes as they develop into an adult and become able to reproduce. Puberty can start at any time between the ages of 8 and 14 and takes around four years. Chemicals called hormones cause puberty to begin and create physical changes, such as developing acne, sweating more and growing underarm and pubic hair. Puberty also creates emotional changes, including mood swings, low self-esteem, aggression and depression.

### Physical changes during puberty in females

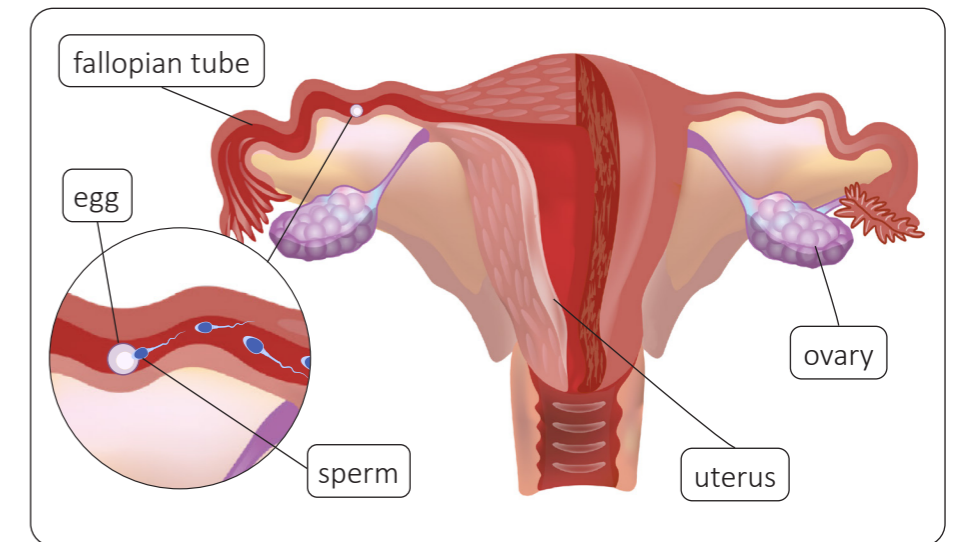


### Physical changes during puberty in males



## Human sexual reproduction

Sexual reproduction is the process of reproduction that involves one female and one male. When humans reproduce, a male sperm fertilises a female egg that has been released from the ovary into the fallopian tube. The fertilised egg divides as it travels down the fallopian tube and becomes a ball of cells called a blastocyst. The blastocyst implants in the wall of the uterus and develops into an embryo.



A sperm fertilises an egg in the female reproductive system.

## Human ageing

Humans reach the peak of their physical fitness during the first decade of adulthood. After this, the cells that make up the human body begin to decay. They lose the ability to function correctly, causing various ageing effects, including cataracts, loss of hearing, greying hair, deterioration of organs and muscles, age spots and wrinkles.

## Glossary

<b>cataract</b>	A condition in which the lens of the eye becomes cloudy, resulting in loss of vision.
<b>foetus</b>	A stage in the mammalian life cycle when a mammal in the uterus has begun to develop limbs and organs.
<b>gestation</b>	The length of time the young of a mammal develops inside the female's body until birth.
<b>process</b>	A series of changes that happen naturally.
<b>stage</b>	One part of a life cycle or period of development.

