# Reproduction: Learning pathway

Genes

| | Activate | Acquire | Apply | Assess | Analyse |
|---|---|---|---|---|---|
| **Sexual and asexual** | ❑ Life cycle | ❑ Describe evidence to support ideas about what happens during reproduction<br>❑ Use diagrams to identify causes of infertility in men and women and communicate this clearly | ❑ Explain why offspring are identical or look different<br>❑ Relate the structure of parts of the reproductive systems to their function | ❑ Acquire<br>❑ Apply | ❑ Evaluate a fertility technique or contraceptive by considering different criteria |
| **Menstrual cycle** | ❑ Life cycle | ❑ Deduce patterns to determine the correct order of events in the menstrual cycle | ❑ Identify key events in the menstrual cycle, using diagrams<br>❑ Predict whether pregnancy will occur at different times | ❑ Acquire<br>❑ Apply | ❑ Interpret a graph and determine how hormones affect the menstrual cycle |
| **Embryo develop-ment** | ❑ Life cycle | ❑ Use a model of the placenta to predict the movement of substances between mother and foetus | ❑ Explain the functions of placenta, umbilical cord and amniotic fluid using accurate scientific vocabulary | ❑ Acquire<br>❑ Apply | ❑ Draw conclusions from information on how expectant mothers and their lifestyle choices can affect the foetus |

**Act** Evaluate a design for an artificial womb

**Medical engineer**

# Reproduction: Big ideas

Genes

What expert understanding do we want after 5 years?

**Characteristics are inherited**
Big idea

All cells contain genetic material, in the form of DNA in chromosomes. Genes are specific regions that contain the instructions that code for characteristics. Organisms reproduce, transferring their genetic material to their offspring. In sexual reproduction fertilisation produces genetic variation in the offspring. Asexual reproduction forms genetically identical offspring.

How does the unit develop this?

**Sexual & asexual**
Key Concept

Reproduction involves mixing genetic material from two parents, or copying cells from one parent

Sub-concepts

Fertilisation

Facts

- Sperm, eggs, pollen and ovules are gametes
- Female organs: ovary, fallopian tube (oviduct), uterus (womb), vagina
- Male organs: testes, penis

**Menstrual cycle**
Key Concept

The menstrual cycle prepares the female body for fertilisation and development of the embryo

Sub-concepts

Ovulation, menstruation, embryo

Facts

- The menstrual cycle lasts around 28 days

**Embryo development**
Key Concept

Embryo development happens in the uterus. The embryo needs substances from the mother to grow

Sub-concepts

Placenta, amniotic fluid, umbilical cord

Facts

- When all the organs have developed, the embryo is known as a foetus

# Reproduction: Scientific thinking, maths & literacy

Genes

How are investigation skills integrated with the concepts?

| Menstrual cycle | Act |
| --- | --- |
| **Draw conclusions** | **Engineer solutions** |
| Deduce patterns and relationships in data and observations | Review the data to determine if the solution meets the criteria |

How are literacy skills integrated with the concepts?

| Sexual & asexual | Embryo development |
| --- | --- |
| **Write** | **Write** |
| Write in specific styles, with appropriate terminology and diagrams | Write with a cohesive structure, linking sentences |

# Reproduction: Curriculum links

Genes

## Which parts of KS3 are covered?

AQA KS3 syllabus: 3.10.2 Human reproduction

## Which parts of GCSE are covered?

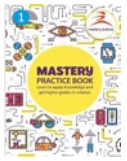
(AQA Trilogy combined science)

| | | |
|---|---|---|
| **Sexual and asexual** | ✓ 4.6.1.1 Sexual and asexual reproduction | |
| **Literacy** | ✓ WS 3.8 Communicating scientific rationale | |
| **Draw conclusions** | ✓ WS 3.5 Draw conclusions from data | |

## What resources are there to teach this unit?

Visit shop.masteryscience.com

CPD



Teaching

Assessment

| | |
|---|---|
| **Medical engineer** | **Analyse** Sperm that have a tail defect are unable to fertilise an egg but engineering may have found a solution - attach a tiny motor to the tail. Students use information to evaluate how well 'spermbots' could help infertile men<br>**Act** An artificial womb has been designed to keep a lamb foetus alive and this prototype could be developed further to keep very premature babies alive, Show the students results from the trial and ask them to evaluate the prototype |