

Biology Revision Guide

Normanhurst School

Year 7



Contents

- Cells
- Reproduction
- Environment & feeding relationships
- Variation & classification

Biology Revision Guide

Cells

Living organisms:

- All living things need oxygen, nutrients and water.
- All living things grow, move and reproduce.
- All living things are made of cells.

Two major groups of cells are animal cells and plant cells.

All cells have:

- A cell membrane
- Cytoplasm
- A nucleus.

Plant cells also have:

- A cell wall
- A vacuole
- Chloroplasts (green structures)

Cells are usually too small to be seen by the naked eye and can only be seen using microscopes.

Know the parts of a microscope including:

- Eye piece lens
- Objective lens
- Stage & clips
- Mirror or light source
- Focusing knob.

Know the parts of a cell:

- Nucleus – controls what the cell does
- Cytoplasm – cell reactions happen here
- Cell membrane – controls what goes in and out of the cell

Know that plant cells also have:

- Cell wall – strong to support the plant
- Vacuole – contains cell sap (sugars, salts, water)
- Chloroplasts – contain chlorophyll for photosynthesis

Tissues & organs:

- Tissue – groups of cells that look the same and do the same job (e.g. muscle tissue).
- Organs – contains several different tissues that work together to do an important job (e.g. the heart)

Animals & plants grow larger as follows:

- Plants and animals grow by making more cells.
- First, the cell makes a copy of the nucleus.
- Next the cell divides in two around the two nuclei.
- Finally these two small cells grow back to normal size.

Reproduction

Animals reproduce by joining a sperm cell with an egg cell to make a new baby.

- A sperm joining an egg is called fertilisation
- External fertilisation happens outside the female
- Internal fertilisation happens in the female's body.

In external fertilisation:

- Predators may eat the eggs or young offspring
- Many eggs are produced.

In internal fertilisation:

- The developing offspring are protected inside the female's body
- Fewer eggs need be fertilised.

For fertilisation to happen:

- An egg is released from the ovary into the oviduct
- Sperm is released into the vagina and travels through the uterus to the oviduct
- The sperm joins with the egg.

Preparing the ovary for pregnancy:

- The lining of the uterus (womb) thickens in preparation to receive a fertilised egg
- The blood supply to the uterus lining increases to bring nutrients
- The fertilised egg is embedded in this thick lining where it grows.

The menstrual cycle (1):

- A new egg is released from the ovaries every 28 days
- If the egg is not fertilised then the thickened uterus lining is not needed and comes away as a period
- The day this happens is the first day of the menstrual cycle.

The menstrual cycle (2):

- Day 1 – first day of the period
- Day 5 – the period stops
- Day 10 – new lining starts to grow in the uterus
- Day 14 – a new egg is released from the ovaries
- Day 28 – end of cycle.

Zygote, embryo & fetus:

- Zygote – the first cell formed from a sperm and egg
- Embryo – a ball of cells formed by cell division of the zygote
- Fetus – cells start to specialise forming head, body etc
- The fetus floats in a bag of fluid.

The placenta

- The placenta allows food and oxygen to pass from the mother's blood to the baby's blood
- The placenta also takes away waste from the baby's blood to the mother's blood.

Environment & feeding relationships

Habitat

A place where a plant or animal lives. This can depend on many things including different environmental factors:

- Temperature
- Sunlight
- Land or water
- Open land or forest.

Adaptation to different parts of the planet

- Plants and animals change to cope with their environment
- We say they have adapted to their environment
- If an organism cannot adapt to its environment, it will die out.

Adapting to daily changes

- Major changes can take place during the day
- Change of light intensity
- Change of temperature
- Change in noise levels.

Biology Revision Guide

Adapting to yearly changes

- Changes happen throughout the seasons
- Sunlight
- Temperature
- Rainfall.

Food chains (1)

- Plants get their energy from the sun (producers)
- Some animals eat the plants (primary consumers – herbivores)
- Other animals (secondary consumers – carnivores) eat the primary consumers.

Food chains (2)

- A food chain shows what eats what
- Grass → rabbit → fox
- The arrows show how energy moves up through the chain
- The energy always starts with sunlight and photosynthesis in plants.

Food webs

- In any habitat there are usually many food chains
- These chains form a web of interconnections
- Several different herbivores eat the same plants
- Several different carnivores eat the same herbivores.

Variation & classification

Species

- A species of plants is a group that can interbreed and produce new plants
- Not all plants can interbreed
- A species of animals is a group that can interbreed
- Not all animals can interbreed.

Variation

- Within a species there can be many differences called variations.

Within dogs there can be differences in:

- Mass
- Height
- Hair colour
- Hair length

And so on.

Classifying living things

There are 2 main groups of living things:

- The plant kingdom
- The animal kingdom.

Classifying the animal kingdom

Animals can be classified into 2 groups:

- Those with a backbone (vertebrates)
- Those without a backbone (invertebrates).

Classifying vertebrates:

- Fish
- Amphibians
- Reptiles
- Birds
- Mammals.

Classifying invertebrates:

- Annelids
- Molluscs
- Echinoderms
- Insects
- Arachnids
- Myriapods.