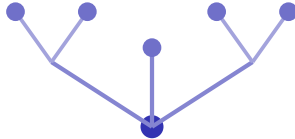


Characteristics & Classification

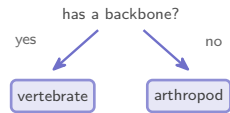
IGCSE Biology ■ Topic 1

IGCSE Biology



What we will cover

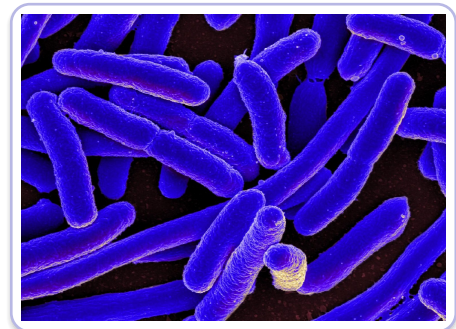
- 1 The seven characteristics
- 2 Species & naming
- 3 Dichotomous keys
- 4 The five kingdoms
- 5 Vertebrates & arthropods
- 6 Plants & viruses



dichotomous keys

The seven characteristics

M	Movement
R	Respiration
S	Sensitivity
G	Growth
R	Reproduction
E	Excretion
N	Nutrition



Microorganisms are living cells too

Species and naming

genus
(capital letter)

↓

*Homo**sapiens*

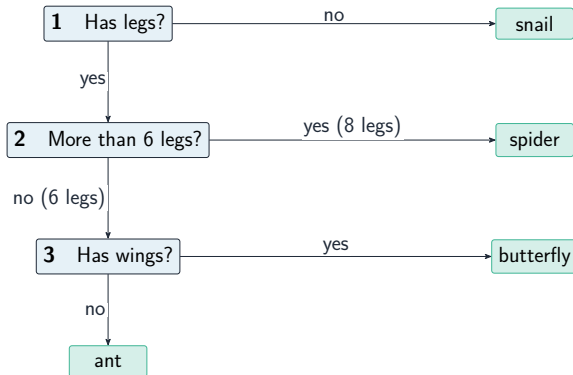
↑

species
(small letter)



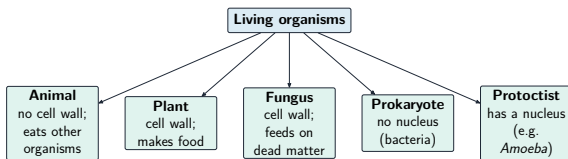
Fungi are a kingdom of their own

Dichotomous keys



A **dichotomous key** 二歧检索表 identifies an organism by a series of **two-way** choices. Use clear, visible features (wings / no wings), not size.

The five kingdoms



- **Animal** – many cells, no cell wall, feed
- **Plant** – cell wall, **photosynthesise** 光合作用
- **Fungus** – cell walls, feed on matter
- **Prokaryote** – bacteria, no **nucleus** 细胞核
- **Protocist** – e.g. *Amoeba*

Vertebrates

mammals – **fur** 毛发/hair; feed young on milk

birds – **feathers** 羽毛 & a beak; hard-shelled eggs

reptiles – dry **scales** 鳞片; leathery eggs on land

amphibians – moist skin; eggs & young in water

fish – wet scales & **fins** 鳍; breathe with **gills** 鳃

Vertebrates 脊椎动物 have a **backbone** 脊柱.

Arthropods

insects – 3 body parts; 3 pairs of legs; **antennae** 触角

arachnids – 2 body parts; 4 pairs of legs; no wings

crustaceans – many legs; 2 pairs of antennae; mostly aquatic

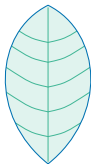
myriapods – many **segments** 体节, legs on each

Arthropods 节肢动物 have no backbone but a hard **exoskeleton** 外骨骼.

Plants and viruses

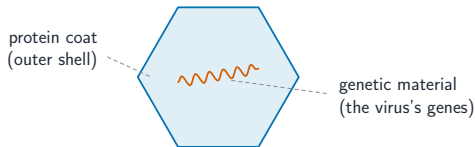


Monocotyledon
parallel veins, 1 cotyledon



Dicotyledon
net (branching) veins, 2 cotyledons

Monocots 单子叶植物: one **cotyledon** 子叶, parallel veins. **Dicots** 双子叶植物: two, net veins.



A **virus** 病毒: a protein coat around genetic material; not a cell, reproduces only in a **host** 宿主.

Worked example – using a key

A student finds a small animal with six legs and two pairs of wings. Which group is it in, and how do you write its name?

- Six legs $\Rightarrow$ an **insect** (arthropods are grouped by **leg number**).
- Insects: 6 legs, 3 body parts, usually 2 pairs of wings.
- Names use the **binomial system** 双名法:
Genus species.
- *Apis mellifera* – genus with a capital, species lower case, both in italics.

Arthropods split on **legs**:
insect 6, arachnid 8, crustacean >10 , myriapod many. Count legs first, every time.

Topic 1 – key takeaways

1

MRS GREN

the seven characteristics of living things

2

Naming

binomial: capital genus, small species, italics

3

Kingdoms

animal, plant, fungus, prokaryote, protocist

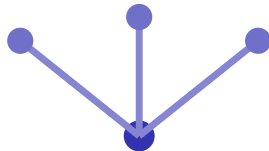
4

Groups

vertebrates (backbone),
arthropods (exoskeleton)

Check yourself

- 1 What does the R in MRS GREN stand for?
- 2 Which part of a scientific name has a capital letter?
- 3 What feature do all arthropods share?
- 4 Why are viruses not placed in a kingdom?



Answers 1. Respiration 2. the genus (first part) 3. a hard exoskeleton & jointed legs 4. they are not made of cells