

SCIENCE · Y4–Y6

Microorganisms

Knowledge Organiser — Y4–Y6

Types of microorganism

1

Bacteria

Single-celled living organisms. Some cause disease; many are harmless or beneficial. Found everywhere — including inside the human body (gut bacteria are essential for health).

Example: Salmonella (harmful), Lactobacillus (used in yoghurt)

2

Virus

Not technically alive — a virus needs a host cell to reproduce. Viruses cause many common illnesses. Much smaller than bacteria.

Example: Influenza (flu), rhinovirus (common cold), COVID-19

3

Fungi

A kingdom of organisms including moulds, yeasts, and mushrooms. Can cause infections; also used beneficially.

Example: Penicillium mould → penicillin antibiotic; yeast → bread

4

Protozoa

Single-celled organisms, some of which cause disease in humans and animals.

Example: Malaria is caused by a protozoan parasite

5

Microorganism

Any organism too small to see with the naked eye. Includes bacteria, viruses, fungi, and protozoa.



Harmful microorganisms

Both sides of the story

- HARMFUL: cause disease (flu, food poisoning, pneumonia); cause food spoilage (mould on bread, sour milk)
- USEFUL — FOOD PRODUCTION: yeast makes bread rise; bacteria ferment milk into yoghurt and cheese; bacteria and fungi make vinegar, beer, wine
- USEFUL — MEDICINE: Penicillium mould produces penicillin (first antibiotic, discovered by Fleming 1928); bacteria produce insulin for diabetics
- USEFUL — ENVIRONMENT: decomposers (bacteria and fungi) break down dead material and return nutrients to the soil; bacteria involved in the nitrogen cycle
- PROTECTION: the immune system fights pathogens (harmful microorganisms); vaccines train the immune system to recognise specific pathogens
- HYGIENE: washing hands removes microorganisms from skin; cooking kills most bacteria in food; refrigeration slows bacterial growth

