Seeds of Science: Nurturing Knowledge for All

The Secret World of Germs

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Introduction

What are germs?

Germs are tiny living things that are so small we can't see them without a microscope.

They are all around us - on our hands, toys, food, and even in the air.

Did you know ?

- Millions of tiny germs can fit on the tip of a pin, but they are too small to see with our eyes.
- Germs have lived on Earth for billions of years.
- Scientists use microscopes to study germs.
- 17th century scientists first saw tiny germs with microscopes.
- 19th century scientists discovered that some germs could cause diseases.

Explanation of Scientific and Technical Principles

Types of germs

There are lots of different germs. Four common types are bacteria, viruses, fungi, and protozoa. They are shown in Image 1.

- **Bacteria** - Tiny living cells found everywhere look like little balls, rods, or spiral. They can make copies of themselves by duplicating into two new bacteria.
- **Viruses** - Much smaller than bacteria and look like tiny spiky balls. They cannot grow on their own and need a living thing to make more viruses.
- **Fungi** - Like mould that grows on food or surfaces.
- **Protozoa** - Tiny germs that can move in water.

How to study germs

- **Light microscope** – Help to study bacteria, fungi, and protozoa using the light and lenses.
- **Electron microscope** – A very powerful microscope that uses electrons instead of light to study germs.

Image 3 shows a light microscope that helps scientists to study germs.

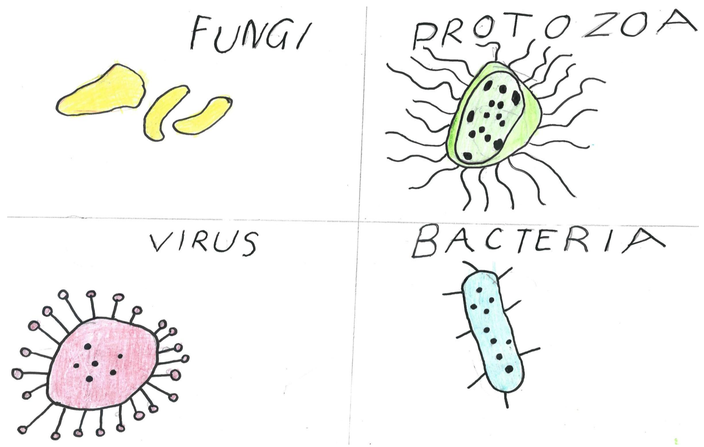
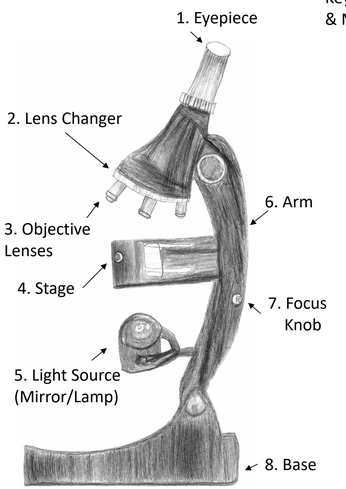


Image 1: Types of Germs



Image 2: How do we get germs?



1. Look through to see the specimen.
2. Turn to change the lens.
3. Difference lenses to make the specimen look bigger
4. Holds the slide
5. Shines light through the specimen so it can be seen
6. Supports the upper part of the microscope
7. Moves the stage or lenses to make the image clear
8. Supports the microscope and keeps it stable

Image 3: Using Light Microscope to study germs

Significance and Impact

Good vs bad germs

Not all germs are harmful, some help us, and some can make us sick.

- Good germs help our body stay healthy
- Bad germs can cause illness

How germs make us sick and stay safe

Germs can enter our body through the mouth, nose, or cuts and make more germs inside us, which can make us feel sick. Image 2 shows how germs can spread to our hands from the things we touch.

To help keep bad germs away

- Wash your hand with soap
- Cover your cough and sneeze
- Keep things clean
- Eat healthy food

How do we treat harmful germs?

- Antibiotics can treat infections caused by bacteria, not for the viruses.
- Virus infections can be treated with antiviral medicines.
- Vaccines help protect our body from some germs before they make us sick.

Why it is important to learn about germs ?

Understanding germs helps us make healthy choices, prevent diseases, and protect ourselves, our families, and our community.

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