KEY STAGE 1 - LESSON 1

Introduction to Micro-organisms

This lesson is designed to introduce students to viruses, bacteria and fungi. The introductory activity allows students to combine their observational and creative skills to make a microbe of their own choice, exploring various microbial types and shapes.

Curriculum Links

Science

Working scientifically, Living things and their habitats

PSHE/RSHE

Health and prevention

English

Reading and comprehension, Writing

Key Words

Fungi, Bacteria, Viruses, Cocci, Bacilli, Spiral, Penicillium, Lactobacilli

@ Weblinks

e-bug.eu/eng/KS1/lesson/Introduction-to-Microbes

Learning Outcomes

All students will:

- Understand there are three different types of microbes: viruses, bacteria and fungi.
- Understand microbes are all different shapes and sizes.
- Understand some microbes are useful but some can be harmful.

Most students will:

- Understand microbes are found everywhere.
- Understand most microbes are too small to be seen with the naked eye.

Resources Required

Activity: Modelling Microbes
Per group

- [ ] Coloured modelling clay (follow TS1 for a home-made recipe)
- [ ] Permanent black marker
- [ ] SH1 Making Microbes Guide
- [ ] SH2 Microbes Fun Fact Sheet
- [ ] SH3-5 Microbe Example Sheets

Per student

- [ ] Petri dishes (optional)

Extension Activity: Yes or No Cards
Per class/group

- [ ] SW1 Yes or No Cards
- [ ] TS2 Yes or No Answers

Extension Activity: Microbe Flashcards
Per class/student

- [ ] SW2 Microbes Flashcards

Extension Activity: Fill in the Blanks Worksheet
Per group

- [ ] SW3 Microbe Mania Fill in the Blanks Worksheet

The modelling clay activity can be carried out using arts and craft materials you may already have in your classroom, or by drawing the microbes.

Advance Preparation

For the main activity students will be making microbes out of modelling clay. Use the Making Microbes Guide (SH1), Microbe Mania Fun Fact Sheet (SH2) and Microbe Example Sheets (SH3-5) for inspiration. Provide each student group with modelling clay, Petri dishes (if using), images and information about microbes.

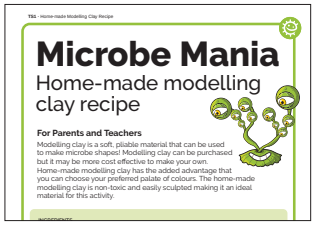
Health and Safety

Take care that modelling clay is non-toxic and suitable for students.

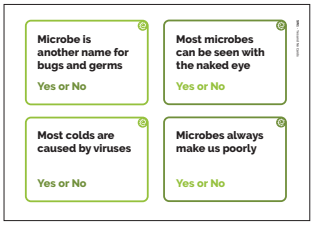
Take care that students do not eat the modelling clay.

For safe microbiological practices in the classroom consult CLEAPPS www.cleapps.org.uk

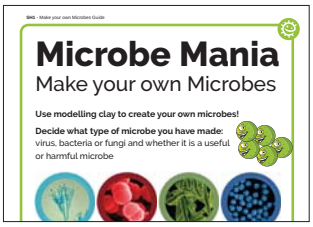
Supporting Materials



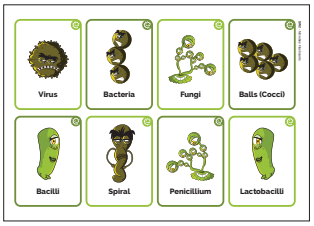
TS1 Home-made Modelling Clay Recipe



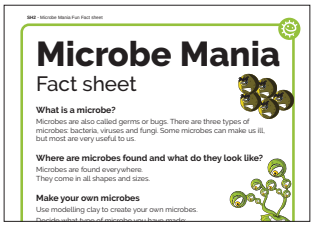
SW1 “Yes” and “No” cards



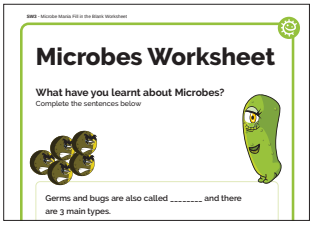
SH1 Making Microbes Guide



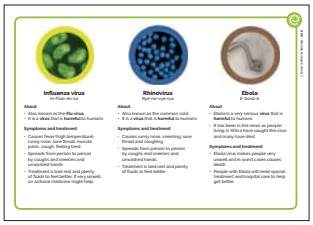
SW2 Microbes Flashcards



SH2 Microbe Mania Fun Fact Sheet



SW3 Microbes Mania Fill in the Blank Worksheet



SH3 Microbe Example Sheets

(SH4-5 available online)

Lesson Plan

Introduction

1. Begin the lesson by asking students if they know what microbes are. Explain that they are tiny living things that are all around us. Most of these are too small to be seen with our eyes.
2. Ask the students if they, or anyone in their family, has ever been poorly with a cough, cold or a temperature? What do they think caused it? Explain to the students that some illnesses called infections, are caused by these tiny living things called microbes. Explain that there are three different types of microbes: viruses, bacteria and fungi.
3. Emphasise that although some microbes make us ill, there are also useful microbes. Tell the students that bacteria help to make foods like yoghurt, and fungi like yeast help make bread while other fungi are used as medicines.
4. Highlight to the class that microbes can be found EVERYWHERE: floating around in the air we breathe, on the food we eat, on the surface of our bodies, in our mouth, nose and gut/tummy, most of these are not harmful and some are good for us.

Discussion

Discuss the microbes the students made highlighting the differences between viruses, bacteria and fungi.

If you have used the extension activity, SW1 Yes and No cards, discuss the answers with the students. Explain that not all microbes make us poorly.

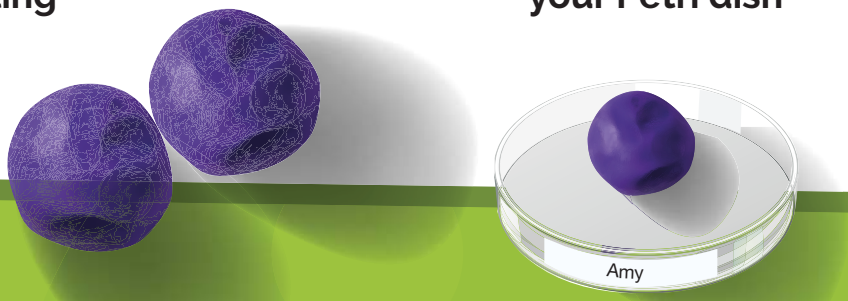
Activity: Modelling Microbes

1 Shape your microbe using modelling clay

2 Place into your Petri dish

3 Write the name of your microbe on your Petri dish

4 Take your Petri dish home



This activity aims to introduce students to different types of microbes and microbe shapes by allowing them to make a microbe out of modelling clay. This activity also introduces students to terms associated with microbes that they may come across day-to-day e.g. germs, bugs.

1. Remind the students that there are three different types of microbes (viruses, bacteria and fungi) and how these are different.
2. Encourage students to make microbes using modelling clay and to place them in a Petri dish (if using). They can use the images from SH1 and SH3-5, and information about microbes on SH2 as inspiration.
3. Point out common forms of microbes that they might have heard of to get them started.
4. Ask them which microbe they are making and to describe it e.g. is it a virus, fungi or bacteria and is it useful or harmful?
5. When they have finished, ask students to write what they have made on the Petri dish with the permanent black marker. Students can take the dish home.

Extension Activities

Yes or No cards

As a class activity or in groups of 3 or 4 provide SW1 Yes or No cards or display them on a whiteboard. Ask students to answer yes or no to the questions provided. Answers can be found in TS2 on the e-Bug website.

Microbe Flashcards

SW2 can be used to support learning. Print the sheet and cut out the flashcards, or display on a whiteboard. Ask students to name the image, the correct word is shown on the card.

Fill in the Blanks Worksheet

SW3 requires students to fill in the blanks using the correct words provided. Provide one worksheet per student to help test their knowledge of microbes.

Fascinating Fact

Micro-organisms first appeared on earth about 3.5 billion years ago and are essential to sustain life on our planet.

Learning Consolidation

At the end of the lesson, ask the class the following questions as a fact checking exercise.

- [ ] What are the three different types of microbes?

  Answer: Viruses, bacteria and fungi

- [ ] Microbes can be beneficial to us e.g. yeast, can be used to make bread rise. What type of microbe is yeast?

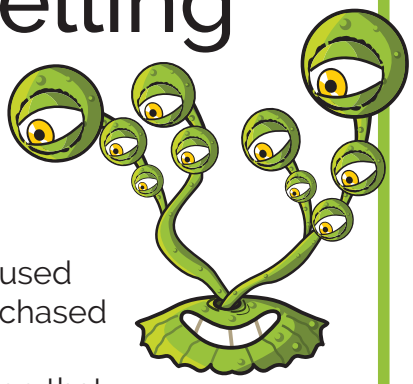
  Answer: Fungus

- [ ] True or false? Microbes are invisible to the naked eye and come in different shapes and sizes.

  Answer: True

Microbe Mania

Home-made modelling clay recipe



For Parents and Teachers

Modelling clay is a soft, pliable material that can be used to make microbe shapes! Modelling clay can be purchased but it may be more cost effective to make your own. Home-made modelling clay has the added advantage that you can choose your preferred palate of colours. The home-made modelling clay is non-toxic and easily sculpted making it an ideal material for this activity.

INGREDIENTS

- **1 cup of plain flour**
- **1 cup of water**
- **1/2 cup of salt**
- **2 teaspoons of cream of tartar**
- **1 tablespoon of vegetable oil**
- **Food colouring**

Method

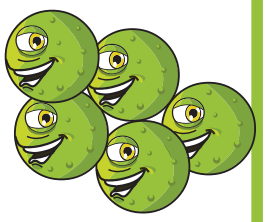
1. Mix together the dry ingredients
2. Add the water and mix until smooth
3. Add the food colouring followed by the vegetable oil
4. Cook on a medium heat, stirring constantly, until the dough leaves the side of the pan in a ball
   Alternatively, microwave the mixture on a high setting for 4 minutes, stirring every 30 seconds
5. Allow to cool before use
6. Store in a plastic bag or wrapped in cling film to stop the modelling clay drying out

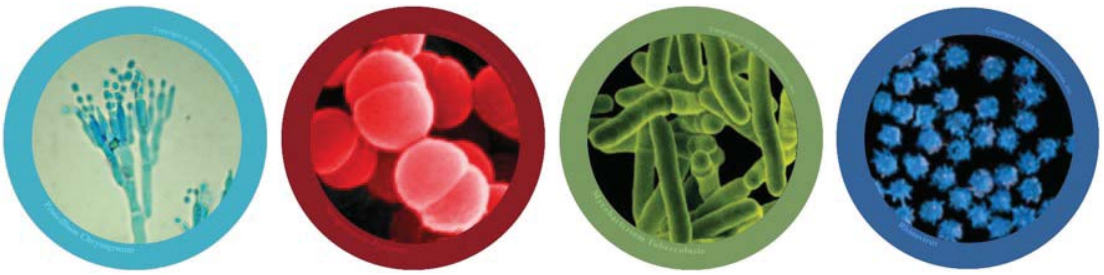
Microbe Mania

Make your own Microbes

Use modelling clay to create your own microbes!

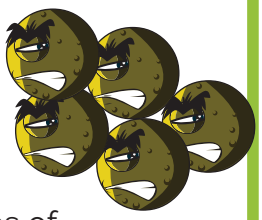
Decide what type of microbe you have made:
virus, bacteria or fungi and whether it is a useful or harmful microbe





Microbe Mania

Fact sheet



What is a microbe?

Microbes are also called germs or bugs. There are three types of microbes: bacteria, viruses and fungi. Some microbes can make us ill, but most are very useful to us.

Where are microbes found and what do they look like?

Microbes are found everywhere.
They come in all shapes and sizes.

Make your own microbes

Use modelling clay to create your own microbes.

Decide what type of microbe you have made:

Fungi, bacteria or virus, and whether it is a useful or harmful microbe

For ideas, download pictures of microbes from www.e-bug.eu. Ask an adult to help you make your own modelling clay, using the TS1 recipe.

Surprise your friends and family with these fun facts!

DID YOU KNOW?

- There are more microbes on the planet than any other type of living thing.
- Microbes are the oldest form of life on Earth. They've been here for 4 billion years.
- Microbes are found everywhere on Earth, even inside volcanoes.
- Some microbes can glow in the dark. People once used glowing pieces of fungus growing on wood to light their way.
- Humans would not be able to live without microbes. Some microbes produce oxygen which we need to breathe and others help plants to grow which we eat.

Influenza virus

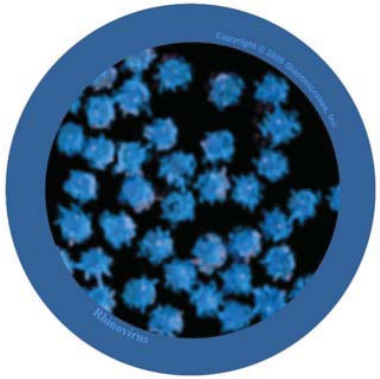
In-Floo-en-za

About

- Also known as the **Flu virus**
- It is a **virus** that is **harmful** to humans

Symptoms and treatment

- Causes fever (high temperature), runny nose, sore throat, muscle pains, cough, feeling tired
- Spreads from person to person by coughs and sneezes and unwashed hands
- Treatment is bed rest and plenty of fluids to feel better. If very unwell, an antiviral medicine might help.



Rhinovirus

Rye-no-vye-rus

About

- Also known as the common cold
- It is a **virus** that is **harmful** to humans

Symptoms and treatment

- Causes runny nose, sneezing, sore throat and coughing
- Spreads from person to person by coughs and sneezes and unwashed hands
- Treatment is bed rest and plenty of fluids to feel better.

Ebola

E-bowl-A

About

- Ebola is a very serious **virus** that is **harmful** to humans
- It has been in the news as people living in Africa have caught the virus and many have died

Symptoms and treatment

- Ebola virus makes people very unwell and in worst cases causes death
- People with Ebola will need special treatment and hospital care to help get better

Microbe is another name for bugs and germs

Yes or No

Most microbes can be seen with the naked eye

Yes or No

Most colds are caused by viruses

Yes or No

Microbes always make us poorly

Yes or No

Bacteria are used to make yoghurt

Yes or No

If you become poorly because of a microbe, this is called an infection

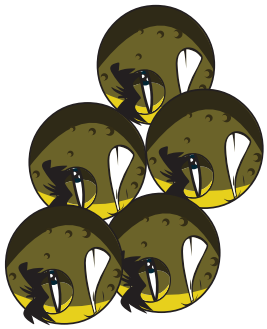
Yes or No

Most microbes do not effect us in any way

Yes or No

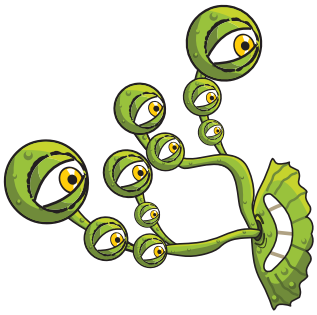
You only find microbes on things that are dirty, like the toilet

Yes or No

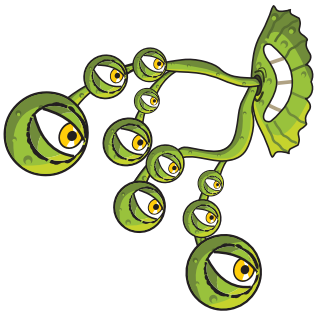


Balls (Cocci)

Lactobacilli

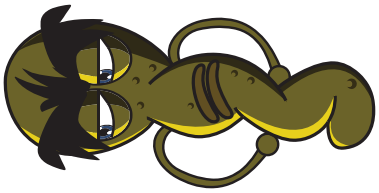


Fungi



Penicillium

Bacteria



Spiral

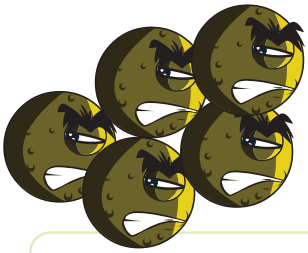
Virus

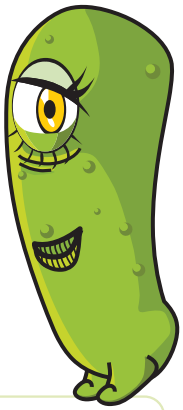
Bacilli

Microbes Worksheet

What have you learnt about Microbes?

Complete the sentences below





Germs and bugs are also called _____ and there are 3 main types.

The smallest Microbe is a _____ and they can make us poorly with a cough or a cold.

The largest Microbe is a _____ we use this to make bread.

Balls, rods and spirals are the 3 main shapes of _____.

Microbes are found _____ and even in volcanos!