

LO: I can describe and investigate helpful and harmful microorganisms.

Choose 1 of these experiments.

Sugar & balloon



<https://www.youtube.com/watch?v=WNVnQwvRgyI>

Yeast, sugar & balloon



<https://www.youtube.com/watch?v=qoxY0z8ukUQ>

hand microbes on bread



<https://www.youtube.com/watch?v=NSwOKooMQBM>

LO: I can describe and investigate helpful and harmful microorganisms.

Write which variables you will keep the same and which you will change.

For example....

We have chosen to conduct the yeast and balloon experiment.

We will be changing one variable- the amount of yeast used for each bottle. We will be keeping all other variable the same, including: size of bottle, type of liquid, size of balloon, type of yeast etc

LO: I can describe and investigate helpful and harmful microorganisms.

Now with adult supervision you can have a go at your experiment!

LO: I can investigate helpful and harmful microorganisms.

E.g. for hand microbes experiment

**Our predictions**

Circle the conditions that *you think* will encourage the most mould to grow:

cold            wet            light            warmth  
moist          dark            dry            hot

Explain why you think this: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What do you think will be the best way to record the amount of mould that has grown every day (or every other day)?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*Decide 3-5 locations

\* where bread will be stored

\* how often measured & how

\* Predictions

## LO: I can describe and investigate helpful and harmful microorganisms.

### News Post

Wednesday

48p

#### **Mouldy food produces new medicine!**

*Funding worries put breakthrough at risk*

New discovery

A small local company at the cutting edge of new bio-technology has run into difficulties with the development of its latest discovery. The company, NewBioTech (NBT), has been working for some time with different plants and foods to try to extract ingredients which might make new medicines.

The Director of NBT, Dr. Smail, explained "Everyone knows that many common plants contain ingredients which can help us. If you are stung by a nettle, you can rub it with a dock leaf to take the itch away. Once upon a time, willow bark was boiled in water to make a drink which cured headaches. Even bread was used in poultices in some cases!"



In the latest discovery, NBT found that a mould growing on food seemed to stop other micro-organisms growing around the mould. "We wondered if this mould could be used as a medicine," said Dr. Smail. "If it stopped other micro-organisms growing, we wondered if it would stop bacteria, which are micro-organisms too. This could be a breakthrough in treating things like simple cuts, which so often get infected by bacteria in dirt. We think this mould might produce a new antibiotic."

Funding

However, NBT have run into difficulties. They only have a small research fund for developing new ideas, and have to rely on grants from other groups which are interested in their work. "If another firm thinks that our discovery might help their work, then they will give us some money to help develop the ideas," explained Dr. Smail. "Sometimes the government will help, too."

Unfortunately, this time no-one has come forward with offers to help with the development costs.

Appeal

The firm is looking for assistance from other groups. "We have been able to grow the mould, but we need to find the best conditions for growing it. We will need to produce large amounts to make antibiotics," said Dr. Smail.



One suggestion is that school research groups could help. Unlike small firms like NBT, who can spare just one or two people to experiment, school groups can gather lots of data very quickly. Dr. Smail was enthusiastic. "We would love to hear from a school, if they can help us find the best conditions for growing moulds. It does not matter what food is used either. Every piece of information is helpful! If the information gives us an idea of the actual amount of mould produced for each condition, that would be really useful."

LO: I can describe and investigate helpful and harmful microorganisms.

**Clue 1.**

Decide on the conditions you want to try growing the mould in.

For example, you could . . .

compare warm against cold conditions.

*or* compare moist against dry conditions.

*or* light conditions against dark conditions.

*or* warm and moist against cold and moist.

*or* . . . what do you think?

**Clue 3.**

Cut out 2 pieces of bread the same size.

Put them into 2 different freezer bags.

Put one bag in one of the conditions you have chosen, (e.g. warm) and the second into the other conditions (e.g. cold).

**Clue 2.**

Make sure you have only changed **ONE** thing!

For example, you could use the same sized slice of bread, in the same size of bag, (or yogurt in a Petri dish) but **ONLY CHANGE**

**THE CONDITIONS** from

warm to cold

*or* moist to dry

*or* light to dark

*or* . . . what you decide!

## LO: I can describe and investigate helpful and harmful microorganisms.

### Clue Cards Clues for recording results

**Clue 1.**

Can you think of a way to record how mouldy the bread or yogurt becomes? Remember that *words* like 'a little bit mouldy', or 'quite mouldy' will not mean very much to the scientists at NewBioTech! They will need *evidence* of some kind.

**Clue 2.**

You could draw the pieces of bread, colouring the areas of mould that appear. You could use a different colour for each observation.

**Clue 3.**

One way of describing how mouldy the bread is would be to describe it in words with a scale.

E.g.



= 0 No mould



= 5 Quite mouldy



= 10 Completely covered in mould

*OR* can you think of a better way?

**Clue 4.**

Use a sheet of clear OHP plastic marked with a grid of 1-centimetre squares. Lay it over the bread. Count the number of squares that have some mould inside them, or colour in those squares on the OHP, using a different colour each day.

LO: I can describe and investigate helpful and harmful microorganisms.

**Recording the growth of the mould**

Type of food used: \_\_\_\_\_

1. Fill in the date column on each day you make a recording.
2. Write in each numbered Column the conditions you are using. There are 5 columns, but you don't have to use them all.
3. Each day, record the number of squares containing mould.

Day	Date	1.	2.	3.	4.	5.
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						