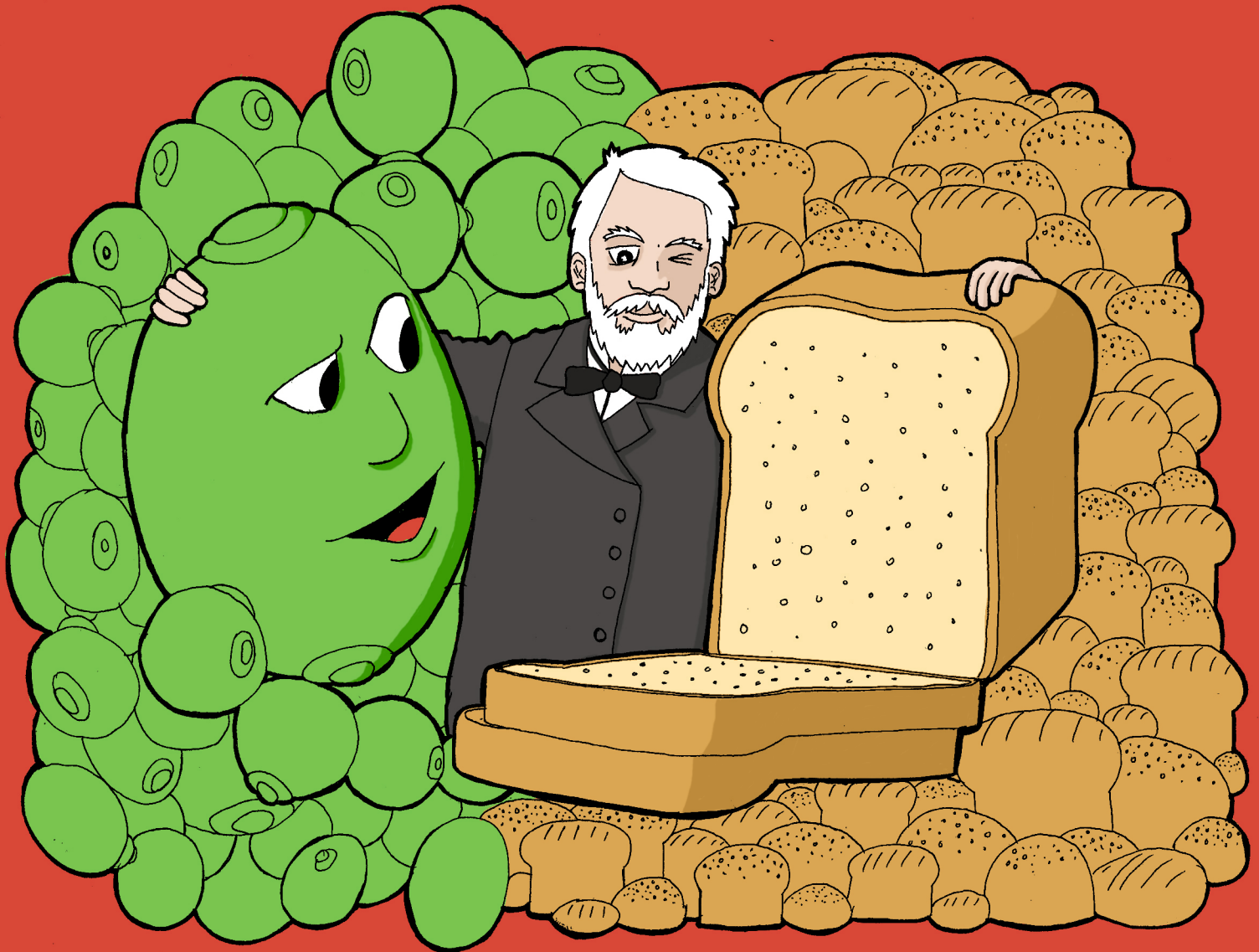


MARVELLOUS MICROBES

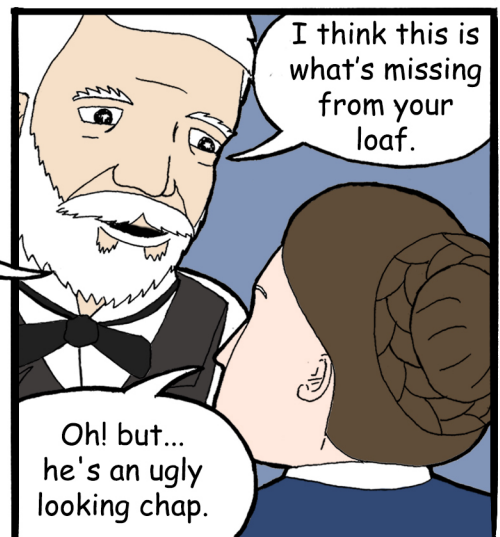
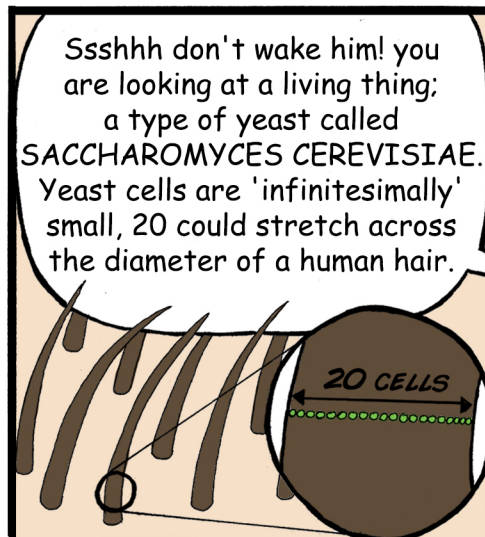
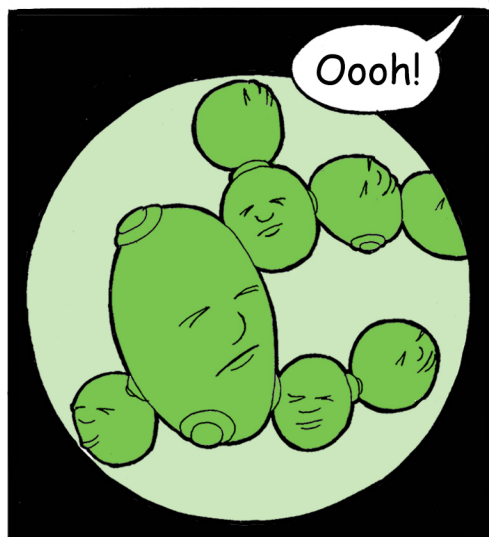
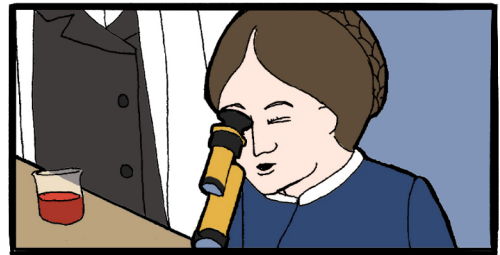
FREE!

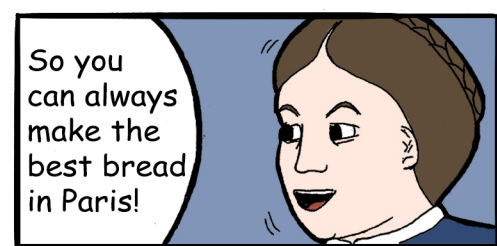
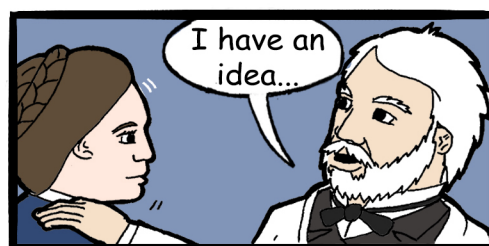
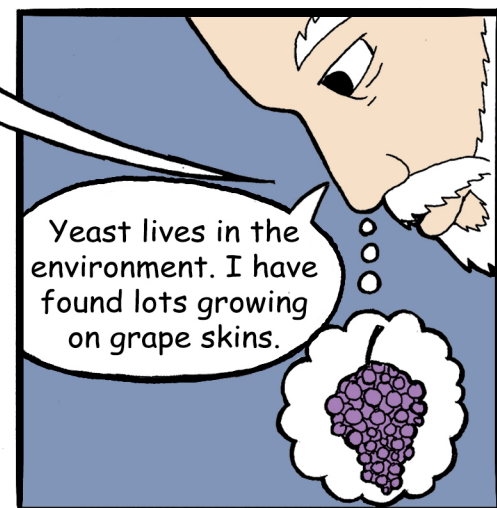
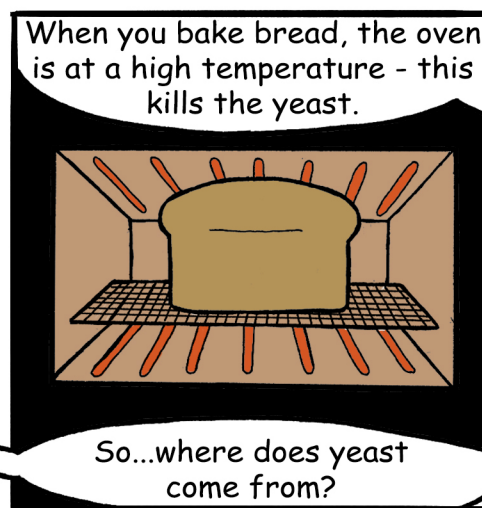
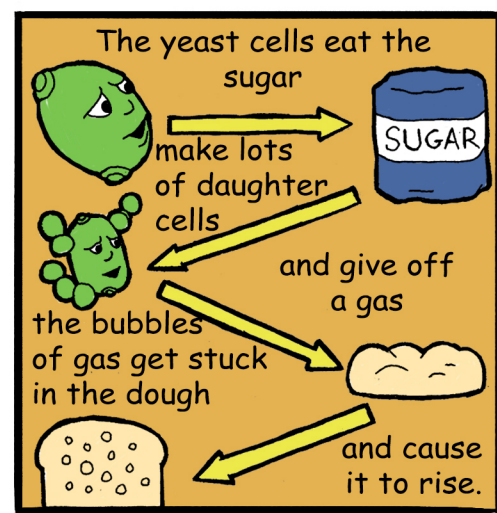
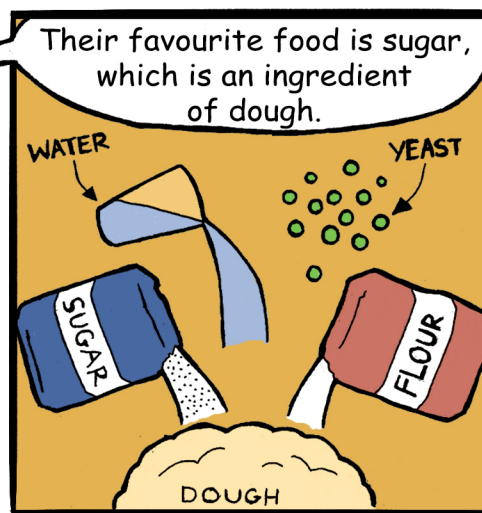
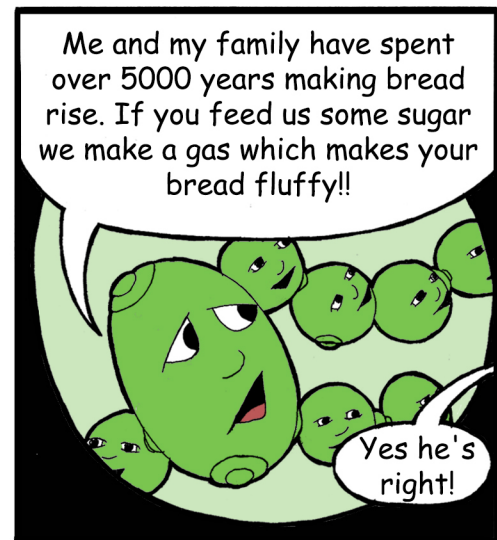
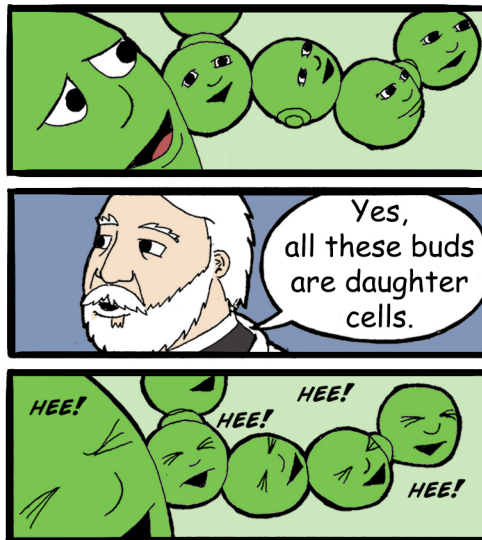
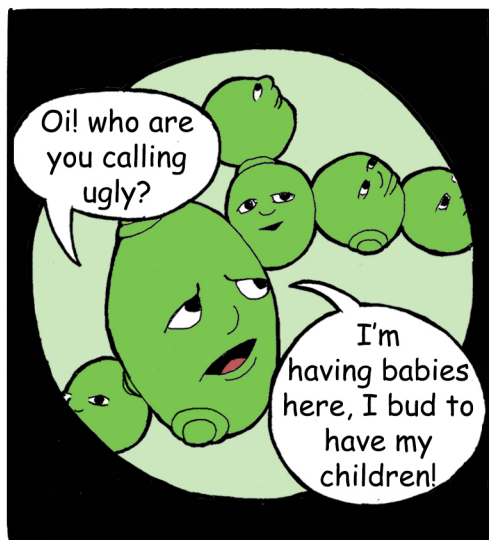
SCINTILLATING STORIES FROM THE
MICROBIOLOGY SOCIETY

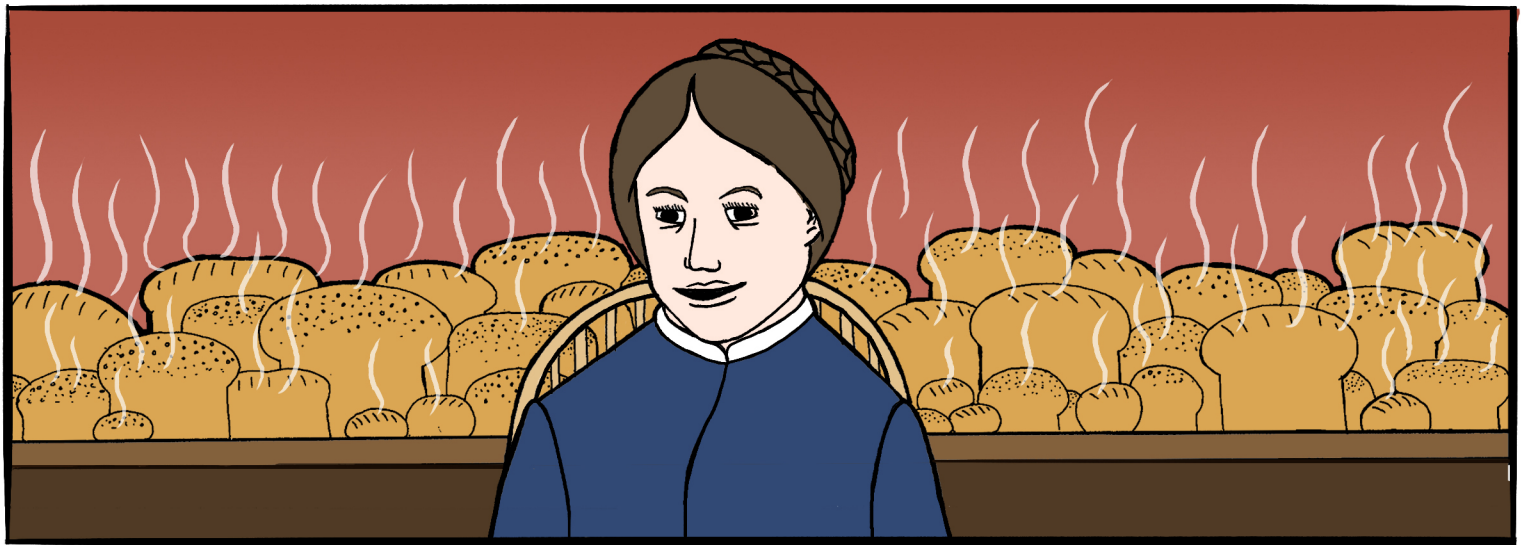


BAKING BREAD

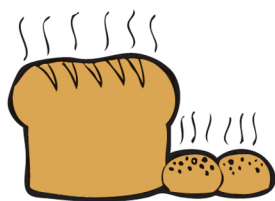
ISSUE 1



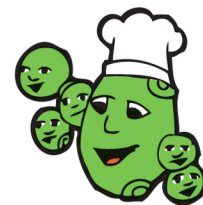




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Baking Bread



Yeast is the raising agent in bread. The word 'yeast' comes from the Sanskrit 'yas' meaning to seethe or boil. Two types of dried yeast are available in supermarkets: dried active and instant (aka fast acting, easy bake, quick or rapid rise). These can be used interchangeably, you can also substitute dried yeast for fresh yeast (often available from the bakery in local supermarkets). The main differences are listed below:

	Dried Active	Instant	Fresh
Ingredients	Yeast	Dried yeast with preservative or rehydrating agent	Yeast
Proving Period	2 proving periods	1 Proving Period	1 - 2 Proving Periods depending on freshness
Activation	Yes	No	Yes
Flavour	Full flavoured	Flavour does not have time to develop	Very full flavoured
Bread Machine Use	Not recommended	Recommended	Recommended
Shelf Life	Approx. 2 years sealed, yeast begins to perish after opening		Up to 3 months in a freezer
Quantities per Standard Loaf	7g	5g	14g

Not all bread recipes have sugar added as yeast can break down starch in flour to sugar (and use it as food).

Simple White Loaf

Ingredients: 700g strong white bread flour, 1 heaped teaspoon dried active yeast, 1 level tablespoon of salt (or less according to taste), 1 teaspoon sugar, 425 ml warm water.

1. Mix dry ingredients together in a large bowl. Pour in the warm water and mix well.
2. Transfer the ball of dough onto a floured work surface. Knead (press-fold-turn action) the dough for 3-5 minutes until it becomes smooth and elastic but not sticky.
3. Place the dough in a clean bowl and cover with a wet tea towel or some cling film with olive oil on the dough side. Leave it in a warm place for about 2 hours until it doubles in size. This is the first proving period.
4. Remove the dough from the bowl and knock out the gas. Knead the dough again for about 2 minutes, then shape into one large, or two small oblongs.
5. Place into a greased loaf tin(s), then place in a warm place until the dough rises above the top of the tin. This is the second proving period, and should take about an hour at room temperature.
6. Bake in the oven at gas mark 8, 230°C, for 30-40 minutes, or up to 45 minutes for the large loaf.
7. Leave to cool on a wire rack.

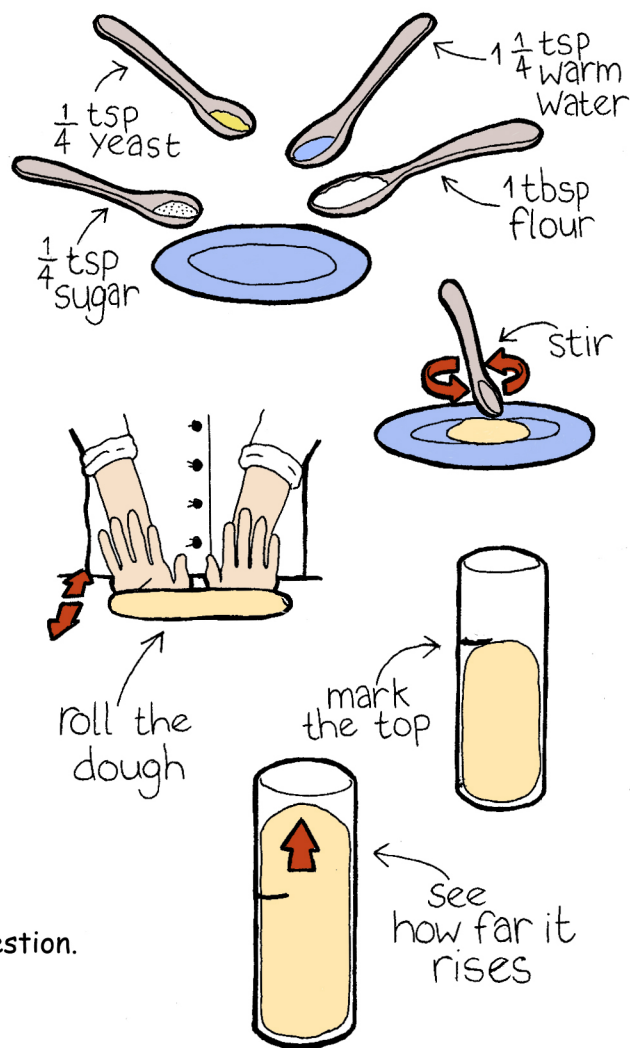
Tuck in - Delicious!

You can see our video **Yeast Power!: What makes bread rise** on Youtube!
Just go to this address - <http://microb.io/yeastpower>

High Rise Dough!

What makes bread rise?
Carry out this investigation to find out.

1. You will need: Yeast (fresh, dried active or fast acting), sugar, flour, warm water, a clear plastic tube or bottle, teaspoons, tablespoon, paper plate, ruler, and graph paper.
2. Measure out 1 level tablespoon of flour and place in the middle of the paper plate.
3. Measure out $\frac{1}{4}$ teaspoon of yeast and add it to the flour.
4. Measure out $\frac{1}{4}$ teaspoon of sugar and add it to the flour and yeast.
5. Finally, measure out $1\frac{1}{4}$ teaspoons of warm water (hand hot), add to the yeast/flour and mix well.
6. Roll the dough into a flat-ended sausage.
7. Push the dough into the bottom of a plastic tube. Record the height of the dough in the tube.
8. Put the tube somewhere warm.
9. Continue to record the height of the dough in the tube every 5 minutes for one hour or until the dough stops rising.
10. Plot a graph of the height of the dough against time.



What made the dough rise?

Did it start to rise straight away?

If not, after how long? Look at your graph to answer this question.

Why does the dough stop rising?

Safety

Children must not put anything into their mouths when carrying out the microbial investigation *High Rise Dough!*

Children should not be allowed to taste the sugar, dough or bread as they are working with these ingredients in the context of a scientific investigation.

Children must wash their hands thoroughly with soap and water after carrying out the investigation. Please be aware that some people may be allergic to yeast.

Disposal

The liquid in the tubes is non-hazardous. It should be disposed of like any standard kitchen material, by dilution. The containers should be washed up in hot water using washing-up liquid.

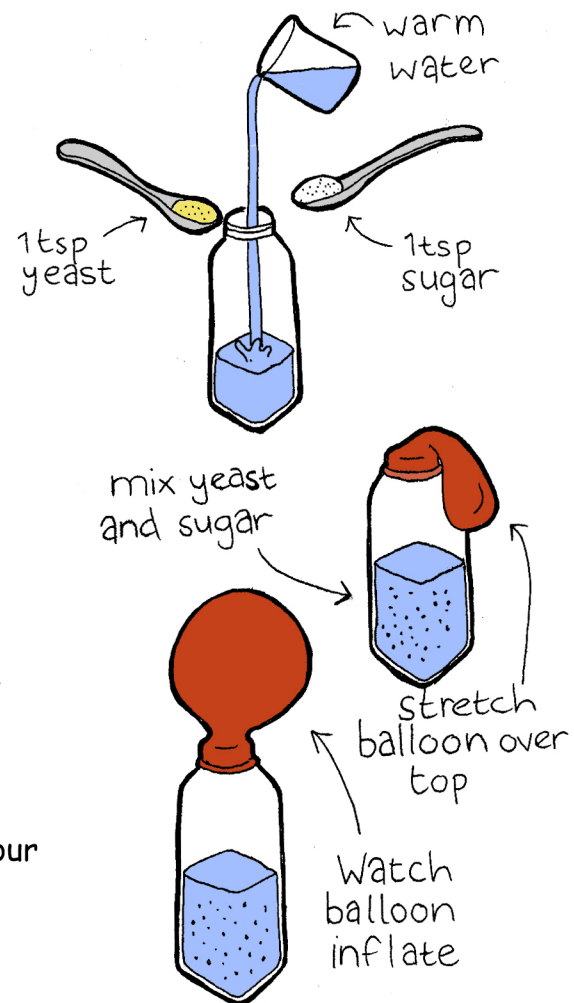
Yeast Power!

Experiment with yeast at home.

Note: Quantities listed are for a 30 ml bottle, scale volumes as appropriate for the container used.

1. You will need: Yeast (fresh, dried active or fast acting), sugar, warm water, plastic bottle (must be small enough to fit a balloon over but large enough so that the balloon can grip onto the bottle), balloon, and teaspoons.
2. Take the bottle and remove the lid.
3. Measure out 1 level teaspoon of sugar and add it to the bottle.
4. Measure out 1 level teaspoon of yeast and add it to the sugar in the bottle.
5. Fill the bottle about halfway with warm water (hand hot).
6. Screw the lid back on tightly and turn upside down to mix. If you don't have a lid for your bottle use cling film to tightly cover before mixing (hold on to the cling film so that a seal is formed).
7. Remove the lid (or cling film).
8. Stretch the neck of a balloon so that it fits over the rim of the bottle.
9. Put the bottle in a warm place for about 30-45 minutes. Observe the bottle every 5 minutes and keep a record of your observations.

What has happened to the balloon?
Can you give a reason for this?



Safety

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Disposal

The liquid in the tubes is non-hazardous. It should be disposed of like any standard kitchen material, by dilution. The containers should be washed up in hot water using washing-up liquid.