

BBC



What happens when I eat?

Investigation 1 - Taste



Welcome to...

Investigation **[1]** Taste

Watch the film:

Make sure you watch the "How to" film on our website which will give you clear instruction on how to carry out this investigation.



Hello, welcome to Investigation 1 from the Terrific Scientific campaign.

At Terrific Scientific, we think it is vital to develop science learning in primary schools across the UK. To kick off the campaign, we are asked you to take part in a special Terrific Scientific Live Lesson on 31st January 2017.

The Live Lesson investigated the question 'What happens when I eat?' and we asked you to find out how many of your children are 'TASTERS', 'SUPERTASTERS' and 'NON-TASTERS'. You can re-watch the Live Lesson on the website bbc.co.uk/livelessons to find out what happened. Although the Live Lesson has now passed, science goes on and you can still use our simple activity help you find out what kind of tasters you have in your class. Instructions on how to carry out the Super Taste Test are below.

In January 2017, the BBC and Wellcome Trust sent a box of science goodies to every UK primary school, for use by 9-11 year olds and their teachers. In that box you will find some natural blue food dye to use in this activity.

Don't forget you can re-watch the Live Lesson at bbc.co.uk/livelessons on where your pupils will find out the result of a very special study by Coventry University that took place to see how children might learn to love the vegetables they hate and a whole lot more about 'What happens when I eat?'

We hope this inspires you and your pupils to get scientific and we look forward to seeing your results!

The Terrific Scientific Team.

Supported by: Coventry University



The Super Taste Test – Blue food dye

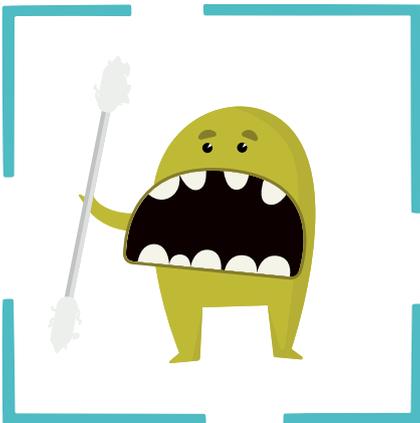
Introduction

Ask:

Does food taste the same to everyone?



Are you a super taster? Super tasters experience bitter tastes more strongly than other people; this is because they have a higher number of taste receptors within fungiform papillae, the big pink bumps on your tongue which contain your taste buds, enabling you to taste sweet, sour, salty, bitter and umami. By counting the number of fungiform papillae, you will be able to determine whether you are a super taster, taster or non taster.





Teacher Prep:



1. Ensure you have collected the parental consent forms.
2. Cut the A4 card in to 16 strips and punch a hole in the end of each strip. Ensure you have enough for each child to have their own strip.
3. Split class in to groups of three.
4. Pour a little food dye in to enough mini cups to give each group one cup each.

Equipment needed:

- Bottle of natural blue food dye (From BBC & Wellcome Trust Science goodie box!)
- Cotton buds
- Disposable Shot glasses (to be referred to as 'mini cups')
- A4 card
- Hole punch
- Scissors
- Torches (optional)
- Magnifying glass (optional)
- Taster chart (see below)
- Damp cloth or paper towels
- Cup or bag on each table for waste
- Anti-bacterial surface cleaner or wipes

NB: Before you carry out this experiment, you should send out parental consent letters. Templates for letters can be found on our website.



Activity Instructions

Remember:



Ask everyone taking part to wash their hands.

Important!

Don't dip your cotton bud more than once!

Remember:



Use the Taste classroom presentation on your whiteboard to help make the process clear for your pupils. You'll find it at: [bbc.co.uk/terrificscientific](https://www.bbc.co.uk/terrificscientific)

1. Ask everyone taking part to **wash their hands**.
2. The person who is going to have their fungiform papillae (pink bumps) counted first needs to sit down comfortably with their elbows on the table, supporting their chin. They will probably need to sit like this for up to five minutes, so make sure they are comfortable.
3. Place a cotton bud into the mini cup of blue food dye until it is well coated. Ask the participant taking part to stick their tongue out. Using the cotton bud, coat the front third of the child's tongue with the dye.
NB: Only dip the cotton bud in the food dye once. Discard the cotton bud once it has been used.
4. The blue dye will stain the tongue but slide off the prominent pink bumps known as fungiform papillae. Each bump contains three to five taste buds.
5. Next, ask the participant to carefully place a hole-punched card on their tongue over the blue food dye.
6. Ask the other children in the group to count how many pink bumps they can see on the tongue inside the hole. The participant needs to try and keep their tongue still.

As they work, ask the children how they could improve the way they make their observations? How could they make their counting more reliable? They might decide to use a torch or magnifying glass to make the fungiform papillae clearer and easier to count. Alternatively the children might take a photo and zoom in on the image to count the fungiform papillae; plus they could check their answer by repeating their observation and counting again.



Results:



Ask your pupils to use the Super Taste Test Results sheet (page 11) to record their result, or they could design their own.

Ask the children to consider which method is the most effective way of making it easier to identify the **fungiform papillae**? Also encourage them to think about why it matters if their counting is accurate or not. Scientists repeat their tests a number of times to ensure data is accurate and reliable. In this case if the number of fungiform papillae is too far out, it will mean that person could be classified as the wrong type of taster.

7. Record the number of pink bumps they can see in the table at the end of this document.

NB: The children should count the bumps on their tongue twice and average the result for accuracy.

8. Clear away all equipment and discard all contaminated cotton buds and holed card. Finally, ask the children to wash their hands.
10. Look at the chart on page eight and see how your class' sense of taste compares to the rest of the nation! Then collate the class results using the table on page 12.

What percentage of your class fit into each category?

Does your class follow the national distribution for each category?

Did you observe a pattern between the number and density of fungiform papillae? (Supertasters should have more FP in a smaller area)



Watch the film:

Make sure you watch the “How to” film on our website which will give you clear instruction on how to carry out this investigation.

Note:

The BBC deems this activity safe if following some basic precautions. It is your responsibility as a school to carry out your own risk assessment and we recommend you consider the risks and mitigations we have described in this activity pack, as well as any risks which may be relevant to your specific class environment.

Health & Safety Hazards & Control Measures:

- Ensure the person preparing and handing out the holed card has clean hands, uses new card and has clean scissors and hole-punch. Prepared card should be kept in a new freezer bag or similar.
- Ensure all pupils wash their hands before and after taking part in the activity.
- Only allow children to dip their cotton bud once into the food dye, if more dye is needed get a fresh cotton bud.
- Have a receptacle on each table for waste.
- Have paper towels on hand to clean up any mess or spillages.
- Have on hand anti-bacterial surface cleaner or wipes.

How to interpret results:

Use this table to work out if your results show that you are a NON-TASTER, TASTER or SUPERTASTER.

Number of Fungiform Papillae (pink bumps)	Type of Taster	How common in population
0 - 5	Non-Taster	One in four (25%)
6 - 10	Taster	One in two (50%)
11+	Supertaster	One in four (25%)



Curriculum points – England, Scotland, Wales and Northern Ireland

England

Working scientifically

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

Scotland

- Apply safety measures and take necessary actions to control risk and hazards.
- P270 SCN2-12b I have explored the structure and function of sensory organs to develop my understanding of body actions in response to outside conditions.

Wales

- Pupils make careful observations. P13a2
- Pupils check observations by repeating them. P13a3
- Pupils decide whether an approach / method was successful. P13b2
- Pupils suggest how the approach / method could be improved P13b4

Northern Ireland

- Developing skills in scientific methods of enquiry can engage pupils to develop understanding of Science processes as well as content of scientific knowledge
- Am I the same as everyone else?

Website:

Don't forget to check the website for more lesson ideas:

bbc.co.uk/terrificscientific

Glossary

Fungiform Papillae	Scientific name for the big, round pink bumps on the tongue which contain taste buds.
Taster Chart	A chart used to indicate whether a person is a Supertaster or not.
Non-Tasters	A percentage of the population that have fewer fungiform papillae (pink bumps) on their tongues than most and are less sensitive to bitter tastes.
Tasters	A high percentage of the population that have an average amount of fungiform papillae (pink bumps) on their tongues.
Supertasters	A percentage of the population that have more fungiform papillae (pink bumps) on their tongues than most and are more sensitive to bitter tastes.
Cotton Bud	A small wad of cotton wrapped around one or both ends of a short rod.
Taste	Sense which helps us experience salt, sweet, sour, bitter & umami flavours with our tongues.



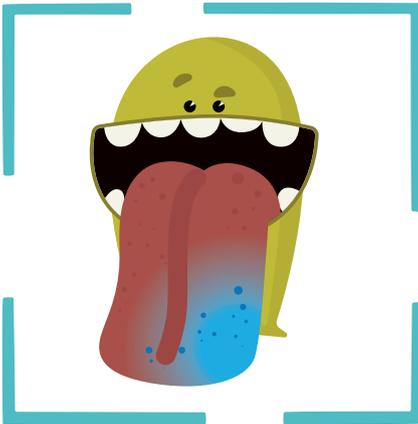
Results:



Use this worksheet to record your group results, then use the table at the bottom of the sheet to work out if you are a supertaster and fill in the third column.

Pupil Super Taste Test Results!

First Name	Number of Fungiform Papillae (Pink Bumps)	What kind of taster are you? (Non-Taster, Taster, Supertaster)



Number of Fungiform Papillae (Pink Bumps)	Type of Taster	How common in population
0 - 5	Non-Taster	One in four (25%)
6 - 10	Taster	One in two (50%)
11 +	Supertaster	One in four (25%)



Results:



You might find it interesting to see how your class compares to the general population. If there is a difference why do you think that could be?

Class Super Taste Test Results

Please collate the number of **NON-TASTERS**, **TASTERS** and **SUPERTASTERS** in your class. Submit these results and the name and location of your school to us at live.lessons@bbc.co.uk using the words *Terrific Scientific* in the subject line.

Make sure your class is watching the [Live Lesson](#) on the 31st January 2017 at 11am!

Type of Taster	Number in our class
Non-Tasters	
Tasters	
Supertasters	