# *Tasty science* **Teacher background notes**

In this investigation, thespecialised structures and functions of cells in the tongue are explored to determine how this organ helps animals survive. Claims regarding the taste map of the tongue, published in 1901, are evaluated through planning and conducting experiments, processing, analysing and evaluating the data.

## Learning intentions

Students will be able to:

* understand that the tongue is an organ with different specialised cells;
* conduct experiments to determine the types of tastes which the tongue can sense;
* investigate the claim that the taste buds on the tongue can be mapped to show different tastes associated with different regions;
* make and record accurate observations;
* identify patterns from observations;
* evaluate the evidence gathered and compare this to the ‘tongue map’ claim;
* understand that scientific knowledge changes as new evidence becomes available.

## [Australian Curriculum: Science links](https://assist.asta.edu.au/resource/4177/tasty-science-year-8-cle)

## Suggested time for this CLE

The time needed to complete the *Tasty science CLE* will depend on the depth of the prior knowledge of students, the time to perform the two investigations—‘What can you taste?’ and ‘Investigating the tongue map claim’ and follow up with any further extension activities. Allow 3–5 hours.

## Prior conceptual knowledge

Science / Year 5 / Science Understanding / Biological sciences

Content description

Living things have structural features and adaptations that help them to survive in their environment [(ACSSU043)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU043)

## Possible misconceptions

Students may hold a variety of misconceptions about the tongue and its role as an organ in the body. They may think the tongue only serves a tasting function, where in reality, it performs a number of roles including helping to mix the food with digestive juices, mechanically break the food down and assist the passage of food to the oesophagus. Students may believe claims about the 1901 tongue map and think that only certain areas of the tongue can detect different tastes. They may think the claims are true because the information can be found on the internet or in a text book.

|  |  |
| --- | --- |
| **STUDENTS MAY THINK…** | **INSTEAD OF THINKING…** |
| The tongue is just a muscle. | The tongue has many types of cells including: muscle, nerve and blood cells. This makes it an organ. |
| The tongue has special areas where sweet, salt, bitter and sour substances can be tasted. | The sensory cells in the tongue can detect all tastes in all areas. |
| Completing trials on one person is sufficient to make a generalisation. | Many trials are required to ensure confidence in a pattern produced. |
| Information in a textbook or on a website is correct. | Information should be evaluated to ensure claims are supported by evidence. |
| Scientists never taste substances. | Some scientists use their sense of taste to help their science work, for example, tasting flavours in food production and tasting grapes to determine the best time to pick them. |

## Links to further information

Pash, Chris. 2015. ‘World first images of taste at work on the tongue’, *Business Insider Australia* website <https://thechainsaw.com/business/world-first-images-of-taste-at-work-on-the-tongue-2015-4/>

Myunghwan Choi, Woei Ming Lee and Seok Hyun Yun. 2015. ‘Intravital Microscopic Interrogation of Peripheral Taste Sensation’*, Scientific Reports 5*, Article number: 8661, *Nature* website, <http://www.nature.com/srep/2015/150302/srep08661/full/srep08661.html>

Wanjek, Christopher. 2006. ‘The Tongue Map: Tasteless Myth Debunked’, *Live Science* website, <http://www.livescience.com/7113-tongue-map-tasteless-myth-debunked.html>