

Centre of the Cell's 'Ingenious Genes' challenge



Genetic Taste Test

The things we like or dislike when it comes to food are influenced by several factors, such as the number of taste buds on our tongue, and the foods we were exposed to in our mothers womb as a baby.

With bitter-tasting foods like Brussel sprouts and broccoli, it all depends on our genes!

What is a gene?

A gene is a section of DNA that codes for a protein, or in other words, it is an instruction for a job in your body, that is passed down to you from your parents.



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challenge goes on social media
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We all inherit two copies of a gene with the exciting name of '**TAS2R38**', which makes a protein found in our taste receptors, allowing us to taste bitter flavours. Depending on which variant of the '**TAS2R38**' gene that you inherit from your parents, you'll find that you either love or hate the taste of foods like broccoli and Brussel sprouts. *Why?* It is thought that the more bitter taste receptors you have, the more unpleasant these foods can taste. The number of receptors is determined by the variant of '**TAS2R38**'. This gene can also influence your ability to taste and enjoy the flavours of coffee, dark chocolate and beer.

Challenge: Carry out a genetic taste test at home!

What you'll need:

- Broccoli or Brussel sprouts, cooked and ready to eat
- A cup of coffee
- Some dark chocolate
- A pen and paper
- A few friends or family members

What to do:

1. Draw up a table to record your results (example on the next page)
2. One at a time, get each member of your 'test group' to taste the broccoli or Brussel sprouts.
3. Record each person's result as 'positive' if they liked the flavour, 'negative' if they didn't like it, or 'neutral' if they didn't feel strongly either way.
4. Do the same for the coffee and the chocolate, and see if there is a pattern.

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Example table to for recording results:

	Broccoli	Coffee	Dark Chocolate
Me	<i>Negative</i>	<i>Negative</i>	<i>Neutral</i>
Mum	<i>Positive</i>	<i>Positive</i>	<i>Positive</i>
Dad	<i>Negative</i>	<i>Positive</i>	<i>Positive</i>
Brother	<i>Neutral</i>	<i>Negative</i>	<i>Positive</i>

What do the results mean?

If you had a strong negative reaction to all three test flavours, you may be a super taster, which means you have two copies of the 'TAS2R38' variant that results in a greater number of bitter taste receptors – making bitter flavours really unpleasant!

If you found that you liked one or two of these flavours, but not the others, this could be because you only have one copy of the 'TAS2R38' variant which allows the tasting of bitter flavours; and if you found you really liked all three, perhaps you have very few bitter taste receptors on your tongue, allowing you to enjoy these foods!

Keep in mind that taste can be influenced by other factors and can change throughout our lifetime. Find out more about taste on BBC Bitesize:

<https://www.bbc.co.uk/bitesize/articles/zdcgpg8>