Alex Russell writes: There are natural variations between humans in our senses. We need different prescriptions to correct our eyesight. Some people say that vinyl sounds better than CDs or MP3s and will pay big money for audio equipment, while others can't tell the difference.

Strictly speaking, the word "taste" refers to the five primary tastes: sweet, sour, bitter, salty and umami.

There is some evidence for other primary tastes, with fat most likely to be the next to be recognized. Others include calcium and metallic, although the latter is often due to various disorders or conditions.

It's the bitter taste that started all of this supertaster stuff. In 1931, American chemist Arthur Fox accidentally released a cloud of phenylthiocarbamide (PTC) powder into his laboratory. Some of this cloud went into Fox's mouth, and that of one of his colleagues. His colleague complained that it tasted intensely bitter, while Fox tasted nothing.

They tasted it again, with the same result. Fox went on to get others to taste PTC. He found that some found it intensely bitter, some mildly bitter, and others could not taste anything.

These differences in perception are partly due to the nature of the receptors in your mouth, which differ depending on your genes. The gene that codes for the PTC receptor exists in two common forms (and a few rare forms), which result in bitterness proteins with slightly different shapes. This, in turn, has an effect on how sensitive you are to bitterness – but that's not the end of the story.

These days, chemosensory scientists use 6-n-propylthiouracil (PROP or PTU) instead of PTC. PTC is a little bit toxic, so beware of taste and smell scientists such as Fox approaching you and asking you to "taste this".

In 1991, American psychologist Linda Bartoshuk conducted experiments using PROP. She coined the term "supertasters" for people who found PROP intensely bitter, and the term stuck.

During these experiments, Bartoshuk noticed that these supertasters had a more dense covering of structures that contain taste buds (known as fungiform papillae) on their tongue. She concluded that the number of receptors is important, too. You can actually use this information to test if you are a supertaster. By using food dye, count the number of taste buds in an area the size of a hole punch to see if you're a supertaster. Jeff Potter/Flickr, CC BY-NC

Fewer than 15 tastebuds in an area the size of a hole punch indicates a "non-taster", between 15 and 35 means you fall in the average range, while if you have more than 35 tastebuds in that area, you're a supertaster.

About one in four of us is a supertaster, one in four is a non-taster (such as Fox) and the rest of us are “medium” or “average” tasters. The proportions vary a little by culture and there is some variation within each group.

Supertasting is not restricted to bitterness. Supertasters often report that sweet or sour tastes are more intense. Salt appears to be a bit of a different beast – it seems that supertasters actually consume more salt, possibly because it masks bitterness.

You may already have an inkling if you are a supertaster based on the foods that you like. If you find coffee too bitter for your tastes, you may be a supertaster.

You may be thinner because you have a healthier diet. This is because you avoid sugar and fat (although this all depends on what you consider a healthy diet to be – there seems to be a new story every week).

But being a supertaster might also put you off healthy bitter foods, such as broccoli, Brussels sprouts or asparagus.

While bitterness is important for some foods (such as chocolate), we generally reject bitter foods because poisonous things are usually bitter. At least one study suggests that supertasters do indeed eat fewer bitter vegetables.

Fortunately for asparagus farmers, scientists have developed “bitter blockers”. So, kids of the world, you may not be able to use the supertaster excuse for avoiding your vegetables. Parents – thank me later. Kids – my sincere apologies.
Are there supersmellers?

We have five (or so) primary tastes, but there doesn’t seem to be such a thing as a primary smell. Instead, our olfactory system can discriminate between thousands of different smells due to loads of different receptors, all coded for by specific genes.

Different people have different genes. Given the number of different types of receptors involved, the chances of having dinner with someone with the same set of receptors as you are quite low.

Just like Fox and co’s different experiences of PTC, our experiences of smell (and therefore our perceptions of flavour) vary.

Rotundone is the main chemical responsible for the smell of pepper (called a character impact odorant). It’s pretty strong and yet about 25% of the population can’t detect it at all, while still being able to detect other smells.

Rotundone is an interesting case because it’s also present in many wines made from the grape Shiraz (or Syrah). These wines are often noted for their spicy or peppery characteristics. So when wine experts describe a Shiraz as peppery, they’re not making it up – it contains the same chemical as pepper.

So are some people more sensitive to smell? Sure, just as some are more sensitive to taste, to light (such as Bono, who claims to have sensitive eyes) and to other stimuli.

Our senses of taste and smell are essentially little chemistry labs that conduct loads of experiments to determine which chemicals are present in food, drinks and air. But not all chemistry labs are created equal – some of us have equipment that others don't have and can therefore detect different chemicals. And for some of us, our equipment is more sensitive.

So next time you're having an argument with someone over dinner about whether the meal is any good, keep in mind that their experience is probably very different to yours.