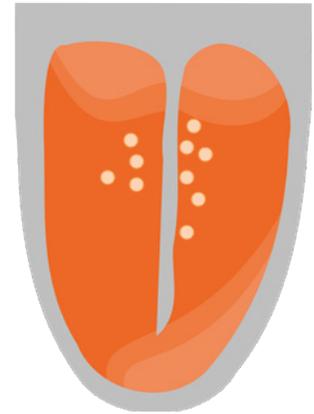


# TASTE 2 RECEPTOR MEMBER 38 (TAS2R38)

## The Bitter Truth About Taste

### Biology Background

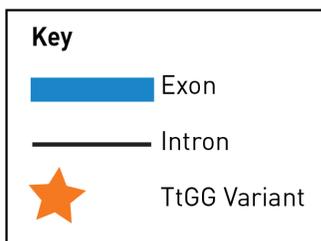
- The Taste 2 Receptor Member 38 (TAS2R38) gene produces the TAS2R38 protein, which functions as a receptor to perceive a wide range of bitter compounds.
- Bitter taste receptors (TAS2Rs) are proteins found on taste cells (mucous epithelium cells) of the tongue (Human Protein Atlas).



Tongue

### Genomic Locus

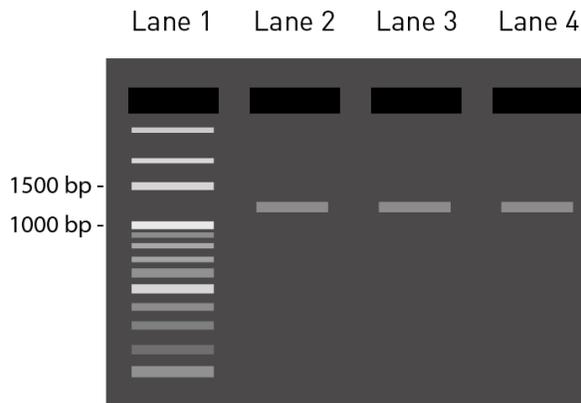
The TAS2R38 gene is located on chromosome 7. It is 1002 base pairs in length and consists of a single exon and no introns, encoding a 334 amino acid protein.



### The TtGG Variants

- TAS2R38 is known to contain three non-synonymous single nucleotide polymorphisms (SNPs).
- The SNPs are located at base pairs 145, 785, and 886 (corresponding to amino acids 49, 262, and 296) and lead to eight possible genotypes in humans.

## TAS2R38 Gel



Lane 1: DNA ladder  
Lane 2: CCG genotype, 1200 bp  
Lane 3: GTA genotype, 1200 bp  
Lane 4: GCA genotype, 1200 bp

*Please note that this variation can not be detected by size.*

## Population Genetics

- Current data suggest that the vast majority of the current human population is made up of two genotypes, CCG (which corresponds to the taster phenotype) or GTA (which corresponds to the non-taster phenotype).
- Different combinations of alleles can lead to other genotypes that correspond to intermediate-taster phenotypes.

## Influence on Human Health

- The bitter taste receptor Taste 2 Receptor Member 38 (TAS2R38) is one of the most well studied taste receptors.
- It has been shown to be accountable for perception of compounds such as phenylthiocarbamide (PTC).

### Sources

- Online Mendelian Inheritance in Man (OMIM) <https://www.omim.org/entry/607751>
- Review on TAS2R38 and its impacts on PTC receptivity see: Risso et al. Global diversity in the TAS2R38 bitter taste receptor: revisiting a classic evolutionary PROPosal. Nature Scientific Reports [2015]
- The Human Protein Atlas
- UCSC Genome Browser