

## PTC Tasting

by Dr. Ty C.M. Hoffman

### Slide 1

PTC (phenylthiocarbamide) tasting is a simple test to demonstrate Mendelian genetics, because it is easy to administer, and the results are unambiguous (people either taste PTC or they do not).

### Slide 2

PTC was not created for the purposes of testing the ability to taste its bitterness. An accidental release of the compound revealed to workers that some people can taste it, and some cannot.

### Slide 3

Substances that cause taste sensations (i.e., things that we can taste) are called tastants. Tastants are sensed by taste receptors called taste buds that reside in the bump-like papillae of the tongue.

### Slide 4

A taste bud features gustatory cells that connect to neurons (nerve cells) leading to the brain. In the presence of a tastant, a gustatory cell causes a neuron to send a signal to the brain. In the brain, the sensation of taste is created. In people who are insensitive to PTC, no signal is sent, so the brain creates no sensation.

### Slide 5

Taste cells respond to tastants in a variety of ways. For bitterness (the taste sensation caused by PTC), a temporary binding of the tastant to a protein embedded in the plasma membrane of the gustatory cell causes that protein to change shape. This triggers events that lead to a signal being sent to the brain.

### Slide 6

The ability to taste PTC is the dominant trait in humans. Therefore, all the children of a couple consisting of one homozygous dominant (tasting) parent and one homozygous recessive (non-tasting) parent will have the ability to taste PTC.