

Friday, May 8th

Do you know what it means to be in **Hardy–Weinberg equilibrium**? Take a look at this video clip: [Penguin Prof's H–W Equilibrium](#)

Please take out a calculator.

Remember, p = dominant allele

q = recessive allele

$$p + q = 1$$

$$p^2 + 2pq + q^2 = 1$$

Let's look at our PTC data

	Period 2	Period 3	Period 4	Total students
Tasters	16	10	10	36
Non-tasters	13	9	8	30
Total population	29	19	18	66

The gene for tasting phenylthiocarbamide, or PTC, has two alleles; the **dominant** allele, tasting, while the **recessive**, non-tasting.

QUICK: IF you are a non-taster, what **must** your GENOTYPE be?

tt

IF you ARE able to taste PTC, what could your GENOTYPE be?

TT **Tt**

The Hardy–Weinberg equations can be used to find the ALLELE frequencies within a population, as well as the GENOTYPE frequencies.

Right away, non-tasters are **tt**, which corresponds to the **q²** part of the equation below:

$$p + q = 1$$
$$p^2 + 2pq + q^2 = 1$$

You can find value for q now very easily...

Now that you have q , can you find p ????

Use the first equation to solve for p , which is the allele frequency for the **DOMINANT** allele in the population.

$$p + q = 1$$

Now that you know the **ALLELE** frequencies, you can calculate the **homozygous dominant** and **heterozygous GENOTYPE** frequencies by using the formula:

$$p^2 + 2pq + q^2 = 1$$

It's that easy!

