
 Hardy-Weinberg  1908

→ formula for determining # of genotypes in a population

→ determine if evolution is occurring.

$p$  - frequency of Dominant Allele (#/total pop.)

$q$  - frequency of recessive allele (#/total pop.)

$$p + q = 1$$

$$p = A$$
$$p \cdot p = p^2$$

$$p^2 = AA$$

$$p = A$$
$$q = a$$
$$Aa$$
$$aA$$

$$2pq = Aa$$

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

↓ shows frequency  
of genotypes

$$q = a$$

$$q \cdot q = q^2$$

$$q^2 = aa$$

equilibrium?

NO Fun ✓  
✓

- ① Yunnge (Big) population size
- ② NO migration
- ③ NO mutations
- ④ mating Random (NO sexier individuals)
- ⑤ NO natural selection

16% of a population is test unable to taste the chemical PTC. These non-taster are recessive for the tasting gene.

① what % of individuals in population are tasters?

② what is the frequency of the Dom. & recessive alleles?

③ what % of pop. are heterozygous for the trait?

$$p + q = 1$$

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

AA + Aa

Find q and p

$$q^2 = 16\%$$

$$\sqrt{q^2} = \sqrt{.16}$$

$$q = .4$$

$$p + .4 = 1.0$$

$$p = .6$$

$$\textcircled{1} p^2 = (.6)(.6) = .36$$

$$+ 2pq = (2)(.6)(.4) = 48\%$$

$$36\% + 48\% = 84\%$$

AA gives you all answers

Aa

AA + Aa

