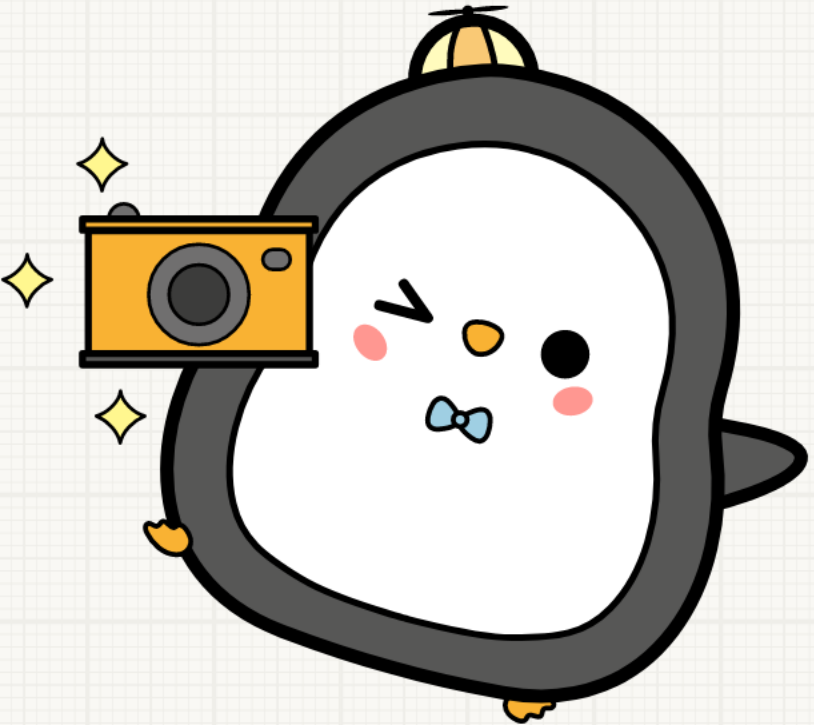
AP Bio Math Mondays

Hardy-Weinberg: Equilibrium Equation

Hardy-Weinberg

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

$$p + q = 1$$



Identification of Variables

p = frequency of allele 1 (dominant)

q = frequency of allele 2 (recessive)

Hardy-Weinberg

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

$$p + q = 1$$

2pq = frequency of allele 1/allele 2 (heterozygous)

p^2 = frequency of homozygous allele 1 (homozygous dominant)

q^2 = frequency of homozygous allele 2 (homozygous recessive)

Math Monday #2

Hardy-Weinberg

In a population of penguins, the fluffy feathers (F) is dominant to smooth feathers (f). If 15% of the population shows smooth feathers, what percentage of the population, to the nearest tenth, is heterozygous of fluffy feathers.

Hardy-Weinberg

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

47.4%

p	q	p^2	2pq	q^2
0.613	0.387	0.376	0.474	0.15

Practice Problem

Hardy-Weinberg

In a population of trogons (a type of bird) tail banding (B) is dominant to no tail banding (b). If 68% of the population shows tail banding, what percentage to the nearest tenth, is heterozygous for tail banding.

Hardy-Weinberg

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

49.1%

p	q	p^2	2pq	q^2
0.434	0.566	0.188	0.491	0.32