Populations

+

traits

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

predicts population traits

HH
Hh
hh

p = dominant allele ★

q = recessive allele ★

pq = heterozygous ★

$p + q = 1$

100

12 chocolate labs

88 black labs → 42 BB
88 black labs → 46 Bb
12 bb

$q^2 = 12/100 = .12$ or 12%

$(.42)\quad (.46)\quad (.12)$

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

$$p + q = 1$$

p = % of dominant alleles

q = % of recessive alleles

p^2 = % of individuals that are dominant

$2pq$ = % of individuals that are heterozygous

q^2 = % of recessive individuals

$\sqrt{q^2} = \sqrt{.12}$

$q = .35$

if $p = .65$

$p^2 = (.65)^2$

$p^2 = .42$

$p + .35 = 1$

$p = 1 - .35 = .65$