TOPIC: ASSUMPTIONS OF THE HARDY-WEINBERG EQUILIBRIUM

Five Assumptions of Hardy-Weinberg Equilibrium

◆ *Recall*: for HW equilibrium, there must be _____ mating and ___ evolution.

- HW equilibrium makes __ assumptions.

Random Mating: non-random mating will affect _____ frequencies.

No Mutation: mutation introduces _____ alleles into a population.

No Natural Selection: NS _____ specific alleles from the population.

Infinite (Large) Population Size: allele frequency changes by chance in _____ populations.

No Gene Flow: gene flow _____ alleles into or out of a population.

Does ____ affect allele frequency.

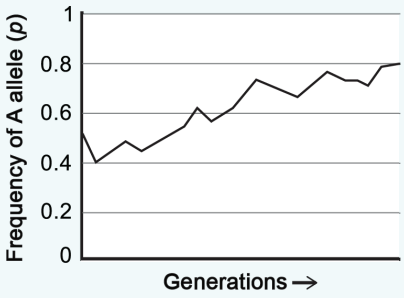
Affect _____ frequency.

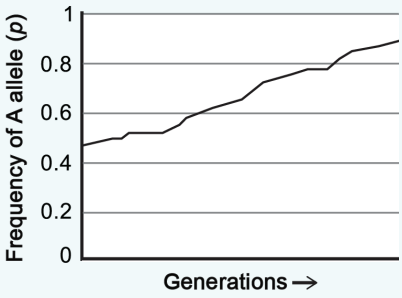
MATING MUTANTS? Its **NATURAL IN FLOW**ERS

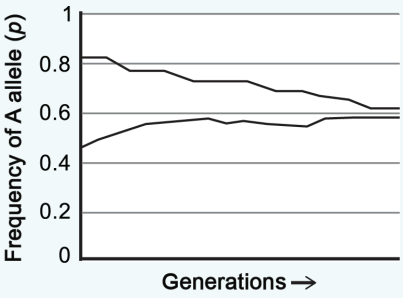
EXAMPLE

The three graphs below show the change in allele frequencies for a specific allele in different populations over time. In each population, one of the assumptions of the Hardy-Weinberg equilibrium is being broken. First, draw a line matching each graph to the situation that describes it. Then, based on the situation, determine which assumption is being broken.

Population of 5000 individuals. $p = 0.5$ In every generation the AA homozygotes average 5% more offspring than any other genotype.	Two populations of equal size. $p = 0.8$ & $p = 0.5$ In every generation, small groups of individuals move between the two populations.	Population of 100 individuals. $p = 0.5$ There is no selection on the A allele.







_____ _____ _____

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PRACTICE

When broken, which assumption of the Hardy-Weinberg equilibrium does not cause evolution on its own?

a) Random mating.
b) Infinite population size.
c) No gene flow.
d) No natural selection.

PRACTICE

Imagine that you are a researcher modeling evolutionary processes in a lab using a population of fruit flies. Which of the following Hardy-Weinberg conditions would be easiest to be sure that you are meeting in the lab?

a) No natural selection.
b) No mutations.
c) Infinite population size.
d) No gene flow.