TOPIC: NON-RANDOM MATING

Non-Random Mating

◆ **Non-Random Mating:** when certain genotypes are _____ likely to mate with each other.

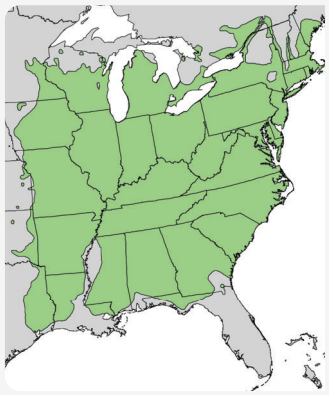
- Alters _____ freq., not _____ freq.
- NOTE: not talking about sexual selection.

‣ Organisms are often more likely to mate with _____ individuals: often due to _____.

◆ **Inbreeding:** mating between _____.

‣ Increases _____.

‣ **Inbreeding Depression:** fitness ___ due to ___ of homozygotes with deleterious recessive alleles.



Distribution of white oak trees.

Oak trees are _____ pollinated.

Is an oak tree in Maine likely to mate with an oak tree in Texas?

Little, Elbert L., Jr. 1971. Atlas of United States trees. Volume 1. Conifers and important hardwoods. Misc. Publ. 1146. Washington, DC: U.S. Department of Agriculture, Forest Service. 320 p.

EXAMPLE

The table below shows the genotype frequencies and allele frequencies for two populations (Populations 1 & 2): in one population, there has been random mating, and in the other population, there has been inbreeding. Identify in which population you think random mating has occurred and in which population there has been inbreeding. Then answer the question below.

		AA	*Aa*	*aa*	*p*	*q*
Two populations with: 1000 individuals	Population 1	250	500	250	0.5	0.5
	Population 2	375	250	375	0.5	0.5

a) Population with random mating: _____.

b) Population with inbreeding: _____.

c) Fill in the sentence below using the words “allele” and “genotype”. Both words will be used twice.

For an actual population, knowing the _____ frequency will tell you the _____ frequency, but knowing the _____ frequency does not tell you the _____ frequency.

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PRACTICE

In a 2019 paper in *Mammalian Genome*, Chu et al. showed that golden retrievers with higher rates of inbreeding had fewer offspring, suggesting inbreeding depression. Which of the following conclusions could you draw about the population?

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a) Lack of gene flow between dog breeds is responsible for the fewer offspring.

b) The small population size of golden retrievers has led to high rates of genetic drift in the breed.

c) Those golden retrievers with fewer offspring likely have decreased fitness due to excess homozygosity.

d) Natural selection is not occurring in golden retrievers.