HARDY-WEINBERG: WORKSHEET ACTIVITY

1. Observations: **These are the number of individuals of each genotype.**

A1/A1: ***28 individuals***
A1/A2: ***79 individuals***
A2/A2: ***15 individuals***

2. Based on this information, what is the **<u>total number</u> of each of our 2 alleles** (i.e., *A1* and *A2*) in the population?

3. What is the **<u>frequency</u> of each of our 2 alleles** (i.e., *A1* and *A2*) in the population?
   Fill out the table below, assigning one of the alleles to "*p*", and the other allele to "*q*".

Alleles	Frequency
p	
q	
Check: $p + q = 1$?	

4. Based on the allele frequencies you calculated above (and assuming that mating is random with respect to these alleles), **what is the <u>expected</u> frequency of each genotype** (i.e., *A1*/*A1*, *A1*/*A2*, and *A2*/*A2*)? Check your calculations by confirming that $p^2 + 2pq + q^2 = 1$.

5. Now go back to your original observations. What is the **observed <u>frequency</u> of each genotype** (i.e., *A1*/*A1*, *A1*/*A2*, and *A2*/*A2*) in the population? Check your calculations by confirming that $p^2 + 2pq + q^2 = 1$.

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6. **Is our population in Hardy-Weinberg equilibrium?** Justify your response by comparing your predictions to the observations.

7. **If the population is *not* in Hardy-Weinberg equilibrium, can you come up with a possible explanation for why it isn't?** *Note*: Your explanation should fit with your observations.

8. **Is it possible to make a definite statement about whether or not our population is evolving?**
   Hint: What are the assumptions of the Hardy-Weinberg equilibrium model?
   - If our observations do not match the predictions made by the model, it suggests that one (or more) of the assumptions have not been met.
   - …Are there any assumptions that might not be met, even if allele frequencies are staying the same between generations (i.e., even if evolution is *not* occurring)?