**­­Modeling Hardy Weinberg Equilibrium**

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| **Purpose:** You will use **models** available on the Internet to answer your own questions. Rather than building the model, you’re applying your knowledge of models to explore questions about population genetics. *Your objective is to generate and explore a question of your how individual design regarding the evolution of allele frequencies in a population.*  |

**Step 1:** **Explore a sophisticated and powerful model for population genetics in the box below.** Try out various combinations of changes to parameters or various extremes of one parameter at time. This exploration should allow you to generate questions that have direct implications to the real world. Generate at least three. Think, in particular, about questions that would systematically investigate the consequences of changing variables (parameters) on the system you’re studying — in this case, population genetics.

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| 🡪 ONLINE **Population genetics simulation program:** Bob Sheely from Radford University has created a simulation and documentation in the form of a Web application. It is available for free at <http://www.radford.edu/~rsheehy/Gen_flash/popgen/> . |

**Step 2:** **Using three questions you wrote down as a starting place, develop one hypothesis for each.** Below are some variables that can be tested.

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| population size | selection (fitness) | migration |
| number of generations | mutation | genetic drift |

**Step 3:** **Test your hypothesis using the model and record data.** Be careful to document what you did and what happens as a result. You will need to write down the p (A1 allele) and q (A2 allele) value along with AA, Aa, & aa (p2, 2pq, & q2) values. Don’t write down what it means yet – stay focused on describing the data. You might want to take the picture of the screen and add as data. You can use a table format if you like.

**Step 4: Analyze the data.**

Write a paragraph regarding what happened to alleles (result) in the population. Did evolution occur? Which of the five Hardy Weinberg principles did it violate?

You may work with others but you are responsible for writing result for all three variable changes.