**Evolutionary Arms Race**

*Before starting, read the introduction.*

**Part I**

1. Run the simulation 5 times and record the times. Each trial will randomly select a different predator from the population.



1. For each predator, calculate and record the difference between the control time and the time for each toxin injection.



1. Graph the control time (x-axis) vs. differences (y-axis). Make three different data series (one for each injection amount). Remember to include a key to differentiate between the different toxin injections.
2. Describe your results. Are your results consistent with other results in the class?
3. Adaptations sometimes come with a “cost”. Based on your data, what is the evolutionary cost of toxin resistance in this predator?
4. Research and describe a real-world example of an evolutionary advantage that comes with a “cost”.

**Part II**

Experimental Question: How does the percentage of toxic prey in the predator’s diet affect predator toxin resistance over time?

1. Write a hypothesis:
2. Select 4 different percentages to test. For each percentage you test, run three trials and find the average. Make a data chart (or charts) and record your data.
3. Find the average difference between control speed and the toxin speed for the start and end for your chosen percentages. Make a chart to record your data.
4. Make an appropriate graph to compare the differences between control and toxin tests for the percentages you tested.
5. Based on your results, is your hypothesis accepted or rejected? Explain.
6. Compare your results to other students. Are they consistent? Explain.