*Break into POGIL teams of 4 and assign each team member one of the following roles.*

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| **Student Name** | **Role** | **Responsibility** |
| John-Patrick Duffy | Facilitator | Records the team’s predictions and observations. |
| Grayson Kurth | Spokesperson | Reports the team’s results and conclusions. |
| Cole Swierczek | Quality Control | Validates the team’s results and conclusions. |
| Zachary | Process Analyst | Keeps track of the team’s progress and assesses its performance. |

This simulation of [rabbits and wolves](http://www.shodor.org/interactivate/activities/RabbitsAndWolves/) (<https://goo.gl/58BVY0>) shows how nature attempts to stay balanced. Read the Learner's Tab about how the simulation works and then complete the following activities.

1.) On the Activity tab, click Start Simulation. You can open the population graphs at any point to see how they change over time. Record your group's observations about how the population of rabbits and wolves changed over time.

They were inversely proportional for a while until one passed the other. As they died off eventually the grass grew more.

2.) **Hypothesis:** What would happen if there were lots more bunnies than there are wolves? Would the bunnies take over and live forever?

The bunnies would take over until they have eaten all of the grass. Once they did this they would start dying off very fast and eventually, the grass would grow again and they would flourish again

3.) **Prediction:** What does your group predict will happen?

We think that the bunnies will eat the grass, growing in population, but then they will start dying off once *all* of the grass has been eaten. The wolves will run out of food eventually.

4.) **Experiment:** Test the hypothesis by first resetting the simulation. Then click the View/Modify Parameters button followed by the View/Modify Start Parameters. Adjust the settings to increase the initial number of rabbits. Record your observations. Did your prediction match with the results? How was it different than the first run of the simulation?

Our prediction did indeed match our results. When we set the number of rabbits to 100, they outlived all the wolves and ate all the grass. Then some of the rabbits starved and some of the grass came back. When we set the number of rabbids to 50, the wolves ate all the rabbits, and then the wolves starved, so the grass began to grow a lot.

5.) **(Portfolio)** Reverse the hypothesis: What would happen if there were lots more wolves than there are bunnies? Would the wolves live forever? Record your hypothesis, prediction and experiment results. (Don't forget to reset the simulation before changing the parameters.)

No, because the wolves would run out of food and eventually kill each other. In my experiment, it showed that my hypothesis is correct, as the wolves killed all of the rabbits and then killed each other and died rather quickly.

6.) Explain how the rabbits and wolves live in balance in this simulation.

The wolves keep the population of the rabits in check

Because the wolves eat the rabbits and leave the grass alone, but the rabbits need the grass, so they all can live and survive.