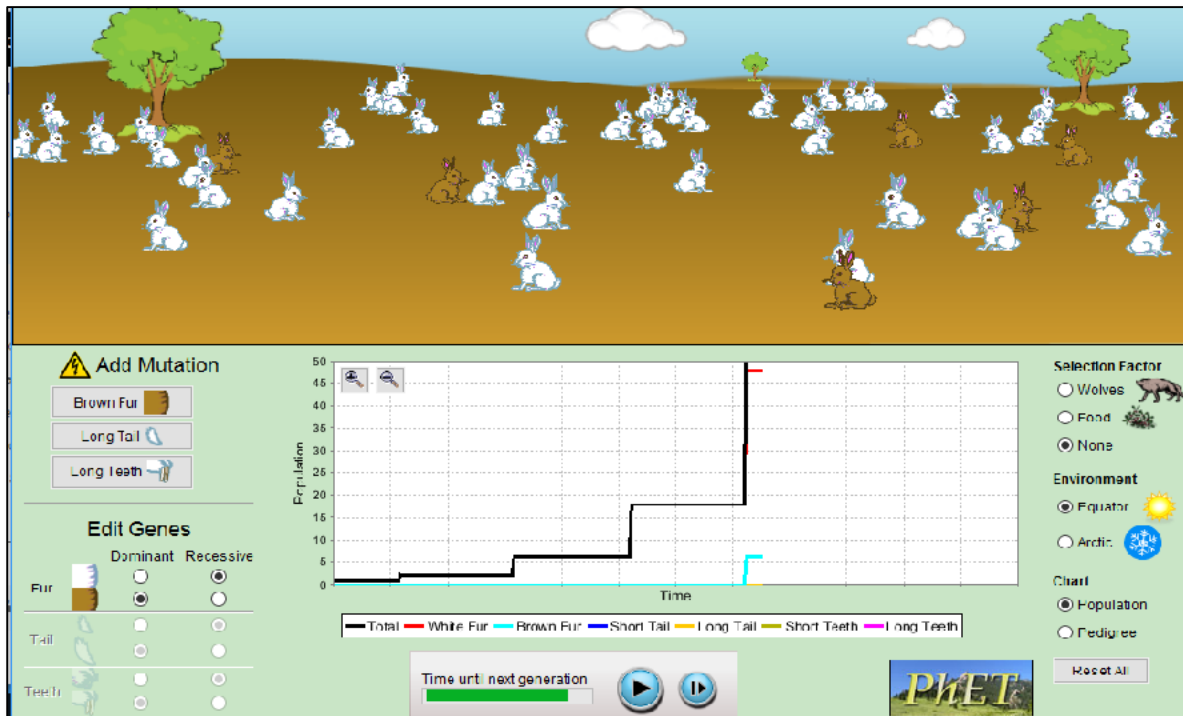# THINKING ABOUT HYPOTHESES

Student Hypotheses

1. It will get hotter.
2. The particles will move faster because they have more energy
3. To raise the temperature, you must increase the heat inside the chamber. Heat is a form of energy, and this heat energy will be converted into Kinetic energy in the gas molecules and they will move around faster.
4. The kinetic energy of the particles will increase.
5. The particles will move faster.
6. The particles will move faster giving rise to a greater number of collisions and so all the particles will react.

We are exploring what makes a good hypothesis.

Decide which of the above hypotheses you consider to be the best and discuss WHAT makes it good. Which hypothesis do you feel is the poorest and WHY?

A number of particles which were chemically reactive were introduced into a reaction chamber. The computer simulation was then paused and the following question was asked:

What will be the effect of increasing the temperature inside the chamber?

Students were asked to develop a hypothesis before proceeding.

Computer simulation is a PHET interactive simulation on Reaction Rates and is available at https://phet.colorado.edu/en/simulation/reactions-and-rates

THINKING ABOUT HYPOTHESES

Add Mutation
Brown Fur
Long Tail
Long Teeth

Edit Genes
Dominant   Recessive
Fur
Tail
Teeth

Time until next generation

— Total — White Fur — Brown Fur — Short Tail — Long Tail — Short Teeth — Long Teeth

Selection Factor
○ Wolves
○ Food
● None

Environment
● Equator
○ Arctic

Chart
● Population
○ Pedigree

Reset All

PhET

A genetic mutation (brown rabbit) was introduced into a population of white rabbits. The computer simulation was then paused and the following question was asked:

How will the population of rabbits be affected by the introduction of the brown rabbit, over the next number of generations?

Students were asked to develop a hypothesis before proceeding.

Student Hypotheses

1. There will eventually be more brown rabbits than white rabbits as brown is a dominant gene.
2. As all the rabbits reproduce at the same rate there will always be more white rabbits than brown rabbits, as there are more white rabbits to start off with
3. The brown rabbits will take over and the white rabbits will disappear.
4. Brown rabbits will exist alongside white rabbits as there is no great advantage to being brown.
5. As all the rabbits reproduce at the same rate there will always be more white rabbits than brown rabbits as there are more white rabbits to start off with.
6. The population will stay the same as some rabbits will die and other rabbits will be born.

We are exploring what makes a good hypothesis.

Decide which of the above hypotheses you consider to be the best and discuss WHAT makes it good. Which hypothesis do you feel is the poorest and WHY?