**Names of students in this group:**

_____

Activity 1: How does food affect the health of sand rats?

Animal research is used to study diabetes using sand rats. Even though we can't conduct research on real sand rats, we can use a software program to simulate this research. You will use this simulation to investigate the relationship between inheritance, environmental factors and diabetes.

What can we manipulate in the simulation?
- **Type of sand rats:**
  - The sand rats' health (diabetic vs. healthy)
  - The sand rats' risk for diabetes (high vs. low)
  - The sand rats' gender (male vs. female)

- **Type of food:**
  - Sugary vs. non-sugary food

- **Measurements:**
  - The sand rats' weight (thin, heavy, obese)
  - Number of diabetic sand rats (diabetic rats, healthy rats)
  - Number of sand rats at risk of diabetes (risk, no risk)
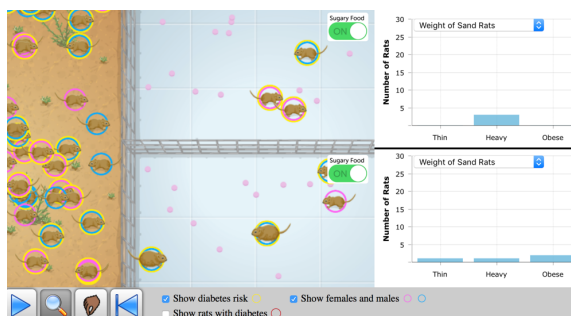
Let's Investigate!

Step 1 - Planning the inquiry question

Discuss with your partner what question you would like to investigate. This question may change as you begin to plan your investigation. Make sure to keep track of any changes.

Question: _____
_____
_____

Dependent variable: _____
Independent variable: _____

Step 2 - Planning and carrying out the experiment

1. Which sand rats will you choose for Pen #1 and Pen #2? What are your criteria for choosing the sand rats?

    _____
    _____

    What characteristics do the sand rats have in each pen? Fill in the chart below.

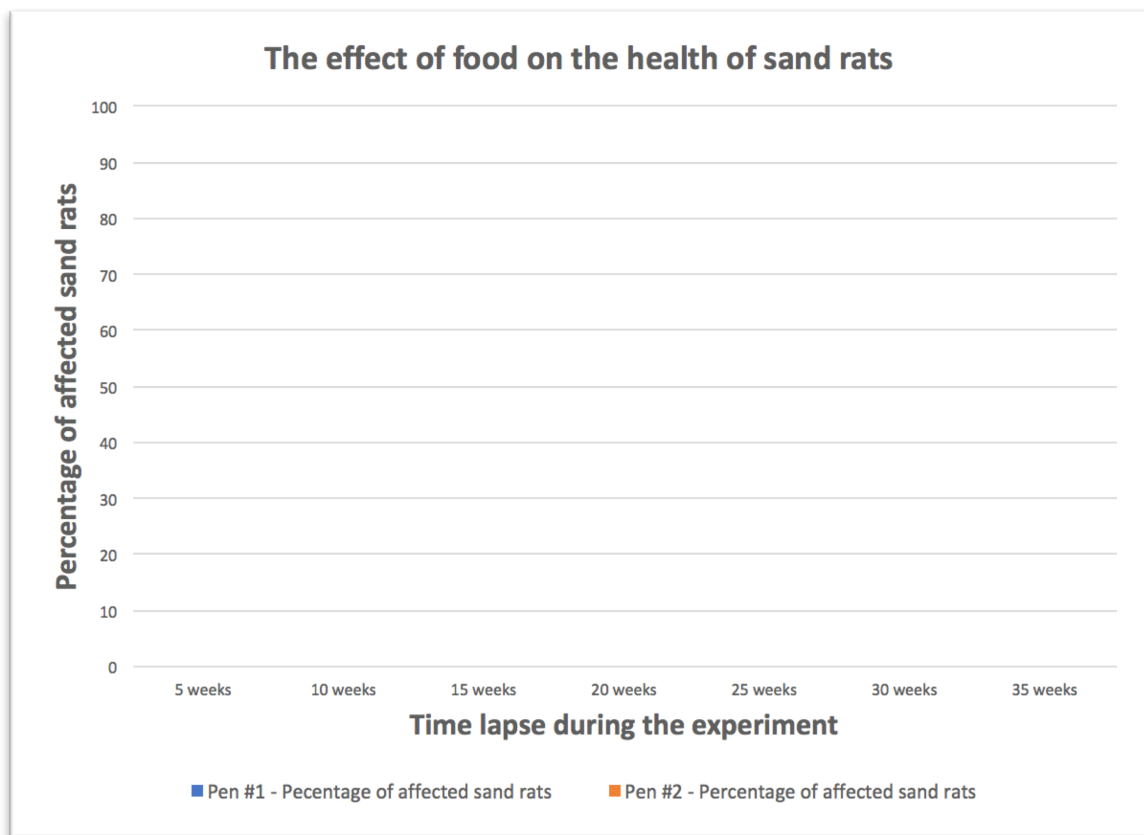| Type of sand rats:	Pen 1 # of sand rats	Pen 2 # of sand rats
Male /without diabetes risk		
Female /without diabetes risk		
Male /with diabetes risk		
Female / with diabetes risk		
Total # of sand rats placed in the pen		

2. What data will you collect? _____
    _____

Step 3 – Analyzing data

Run your experiment. Stop the simulation every 5 weeks. At the end of each run, record the results in the *Result Table*. Run your investigation several times, until you think you have collected enough data.

Time lapse (weeks)	Pen #1			Pen #2		
	Total number of sand rats	Number of affected sand rats	Percentage of affected sand rats	Total number of sand rats	Number of affected sand rats	Percentage of affected sand rats
5						
10						
15						
20						
25						
30						
35						

Plot the graph here:

The effect of food on the health of sand rats

Percentage of affected sand rats (y-axis: 0 to 100)

Time lapse during the experiment (x-axis: 5 weeks, 10 weeks, 15 weeks, 20 weeks, 25 weeks, 30 weeks, 35 weeks)

■ Pen #1 - Pecentage of affected sand rats   ■ Pen #2 - Percentage of affected sand rats

Step 4 – Interpreting data and communicating information

1. What **pattern** can you find in the data? Discuss with your partner the trends and record them here.

   _____

   _____

   _____

2. What **claim** can you make about the effect of environmental factors on sand rats' health? What evidence do you have that support your claim? What is your reasoning?

   _____

   _____

   _____

3. How does your investigation help explain **Monique's diabetes**?

   _____

   _____

   _____

4. How can your investigation help answer the driving question: **What controls my health**?

   _____

   _____

   _____