Antibiotic Resistance Lab

Introduction:

If you look at the label on a container of hand sanitizer, you'll see that it claims to kill 99.99% of germs (bacteria). What about the 0.01% that are not killed? Why did they survive? What will happen to the population of 0.01% of bacteria that were not killed?

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Task:

1. Obtain the following materials:20 mini-marshmallows, 8 pieces of round fruit candy of any color, 1 toothpick, 1 paper plate, and 1 paper cup
2. Put 8 mini-marshmallows and 2 pieces of round fruit candy on the same plate.
3. Using the toothpick, pick up the mini-marshmallows or candies one at a time and place them in the cup. Pick up as many as possible in 7 seconds.
4. Count how many are remaining and record this data in the table below.
5. The remaining mini-marshmallows and pieces of candy will now undergo reproduction by fission. Double the amount of mini-marshmallows and pieces of candy on the plate.
6. Repeat steps 3-5 twice for a total of 3 rounds and record all data in the table below.

Data Collection:

Time	# of normal bacteria (mini-marshmallows)	# of mutated bacteria (round fruit candy)
Beginning (Step 0)	8	2
After 1st Dose of Hand Sanitizer (D1)		
Remaining Bacteria Reproduce (R1)		
After 2nd Dose of Hand Sanitizer (D2)		
Remaining Bacteria Reproduce (R2)		
After 3rd Dose of Hand Sanitizer (D3)		
Remaining Bacteria Reproduce (R3)		

Graph:
Construct a line graph showing the change in the number of bacteria over time.

Conclusions:
What does the paper plate represent?

What do the white mini-marshmallows represent?

What do the pieces of candy represent?

What does the process of removing them represent?

What does the process of doubling the amount left represent?

Does this change your view on using hand sanitizer?

What was the mutation and where did it come from?

Where do you see the following between the marshmallows and candies?

Competition?

Variation?

Survival of the Fittest?

Reproductive Success?