

Serial Dilution Lab

A serial dilution is the stepwise dilution of a substance in solution. Usually the dilution factor at each step is constant, resulting in a geometric progression of the concentration in a logarithmic fashion.

This lab is designed to introduce you to the process of 'serial dilution'. The word serial comes from the same root as the word 'series'. In this lab, you will be creating a series of solutions that are diluted 2-fold. Each solution will be 2-fold less concentrated than the solution it was diluted from. Or, to say it another way, each dilution will be half as concentrated as the one used to create it. The process of creating serial dilutions is used routinely in scientific assays in order to test reagents over a range of concentrations, to create a standard curve etc.

Procedure

1. Line up nine 1.5mL microfuge tubes in a tube rack.
2. Label the tubes from left to right: 1, $1/2$, $1/4$, $1/8$, $1/16$, $1/32$, $1/64$, $1/128$, $1/256$.
3. Using a p1000 micropipette, place 1mL of a very dark green solution of food coloring and water (provided by the instructor) into tube #1.
4. Using a p1000 micropipette, place 0.5mL of water in each of the other tubes (See Fig 1.).

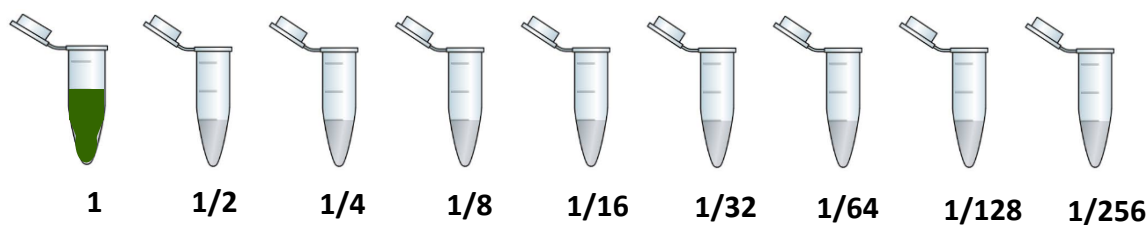


Fig. 1

5. To make your first serial dilution, use a p1000 micropipette to remove 0.5mL of the dark green solution in tube #1. Add the 0.5mL you have removed from tube #1 and mix it with the 0.5mL of water in the tube marked $1/2$. You now have 1mL in tube $1/2$ and this solution is a slightly lighter green than the solution in tube #1 (See Fig. 2).

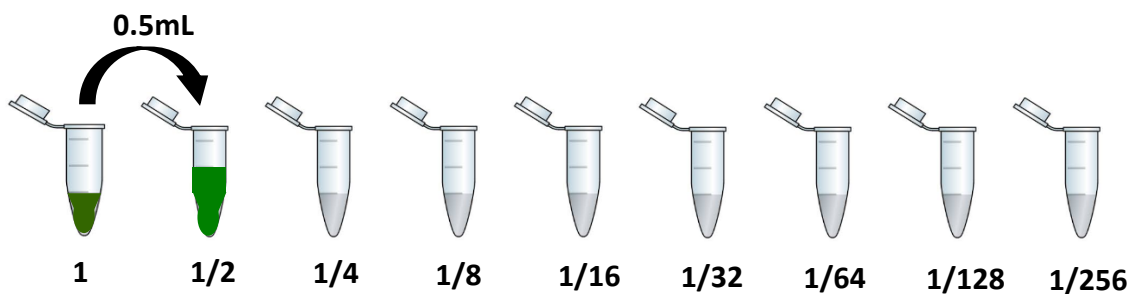


Fig. 2

6. To make your second serial dilution, use a p1000 micropipette to remove 0.5mL of the green solution in tube #1/2. Add the 0.5mL you have removed from tube #1/2 and mix it with the 0.5mL of water in the tube marked 1/4 . You now have 1mL in tube #1/4 and this solution is a slightly lighter green than the solution in tube #1/2 (See Fig. 3).

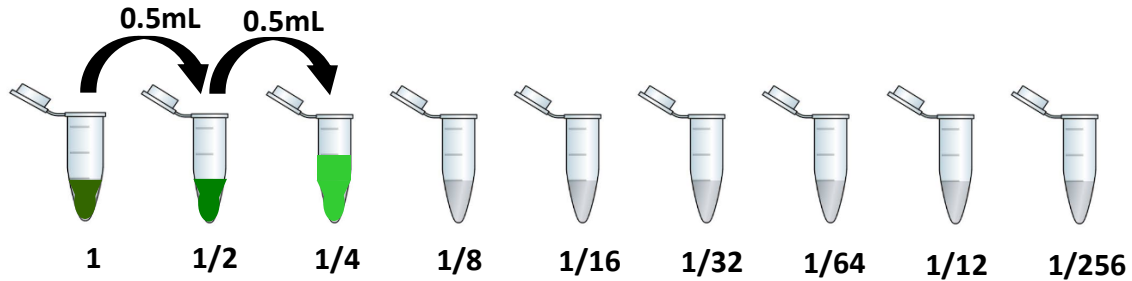


Fig. 3

7. Continue this procedure to create the rest of your serial dilutions.
8. Your final set of dilutions should look something like this in color (See Fig. 4).

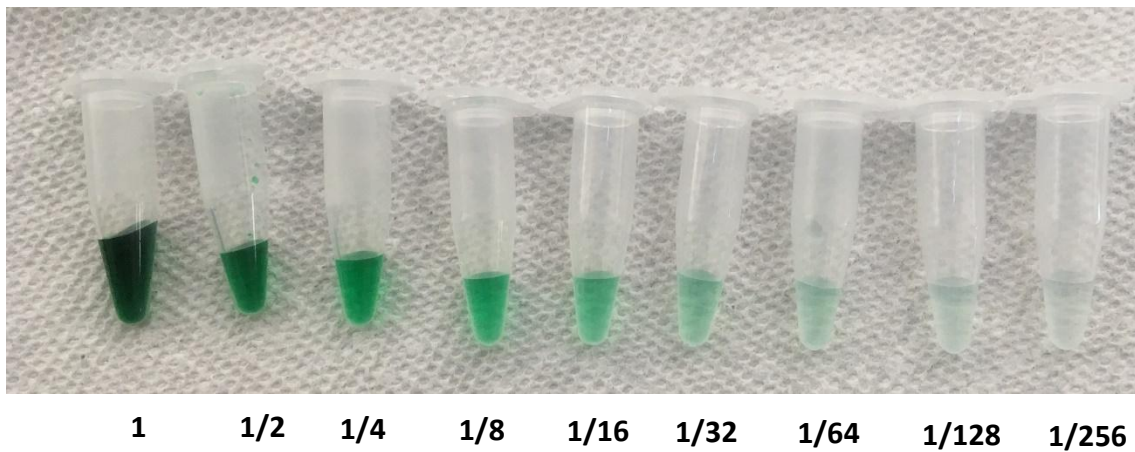


Fig. 4