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TEACHING THE GENOME GENERATION™

MICROPIPETTING EXERCISE

The Jackson Laboratory
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BEFORE YOU BEGIN

Watch Using a Micropipette — University of Leicester
www.youtube.com/watch?v=uEy_NGDfo_8&sns=em

This protocol is adapted from Bard College Citizen Science "Pipetting Exercise."

PREREQUISITES & GOALS

PREREQUISITES

Prior to implementing this lab, you should understand:

- The major working parts of a micropipette
- Units of volumetric measurement (µL)

LEARNING GOALS

Perform proper micropipetting technique.

Tips for pipetting:

1. The numbers displayed in the micropipette window represent different volumes for different sized pipettes.
2. Keep the micropipette vertical at all times to keep solution in the tip and not in the body of the pipette.
3. Each micropipette uses size-specific tips that should fit snugly with minimal pressure.
4. When picking up a solution, depress plunger to the first stop before inserting the tip into the solution, and stay below the surface when drawing up the solution.
5. Change tips when changing solutions or after combining solutions.
6. Small volumes should be directly expelled into larger volumes or onto the side of the tube.
7. Depress the plunger to second stop to expel all volume from pipette.

MATERIALS

REQUIRED LAB MATERIALS

Markers for labeling

Micropipettes & tips
(sizes P1000, P200 & P20)

1.5 mL tubes

Tube holders/racks

Deionized water

Food coloring (red, yellow, blue)

WORKSTATION NEEDS

These materials should be at each workstation.

Micropipettes and tips

Food coloring

1.5 mL tubes

Deionized water

Tube holders

Markers for labeling

PROCEDURE

☐ STEP 1

Obtain six 1.5 mL tubes and label them R1, O1, Y1, G1, B1 & V1.

☐ STEP 2

Using the P1000 micropipette, add 900 µL of deionized water into the R1, Y1 and B1 tubes.

NOTE: The same tip can be used for this step since the same solution is being expelled into each clean tube.

☐ STEP 3

Using the P200 micropipette, add 100 µL of red food coloring to R1. Push the plunger up and down slowly to mix the two solutions. Cap the tube.

NOTES:

a. When combining two solutions, always mix by flicking the bottom of the tube or by inversion 10 times.

b. Always collect solution at the bottom of the tube by "self" or mechanical centrifugation.

☐ STEP 4

Repeat STEP 3 by adding yellow food coloring into the Y1 tube and blue food coloring into the B1 tube.

☐ STEP 5

To create V1, add:

- ☐ 100 µL of R1 using the P200 and
- ☐ 10 µL of B1 using the P20.

NOTES

☐ STEP 6

To create O1, add:

- ☐ 100 µL of Y1 using the P200 and
- ☐ 20 µL of R1 using the P20.

☐ STEP 7

To create G1, add:

- ☐ 100 µL of Y1 using the P200 and
- ☐ 20 µL of B1 using the P20.

☐ STEP 8

Create a dilution of your stock colors by obtaining six new 1.5 mL tubes. Label them R2, O2, Y2, G2, B2 and V2.

☐ STEP 9

Using the P1000 micropipette, add 1 mL of deionized water into each new tube.

NOTE: The volume units change in STEP 9.

☐ STEP 10

Using the P200 micropipette, add:

- ☐ 100 uL of R1 into the R2 tube,
- ☐ 100 uL of O1 into the O2 tube,
- ☐ 100 uL Y1 into the Y2 tube,
- ☐ 100 uL of G1 into the G2 tube,
- ☐ 100 uL of B1 into the B2 tube, and
- ☐ 100 uL of V1 into the V2 tube.

Expected result is to have six tubes with 1.1 mL of colored water representing a rainbow.

NOTES