

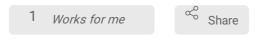


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Dilutions and Pipetting Practice (Instructor Protocol)

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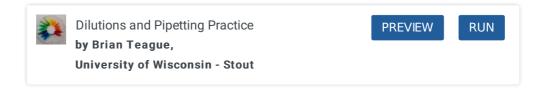
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Yeast ORFans CURE

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ABSTRACT

This is the instructor protocol for



It contains setup instructions and instructor tips for running the lab.

EXTERNAL LINK

https://qubeshub.org/community/groups/coursesource/publications?id=2556&tab active=about&v=1

PROTOCOL CITATION

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KEYWORDS

pipetting, instructor

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MATERIALS TEXT

- Grocery store food coloring red, green, blue, yellow
- (4) 15 ml conicals
- microcentrifuge tubes (4) for each set.

I usually ask two student groups to share a set of reagents.

SAFETY WARNINGS

Food coloring can stain skin and clothing. Use appropriate PPE, including a lab coat and gloves.

Lab Setup

- 1 In the conical tubes, add 500 μ l of food coloring to 9.5 ml of tap water to make the "10X stocks." Make a stock for each color.
- 2 Transfer **500** µL of each stock into a microcentrifuge tubes. Label them appropriately.
- 3 Follow the student protocol to create standards.

Instructor Tips & Common Student Errors

△ Instructor Tips

- I often start the class by having students grab a P-1000 or P-200, setting them to 500 and 200 µl respectively, and together slowly pressing down to find the first stop, then the second. We transfer a bit of water together, then I leave them to their own.
- Students often recognize c1 * v1 = c2 * v2 but have never actually used it (or have forgotten how to use it) to actually make dilutions. The original protocol, from which this was

- adapted, has quite explicit instructions. I usually allow students to struggle, ask them to consult their colleagues, etc, and then when a group is properly stuck will help them through it.
- Stand by the standards and compare students' results with them. Students often don't have a good idea of how close is "close enough." Both the volumes and colors should be precisely the same!
- Comparing students' samples to standards is easier if you set the standards on a piece of white paper.
- If a student's sample is substantially different, ask them to go back and try it again.

This is a good place to begin normalizing failure and multiple attempts.

 If, after a second attempt, a student sample isn't correct, follow them back to their bench and observe their technique closely.

It's better to catch technique errors here than later, after a bunch of failed PCRs!

5 Common student errors

 Pressing the plunger all the way down (instead of to the first top) when aspirating, and thus aspirating too much liquid.

This is BY FAR the most common technique error.

- Not watching their pipetting, but doing so blind (especially for the 1/10th scale).
- Making their "mixed" samples from the 10X concentrate instead of the 1X working stocks.
- Forgetting that to make a dilution, they need to add both the concentrate and a diluent (in this case, water).

