

Micropipette Art: Full STEAM Ahead!

Activity overview

Science experiments might require you to micropipette different volumes accurately, deposit liquids precisely, and mix samples with great delicacy. Micropipette art requires the same skills! Test your abilities with the exercises on the following pages.

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Additional supports

Help your students build proficiency in micropipetting with additional instructional videos, worksheets, and activities available at: <https://www.minipcr.com/micropipetting>

Materials needed

Supplied in kit (KT-1510-21)

Supplies	Amount provided in kit	Amount needed per lab group	Storage	Teacher's checklist
Red, blue, and yellow micropipetting practice dyes	20 ml each	1 ml of each color (varies by pattern)	Room temp.	
Micropipette art card	16 cards	1 card	Room temp.	
Micropipette tips	100 tips	At least 1	Room temp.	

Supplied by teacher

Supplies	Amount needed per lab group	Teacher's checklist
Micropipettes 2-20 μ l adjustable volume (QP-1001-01) or 10 μ l fixed volume (QP-1003-02) Available at minipcr.com	1	
Printout(s) of pipette art patterns 'Pette-by-number, Mimic mine, or Your choice patterns found on pages 5-7 of this guide.	At least 1	

Teacher's notes

- When printing art patterns, be sure to print pages in actual size. Scaling or shrinking pages will prevent patterns from aligning properly with art cards. Note that printing in actual size may cut off text, but patterns should remain intact.
- The same micropipette tip can be reused throughout the activity. Simply rinse the tip with water before switching dye colors.
- Micropipetting practice dye containers may be refilled with homemade dye. To refill one set of dyes (red, yellow, blue), dissolve 1 g table sugar in 15 ml water. Divide mixture evenly into the three containers. Add 1 drop of food coloring to each container and swirl to mix.
- A Petri dish can be used instead of the provided micropipette art card.
 - Use the base of the dish rather than the lid (the base has a smaller diameter than the lid).
 - Line the Petri dish up with the circle on the pattern.
 - Where the arrows at the top and bottom of the grid meet your Petri dish, use a permanent marker to mark the walls of your Petri dish (see image at right for example).



'Pette-by-number

Instructions

- 1. Lay the 'Pette-by-number pattern flat on your table or bench. Place the micropipette art card over the grid labeled "Yellow" for your selected design, lining up the circle on the pattern with the circle printed on your card.**
 - The arrows on your card should line up with the arrows at the top and bottom of your grid.
- 2. Pipette 10 μ l of yellow dye onto the card over every cell that is marked with a '10'.**
 - You may reuse your tip to reduce plastic waste. If your tip appears to become clogged, you may get a new tip or flush the tip with water by pipetting up and down a few times.
- 3. When all marked cells in the "Yellow" grid have been filled, carefully slide the micropipette art card to the grid labeled "Red." Line up the arrows on your art card with the arrows at the top and bottom of the grid.**
- 4. Pipette 10 μ l of red dye onto the card over every cell that is marked with a '10'. If there is already a drop of yellow dye in a given cell, add the red dye to the yellow dye.**
 - There is no need to replace your pipette tip, but you may wish to rinse your pipette tip with water before changing colors.
- 5. When all marked cells in the "Red" grid have been filled, repeat steps 3 and 4 for blue dye, using the "Blue" grid.**
- 6. When you are finished, admire your work against a neutral background (a plain sheet of white paper works well) and take a picture!**
 - Consider preserving your design by blotting it onto a clean paper towel.
 - Your micropipette art card and micropipette tip can be rinsed with water and reused.

Mimic mine

Instructions

- 1. Lay the Mimic mine pattern flat on your table or bench. Place the micropipette art card over the colored grid, lining up the circle on the pattern with the circle printed on your card.**
 - The arrows on your card should line up with the arrows at the top and bottom of your chosen pattern.
- 2. Pipette dye onto the micropipetting art card, using the palette and recipes provided to match the pattern underneath as best you can.**
 - You may re-use your tip to reduce plastic waste. If your tip appears to become clogged, you may get a new tip or flush the tip with water by pipetting up and down a few times.
 - It may be helpful to carefully slide your card over to the blank grid from time to time to see how your art looks against a neutral background.
- 3. How well were you able to match the pattern? If you were successful, your drops of dye should line up neatly, and drops of the same color should match in their hue and size.**
- 4. When you are finished, admire your work against a neutral background (a plain sheet of white paper works well) and take a picture!**
 - Consider preserving your design by blotting it onto a clean paper towel.
 - Your micropipette art card and micropipette tip can be rinsed with water and reused.

Your choice

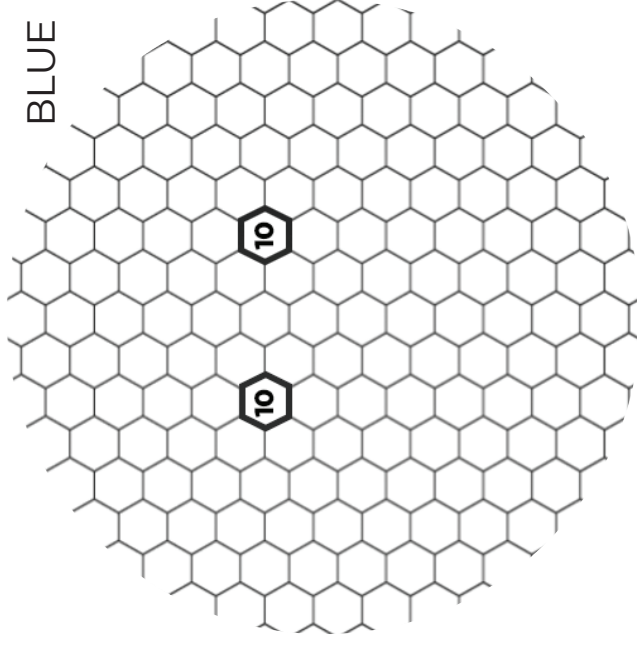
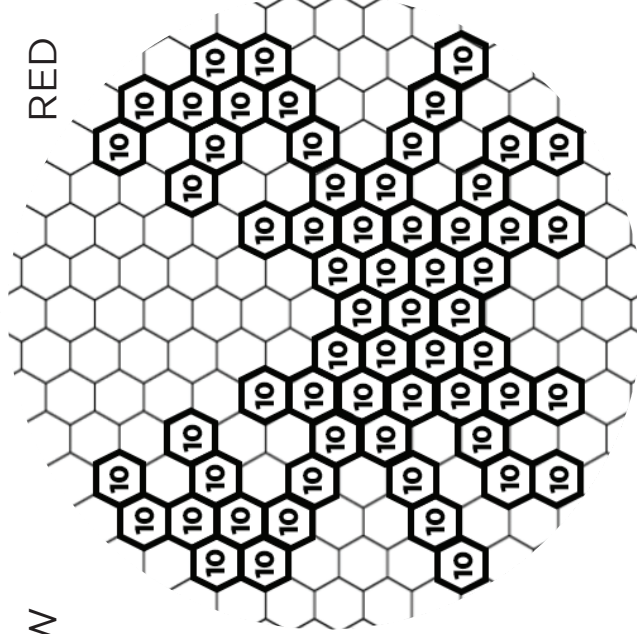
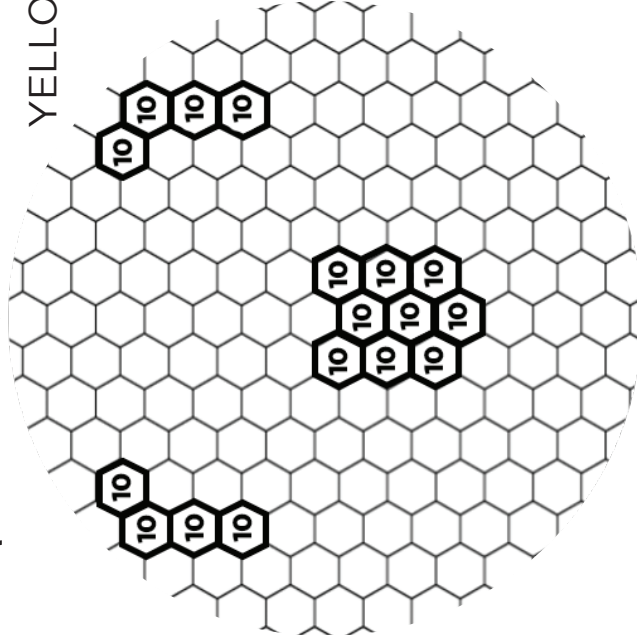
Here's your chance to get creative! Use the blank pattern to generate your own design. Use the recipes provided or experiment with your own mixes.

Have a design you love? Share it with us @miniPCR on Instagram!

YELLOW

RED

BLUE

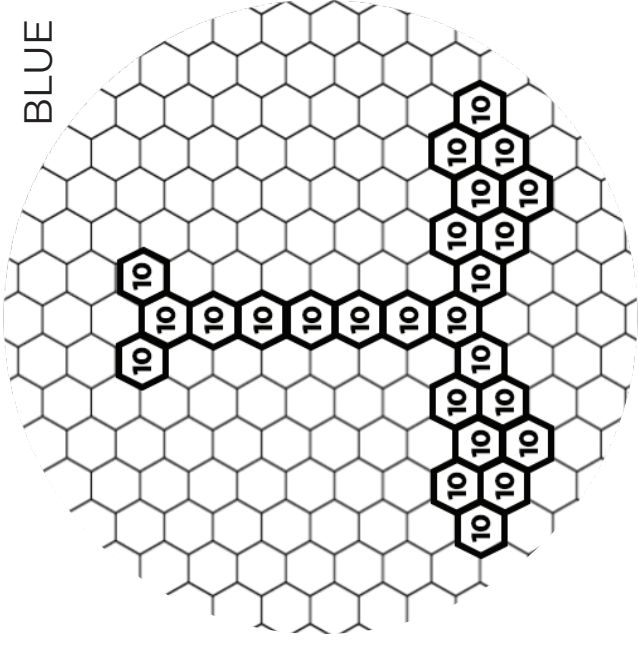
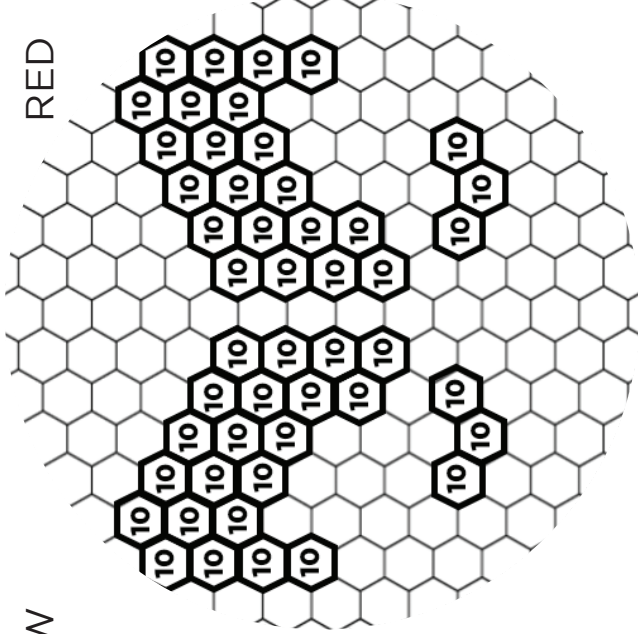
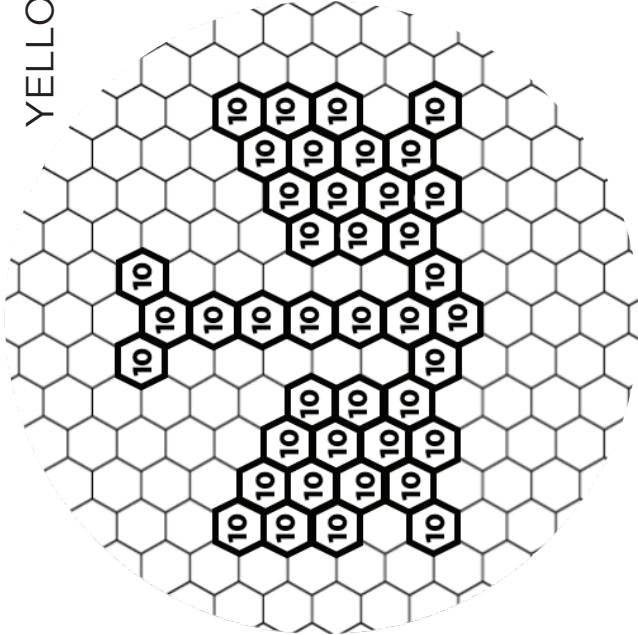


Design 1

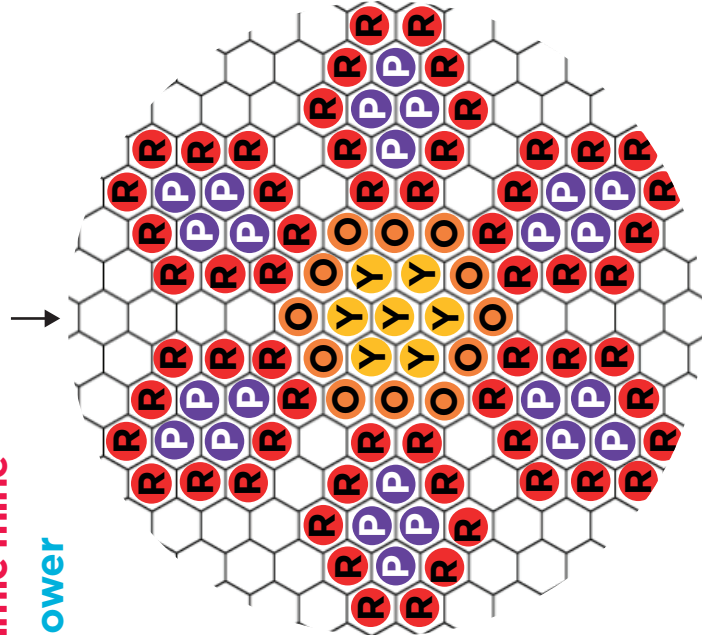
YELLOW

RED

BLUE



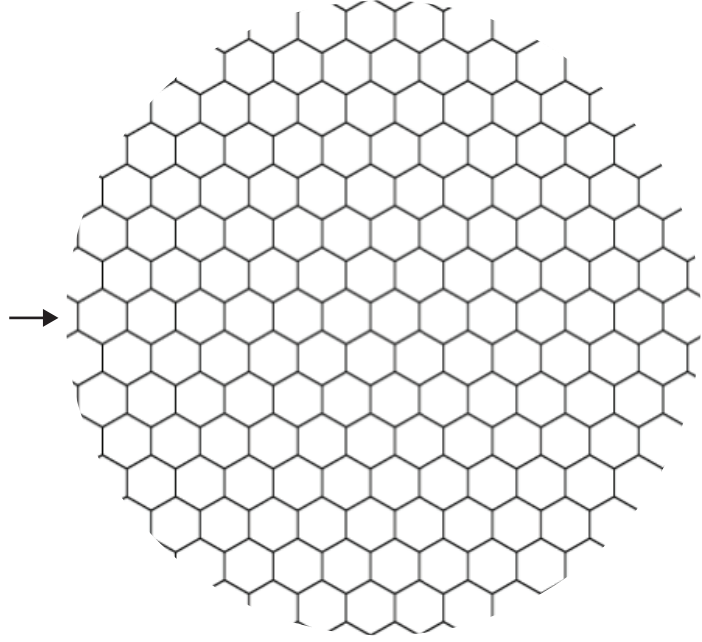
Design 2



Copy this design

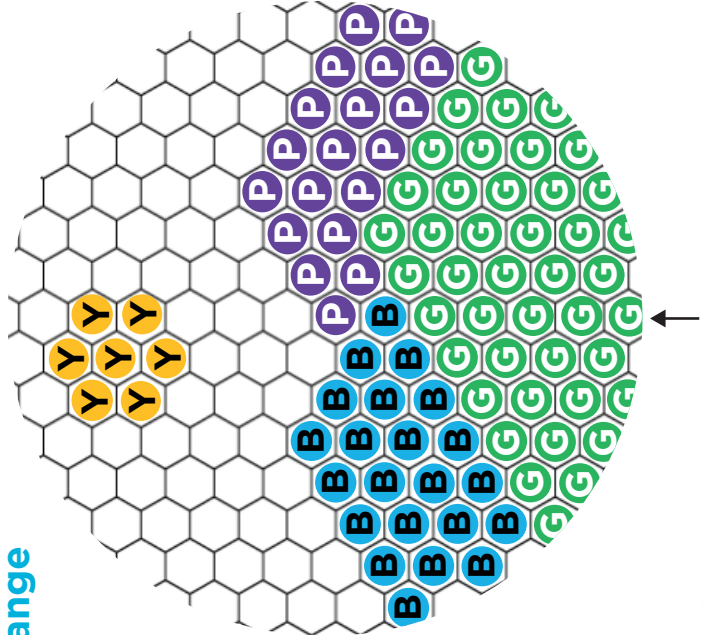


Check your work against a neutral background



PALETTE

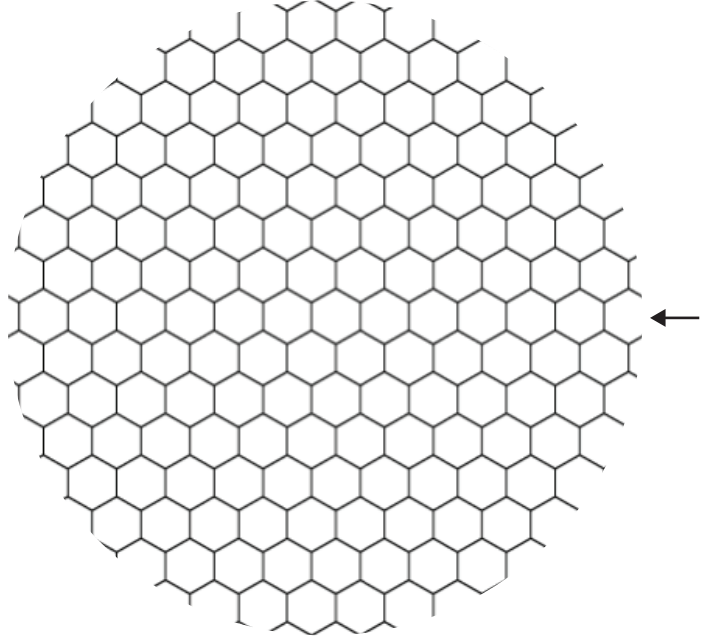
- R** Red 10 µl red
- O** Orange 10 µl red 10 µl yellow
- Y** Yellow 10 µl yellow
- G** Green 10 µl yellow 10 µl blue
- B** Blue 10 µl blue
- P** Purple 10 µl blue 10 µl red



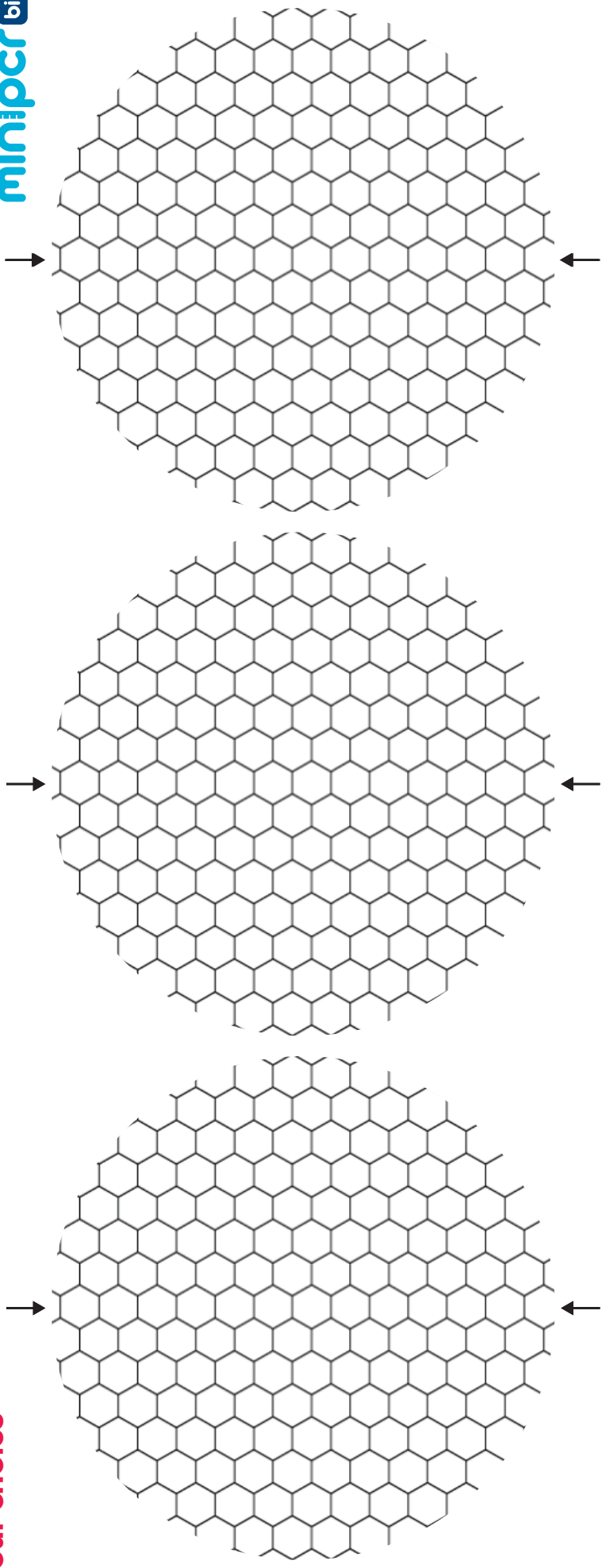
Copy this design



Check your work against a neutral background



Your choice



SUGGESTED RECIPES

- R** Red 10 µl red
- G** Green 10 µl yellow
10 µl blue
- O** Orange 10 µl red
10 µl yellow
- B** Blue 10 µl blue
- Y** Yellow 10 µl yellow
- P** Purple 10 µl blue
10 µl red

Make a design you love?
Share it with us on Instagram @minipCR!

Need more blank patterns?
Download printable grids at
www.minipcr.com/micropipetting

