# Learning to Use Micropipettes: Making Suncatchers1

**Materials**

**Reagents**

Tubes of blue, red and yellow food coloring diluted in water

**Equipment**

96-well plate

AND

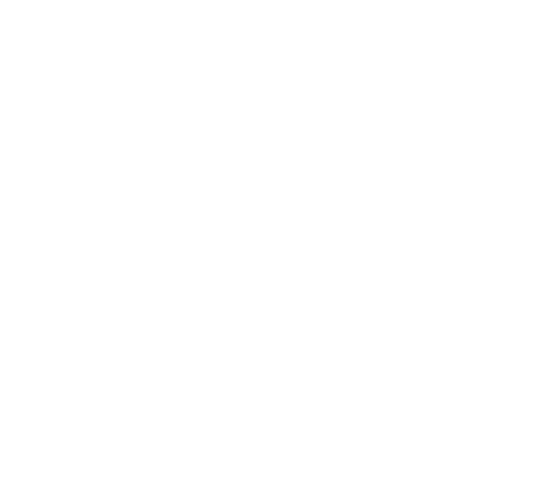
200 l pipettes

200 l tips

OR

100 & 1000 l pipettes

100 & 1000 l tips



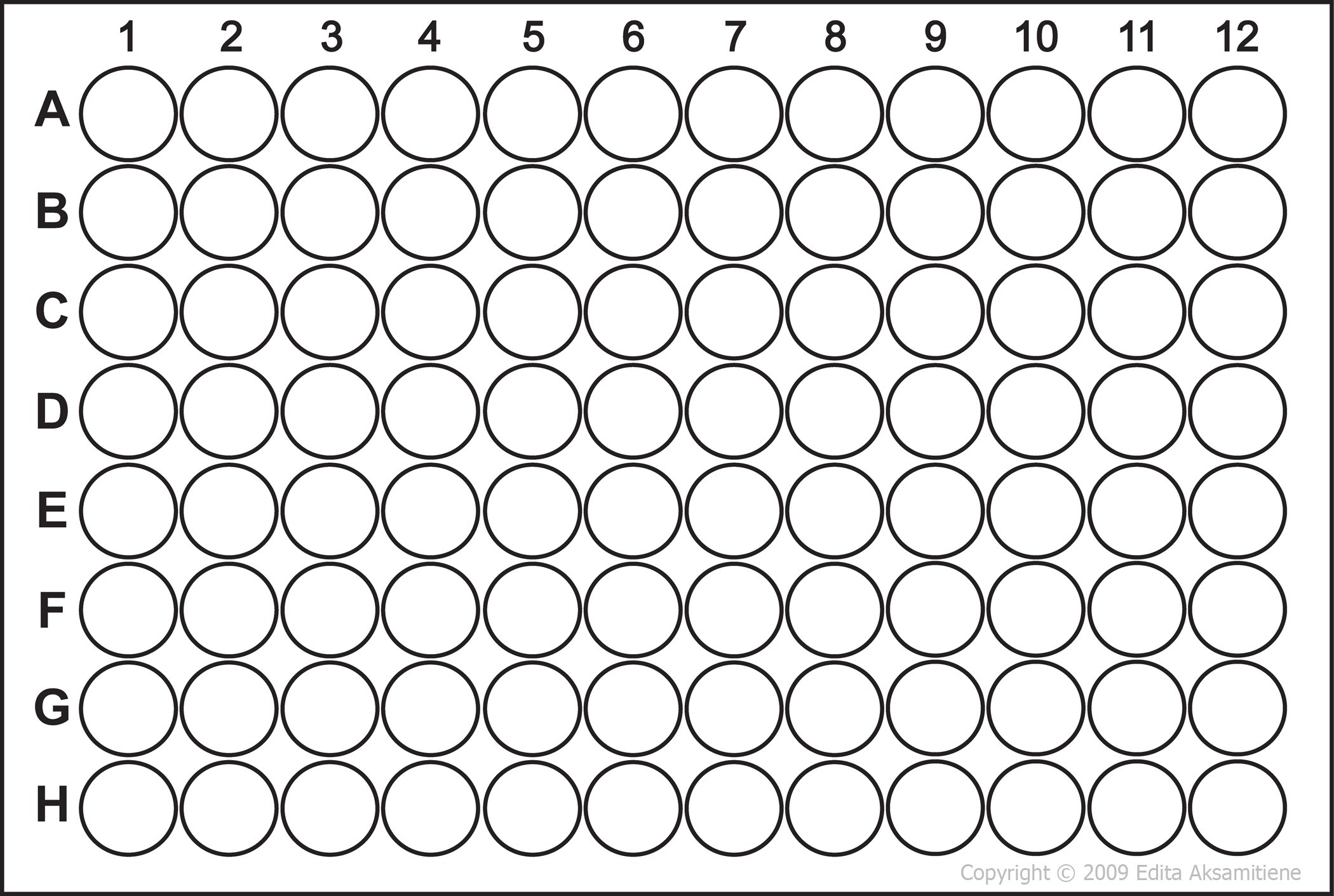
**Background**

To get more pipetting practice for upcoming labs, we will pipette different colored liquids to form a picture using a 96 well plate and reading a coordinate system. Just like Battleship, 96-well plates have letters and numbers to note the location of individual wells. The first well in the upper left corner is A1, below that is B1 and so on. A scientist can use these coordinates to separate 96 different experiments in this small space.

The purpose of this lab is to get each student ready for the next set of labs. If you work in groups, make sure that every lab partner is practicing micropipetting by allowing each group member to pipette some of the picture coordinates.

## **Protocol**

1. Obtain the coordinate instructions for the picture that you will create.
2. Figure out which colors will be used in your picture choice. The primary colors are provided (red, blue, yellow). Others will need to be made by you (green, purple, brown).
3. If the color has been provided for you, pipette 150 l of that colored solution into the appropriate well (s).
4. If you have to mix colors to create the color (i.e., Blue + Yellow = Green) use 75 l of each color for a total volume of 150ul.
5. When finished with your pipetting, determine what picture was created.
6. Using Colored pencils or crayons, color in the 96-well diagram on the next page.



## We picked picture #

Our picture was a

Did everyone in your group participate?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Picture 1** | Purple A5 | B4 | C3 | D3 | E3 | F3 | G4 | H5 |
|  | A6 | B5 | C4 | D4 | E4 | F4 | G5 | H6 |
|  | A7 | B6 | C5 | D9 | E9 | F5 | G6 | H7 |
|  | A8 | B7 | C8 | D10 | E10 | F8 | G7 | H8 |
|  |  | B8 | C9 |  |  | F9 | G8 |  |
|  |  | B9 | C10 |  |  | F10 | G9 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yellow | C6 C7 | D5 D6 D7 D8 | E5 E6 E7 E8 | F6 F7 |
| Green | E1 E12 | F1 F2 F11 F12 | G1 G2 G3 G9 G11 G12 | H2 H3 H4 H9 H10 H11 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Picture 2** | Blue | A3 A4 A5 | B2 B3 B4 | C1 C2 C3 | D1 D2 | E1 E2 | F1 F2 F3 | G2 G3 G4 | H3 H4 H5 |
|  | Yellow | A6 | B7 | C8 | D6 | E8 | F8 | G7 | H6 |
|  |  | A9 | B9 | C9 | D7 | E9 | F9 | G9 | H9 |
|  |  | A 12 | B11 | C10 | D8 D9 D10 D11 D12 | E10 | F10 | G11 | H12 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Picture 3** | Brown  Blue | A4 A8 | B5 B7 B2 | C1 | D1 | E2 |
|  | Purple | C2 | B3  B9 B10  D2 | C4  C5 C7 C8 C11  G4 | D11 | E3  E4 E5 E7 E8 E9 E10 |
|  |  | C3  C9 C10 | D3  D4 D5 D7 D8 D9 D10 | G8 |  |  |
|  | Yellow | C6 | D6 | E6 | F6 | G6 |
|  | Green | F4 F5 F7 F8 | G3 G5 G7 G9 | H3 H4 H8 H9 |  |  |

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| **Picture 4** | Green | B7 | C6 C7 | D2 D3 D4 D5 D6 D7 D8 | E1 E2 E5 E6 E7 E8 | F2 F3 F4 F5 F6 F7 F8 | G6 G7 | H7 |
|  | Red | C11 | D10 | E9 E11 E12 | F10 | G11 |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Picture 5** | Red | B5 | C4 | D4 | E2 | F2 |
|  |  | B6 | C5 | D6 | E3 | F3 |
|  |  | B7 | C6 | D7 | E4 | F4 |
|  |  | B8 | C7 | D9 | E5 | F5 |
|  |  |  | C8 |  | E6 | F6 |
|  |  |  | C9 |  | E7 | F7 |
|  |  |  |  |  | E8 | F8 |
|  |  |  |  |  | E9 | F9 |
|  |  |  |  |  | E10 | F10 |
|  |  |  |  |  | E11 | F11 |
|  |  |  |  |  |  | F12 |
| Yellow | | | E1 |  | | |
| Brown | | | G3 | H4 | | |
|  | | | G5 | H10 | | |
|  | | | G9 |  | | |
|  | | | G11 |  | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Picture 6** | Green  Purple | C9  A6 | B7 | C4 | D4 | E4 | F4 | G6 | H6 |
|  |  |  |  | C7 | D6 | E7 | F7 |  |  |
|  | Orange | A2 | B3 | C3 | D3 | E3 | F3 | G3 | H2 |
|  |  | A5 | B6 | C5 | D5 | E5 | F5 | G7 | H5 |
|  |  | A7 | B8 B9 | C6 C8 C10 | D7 D8 D9 D10 D11 | E6 E8 E9 E10 | F6 F8 F9 | G8 | H7 |

**Picture 7**

Any colorA2 B2 C2 D2 E2 F2 G2 H2

A5 B5 C5 D3 E5 F5 G5 H5

A8 B10 C10 D4 E10 F10 G10 H8

A9 D5 H9

A10 D10 H10

A11 H11

A12 H12

**Picture 8** Blue B1 C1 D1 E3 F1

B2 D2 F2

B3 D3 F3

Yellow B4 C5 D5 E5 F5

B5

B6

Green B7 C7 D7 E7 F7

B8 D8 F8

B9 F9

Red B10 C10 D10 E10 F10

B12 C11 D12 E12 F12

C12