

BASIC BIOMEK (Automated Liquid Handling Robot) PROTOCOL

Last updated 1/5/2018 by E.B.

To use the Biomek, you first need training by Whitney Blocher McTigue (wblocher@umass.edu) in the Perry Lab.

MATERIALS

Biomek NX^P Automated Workstation
Labware for your method, in this example:
Biomek P50 tips
1.5 mL microcentrifuge tubes
Biomek 24-tube holder
Falcon polystyrene 96-well plate

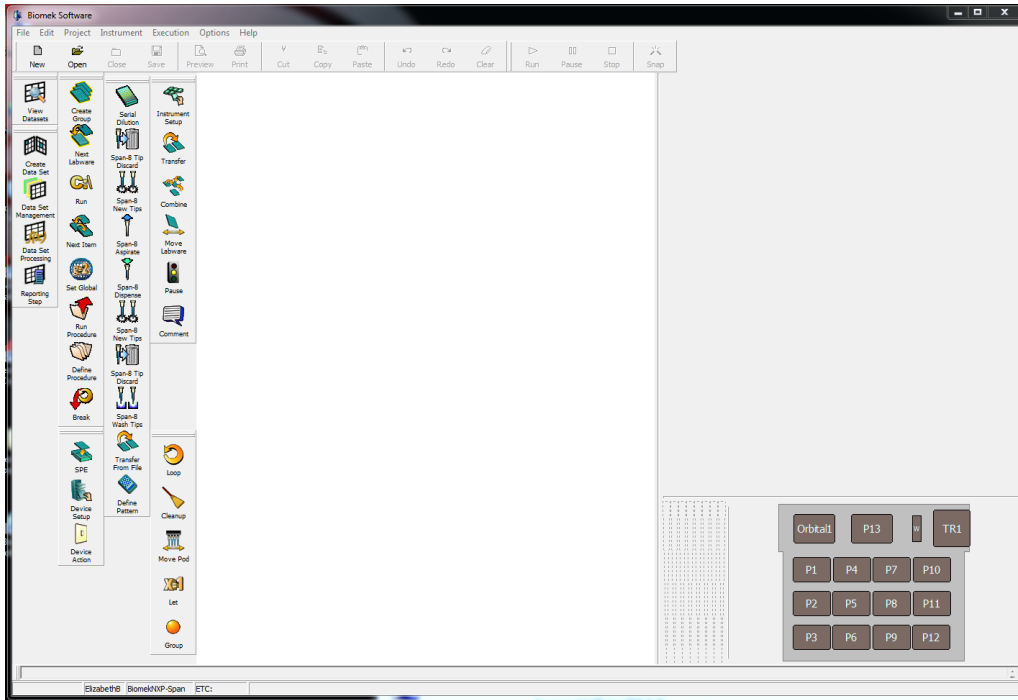
BASIC CALIBRATION BEFORE ANY METHOD

1. Make sure the system water container is not empty (located under the Biomek, fresh nanopure water needs to be added at least the night before to remove air bubbles).
2. Open the Biomek software. Under the **Execution Menu**, select “Home all Axes” and follow the prompts. Let the system water run through the syringes until no visible air bubbles are present since air bubbles will impact pipetted volumes.

SETTING UP A METHOD

1. This is what you will see when you open a new method:

On the left-hand side are all the actions that the Biomek can perform.



The lower right-hand

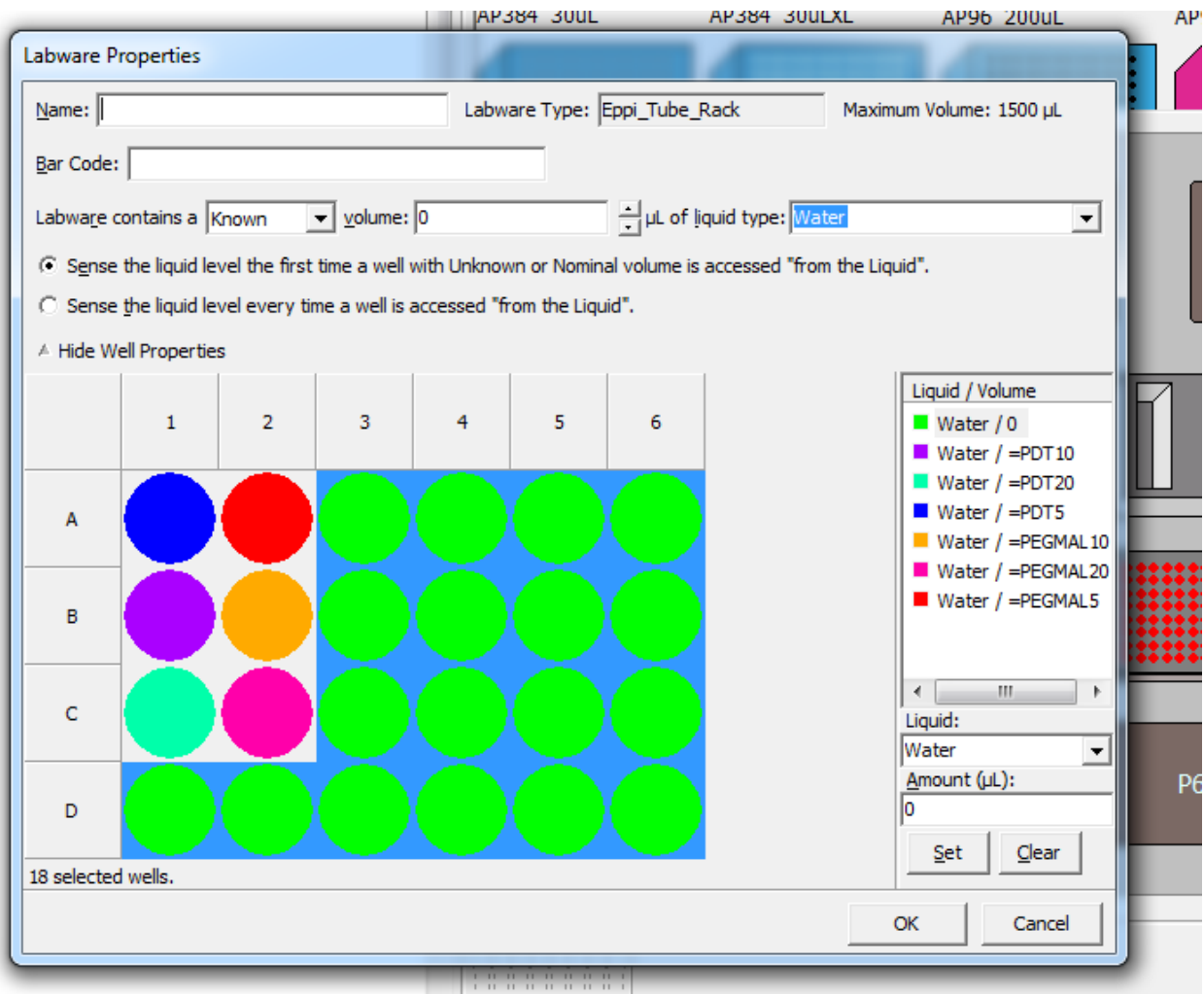
corner shows the deck where you place the labware for the method.

- Under “start” define all of the variables for the method. These can have predetermined values or the user can be prompted to enter a value each time the method is run by selecting “Prompt” next to the variable.

Overridable	Prompt	Variable Name	Value
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDT10	10
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDT20	10
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDT5	10
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PEGMAL10	50
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PEGMAL20	50
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PEGMAL5	50
<input type="checkbox"/>	<input type="checkbox"/>	Reservoir	10000
<input type="checkbox"/>	<input type="checkbox"/>	Swell_buffer	5000
<input type="checkbox"/>	<input type="checkbox"/>		

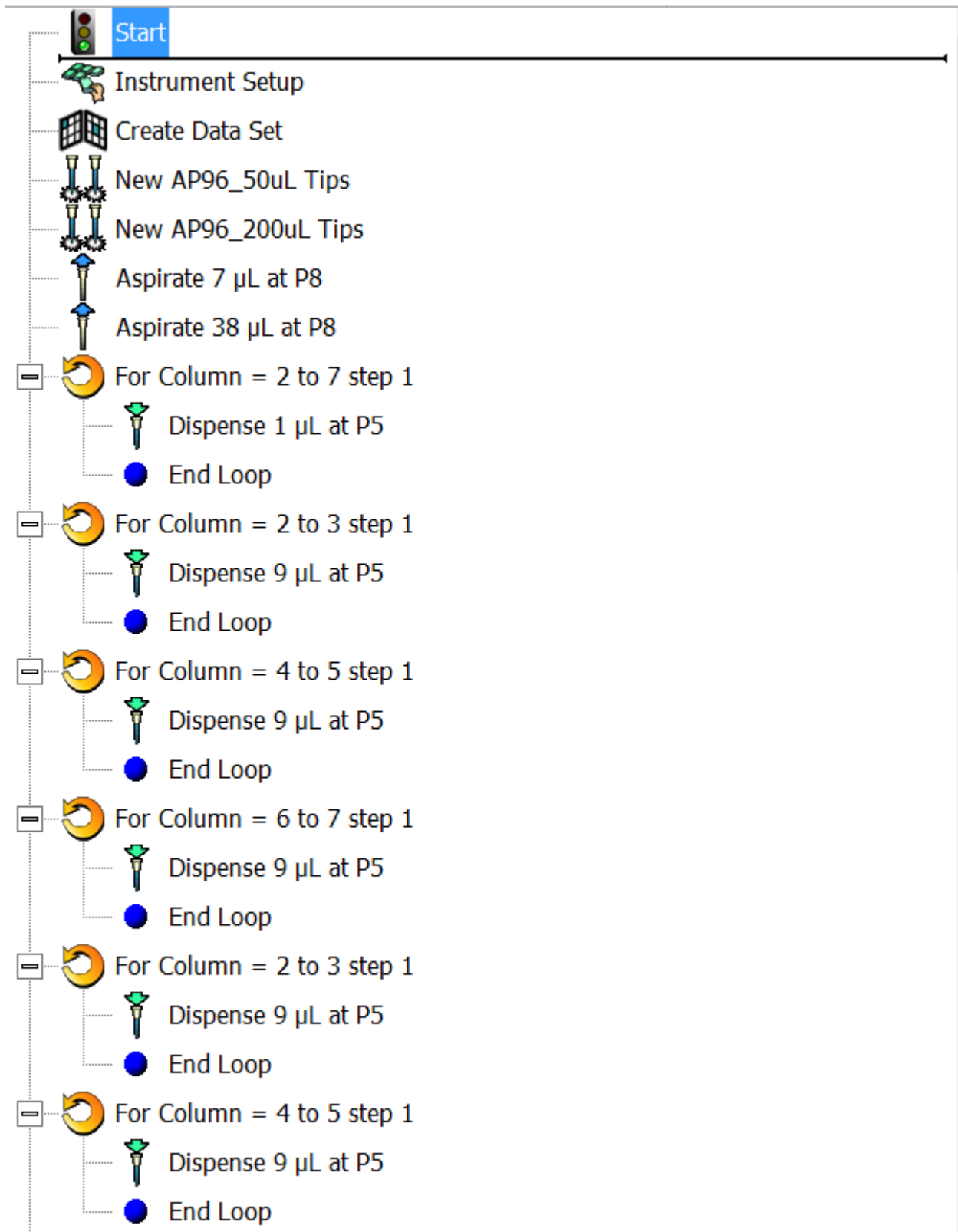
- Add labware to the deck for the method. There is a predefined menu of available labware that can be added to the deck by selecting it from the menu and dragging it to the location it will be used on the deck. You can only use labware that has been defined for the system. It is possible to create new labware definitions (see separate protocol). The images for the tip boxes match the colors of the actual boxes to make selecting the correct ones easier.

4. Define the properties for each piece of labware on the deck. This is an example of defining the variables for 1.5 mL tubes in the 24-tube holder labware. Click on the labware icon on the deck and this screen will open:



Enter the information at each location that needs to be defined.

5. Add steps to your method from the Biomek menu on the left-hand side of the screen to end up with something that looks like this:



6. Edit each step to have the Biomek perform the exact actions need for the method. For example, clicking on “New AP96_50 uL Tips” opens this screen to

select the probes where the tips will be added:

Pod: Pod1
Tips: AP96_50uL
Probes: 1 2 3 4 5 6 7 8

Probes 1 and 2 have been selected to pick up new tips when the method is run.

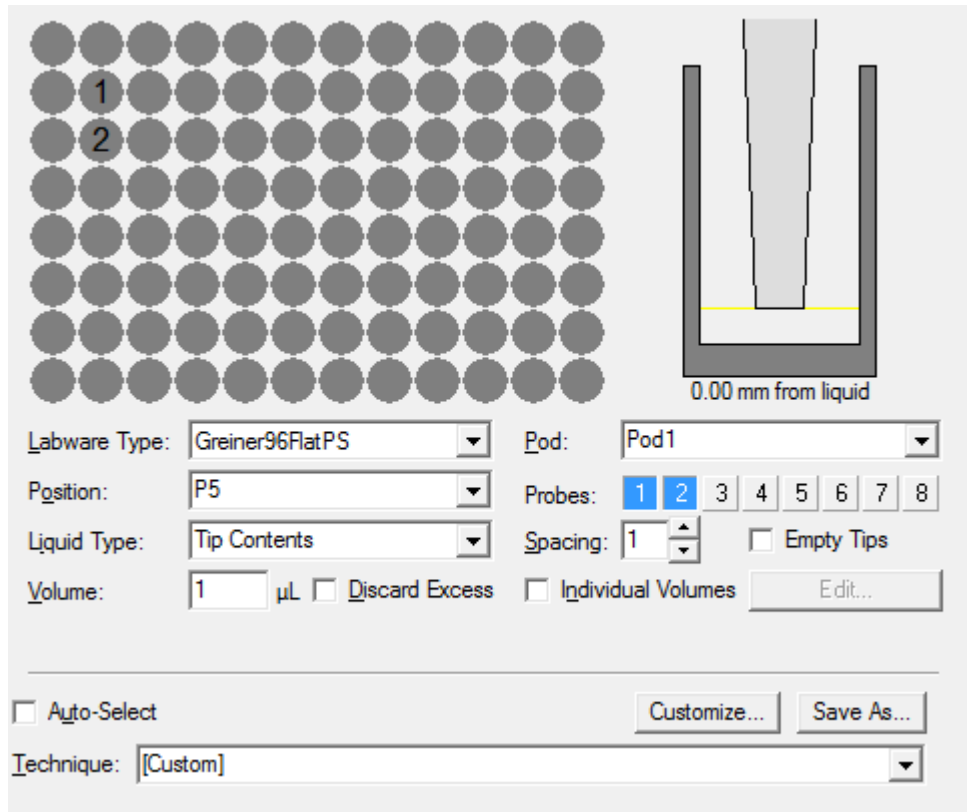
To aspirate using these types from locations of the 24-tube labware, the aspirate step would look like this:

1
2

-2.00 mm from liquid

Labware Type: Eppi_Tube_Rack
Position: P8
Liquid Type: Water
Volume: 7 µL
Pod: Pod1
Probes: 1 2 3 4 5 6 7 8
Spacing: 1
 Individual Volumes Edit...
 Refresh Tips AP96_50uL
 Auto-Select Customize... Save As...
Technique: Water_Transfer

The next step would be to dispense the aspirated liquid at another location. A 96-well plate example would look like this:



The amount of liquid aspirated and dispensed can be adjusted for each tip individually.

7. Once all of the steps for the method have been defined, make sure that the actual labware on the deck matches what has been entered into the Biomek software. Make sure all of the lids are open/off.
8. Run the method by clicking on the "Run" button at the top of the screen. Follow the prompts for the method to run completely.
9. When the method is finished, clear the deck of all labware.