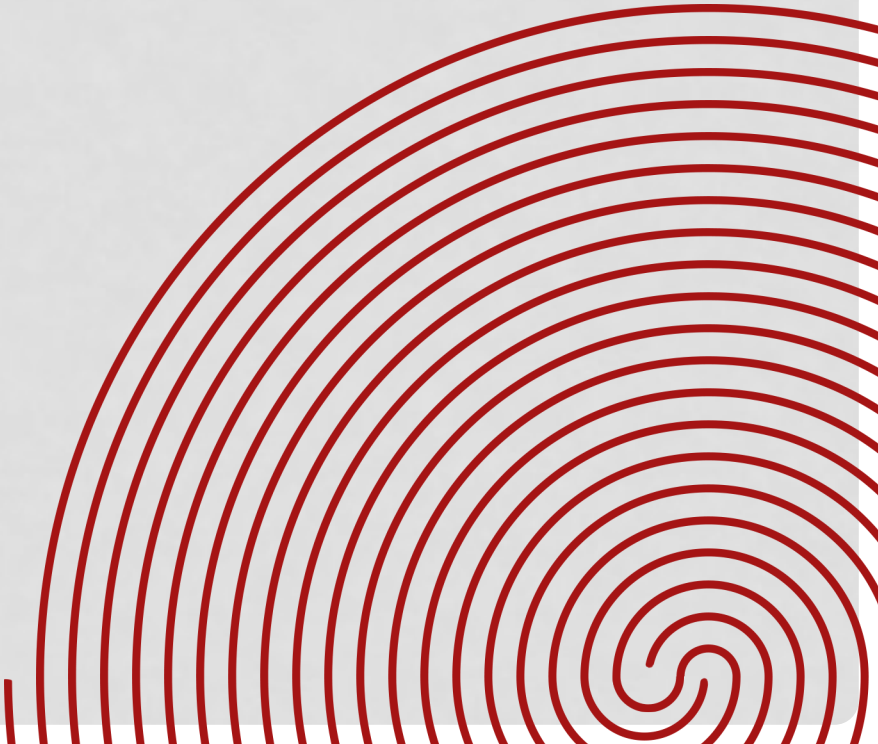
When working with solutions,
what do you do?

uMix



User Guide & Documentation
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uMix User Guide

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uMix

uMix is a calculator that assists in determining quantities and concentrations for simple dilution solutions. It operates on four functions:

Molarity

Computes either formula weight, sample mass, solution volume, or concentration when three of those quantities are given

Dilution

Determines how much of an initial solution to mix with a diluent in order to make a solution of specified concentration

Resuspension

Determines how much solvent to add to a dry solute in order to make a solution of specified concentration

Copy Number

Calculates the number of copies of a specified DNA oligo, given sample mass and length of oligo.

Feedback

User input is valuable in shaping our development priorities. Any feedback may be sent to

adam.millington [at] path.utah.edu

Unit Handling

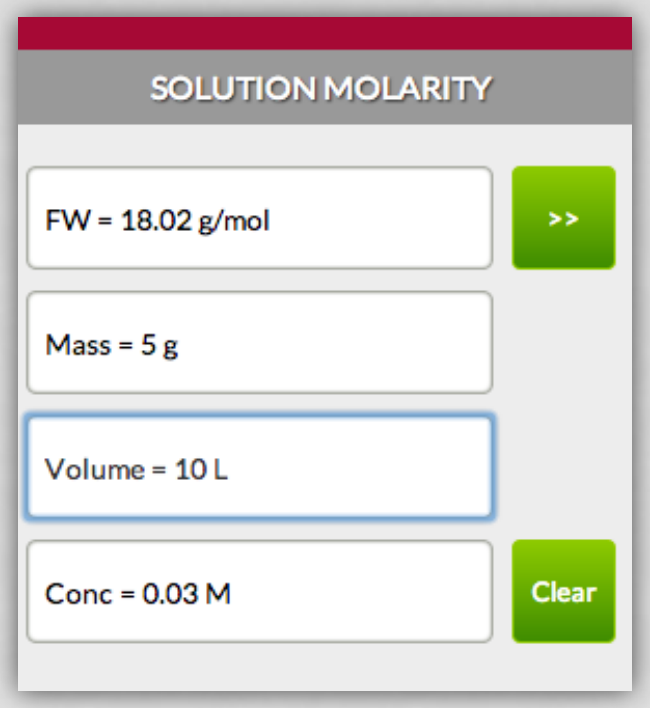
- While inputting values, simply type the appropriate unit directly after the value
- If no unit is typed, the 'Default' unit appropriate to the input type will be assumed
- Default units can be changed in the 'Select Default Units' area
- All outputs will be reported as in the appropriate Default Unit.

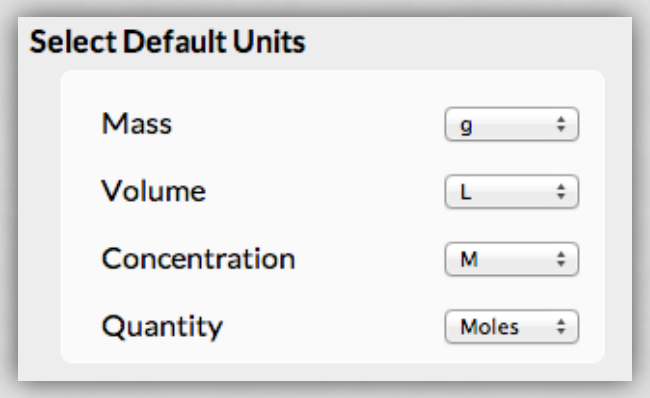
Flexible Unit Input

It doesn't matter if you type liter, liters, Liter, or Litres. uMix should recognize them all plus more. If there is an unrecognized unit that you feel should be valid, please contact the developer.

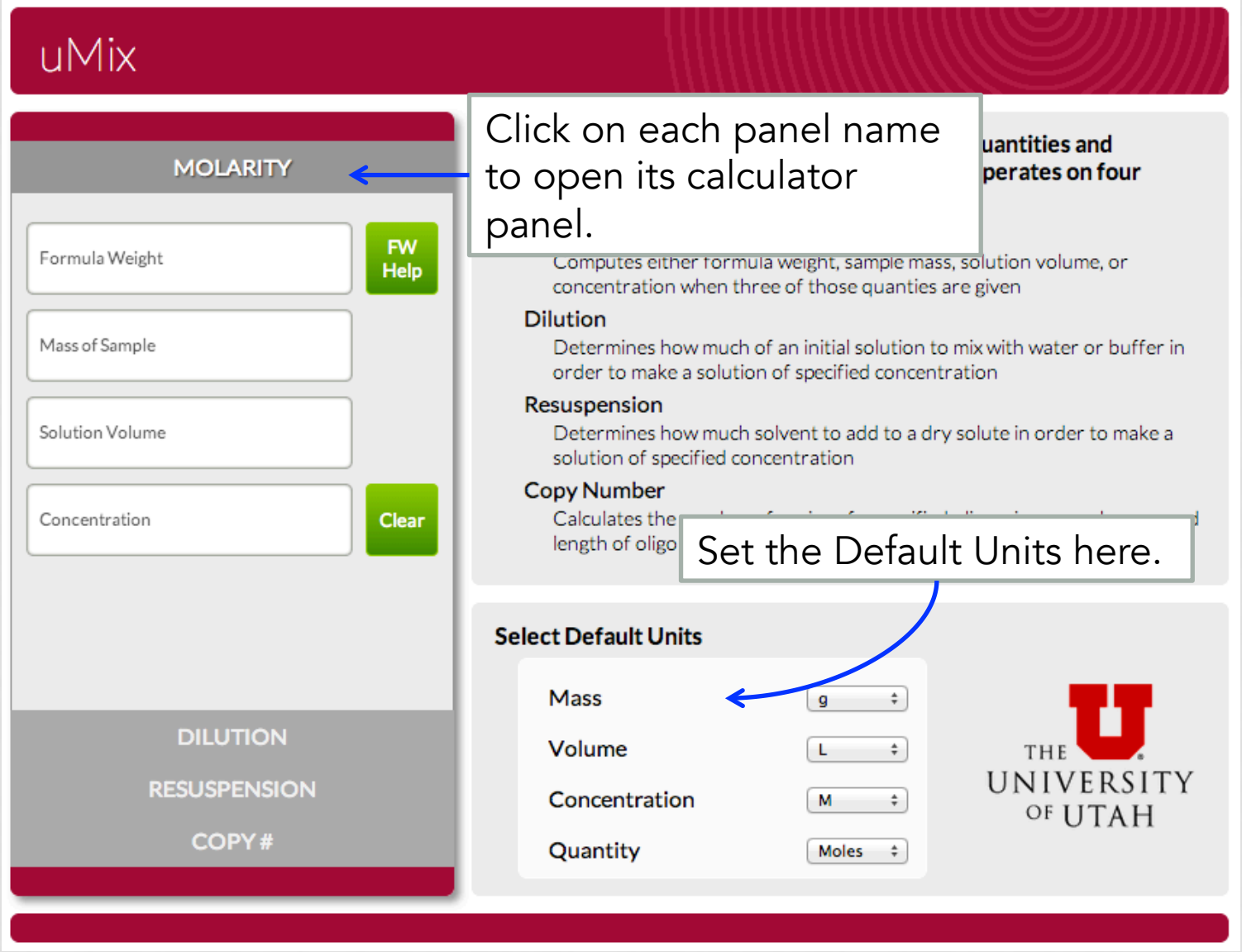
Examples: Each of the following is a valid input

- 5 nanograms, 5 ng, 5nanog, and 5 ngram
- 3 microliter, 3ul, 3µL, and 3microl (Lower case 'u' is the easiest input for micro.)





Interface


uMix
MOLARITY
Formula Weight
FW Help
Mass of Sample
Solution Volume
Concentration
Clear
DILUTION
RESUSPENSION
COPY #
Click on each panel name to open its calculator panel.
uantities and
perates on four
Computes either formula weight, sample mass, solution volume, or concentration when three of those quanties are given
Dilution
Determines how much of an initial solution to mix with water or buffer in order to make a solution of specified concentration
Resuspension
Determines how much solvent to add to a dry solute in order to make a solution of specified concentration
Copy Number
Calculates the
length of oligo
Set the Default Units here.
Select Default Units
Mass
g
Volume
L
Concentration
M
Quantity
Moles
THE UNIVERSITY OF UTAH

Molarity Panel

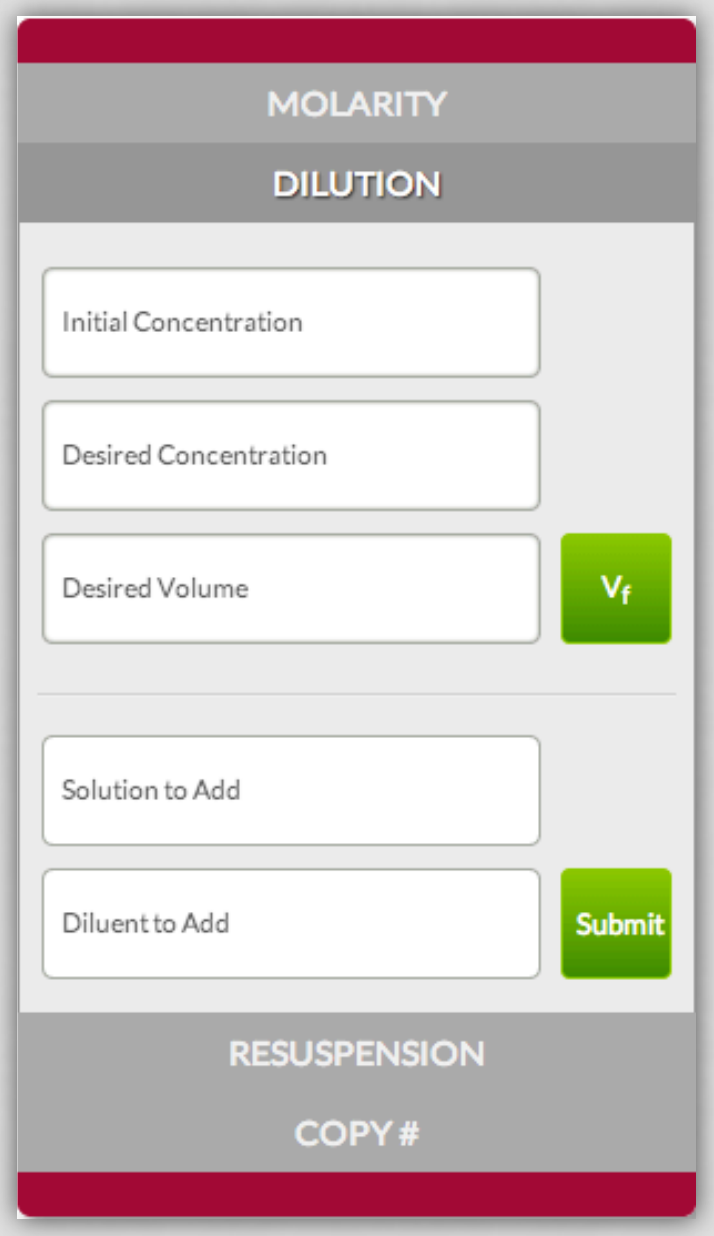
The primary purpose of the Solutions Molarity panel is to calculate the molar concentration of a solution with specified volume and solute. It can also function to calculate any one of the four values if given the other 3.

How it works

1. Input values for 3 of the 4 cells.
2. The 4th value will be calculated and the cell with calculated value will flash green.

Formula Weight Side Panel

Clicking on the green button to the right of the Formula Weight input opens the Formula Weight Panel. From this panel, uMix can calculate the Formula weight of any compound from its Chemical Formula (i.e. H2O).



Dilution Panel

The Dilution panel determines how much water or buffer to add to a stock solution in order to obtain a solution of specified concentration.

Two different calculations

V_f

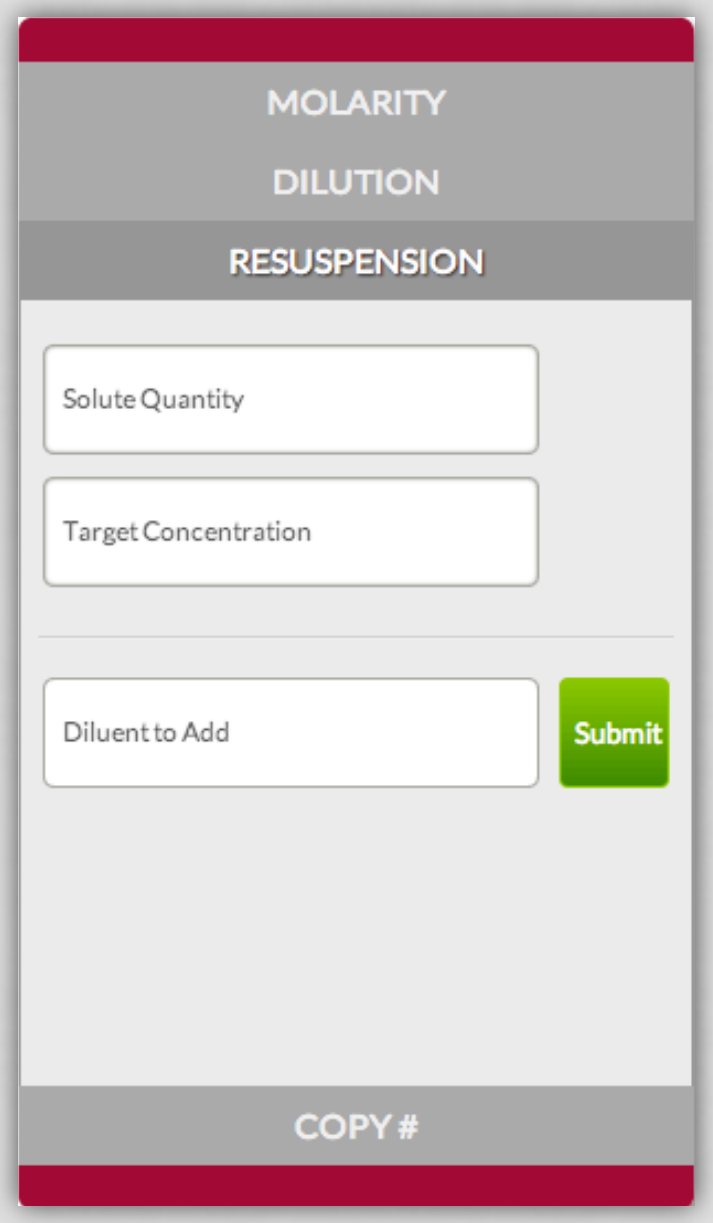
Use this option if you would like to make a specific volume of the final solution

V_i

Use this option if you would like to dilute all of the stock solution.

How it works

1. Select whether to use V_f or V_i by clicking the green button.
2. Input appropriate values into the first 3 cells.
3. Click the green Submit button.



Resuspension Panel

The Resuspension panel determines how much water or buffer to add to a specified quantity of dried solute in order to obtain a solution of specified concentration.

How it works

1. Input appropriate values into the first 2 cells.
2. Click the green Submit button.

Copy Number Panel

The Copy Number panel determines the number of copies of a DNA or RNA sequence present in a dried sample of specified mass.

How it works

1. Input appropriate values into the first 3 cells.
2. Select template type.
3. Click the green Submit button.

Software Philosophy

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- Software is free to use, without requirement of registration
- Please respect our work and cite our publications or software in manuscripts, presentations, or posters.

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