**Tip Sheet: Creating Stimulus Wave Files**

Early in the semester, you will be using pre-saved stimulus waves such as "StepPulse_DAC" and "EPSC_single_DAC" to deliver stimulus currents to your cells. As we progress through the semester, you will need to begin creating your own stimulus waves to accomplish your particular experimental objectives. This is a fairly simple process.

You must first have saved your experiment as an unpacked experiment. Otherwise, there will be no available directory to store your newly created wave.

Now, locate the "DACPulses" window in IGoR Pro.   It gives you several options for creating stimulus waves shaped like square waves, postsynaptic currents, ramps, etc. We will be using primarily Train waves and PSC waves.
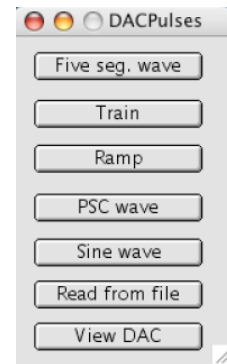
Click the "Train" button to create a train of square step pulses. You will see the following dialog box:
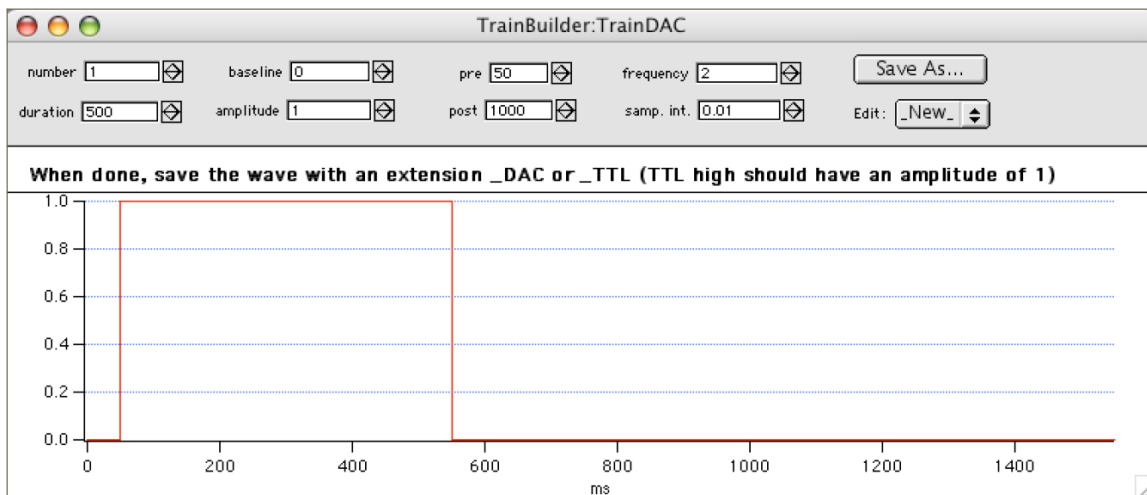
Set "number" to the number of step pulses you want in the train. Set this to 1 if you want to deliver a single step pulse.   Leave baseline at '0' and leave amplitude set at '1'.   The value of "pre" is the number of milliseconds before the first step pulse, and the value of "post" is the number of milliseconds after the last step pulse.   "Duration" sets the duration of the step pulse in milliseconds, and "frequency" sets the frequency of step pulses in a multi-step train.

As you change these parameters, the stimulus wave you have specified will be displayed in the window. When you have created the stimulus wave that you want, you will need to save it as a new file. Click on the "Save As" button to bring up this dialog box:
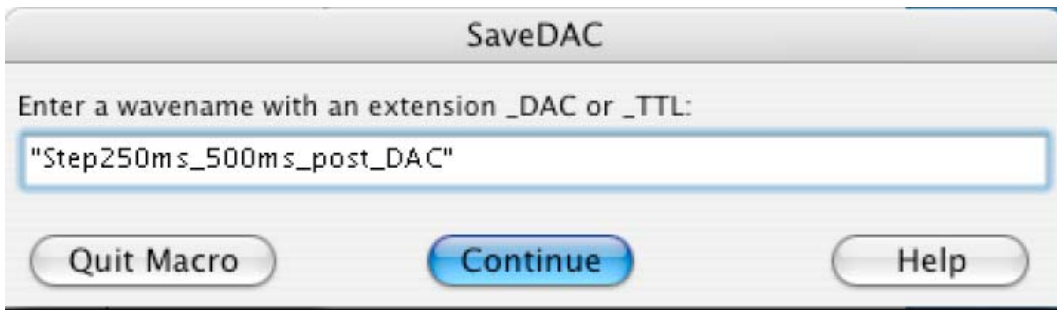
Give your new stimulus wave a descriptive name. The name must begin with a letter and cannot have spaces. The name of your wave must end in _DAC as shown in the above example. Click "continue" when you are ready.

Once you have saved this stimulus wave, you can select it in the pull-down menu in the ADC_DAC Control panel, just as you select any other stimulus wave (see figure below). Remember that the amplitude of these waves is determined by the multiplier value to the right of the wave name.