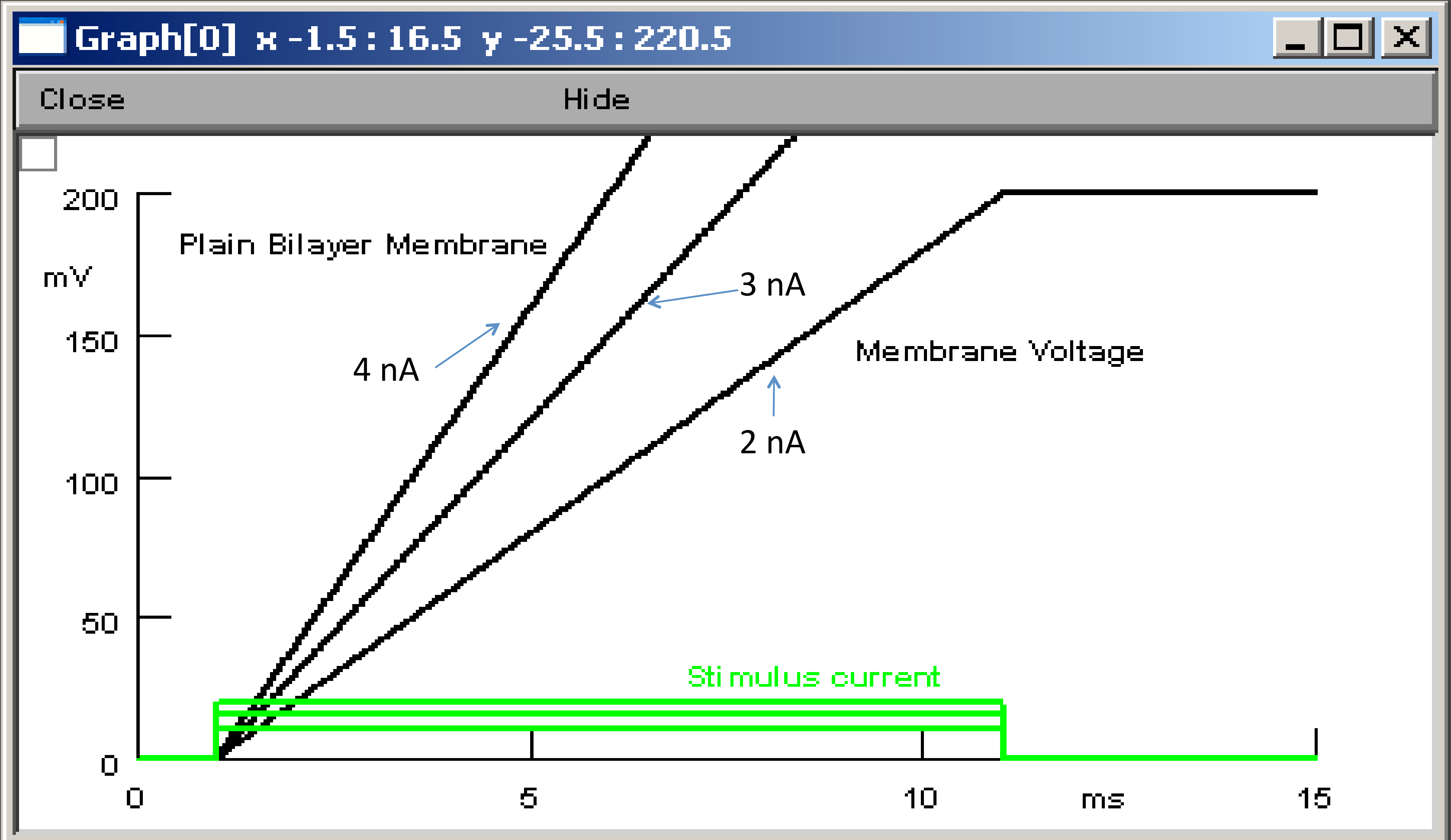
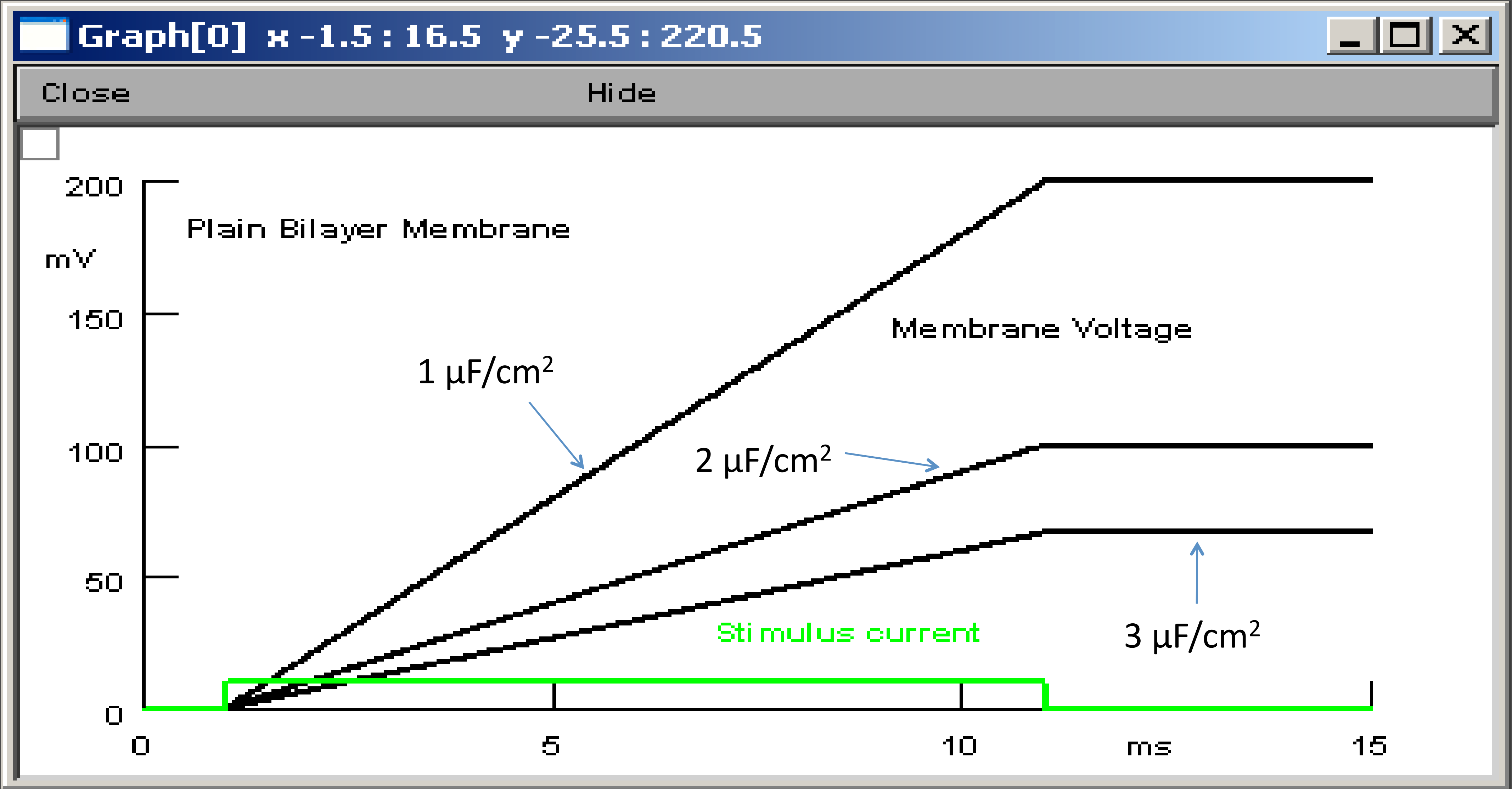
Completed Lab E

With A Sampling of the Bonus



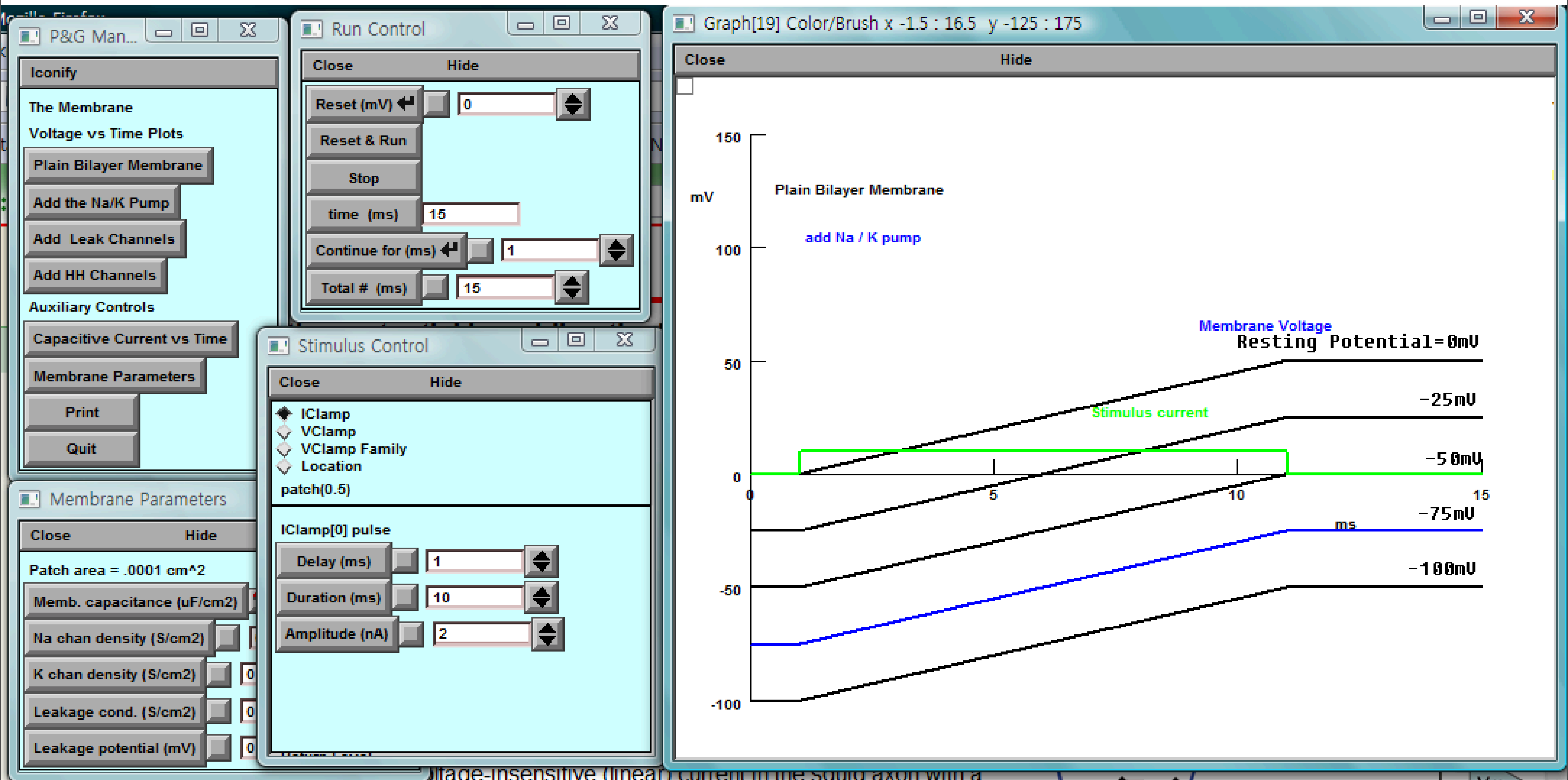
[dV/dt] = Icap/C;

The slope of the voltage change should be directly proportional to the current amplitude according to the above equation where the change is [dV/dt] and the current amplitude is Icap (for here, since assuming perfectly closed membrane bilayer).



As stated previously in the tutorial, the membrane voltage change [dV/dt] is inversely related to the size of the capacitance. It is shown here that *increase* in the size of the membrane capacitance *decreases* the value of [dV/dt], which validates the concept.

Experiment2.Establish a resting potential



The value of the resting potential does not affect the slope of the voltage ramp in response to a current pulse

Bonus Problem

Changed the amplitude of the currents injected (Left: 2 nA, Right: 5 nA) and the duration of the stimulus current was same. The increase in the stimulus current amplitude did increase the frequency of the firing rate, resulting in greater number of action potentials per given time period, which is consistent with the concept. However, the peak membrane voltage for the greater amplitude current injection is smaller. This is possibly because the neuron does not have the time to fully carry out the action potential or recover from it so it does not fully reach its peak depolarized membrane potential.