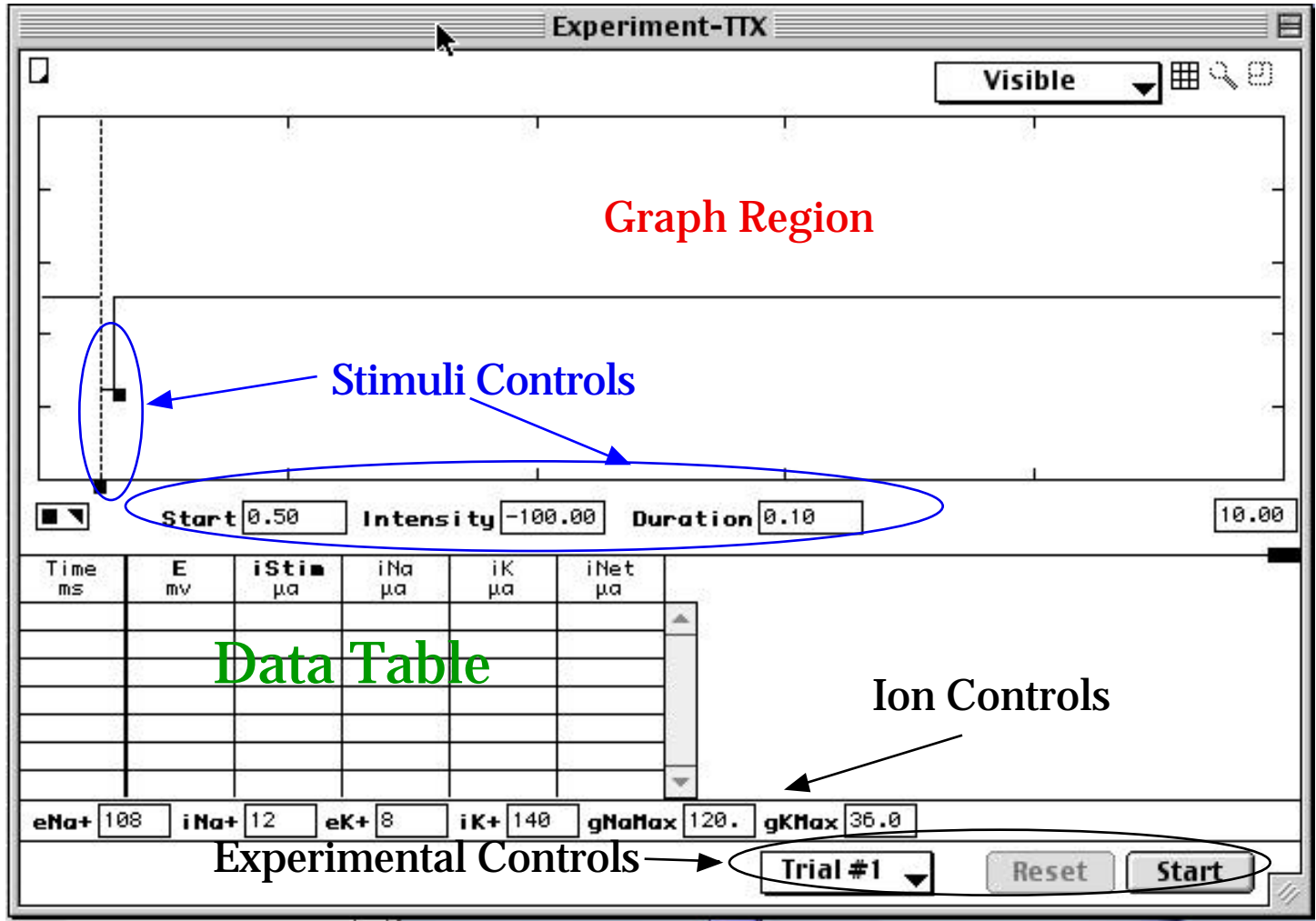


Axon Controls

There are four major components to the experiment summary window for the program:

- the **Graph Region**,
- the **Stimuli Controls**,
- the **Data Table**
- the Experiment Controls
- the Ion Controls



The **Graph Region**; will display your data as your experiment runs.

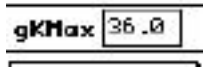
The **Data Table** ; contains all of the data generated from the current trial of the experiment. You can scroll the table to read values after the trial has finished.

The **Stimuli Controls**; are used to modify the stimulus parameters.

The **Ion Controls**; are used to modify the ion parameters. concentrations, conductance, etc..

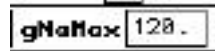
The **Experiment Controls**; are used to start, stop, or continue an experiment trial; to start a new experiment trial; and to switch back and forth between trials which have already been run.

TEA Simulation:



You can wipe out the Na channels by locating the gkMax box and changing its value from 36 to 0. Now start the simulation. In the laboratory, the K channels can be wiped out by applying a K channel blocker like tetraethylammonium.

TTX Simulation:



You can wipe out the Na channels by locating the gNaMax box and changing its value from 120 to 0. Now start the simulation. In the laboratory, the Na channels can be wiped out by applying a Na channel blocker like tetrodotoxin or saxitoxin.



Look at the manual “Axon manual.pdf”. for detail use of this program.

Questions you are required to answer indirectly are:

1. Tetraethylammonium chloride (TEA) is a biotoxin which acts on the potassium channels. Using the AXON program, simulate the effects of TEA at various doses. To do this, vary the potassium conductance and stimulate the axon. Discuss in detail how TEA effects the transmission of APs using your data to support your conclusions.
2. How does the strength and polarity of the stimuli change the AP while under the influence of TEA? Can a stronger stimuli negate the effects of TEA? Discuss this in detail and back it up with your data.
3. Using specific examples of data generated from the axon simulation, describe the effect of TTX on AP generation and synaptic transmission.
4. Describe, using data generated last week, the relationship between E_k and E_{na} and resting membrane potential.
5. Does TEA and/or TTX have a medicinal use? Are they currently used in clinical settings? If so, how and where?
6. What is the threshold stimulus in the axon simulated in this program. How does it compare to that of the Action Potential Exper. v2.0?

