Pre-Reqs:

Computes:

none	**Ramp**	*Description*: Current injection of increasing intensity at a rate much slower than the time constant of the neuron. *Details*: Ramp of 25 pA per 1 second, terminated after a series of action potentials are acquired.	ap count
non-is rheobase	**Long Square**	*Description*: Square pulse of a duration to allow the neuron to come to steady-state. *Details*: 1 s current injections from -110 pA (or -190 for some Pvalb neurons) to rheobase + 160 pA, in 20 pA increments.	Vss(i)TABLE
non-is none	**Short Square**	*Description*: Square pulse brief enough to elicit a single action potential. *Details*: 3 ms current injections used to find the action potential threshold within 10 pA.	thresh i
non-is rest V I-bias x3	**Short Square** Hold -60mV Hold -70mV Hold -80mV	*Description*: Short pulse stimulus with stepped holding potentials. *Details*: Bias current brings the neuron to steady state potentials of -60 mV or -80 mV. If the neuron rests at -80 mV or -60 mV, the neuron is held at -70 mV.	I-th(Vhold)
thresh i none	**Short Square** Triple	*Description*: Three short pulse stimuli in rapid succession. *Details*: Three threshold stimuli of 3 ms duration are delivered at decreasing frequencies from ~140 Hz to ~30 Hz.	
non-is rheobase	**Noise** 1 & 2	*Description*: Noise pulses offset with square current injections. *Details*: Pink noise generated from 2 seeds (1 & 2) scaled to three amplitudes, 0.75, 1, and 1.5 times rheobase. Additional details can be found in the Appendix.	
non-is rb	**Noise** Ramp to Rheobase	*Description*: Noise pulse offset with a ramp to rheobase current injection. *Details*: Noise with varying coefficients of variation, scaled to rheobase. Additional details can be found in the Appendix.	
non-is rb	**Square** 2 s Suprathreshold	*Description*: Suprathreshold long square current injections to analyze sustained action potential firing. *Details*: 2 s square current injections to rheobase + 40 pA and 80 pA. Additional details can be found in the Biophysical Models - perisomatic Technical White Paper.	
none	**Square** 0.5 ms Subthreshold	*Description*: Brief subthreshold square current injections used to determine membrane capacitance for biophysical models. *Details*: 0.5 ms square current injections to +/- 200 pA. Additional details can be found in the Biophysical Models - perisomatic Technical White Paper.	

Figure 3. Electrophysiology stimulus descriptions and details. The square 2 s suprathreshold and 0.5 ms subthreshold stimuli are further described in the Biophysical Model-perisomatic whitepaper located in "Documentation."