AP generating even w/o a current input?
magnitude of AP? 20 or 40?
duration of AP?

Homework 2

1. Implement Hodgkin-Huxley model in Matlab. Use a 500us depolarization pulse to evoke an action potential. Record the output as a plot of Vm vs. time. Submit the plot and the .m file.
   magnitude of current input?
2. Investigate the effect of different parameters changes on the AP shape and threshold. For each provide a supporting figure and a physiological explanation behind the response.
   a. Temperature only from Nernst? Na and K, but not leak (E_L)
   b. g_{Na} by $\bar{g}$ or m, n, and h?
   c. g_L
   d. g_K
   e. $[K_{out}]$
   f. $[Na_{out}]$

3. For each of the following changes to the AP propose one possible mechanism. Provide the Matlab simulation with the supporting figure and a physiological explanation.
   a. Repetitive firing
   b. Increased threshold
   c. Increased refractory time
   d. Increased AP amplitude