Channel Sensitivity Analysis in a Ventricular Myocyte Model

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JULY 30TH, 2012

Project Proposal

- Utilizing Shannon-Bers' ventricular myocyte model, through Matlab and Nimrod, this project aims to analyze the various parameters that are associated with each ionic channel in the cell. This analysis will be used to determine the effect and importance of each parameter on each channel. This analysis can eventually be used to aid in determining the best targets for pharmacological systems.
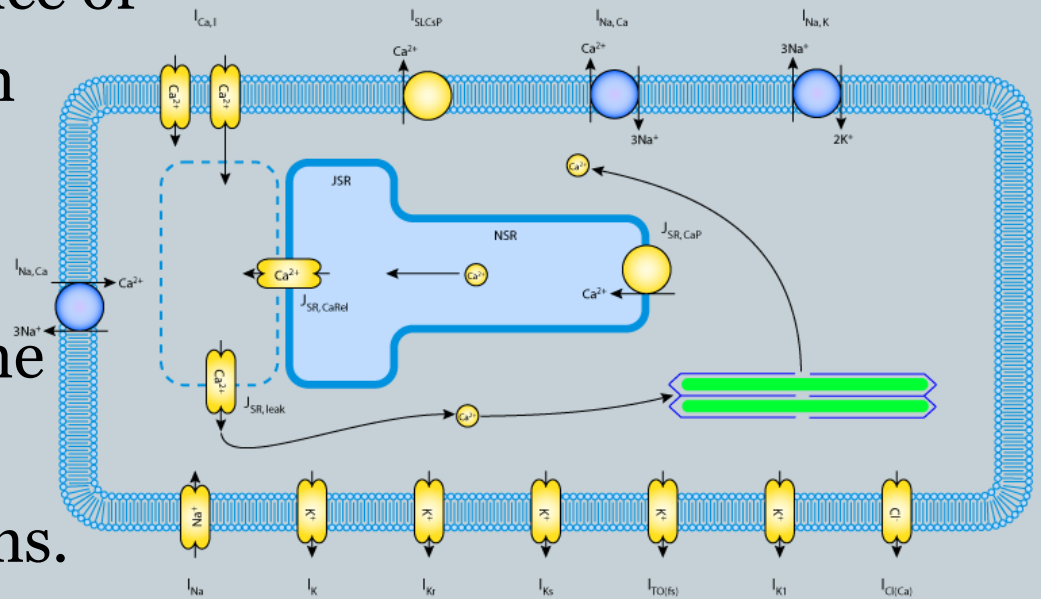
Progress

- Met up with Neil and Blair to work on an experimental design, to be used to display the data
  - There are two options that would work, one deals with a center point and reference, or star points, the other would be using latent hypercubes
- Re-adjusted experiments to be able to work with the new experimental design; began re-running parameter sweeps
  - The parameters are the same, but the interaction between them has been tweaked, so that the data will be portrayed better

Tentative Plans

- Finish up the parameter sweeps for the channels, according to the new experimental design
- Review sources pertaining to the experimental design
  - An article by Box, Hunter & Hunter
- Blair obtained an old version of Nimrod/E, so hopefully will be able to use it, once there is a working version of it
- May have to download & start using R, if/when Neil sends over some scripts for the design

Plans for the next 3 weeks

- After all the parameter sweeps are done, which should be really soon, I will start some post-analysis of the data
  - This will be able to be achieved, through the use of Nimrod/E and the help of Neil (and Blair)
- After I have the analysis of the data, I will be able to get a picture of what parameters affect the model the most, which will help me to interpret their significance within the cell
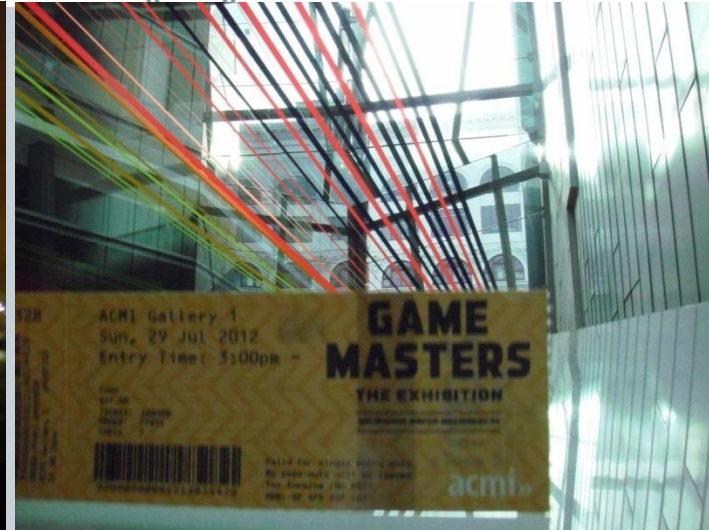
My Project's Journey

Successes!

- Able to clearly lay out an experimental design, that can be used to properly analyze the data

Roadblocks

- Now that I have a clear experimental design, I had to redo some of the channels, so that they work with the new data analysis

Olympic Fireworks & Game Masters!

Metal Gear Solid

Street performance!

Acknowledgements

- Monash University
  - David Abramson
  - Blair Bethwaite
  - All the lab members!
- UCSD PRIME and AIP
  - Peter Arzberger
  - Gabriele Wienhausen
  - Teri Simas
  - Tricia Taylor.
- UCSD Bioengineering
  - Anushka Mihailova