**Michelle Goodman’s Work during her Thesis Jan 2015 - Feb 2018**

Included in this respiratory is code generated by Michelle Goodman to complete the research in her thesis. The folders include:

1. Source files – This contains all base Matlab code for her research
2. Initial Data – Initial conditions data for some of the Matlab code (may not be used)
3. Documentation – Documents created weekly on an array of topic during the research
4. Output files – (Should be mostly empty) where any simulation saves data and figs created.
5. Source Thesis – Matlab files created specifically for the thesis figs and data.

**Main Run**

The main simulation file is: MOL\_PDE >1. Source Files > 10. Clean Up Of Run > Main\_run\_all.m

To run this file first change the AllDir.ParentDir to where the MOL\_PDE file is located. On run choose the number of models and which models you would like to run. To change the initial conditions (including the β(x) function) open the Inital\_Conditions.m.

Note this file does not run Koenigburger Model which is located separately: MOL\_PDE >1. Source Files > 15. Koe > MainRun.m

In general there exists 3 layers:

* The outer run layer (MainRun.m) which calls ODE45
* The mid layer (odefun\_XXX.m) which converts format for the inbuilt ODE function and applies a method of lines approach to discretise the spatial diffusion.
* The inner most layer (calc\_XXX.m)this uses the single cell dynamics to calculate the rate of change. Note this is vector sensitive.

**Other Files**

16. 2D contains unexplored 2D calculations

17. ToyClean is the toy models included in my thesis

12. AoP is the code for the Excitability Profile in thesis