**This repository contains the following MATLAB files:**

**Mathematical models:**

**- ohara\_human.m:** the main function for the O’Hara human adult ventricular myocyte model

**- dydt\_ohara.m:** contains differential equations for the model, solved by ode15s

**- paci\_ipsccm.m:** the main function for the Paci human iPSC derived cardiac myocyte model

**-dydt\_paci.m:** contains differential equations for the model, solved by ode15s

**-lr09\_guineapig.m:** the main function for the Lou-Rudy guinea pig ventricular myocyte model

**-dydt\_guineapig.m:** contains differential equations for the model, solved by ode15s

**-shannon04\_rabbit.m:** the main function for the Shannon rabbit ventricular myocyte model

**-dydt\_rabbit.m:** contains differential equations for the model, solved by ode15s

Main function defines simulation parameters, runs simulation by calling the dydt using ode 15s solver, and outputs the simulation results.

**- InitialCondition\_4models\_1Hz.mat:** contains a structural array with initial conditions for state variables of the 4 models, under 1 Hz electrical pacing.

**Cross-cell type regression model implementation**

**- crosscelltype\_regression\_iPSCCMtoAdult.m:** the main script that constructs a cross-cell type regression model from human iPSC-CM to human adult myocyte.

**-Metrics\_humanadult.mat:** metrics of adult human Action Potential and Ca2+ Transient

**-Metrics\_iPSCCM.mat:** metrics of human iPSC-CM Action Potential and Ca2+ Transient

**-PLS\_nipals.m:** performs partial least square regression

**-zscore.m:** performs z-normalization