This note is for the MATLAB codes for the parameter sensitivities in the CO-mediated sickle cell de-polymerization. For more details in the mathematical model equations and the parameter sensitivity analysis, please find the paper "Parameter Sensitivity Analysis for CO-Mediated Sickle Cell De-polymerization" in BIOMATH journal.

SickleCell4DE.m is the function program for the four differential equations. This will be called in the program producing Fig. 3.

SickleCellDE.m is the function program for the Traditional Sensitivity Functions (TSF) differential equations. This will be called in the main program and the programs producing individual figures for TSA analysis.

MainTSASickleCell.m is the main program that calls the ODE solver in MatLab to solve the TSF differential equations and plot all the figures in the traditional sensitivity analysis (TSA).

For the TSA, we simple run the main program "MainTSASickleCell.m" in the MatLab command window. The figures will be plotted on the screen, the figures and the data files will be saved in the current folder.

pCOSensMPSA.m is the function program for the ODE system. This will be called in the code pMYRK4COSensMPSA.m to solve for the ODEs.

pMYRK4COSensMPSA.m is the function program for solving the ODEs using the 4th order Runge-Kuta method manually with specific step sizes. This will be called in the main program for the MPSA analysis.

MainMPASickleCell.m is the main program that calls the ODE solver in MatLab to simulate the ODEs many times (default 1000), compute the objective values, classify the acceptable and unacceptable cases, calculate the PMFs and CDFs, and plot all the figures for the PMFs and CDFs.

For the MPSA, we simply run the main program "MainMPSASickleCell.m" in the Matlab command window. The figures will be plotted on the screen, the figures and the data files will be saved in the current folder.

The Fig#_XXX.m are the specific code to produce the individual figures (Figs. 3—12) in the journal paper.