

Inflammation Bolus Cont

This software in Matlab predicts concentrations of cytokines and monocytes in response to a bolus and continuous injection of LPS.

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Use this code under the MIT license (see below). Users of this code are also requested to cite the manuscript:

“Characterization of differences in immune responses during bolus and continuous infusion endotoxin challenges using mathematical modeling: Supporting Information”

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Files included in this repository reproduce Figure 6 in the manuscript cited above. The Arxiv version is included with the repository. To generate the plot:

- *Run the file “ModelRun.m”*
 - This MATLAB file pulls from other MATLAB files in the folder to load the bolus and continuous infusion data, model structure and parameters, ODE solver, and plotting functions.
 - *The first section of this code is for the continuous infusion model*
 - The file “meanctsdataplots.m” loads the mean and SD of the continuous infusion data and plots it on the figure in red.
 - The file “MeanCtsOptPars.mat” loads the optimal parameters for the mean continuous infusion model.
 - The file “cts_model_ic.m” loads the continuous infusion model initial conditions.
 - The file “cts_model_solver.m” solves the continuous infusion model.
 - The file “cts_model_plotsOPT.m” plots the time course of the model states in red and returns the R^2 value for each cytokine.
 - *The second section of this code is for the bolus model*
 - The file “meanbolusdataplots.m” loads the mean and SD of the bolus data and plots it on the figure in black.
 - The file “MeanBolusOptPars.mat” loads the optimal parameters for the mean bolus model.
 - The file “bolus_model_ic.m” loads the bolus model initial conditions.
 - The file “bolus_model_solver.m” solves the bolus model.

- The file “bolus_model_plotsOPT.m” plots the time course of the model states in black and returns the R^2 value for each cytokine.
- *The last section of the code plots the cytokine R^2 values for both the continuous infusion and bolus models in a legend on the plot.*