1. **Import & visualize data.**
   1. DataImport.m. This imports the tabularized data regarding the live-tracking of each filopodium at P40 and P60 respectively for the different genotypes and saves it to ./FiloData/AllData.mat. It also generates a number of plots to visualize the live-tracking data. The data is imported into a Data structure of the form Data.<mutant>.<time>.<type>

mutant: 'DLar' or 'LiprinA' or 'Syd1' or 'Trio' or 'WT'

time: 'P40' or 'P60'

type: 'sF' or 'ellF' (short- and long-lived filopodia)

Example: Data.DLar.P40.sF contains all data of short-lived filopodia at P40 for the DLar knockout mutant. The following data was stored 'LTimes' -Lifetimes; 'StartTimes' -when the filopodium emerged; 'EndTimes' -when it disappeared; 'GC' - which growth cone it belongs to.

1. **Parameter estimation** 
   1. Parameter **c2\_sF, c2\_ellF**: Can be computed using ‘FitFilopodiaLifetimes.m’, which fits the parameters to the filopodial lifetime data.
   2. Parameter **c1**: Can be computed using ‘PlotFiloNumbers.m’: Plots the number distribution of short- and long-lived filopodia and prints them into a LaTeX table (using the accessory function latexTable.m). Parameter c1 (birth rate parameter) is the mean number of (short- or long-) filopodia multiplied by its death rate (c2, above).
   3. Function **fF(t):** The fifth-order polynomial is fitted in the routine `Fit\_F\_t.m’. This routine also plots the other slow-scale function f\_FB(t,t\_half).
   4. Parameter **c4**: The routine `AnalyzeBulbousLifeTimes.m’ depicts the lifetime of bulbous tips and computes parameter c4 (death rate parameter) of bulbous tips.
   5. Parameters **B50**, **c5** and **r3(t):** We fitted the auto-inhibition model and its three parameters in the routine `FitFeedbackParameters.m’. The routine fits parameters for both a model without feedback (linear model) and a model with feedback by minimizing the Kullback-Leibler distance between the experimental- and model predicted probability densities of bulbous numbers at P60. Note, that the accessory routine 'PlotBulbousData.m' can be used to print the experimental number distribution of bulbous tips that is used in in this parameter estimation routine.
2. **Model Simulation**
   1. `SimulateGrowthCone.m’ excecutes stochastic simulations of the data-driven Markov Model. Input: mutant specification with possible entries 'WT', 'DLar', 'LiprinA', 'Trio' or 'Syd1'. Saves the simulations into the File './EnsembleData/Simulation\_<mutant>.mat'. Parameters of the model are loaded from the File 'AllParameters.mat', which can be generated by calling `writeAllParameters.m’
   2. `PlotSimulation.m’: This function plots the ensemble statistics of from the Markov Model simulations (solid red lines are medians, dotted black lines means, light- and grey areas denote the quartiles and 5-95 percentile range). Input: mutant specification with possible entries 'WT', 'DLar', 'LiprinA', 'Trio' or 'Syd1'. Requires that the simulations have been conducted such that the simulation files can be found in ./EnsembleData/