1. **Import & visualize data.**
2. Data Import: DataImportBulbous.m

This imports the tabularized data regarding the live-tracking of each bulbous filopodium at P60 for the different genotypes and saves it to ./AllData.mat. It also generates a number a plot to visualize the live-tracking data (number of bulbous tips per time instance). The data is imported into a Data structure of the form Output.<temperature>.<time>.<type>

mutant: 'T18C' or ' T25C ' or ' T29C '

time: 'P60'

type: 'Bulb' (bulbous tip)

1. Assess Lifetime data (Fig. 1F): PrintBulbousNumber.m

This plots the life time data distribution and starts the Kaplan-Meier estimator for the life times at the different temperatures (Fig. 1F). Survivial probabilities are saved to ./AllData.mat

1. **Parameter estimation.**
   1. EstimateBulbLifeTimesNew

Estimates rate parameters **c2** and **c5** that refer to the retraction rate of short-lived and synaptogenic bulbous tips. These go into ‘FitFeedbackParameters.m’ (lines 37-38).

* 1. PlotBulbousTipsPerLifeTimeThreshold

Makes Tables with the number distributions of short-lifed and synaptogenic bulbous tips. These go into ‘FitFeedbackParameters.m’ (lines 45-57)

* 1. FitFeedbackParameters

After putting the lifetimes and number distr. In, this routine estimates 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 a feedback model by minimizing the Kullback-Leibler distance between the experimental- and model predicted probability densities of bulbous numbers at P60. Time-dependent functions were taken from previous work (Özel et al. 2019, Dev Cell).

1. **Simulations**
   1. WriteAllParameters

Writes the data structure AllParameters.mat that is needed for simulation.

* 1. growthConeSim

Simulates the growth cone dynamics for a given temperature (T18C, T25C or T29C) for 3600 developmental minutes (i.e. from P40 to P100). Scaling of developmental- to real time is already implemented. Results are written into the folder ‘EnsembleData’ are plotted using the subroutine ‘plotSimulation.m’.

Note, that the code contains 2 extra (empty) reactions for numerical accuracy

* 1. PLotvsReference

Generates Figures 1G-H of the main manuscript after all temperatures have been simulated