This repository contains MATLAB scripts to generate **Figures SM.3A, SM.3B, SM.3D, SM.1D, and 2K**.

The following codes generate **Figures SM.3A**, **SM.1D (left hand-side plots)**, and **2K (top plot)**

**Main Script**

* **Figure\_SM\_3\_A\_Y1\_input.m**  
  This is the **main script** to run.  
  It:
  + Sweeps the input kmet (bar Y1) from 0 to 1.
  + Simulates the corresponding steady-state values of chromatin states.
  + Plots the output (e.g., \bar Da) as a function of the input.

**Model Functions**

* **Y1\_input\_function\_1.m; Y1\_input\_function\_2.m**  
  This function implements the **ODE model** for the chromatin regulatory system and returns the steady-state outputs for a given input level.

You can **tune model parameters** here, including e (epsilon) and ee (zeta).

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The following codes generate **Figures SM.3B**, **SM.1D (right hand-side plots)**, and **2K (bottom plot)**

**Main Script**

* **Figure\_SM\_3\_B\_W1\_input.m**  
  This is the **main script** to run.  
  It:
  + Sweeps the input u1 (bar W1 at time 0) from 0 to 4.
  + Simulates the corresponding steady-state values of chromatin states.
  + Plots the output (e.g., \bar Y1) as a function of the input.

**Model Function**

* **W1\_input\_function.m**  
  This function implements the **ODE model** for the chromatin regulatory system and returns the steady-state outputs for a given input level.

You can **tune model parameters** here, including e (epsilon) and ee (zeta).

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The following codes generate **Figure SM.3D**.

**Main Script**

* **Figure\_SM\_3\_D\_T\_input.m**  
  This is the **main script** to run.  
  It:
  + Sweeps the input mu1 (bar T at time 0) from 0 to 4.
  + Simulates the corresponding steady-state values of chromatin states.
  + Plots the output (e.g., \bar Y1) as a function of the input.

**Model Function**

* **T\_input\_function.m**  
  This function implements the **ODE model** for the chromatin regulatory system and returns the steady-state outputs for a given input level.

You can **tune model parameters** here, including e (epsilon) and ee (zeta).