

How to Run the Leukemia Control Simulations

Step-by-Step Instructions

1 Open the Simulink Model

Open the file named:

- SMC_Leukemia_nonmono.slx, or
- SMC_ISTSMC_ATSMC_IASMC_Leukemia_nonmono.slx
in **MATLAB R2024b or later**.

2 Set Simulation Stop Time

At the top of the Simulink window:

- Find **Stop Time**
- Set it to: 50

3 Run the Simulation

Click **Run** ►

Observe the system responses in the Scope blocks:

- $N(t)$: Healthy cells
- $L(t)$: Leukemic cells
- $h(t)$: Drug level / control input

4 Controllers Already Included

All controllers are implemented using **MATLAB Function blocks**, so:

- ✓ No extra setup required
- ✓ Only click **Run** to simulate
- ✓ All model parameters are pre-loaded inside the model

Output Interpretation

- Goal: $L(t) \rightarrow$ decreases to near zero
- Goal: $N(t) \rightarrow$ stays above safe minimum
- Controller ensures drug use remains within allowable limits

Contact

If any issues arise during execution, please contact:

Muhammad Munir Butt — mmunirbutt@gmail.com

