

Introduction to Modeling & SBML

This tutorial will introduce some essential ideas in modeling biochemical networks using ordinary differential equations. The session will be divided into the following topics:

1. Introduction to different types of modeling
2. Biochemical models
3. Stoichiometry matrix, construction and properties
4. Reaction rate laws
5. The fundamental equation of chemical ODE based models
6. Basic properties of chemical systems
7. Solving the ODEs, time course and steady state
8. Types of analysis on the systems of ODEs
 - a) Structural analysis
 - b) Bifurcation analysis
 - c) Sensitivity analysis
 - d) Data fitting
9. Computational aspects – Software tools
10. Introduction to SBML
11. Generating and reading SBML