

System Biology Training

System Biology Training Program



NTHRYS provides System Biology Training Program at its Hyderabad facility, Telangana. Please refer below for more details including Fee strctures, Eligibility, Protocols and Modules etc.,. Please do call / message / whatsapp for more details on +91-7993084748. Eligibility: BSc / BTech / MSc / MTech / MPhil / PhD in relevant field studying or completed students.

What do NTHRYS Provide in System Biology Training Program Accommodation Assistance

Please communicate with our Academic Services Department via whatsapp on +91-7993084748 for any queries.

Modules

This field has <u>Research Training</u> as well as <u>Industrial Training</u> Programs.

Module 1: Introduction to Systems Biology

+

This module introduces the foundational concepts of Systems Biology, focusing on the integration of molecular biology, bioinformatics, and computational modeling to understand complex biological systems.

• Overview of Systems Biology - defining systems biology, its scope, and its significance

in modern science

- Basic Principles understanding the systems approach to biological research (feedback loops, network motifs)
- Introduction to Systems Modeling basic concepts in mathematical modeling of biological systems (differential equations, stochastic models)
- Key Tools and Techniques an introduction to the primary computational tools and techniques used in systems biology (CellDesigner, Systems Biology Markup Language SBML)

Duration: 2 Weeks

Fee Structure: Rs 16,000

Module 2: Network Analysis in Systems Biology

+

This module explores the construction, analysis, and interpretation of biological networks, which are central to understanding complex interactions within cells and across biological systems.

- Biological Network Concepts types of networks in biology (gene regulatory networks, protein interaction networks, metabolic networks)
- Network Construction methods and tools for building biological networks from high-throughput data (Cytoscape, NetworkX)
- Network Analysis Techniques analyzing network properties and dynamics (centrality measures, network motifs)
- Case Studies in Network Analysis practical applications of network analysis in research (using real datasets to uncover insights into cellular processes)

Duration: 3 Weeks

Fee Structure: Rs 35,000

Module 3: Computational Modeling and Simulation

+

This module delves into the quantitative modeling and simulation techniques used to predict the behavior of complex biological systems, which are essential for hypothesis testing and the design of experiments.

- Mathematical Modeling introduction to the use of differential equations and agentbased models to describe biological processes
- Simulation Tools training on specific computational tools for simulating biological models (COPASI, VCell)
- Parameter Estimation techniques for estimating parameters from experimental data to refine models and improve their predictive accuracy
- Model Validation strategies for validating models against experimental observations to

ensure they accurately reflect biological reality

Duration: 4 Weeks

Fee Structure: Rs 45000

Module 4: Omics Data Integration

+

This module focuses on the strategies and computational methods for integrating genomic, transcriptomic, proteomic, and metabolomic data to gain a holistic view of biological systems.

- Introduction to Omics Technologies overview of various omics technologies and their applications in systems biology
- Data Preprocessing and Normalization essential techniques for preparing diverse omics data for integration
- Integration Methods exploring statistical and computational approaches for combining datasets from multiple omics platforms (multi-omics integration platforms, bioinformatics tools for data merging)
- Case Studies in Omics Integration real-world examples of how integrated omics data has been used to solve complex biological questions

Duration: 4 Weeks

Fee Structure: Rs 50,000

Please choose a suitable time slot and inform our team via WhatsApp on +91-8977624748 (located at the top right corner) to receive the payment link for fee payment and slot confirmation.