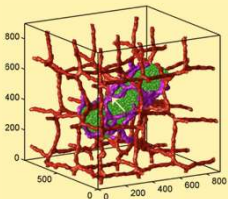


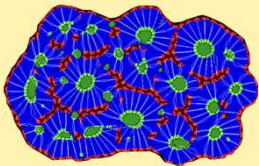
14th User Training Workshop

Developing Multi-Scale, Virtual Tissue Simulations with CompuCell3D

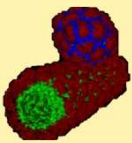
August 11th - 17th, 2019
Indiana University, Bloomington, IN, USA



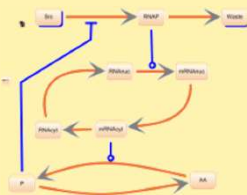
Vascular Tumor Growth



Somitogenesis



Polycystic Kidney Disease



Biochemical Network Modeling

Background: Mechanistic modeling is an integral part of contemporary bioscience, used for hypothesis generation and testing, experiment design and interpretation and the design of therapeutic interventions. The CompuCell3D modeling environment allow researchers with modest programming experience to rapidly build and execute complex Virtual Tissue simulations of development, homeostasis, toxicity and disease in tissues, organs and organisms, covering sub-cellular, multi-cell and continuum tissue scales. Virtual Tissue simulations developed using CompuCell3D run on Windows, Mac and Linux. CompuCell3D is open source, allowing users to extend, improve, validate, modify and share the core software. For more information please visit: www.compuCell3d.org

Goal: By the end of this one-week course, participants will have implemented a basic simulation of their particular biological problem of interest. Post-course support and collaboration will be available to continue simulation development

Topics: Python scripting. Introduction to Reaction-Kinetics (RK) models. Introduction to SBML. Introduction to Virtual-Tissue simulations. Introduction to CompuCell3D. Basics of model building. Combining RK and Virtual-Tissue models. Extending CompuCell3D. Building a basic simulation of your system.

Format: The workshop will include a limited number of lectures and numerous hands-on computer tutorials. Each attendee will also present a mini-talk on their problem of interest. There will be concurrent sessions for basic and advanced modelers.

Instructors: James A. Glazier (Indiana University), Julio Belmonte (North Carolina State University), Maciek Swat, Juliano Gianlupi (Indiana University), Andy Somogyi (Indiana University).

Target Audience: Experimental Biologists, Medical Scientists, Biophysicists, Mathematical Biologists and Computational Biologists from advanced undergraduates to senior faculty, who have an interest in developing multi-scale Virtual-Tissue simulations, or learning how such simulations might help their research. No specific programming or mathematical experience is required, though familiarity with a modeling environment (e.g. Mathematica®, Maple®, Python, or Matlab®) and how to represent basic concepts like diffusion and chemical reactions mathematically, will be helpful.

Note: An Introductory Python Tutorial will take place on August 11th. If you already know Python, you may skip this part of the workshop.

Fees: There is no registration fee. We will provide coffee, tea, lunch, snacks and workshop materials.

Registration: Enrollment is limited and by application only. Kindly apply online with a c.v., a brief statement describing your current research interests and the specific problem you would like to model. Students should also include a letter of support from their current advisor. Please submit all application materials electronically at <https://goo.gl/forms/lGMPVFrjhHZFYGdJ3> by **June 1st, 2019**.

Facilities: The workshop will be held at Indiana University, Bloomington, IN, USA. The nearest airport is Indianapolis, IN. Participants will be able to connect to the Internet using their own laptops.

For more information, please contact: CompuCell3D Team (compuCell3d.iu@gmail.com).

Supported and funded by: