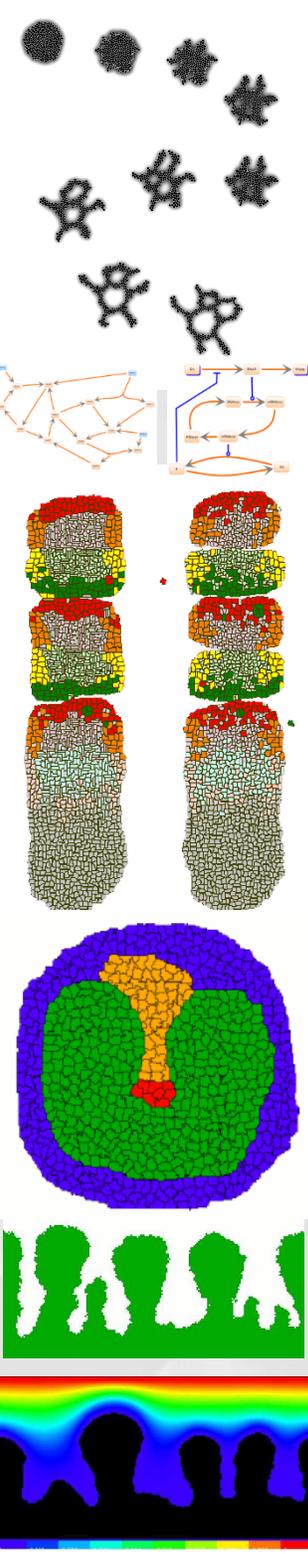


Joint Training Workshop Developing Multi-Scale, Multi-Cell Biological Simulations with CompuCell3D and SBW

July 30th-August 3rd 2012

Indiana University & The Hamner Institutes for Health Sciences
Research Triangle Park, NC, USA



Background: Computational modeling is becoming an integral part of contemporary bioscience. The Glazier – Graner - Hogeweg (*GGH*) model as implemented in the modeling environment, CompuCell3D allows researchers to rapidly build complex models of multi-cell processes in development and disease with user-selectable resolution, from sub-cellular compartmental models to continuum models of tissues. To efficiently link to sub-cellular scale users build biochemical reaction models using SBW and use exported models in the SBML format to control properties of simulated cells in CompuCell3D. CompuCell3D and SBW are simulation environments that target complementary areas of biological modeling. By combining the capabilities of both frameworks users can build truly multi-scale models of tissues, organs or organisms with a minimal amount of coding. CompuCell3D and SBW are open source, allowing users to extend, improve, validate, modify and share the core software. For more information please visit: compucell3d.org (CompuCell3D) or sys-bio.org (SBW).

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

Topics: Introduction to Reaction-Kinetics models. Introduction to SBW, Simulation, Network design tools and SBML. Introduction to *GGH* modeling. Applications of *GGH* modeling. Introduction to CompuCell3D. Python scripting. Basics of model building. Extending CompuCell3D. Building a basic simulation of your system.

Format: The workshop will consist of a limited number of lectures and extended hands-on computer tutorials.

Instructors: Herbert Sauro (Univ. Washington), Maciej Swat, Julio Belmonte, Abbas Shirinifard, James Sluka, James A. Glazier (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-cell, multi-scale computational models, or learning how such models might help their research. No specific programming or mathematical experience is required, though familiarity with some modeling environment (e.g. Mathematica®, Maple®, Matlab®) and how to represent basic concepts like diffusion and chemical reactions mathematically, would be helpful.

Fees: There is no registration fee. We will provide workshop documents.

Application and Registration: Enrollment is limited and by application only. To apply, please send a c.v., a brief statement of your current research interests and of the specific problem you would like to model. Students and postdocs should also include a letter of support from their current advisor. Please submit application materials electronically to Maciej Swat (mswat@indiana.edu) by June 1st, 2012.

Facilities: The Hamner Institutes for Health Sciences, Research Triangle Park, NC.

For More Information Contact: Maciej Swat (mswat@indiana.edu) or visit compucell3d.org.

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