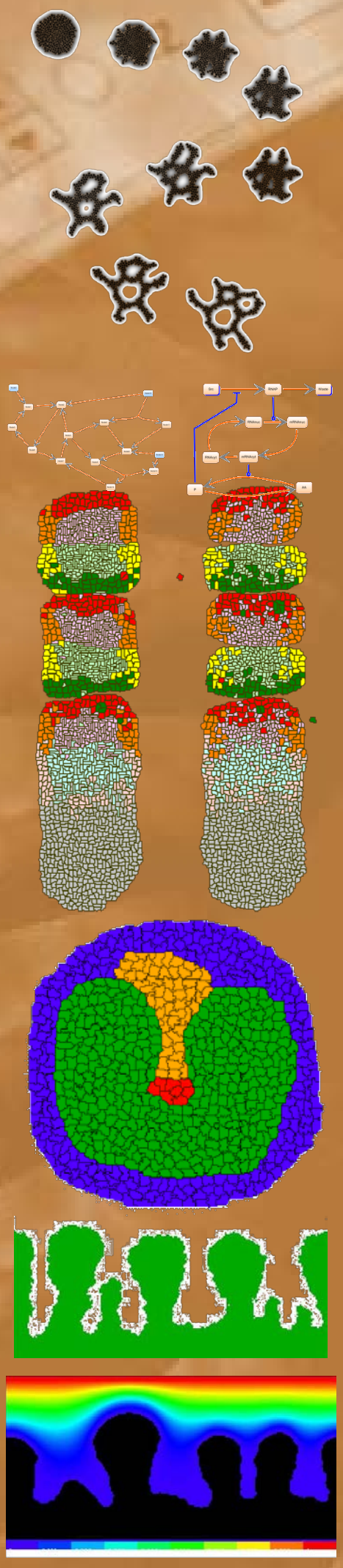
10th User Training Workshop
Developing Multi-Scale, Virtual Tissue Simulations with CompuCell3D and Systems Biology Workbench

August 11th—August 16th, 2014

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



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 modeling environments, CompuCell3D and SBW work together to allow researchers with modest programing experience to rapidly learn to 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. Simulations written using these environments are compact and run on Windows, Mac and Linux, desktops and clusters, and take advantage of multicore and GPU acceleration. CompuCell3D and SBW are open source, allowing users to extend, improve, validate, modify and share the core software. For more information please visit: www.compucell3d.org (CompuCell3D) and www.sys-bio.org (SBW)

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 SBW, Simulations, Network design tools and 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 her/his problem of interest.

Instructors: Herbert Sauro (UW); Julio Belmonte, Xiao Fu, James A. Glazier, James Sluka, Maciej Swat (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, Logo or Matlab®) and how to represent basic concepts like diffusion and chemical reactions mathematically, will be helpful.

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

Application and Registration: Enrollment is limited and by application only. To apply, please send a c.v., a brief statement describing your current research interests and the specific problem you would like to model. Students and postdocs should also include a letter of support from their current advisor. A very limited amount of travel support may be available for student and postdoctoral participants. If travel support is being requested, please include a statement documenting need and amounts requested. Please submit all application materials electronically to Maciej Swat (mswat@indiana.edu) by June 10st, 2014.

Facilities: The workshop will be held at The Hamner institutes of Health Sciences (www.thehamner.org) Participants will be able to connect to the Internet using their own laptops.

For more information, please contact: Maciej Swat (mswat@indiana.edu).

Or visit: www.compucell3d.org

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