



# 2025 CompuCell3D Multicell Virtual Tissue Modeling ONLINE Summer School & Hackathon

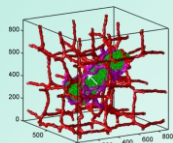


**Intro to Python: July 19<sup>th</sup>, 2025 (Sat)**

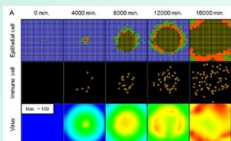
**Basic CompuCell3D: July 28<sup>th</sup> – Aug. 1<sup>st</sup>, 2025 (Mon – Sun)**

**Advanced CompuCell3D: Aug. 4<sup>th</sup> – 6<sup>th</sup>, 2025 (Mon – Wed)**

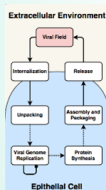
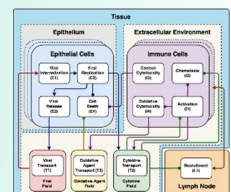
**Model-Building Hackathon: Aug. 8<sup>th</sup> – 10<sup>th</sup>, 2025 (Fri – Sun)**



Vascular Tumor Growth



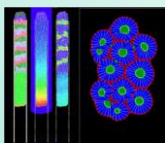
Viral Infection Modeling



Biochemical Networks



Cell Migration Modeling



Developmental Bio

**Background:** Mechanistic agent-based 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 allows researchers to rapidly build and execute complex Virtual Tissue simulations with minimal programming experience. CompuCell3D enables biological simulations from subcellular to tissue scales, supporting explicit cell shapes, cell migration, contact-mediated cell interactions, soluble signals, and complex cell state dynamics (gene regulatory, signaling, and metabolic networks). CompuCell3D natively supports SBML, Antimony, and MaBoSS network model integration. Try out some example models online at NanoHub: <https://compucell3d.org/Models-nanoHub>. By the end of the course, participants will have implemented a simulation of their biological problem of interest. Post-course support and collaboration will be available to continue simulation development.

**Course Goals:** The workshop will introduce new users the basics of multicellular modeling using CompuCell3D. Topics include principles of biological model building, Cellular Potts modeling methods, the fundamentals of working with CC3D, and practical examples of diverse biological systems. Additional topics include a variety of high-level modeling options and features of CompuCell3D, such as biochemical network modeling with CC3D, cell compartments and epithelia, links and collective cell migration, tissue folding, model parameterization, and more.

**Format:** Daily Zoom classes, held from 10:00 AM to 5:00 PM eastern daylight time (UTC-04:00). Each day will feature three instructional modules, with time for Q&A with the instructors at the end of each day.

**Target Audience:** Experimental Biologists, Medical Scientists, Biophysicists, Mathematical Biologists, Bioengineers, and Computational Biologists (advanced undergraduates to senior faculty) who want to develop or learn more about Virtual-Tissue simulations. No specific programming or mathematical experience is required.

**Registration:** Enrollment is limited & by application only. Kindly apply by **June 1st**, at <https://tinyurl.com/CC3D2025> or the **QR code** above. Registrants may apply for one or both weeks of the workshop. **Application Fee: \$25.00 USD. Please see website below for details.**

For more information, visit: [www.compucell3d.org/Workshop25](http://www.compucell3d.org/Workshop25)

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