

Meeting: 1003, Atlanta, Georgia, MAA CP S1, MAA Session on Meeting the Challenge: Relationship Between Mathematics and Biology in the 21st Century

1003-S1-1582 **Suman Ganguli*** (sganguli@itsa.ucsf.edu), 513 Parnassus Ave., UCSF Biopharmaceutical Sciences, Box 0446, San Francisco, CA 94143. *Agent-Based Modeling as a Tool for Teaching Computational Modeling of Biology.*

We discuss agent-based modeling (ABM) in biology, with a focus on using ABM as a teaching tool. Most mathematical and computational biology consists of differential equations models. Working with differential equations, however, is unintuitive for most students. This hampers the teaching of mathematical and computational modeling. Agent-based modeling is an alternative approach to modeling complex systems, in which systems are modeled with discrete “agents” which have rules for interacting with each other. Within biology, ABM has natural applications in fields such as epidemiology, ecology, and immunology, and is an excellent tool for introducing students to computational models of biological systems. This is facilitated by the existence of software platforms for agent-based modeling. In particular, StarLogo is a software platform designed to allow students to work with agent-based models. By experimenting with, modifying, and ultimately creating models in StarLogo, students can gain valuable aspects of mathematical and computational literacy, including experience with modeling and programming. Ultimately, students can use ABM and StarLogo to develop their own research projects. (Received October 05, 2004)