5th Active LENS Workshop: Summer 2019

The 5th annual Avida-ED Active LENS Workshops will be held this summer. This year, we are offering two options: one, at the University of Texas, Austin, June 12-14, 2019 and one at Michigan State University August 7-9, 2019 in East Lansing, MI. The purpose of this workshop is to train instructors in the use of the Avida-ED software package, developed to help students learn about evolution and the nature of science, so that workshop participants can both implement classroom interventions using this software and also train other educators. Participants will learn to use Avida-ED and how to best incorporate it into courses that they teach. Travel and expenses related to the workshop will be covered for the 20 participants for each workshop as part of an NSF-funded IUSE grant. Selection priority will be given to *teams of two*, but we will also consider applications from individuals.

Avida is a digital evolution software platform used to study evolutionary processes, and harness evolution to solve engineering problems. Avida-ED is a free, user-friendly, browser-based version of Avida developed specifically for educational purposes, with a graphical user interface and visualizations that allow the user to observe evolution in action. (See http://avida-ed.msu.edu/ for more information.) Organisms within this software are self-replicating computer programs, competing for computational resources supplied by the environment. Their replication is imperfect, resulting in mutations in some of their offspring, which may alter the ability of those organisms to make use of their environmental resources. Populations studied over the course of generations therefore display all of the elements necessary for evolution by natural selection: variation, inheritance, selection, and time.

Avida-ED has been developed for undergraduates and advanced placement high school students to learn about the nature of science and evolution in particular. Users have significant control of the environment, and are able to change parameters such as the world size, the mutation rate, and what resources are available. Individual organisms can be saved in a virtual freezer, analyzed individually to watch how they perform tasks and replicate themselves, and used to start new evolutionary runs. Because digital organisms grow and divide much faster than even the fastest microbes, Avida-ED allows users to test evolutionary hypotheses over the course of hours or minutes. By generating hypotheses, collecting data, and analyzing results, users gain experience not just with concepts in evolution, but with the nature and practice of science as a whole.

Workshop participants will join a growing community of educators using digital evolution to let their students directly observe evolutionary processes through inquiry-based exercises that advance reform-oriented active learning. Participants will develop new lesson plans and will help collect assessment data from their classroom implementations. They will help disseminate materials and train other science educators; financial support is available for this. We will expect a brief written on participants' implementations after their course has ended.

The team application form for the Active LENS Workshop must be completed online on the following page: https://avida-ed.msu.edu/active-lens-train-the-trainers-workshop-2019-edition/ Applications are due on Sunday, March 3rd. If you have any questions or difficulties with the application, contact Michael Wiser (mwiser@msu.edu).