

CSHL's DNA Learning Center awarded Science magazine SPORE prize

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Cold Spring Harbor Laboratory's DNA Learning Center (DNALC) has been awarded the Science Prize for Online Resources in Education (SPORE) for its creation of a science education portal at www.dnalc.org that attracts more than 7 million online visitors annually.

The prize, established in 2009, recognizes the use of innovative, high quality, freely available online resources to promote and enhance [science education](#). Winners are invited to write an essay about their resource for publication in Science. The prize-winning essay by the DNALC, written by founder and executive director David Micklos and his colleagues Susan Lauter, who leads the DNALC's multimedia design team, and Amy Nisselle, who produces and evaluates its websites and apps, appears in Science on December 23.

Launched in 1996 to educate students and teachers about the theory and practice of DNA science, the DNALC's website mushroomed into 18 different sites over the next 15 years. The sites serve either as virtual, multimedia-rich "textbooks" on core concepts in genetics and biotechnology or as platforms for online lab notebooks, and bioinformatics tools and workflows. The sites feature video interviews, 2-D animations, and interactive learning activities, and some even include "real-time" 3-D animations of [cellular processes](#) ranging from [DNA replication](#) to signal transduction.

The SPORE essay explains how DNALC.org evolved into a major science education portal; how the team overcame emerging challenges as

the Internet itself changed; and offers a strategic blueprint for science organizations that share goals for science education online.

Despite creating a web portal that drew ~7 million visits at its peak in 2007, "we couldn't simply say 'build it and they will come,' and rest on our laurels," says Micklos. When changes in search algorithms precipitated a crash in visitation, Micklos spurred his team on to the ambitious goal of redesigning the websites to increase search engine visibility, a move that resulted in an "almost 10% increase in visitation in 2010," notes Lauter. "A second revision in spring 2011 resulted in a 20% increase in visitation from June to November compared to the same time last year."

In addition to using programming and software techniques to make animations and videos more visible, the team also worked to "disaggregate" their websites into searchable units. Instead of restricting content to its websites, the DNALC now routinely retools videos and animations for distribution through multiple channels, such as YouTube and apps for smartphones and tablets.

Even as the team implemented these measures, "we realized that it was important to find out whether our websites and programs really improve students' learning experiences," explains Nisselle, who subsequently led an effort to test whether two much-used websites, G2C Online and Inside Cancer, improved student learning. A rigorously planned experiment involving 12 teachers and 662 students in 28 high school and college classrooms across 10 states showed that "an engaging website can potentially increase student learning by one letter grade," according to the authors.

The team's latest successes include increasing access to bioinformatics tools and broadening their use in science education. The DNALC plays a key role in multi-institutional projects, such as the iPlant Collaborative,

and brings students into the genome age by designing exercises that allow them to sequence and analyze genomes, including their own. "This is the first time in the history of science that students and teachers can work with the same data, with the same tools, at the same time as elite researchers," says Micklos.

In his inaugural editorial in 2010, *Science* editor-in-chief Dr. Bruce Alberts explained SPORE as stemming from the idea that "being an outstanding science educator is as demanding and valuable to society as being an exceptional research scientist." The achievements of the DNALC bear testimony to this idea.

More information: "Lessons from a science education portal," appears in *Science* on December 23. The full citation is: David Micklos, Susan Lauter, and Amy Nisselle. The essay can be downloaded at www.sciencemag.org

Provided by Cold Spring Harbor Laboratory

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