

THE SACRAMENTO BEE [sacbee.com](http://www.sacbee.com)

Students gain access to electron microscope via Internet

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Published Monday, Aug. 01, 2011

Scott Robinson looks for the grossest, creepiest things, like stingers, fangs, and venom pores. Spider eyes are creepy at 300- to 20,000-fold magnification. And kids love creepy.

Robinson is a microscopist with a program known as Bugscope that puts a \$600,000 electron microscope under the control of K-12 kids all over the country, via the Internet. The program last week received a Science Prize for Online Resources in Education (SPORE).

In an essay in Friday's edition of Science, the journal of the American Association for the Advancement of Science, Bugscope collaborators Michele Korb and Umesh Thakkar explained how the program works.

It is free to schools, home-school networks and museums, and uses a scanning electron microscope at Beckman Imaging Technology Group at University of Illinois at Urbana-Champaign. Schools in Davis, Turlock and the Bay Area have used the program.

What's special, Korb said in an interview, "is that it's a live session. You send your insects. You have direct interaction with scientists at Illinois. It's a live chat," with students controlling the scope and the direction of the conversation.

Korb teaches Bugscope to future science teachers as a professor at California State University, East Bay.

She said Bugscope allows as many kids to log on as there are laptops in a classroom.

"We did it with 75 second-graders once in Wisconsin," Korb said.

Beckman purchased the microscope with help from National Science Foundation funds designated for K-12 education. Bugscope uses it for about four to six hours a week; the rest of the time it is available for research.

"The whole idea is allowing a classroom to be like research investigators," Thakkar said. "Each session is unique. The teacher has the power. The kids are the main actors. We are just support."

To take Bugscope beyond fun and help students learn important ideas in science will require creative thinking by teachers, said Rich Hedman, director of the Center for Mathematics and

Science Education at California State University, Sacramento. But he thinks Bugscope offers wide opportunities for science teachers and students.

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