

## ZEBRAFISH TO GO

### TEACHER JONI BRAILSFORD HAS FOUR BREEDING

pairs of zebrafish in her AP biology classroom at Blue Springs South High School. Her students watch each pair, noting mating behavior and eagerly awaiting the outcome. If all goes well, the students will capture the eggs and then watch the transparent embryos develop through the lens of a microscope. ¶ “Kids love to watch real life happen,” says Brailsford, who prefers this method of teaching versus lectures alone. ¶ Teachers like to watch real life happen as well. Brailsford was introduced to her first batch of zebrafish embryos during the 2010 Maps in Medicine (MiM) Summer Institute at the University of Missouri. ¶ During the week-long session, 20 high school teachers peered at zebrafish embryos through a microscope and used Play-Doh to build embryo models. They amplified DNA and

infected bacterial cultures with the “blue flu,” a model of influenza virus. The exercises introduced teachers to the main themes of MiM: mapping cell fate and mapping the spread and transmission of influenza. Teachers spent the week becoming familiar with each of the theme’s multiple elements. They also met teachers already skilled in teaching the themes. MiM provides resources, equipment, and reagents that the teachers take back to their classrooms. ¶ “The curriculum can be used at varying levels. Teachers can use the entry-level sections or they can add layers for an AP course,” says Susan Ailor, a program leader in the HHMI-supported program. And it doesn’t have to be limited to science classes. Teachers can use the materials to discuss the economic impact of flu, she adds. ¶ Ninfa Matiase, a biology teacher at Normandy High School,

has helped develop and revise the MiM curriculum, and she uses the units in her classroom. The 2010 Institute inspired her to design a lesson on how disease spreads. Matiase will tell students that a dead bird was found near the school. Students will then use Google Maps to look at their own community to see how avian influenza could spread across town. ¶ Matiase has already used the blue flu unit to teach how viruses work. In that lesson, students infect bacterial cultures with the harmless virus. Then, they do a protein assay to see if the bacteria are infected. Next, they amplify DNA and examine the results for particular genetic patterns. The exercise gives her students a taste of bench science. “This is what I like best,” she says. “Giving students an experience they would otherwise not have in high school.” —J.E.

and a leader in the HHMI-supported program. “I had hoped for a really good experience. I think they had a really *great* experience.”

Jack Short, one of four second-year medical students who served as program counselors, used the same lymphoma scenario to demonstrate the variety of career choices available in medicine. He started with the medical receptionist, who is the first person a patient contacts, and covered everyone from medical technologists to specialized nurses, physicians, and phlebotomists. Students learned about the relationship between years of education and potential salary as well as the importance of every member of the health care team, says Ailor.

During a session on college preparation, students were asked to close their eyes and make successive folds in a pink piece of paper, following deliberately vague instructions given by the moderator. No questions allowed. The students then snipped off one corner of their folded paper. Giggles bounced around the room as the teens unfolded their handiwork and discovered very different results from paper to paper. The task drove home that working in the dark without proper information is a bad way to prepare for college.

That evening, students attended a college fair where they met college advisors from institutions ranging from small private colleges to large public universities. “We wanted them to feel recruited,” says Ailor.

On the last day of camp, Ailor reflected on the students’ experiences. “It was amazing to me that they found their strengths and used them in different ways during the week. We’d love to turn them all on to science,” she says. “If we can get them thinking about science, it’s huge.” ■ —JEANNE ERDMANN

### 2010 HOLIDAY LECTURES ON SCIENCE

## VIRAL OUTBREAK: THE SCIENCE OF EMERGING DISEASE

Today, people can travel from country to country with ease. The result is a more global community. But all that international travel coupled with the planet’s warming trends means more outbreaks of infectious diseases. Learn how viruses are thriving—and how scientists are working to fight them—at HHMI’s 2010 Holiday Lectures on Science. Joe DeRisi and Eva Harris will talk about their virus research and the technologies they are using to detect and classify new viruses. DeRisi, an HHMI investigator at the University of California, San Francisco, will describe how he has used microarray technology to identify a number of new viruses, including some that are killing parrots and bees and infecting people in Nicaragua. Harris, a University of California, Berkeley, professor of public health, will talk about her research and community outreach in Central America, where she is studying the rapid spread of dengue fever. The Holiday Lectures will be available live by webcast December 2-3 at [www.holidaylectures.org](http://www.holidaylectures.org).