

Fish-breeding exercise a big hit with students at Upper Arlington's Barrington school

By Alissa Widman Neese

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After piloting the program in Upper Arlington last week, researchers hope to establish a center at Ohio State University for Project BioEYES.

Through the international program, children breed zebrafish and study their transparent eggs, embryos and larvae to learn about life cycles and genetics.

The fourth-graders prodded the petri dish with a plastic pipette. They carefully used the tool to suck up debris and dirty water from the habitat filled with dozens of tiny fish embryos.

One child paused; another gasped.

During daily cleaning Sept. 26, they discovered that some of the embryos finally had emerged from their clear eggs. They were now zebrafish larvae.

"We have four ... five ... six?" announced a stunned Evan Liu.

The 9-year-old excitedly turned to his classroom's guests at Barrington Elementary School in Upper Arlington and guided the group to a microscope to view the transparent creatures up-close.

The goal of Project BioEYES is to help students see life develop firsthand, explained outreach educator Rob Vary, who visited from the Carnegie Institution for Science in Baltimore to host the science experiment for the first time in Ohio.

Vary was joined by Ohio State researchers, who hope to make the university a permanent hub for the international program and offer it to students throughout central Ohio.

Students breed adult fish, raise their offspring and document observations, including genetic mutations that affect the fish's markings. The week-long experiment culminates with watching beating hearts under a microscope.

"Working with live animals gets kids interested, involved and excited in a way that very little else can," Vary said.

"You don't see this in book work."

Project BioEYES has full-time centers in Philadelphia, Baltimore and Salt Lake City in the United States and Melbourne, Australia, all associated with universities. It also has smaller, part-time centers that are host to the project a few times a year. It started at Thomas Jefferson University in Philadelphia in 2002 and has since reached more than 120,000 students.

Zebrafish, named for their black and white stripes, live in tropical areas of South Asia in freshwater and belong to the minnow family.

They're popular in the aquarium trade because they're hardy, prolific breeders, producing hundreds of offspring weekly.

Researchers are particularly fond of them, too, because they're transparent as eggs, embryos and larvae, making them easy to study, and fertilization and development occurs outside of the mother fish's body.

They're also surprisingly similar to humans, sharing about 70% of their genetic makeup.

They can develop diseases that affect humans, including diabetes and cancer, and have similar major organ systems.

Those benefits are why professor Sharon Amacher, of Ohio State's Department of Molecular Genetics, raises and studies zebrafish. She teamed with genetics researcher Uyen Tram, whose daughter is a Barrington fourth-grader, to bring Project BioEYES to her classmates as a pilot.

Tram saw the project's founders, Steven Farber and Jamie Shuda, receive an award at a Genetics Society of America event. She was hooked.

"I thought, 'I need to bring this to Ohio,'" Tram said.

The program has courses for middle and high school students, which means it could impact students of all ages if Ohio State starts a full-time center.

That requires a steady supply of zebrafish, which Amacher has, and trained educators willing to coordinate it.

Thanks to grants from Ohio State and fundraising from the Upper Arlington Education Foundation and the Barrington PTO, the school collected enough money, about \$5,600, for supplies and to bring Vary to Upper Arlington for training and consulting.

Teacher Katie Benton said the test run went swimmingly.

Evan has cared for zebrafish in his 15-gallon aquarium at home, but seeing their tiny bodies develop with his own eyes was an entirely different experience, he said. Evan said he's excited about the possibility of continuing Project BioEYES as he gets older.

"It's really fun, and I learned a lot," he said. "I would love to do it again."

awidmanneese@dispatch.com

[@AlissaWidman](#)

Upper Arlington paper photos (3)
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Robert Vary with BioEYES teaches Barrington Elementary School fourth-graders about the growth of zebrafish larvae Sept. 26 during a weeklong fish-breeding program called BioEYES, partnered with Ohio State University. - [MADDIE SCHROEDER/THE COLUMBUS DISPATCH](#)



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Olivia Uriostegui, a fourth-grader at Barrington Elementary School, views zebrafish larvae out of a petri dish through a microscope Sept. 26 during a weeklong fish-breeding program called BioEYES, partnered with Ohio State University. - [MADDIE SCHROEDER/THE COLUMBUS DISPATCH](#)



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Barrington Elementary School fourth-graders Cameron Gabriel (left), Evan Liu, and Eleanor Heil view live zebrafish larvae out of a petri dish Sept. 26 during a weeklong fish-breeding program called BioEYES, partnered with Ohio State University. - MADDIE SCHROEDER/THE COLUMBUS DISPATCH