

Zebrafish provide insight to mutations

By Demian McLean
Emerald Reporter

The University's Kimmel Laboratory might be as close as Eugene gets to the tropics.

The air temperature is a balmy 85 degrees year round, and small, striped fish dart around in more than 8,000 gallons of water. Biologists walk between rows of aquariums taking notes, clothed comfortably in shorts and T-shirts.

For almost 10 years now, University biology Professor Charles Kimmel has worked in this environment studying genetic mutations in the tropical zebrafish. Though his work has focused on fish, Kimmel said his research has eventual implications for humans, such as finding a way to prevent birth defects.

"Even though this is a study on zebrafish, it's a simple model for humans," he said.

Last October, Kimmel's research earned him national attention. The American Association for the Advancement of Science elected Kimmel a fellow for establishing the zebrafish as a model for mammalian development.

Founded in 1848, the AAAS is the world's largest general science organization, with more than 10,000 members internationally. The AAAS, which also publishes the weekly journal *Science*, recognizes about 200 researchers each year for distinguished achievements.

Kimmel will travel to Boston in February, where the AAAS

will present him and 237 other members with a ribbon and an official certificate.

Biologists have long been intrigued by problems in early human development, Kimmel said, for example spinal bifida. Humans with spinal bifida are born without a spine.

But because human embryos are difficult to study, researchers often use a simpler mammalian relative, such as mice. And even simpler to study, Kimmel said, are the small, clear embryos of the zebrafish.

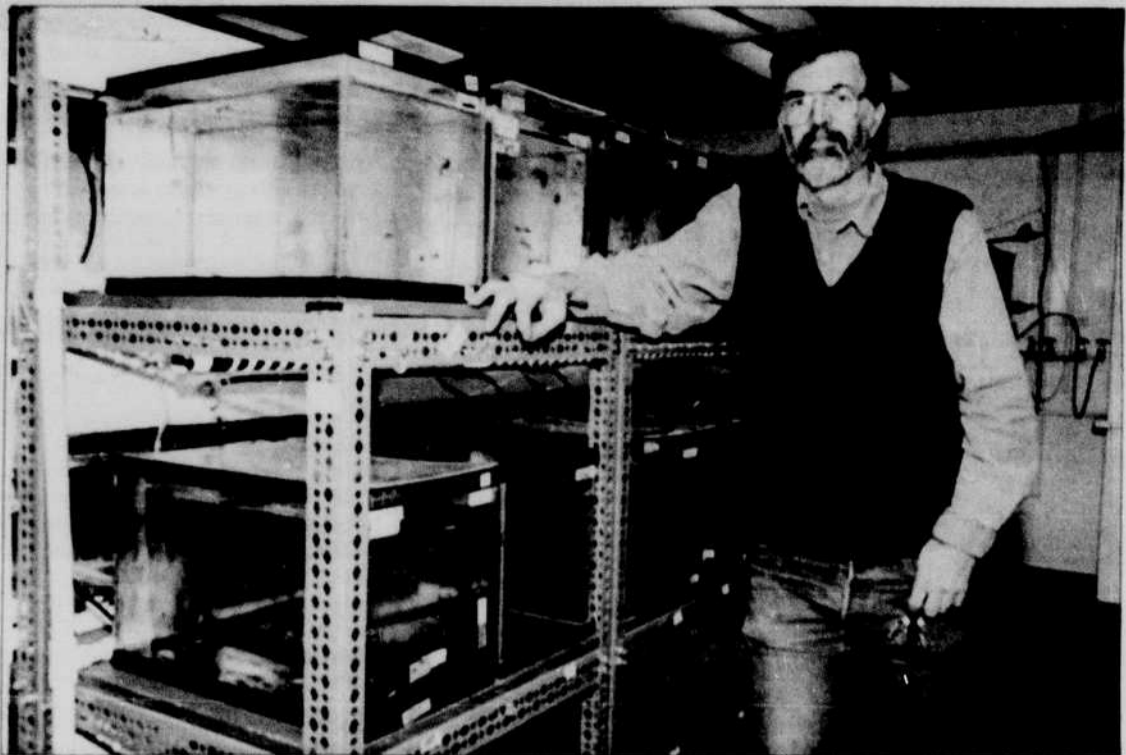
Biologists can use fish as a model for human development for several reasons, Kimmel said.

First, fish and mammals are ancient relatives, he said, having evolved from a common ancestor. Second, most vertebrate embryos are strikingly similar in their early stages. For these reasons, biologists can confidently use zebrafish as a model for early mammalian development, he said.

One of Kimmel's most notable achievements is linking development in mice to that in zebrafish.

"Though there's different body parts between a fish and a mouse, you find a lot of their genes are similar," he said. "There's a common ancestor for both fish and mice."

Science has known for decades that mice and fish (and most vertebrates) share a common gene for developing a



Charles Kimmel stands among several tanks of zebrafish in Heustis Hall. His work with zebrafish and genetic mutations has earned him national recognition.

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— Charles Kimmel,
biology professor

backbone, Kimmel said.

Knowing that some mice are born without a backbone, Kimmel worked to produce a zebrafish that also lacked a backbone. After doing so, Kimmel could study those backbone-less fish as they developed and matured, and then apply his findings to mice.

If biologists can find a link between fish and mouse back-

bone development, they can possibly do it with humans, too, Kimmel said.

"It happened the same way in me or you," he said. "We share genes with strange organisms, including fish and fruitflies."

Zebrafish are minnow-sized natives of rivers in the Far East, such as the Ganges. Kimmel said they are ideal subjects for a

study of embryo development for several reasons.

First, the zebrafish eggs are transparent, which lets researchers see exactly how the infant inside develops, or doesn't develop, as in the case with Kimmel's mutants.

Second, they produce copious amounts of eggs, between 200 and 1,000 per fish. And last, they are small and easy to care for.

Kimmel's research is funded by about \$250,000 in federal grants every year. His discovery linking mice and fish, he said, brings biologists one step closer to tracking genetic mutations in humans.

Snapple containers create messy recycling problem

By Carrie Fenelon
Emerald Contributor

Just because Rush Limbaugh likes Snapple doesn't mean everyone has to.

The beverage has become a favored alternative to soda and can be found not only in the EMU and local stores, but also in overflowing campus garbage cans and recycling bins.

The University collects about 1000 pounds a week of non-refundable glass from Carson Hall, Hamilton Complex, University Inn, Bean Complex and the EMU. More than 90 percent of this glass is Snapple bottles, said Mark Burke, a recycling assistant for the Student Recycling Program.

Catering in Bean fills a 55-gallon barrel four times a week, as does the EMU. More glass is thrown away because a recycling bin isn't always readily available. Garbage collectors for the Physical Plant reported finding approximately 1200 pounds of Snapple bottles in the garbage bins at Pizano's, the new pizza restaurant on campus.

The EMU has been carrying Snapple for about a year. The company provides Dennis Carr, EMU food service manager, with a refrigeration unit, delivery and merchandising as part of the contract.

Karyn Kaplan, Campus Recycling coordinator, began to notice the increase in glass almost immediately. In May Kaplan's assistant Katherine Luscher sent a letter to Snapple to bring the problem to the company's attention and to suggest the company implement a deposit on the bottles. Snapple empties are refundable only in Maine.

At the end of the letter Luscher implied that the University may have to begin a boycott of Snapple products if the situation was not taken care of.

Snapple's response was a letter thanking Campus Recycling for "taking the time to let us know that you enjoy our



Mark Burke of Student Recycling helps sort through the new Snapple recycling bins.

products." A handwritten note at the bottom stated that glass is recyclable in Oregon and to contact the state for more information.

The letter was referring to the much touted Bottle Bill. But the Bottle Bill is not a solution to excess waste, Kaplan said.

"When the Bottle Bill came out in 1970, it was intended as a roadside litter bill," Kaplan said. "But it doesn't cover non-carbonated beverages, which was not a problem until all those new waters and juices came out."

Carr agreed with Kaplan regarding the Bottle Bill.

"The Bottle Bill is totally outdated. When it was introduced it was the cutting edge of legislation," Carr said. "There are dozens and dozens of products that the bottle bill doesn't address in any way, shape or form."

On Oct. 29, Kaplan, Carr, Cal Morgan of Premier Distributors, Larry Baker, a Snapple salesman, and Joe Grube and Linda Dievendorf of the EMU Board met to discuss a resolution to the problem.

Snapple Co. and Premier Distributors agreed to provide and service nine large collection bins for Snapple bottles. Five of the bins are located in the EMU, and there are plans for more bins to be placed in Lawrence Hall, which sells Snapple at the Hearth Cafe and at the Bean Complex loading dock.

Premier Distributors will collect the wheeled bins when it delivers Snapple. Wheeler has a recycling company within its organization that processes recyclable materials and sells them to producers.

Carr said he is not sure if the responsibility lies solely with Snapple and Premier. Although the distributor and manufacturer have taken action along with the EMU and Campus Recycling, Carr

said he believes the customers — namely University students — are also part of the problem and the solution.

"Customers tend to be irresponsible in this respect (recycling)," Carr said. "If they can externalize waste and make it someone else's problem, they will."

Kaplan said she believes Snapple has also externalized the situation.

"You pay 85 cents for a bottle of Snapple," she said. "The company gets the money, but then we pay for upkeep on the roads, for pollution from trucks and for litter. One bottle ends up costing the taxpayer three or four dollars. That's money that I have to pay, and I don't even drink the stuff."

Because of the amount of glass produced, the student-funded Student Recycling Program also must pay. Kaplan estimates that an additional 10 to 15 hours of time is needed per week to collect glass. This is time — and money — that could be spent on better projects. She asked Snapple to give the recycling program 75 dollars a week to deal with the problem, but the company refused.

Kaplan will postpone the boycott of Snapple until she determines if the recycling effort is effective. Carr said that as a state employee, he could not support a boycott, and the sale of Snapple is also economically beneficial to the EMU.

"Snapple represents \$1,000 to \$1,100 of business a week in gross sales. This money provides for a lot of student employment and overhead costs," Carr said. "We can't afford to lose a product with that type of business."

Carr said the EMU is open to any group that would like to set up tables to help students realize their personal responsibility in recycling glass containers. He said he believes students should focus their energies toward state legislators who have the capacity to create a more comprehensive bottle bill.