

Mayo Clinic News Network

O16 Mayo Clinic Zebrafish Program

Intro: There is a tiny unsung hero in the medical world, the zebrafish. Studying it has led to countless breakthroughs, from understanding how the body works, to treatments for conditions like cancer and heart disease. At Mayo Clinic, researchers often take their quest for answers to the “Fish Farm.”

Video

Audio

TRT 4:08	
Voice of Dennis Douda	Mayo Clinic is world renowned for its innovation in virtually all fields of medicine. Technology and science have lead to discoveries capable of treating some of the human body’s most challenging conditions. And increasingly, doctors and researchers are finding that a tiny collaborator can help them find the answers they seek. The zebrafish.
Stephen Ekker, Ph.D. Mayo Clinic Zebrafish Program Director	“We have 80,000 adult fish in the fish room.”
	“We usually call it the Fish Farm.”
	“It’s an aquaculture facility that is one of the best in the world.”
	“We generate up to 10,000 embryos a day for large scale genetic and biological testing.”
Voice of Dennis Douda	Dr. Stephen Ekker is a professor of biochemistry and molecular engineering. He is also Director of the zebrafish research program at Mayo Clinic.
Voice of Stephen Ekker, Ph.D.	“I think most people are surprised at how related we are to a small fish.”
Voice of Stephen Ekker, Ph.D.	“ We share the heart, we share kidney, we share pancreas, we share digestive systems, we share eyes and ears.”
Voice of Dennis Douda	Which makes the zebrafish almost ideally suited for studying essentially any disease or physiological system, tissue, gene function or bio-chemical process – such as addiction.
Voice of Stephen Ekker,	“The number one and number 3

	preventable causes of death and excess healthcare costs in this country are tobacco and alcohol respectively and we have programs in all those areas using zebrafish.”
Voice of Dennis Douda	Only the laboratory mouse is more widely used by researchers around the world. But, Dr. Ekker predicts zebrafish will overtake that top spot. Fish take far less space, are easier to care for and, because they reproduce and develop rapidly, he says scientists may get their results faster.
Voice of Stephen Ekker,	“And the eggs develop eggs externally, so you can see literally from the one cell stage everything.”
Voice of Stephen Ekker,	“The zebrafish is the premier model for understanding how we go from a one-celled early vertebrate to this rich body that we are.”
John Henley, Ph.D. Mayo Clinic Neuro Surgery Researcher	“One of the other beauties of the zebra fish system that we use is that it is a much more permissible organism for regeneration. “
Voice of Dennis Douda	Dr. John Henley is studying how severed nerves try to repair themselves.
Voice of John Henley	“Do you grow straight? Do you make a right turn? Do you make a left turn to find their -- their way to the correct target?”
Voice of Dennis Douda	His research has uncovered some startling chemical signals that may one day allow severed spinal cords to heal and reverse paralysis. :07
Voice of John Henley	“And then it allows us, instead of just making findings in a culture dish and then surmising it might be relevant in the animal, we can actually test it in the fish model and see if we can restore function.”
Voice of Dennis Douda	To suit a wide variety of research needs, Mayo’s program generates 5 to 10 novel lines of zebrafish strains each week. They’re shared with fellow scientists all around the world.
Maggie Panetta, Science Student	“Ah, I learned a lot of things about zebrafish because I’ve been working with them since the 7 th grade here at Lincoln.”
Voice of Dennis Douda	Even some very young scientists, who’ve impressed the research community enough

<p>Lincoln K-8 Choice School Rochester, Minn.</p>	<p>to have their findings published in the peer-reviewed journal, Zebrafish; its youngest contributors ever.</p>
<p>Voice of Stephen Ekker,</p>	<p>“One of the amazing new things we started about 5 years ago is a science education reform program called InSciEd Out, where we are using the zebrafish in schools.”</p>
<p>Voice of Stephen Ekker,</p>	<p>“The goal is to really re-imagine and rebuild science education.”</p>
<p>Voice of Stephen Ekker,</p>	<p>“And here in Rochester our lead school is now the top science school in the state.”</p>
<p>Voice of Dennis Douda</p>	<p>Whether the question involves Cardiology, neurology, oncology – genetics, aging or regenerative medicine – at Mayo Clinic, medical researchers may find the answer - swimming right before their eyes.</p>
<p>Voice of Stephen Ekker,</p>	<p>“And I’m excited that the zebrafish is here at Mayo Clinic really contributing to that understanding.”</p>