

Zebrafish help researchers identify promising drugs

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“Jaws” it isn't, but the tiny striped zebrafish is helping Tulane University scientists take a big bite out of a tough question ? what drugs might be beneficial for treating psychological disorders?



For researchers Jonathan Cachat, left, a PhD student, and Allen V. Kalueff, right, assistant professor of pharmacology, a tank of zebrafish is the key to identifying promising new drugs. (Photo by Paula Burch-Celentano)

“We are studying the behavioral and physiological responses of adult [zebrafish](#) to various drugs that affect brain functioning,” says PhD student Jonathan Cachat, who has been working in the lab of [Allen V. Kalueff](#), assistant professor of pharmacology at the Tulane School of Medicine.

“Our lab has been dedicated to developing zebrafish models of several different brain disorders ranging from anxiety to drug abuse and psychoses,” says Kalueff.

Zebrafish have been used widely for biological and medical research because they reproduce and mature quickly, are inexpensive and are easy to manage in a lab setting. Crucially, however, they share many cognitive functions with other species including humans.

Cachat administers test drugs to zebrafish by dissolving them in the water of the fish tank. A fish absorbs the drug through its gills and soon begins to react. Cachat then records its travels using two video cameras linked by specialized tracking software. The result is a graphic three-dimensional plot of the fish's movements.

"We have looked at a wide array of well-characterized therapeutic compounds and different drugs of abuse, and we're hoping to isolate behavioral features that are unique to the mechanisms of those specific drugs," says Cachat.

He is working to quantify the features of fish trajectories that are unique to those drugs. "Then I can input raw data ? a new record of fish activity ? and have it predict to me what the drug is," he says. "If we can do that with a good success rate with known compounds, then you could test a new drug using zebrafish and say, 'This could potentially be used as a new drug to combat anxiety, and this drug seems to have antipsychotic properties.'"

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