Beware the bots

A well-designed mimic can trick an animal into believe the fake is the real deal. That can be a useful approach for studying behavior—extra animals aren't needed to serve as stimuli, and the researcher has greater control over the overall experience that might not otherwise be possible with animals that have minds of their own.

Maurizio Porfiri and colleagues at New York University have been designing robotic replicas of zebrafish. In a new Research Article, they deploy the bots as an aversive stimulus in a refined fear-conditioning paradigm for behavioral pharmacology studies, demonstrating that the real zebrafish can learn to fear the robots and that administration of different drugs can modulate the animals' behavioral responses to the frightening replicas.

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Expanding the reach of multiphoton microscopes

With the help of fluorescent molecules, researchers can image cells in a relatively non-invasive manner in living animals, from rodents and nonhuman primates, to fish, flies, and more as the transgenic tools involved expand to more and more species. The imaging takes a little laser light, and the lasers and microscopes being built to work with them have been rapidly improving.

Deeply penetrating 3 photon instruments are becoming more widely available, letting researchers see deeper into their subjects than ever before. Others meanwhile are increasing the speed, resolution, and field of view that can be achieved with 2 photon systems. Our September Technology Feature explores how and why the multiphoton microscopy community is pushing the field's *in vivo* limits.

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