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WEIRD & WILD

Rats Remember Who's Nice to Them—and Return the Favor

It's the first time scientists have found direct reciprocation in the animal kingdom.

By **Ralph Martins**, National Geographic

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Rats can remember acts of kindness by other rats—and treat them accordingly, a new study says.

In experiments, Norwegian rats were most helpful to individuals that had previously helped them—perhaps to try and secure their assistance again, scientists suggest.

While rats are known to cooperate and assist one another, rewarding another rat for no immediate gain wasn't thought to be common behavior. (Also see "Rats Show Regret After Wrong Choices, Scientists Say.")

The study, published February 24 in the journal *Biology Letters*, suggests otherwise.

In fact, a rat rewarding a fellow rat for help—an act called direct reciprocation—is a first among nonhumans, said study co-author Michael Taborsky, a behavioral ecologist at the University of Bern in Switzerland.

Bananas, Please

The study was based on female captive Norwegian rats' preferences for two types of food: bananas and carrots. For these wild-type rats, bananas are a favorite—carrots, not so much.

In the experiment, each of a pair of rat helpers could deliver one of

these tidbits to a rat in another enclosure by pulling on a stick. (Watch a video of rats at night.)

Eventually, the receiving rat would recognize each helper as either a high-quality helper (if it delivered bananas) or a low-quality helper (if it delivered carrots).

Then, scientists switched the rats' places, so the rats on the receiving end were now able to pull on a stick that would deliver cereal flakes to a certain helper.

The rats that had given bananas generally received cereal more quickly and more often than carrot-givers. In the same vein, the rats that had given carrots got cereal less often than the banana-givers did.

Brainy Rats?

But are the rats really rewarding helpers for their generosity?

Researcher Taborsky thinks so, adding that the rats are making a simple association.

"Two elements are involved: recognizing an individual, and responding to the quality of service," Taborsky says.

The latter, he says, is evident from previously known behavior—rats will flock to good feeding spots, for example. And recognition, he points out, is widely documented in many species, including rats. (See "Rat Made Supersmart-Similar Boost Unsafe in Humans?")

Since Norwegian rats exchange favors, a desire to reward others—and perhaps to ensure more exchanges in the future—"might not be as complex as we think," says Taborsky.

An even simpler explanation is that the rats simply "associate the [helper] with the preferred food," Thomas Zentall, an animal behaviorist at the University of Kentucky in Lexington, said in an email.

That is, the rat associates bananas with the presence of the banana-giver, and thinks pulling on the stick when the banana-giver is present might bring bananas.

But Taborsky argues this isn't the case, since it's known that rats can tell they're delivering food to another rat, not themselves.

In his view, rats clearly use the quality of service they receive to determine how much they give back.

Wonder what that says about their tipping habits?

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