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Scientists engineer red-eyed mutant wasps

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By [Brooks Hays](#) | April 19, 2017 at 10:27 AM [Follow @upi](#)

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Scientists augmented the genes of jewel wasps using CRISPR technology and successfully turned their eyes red. Photo by Akbari/UCR
Scientists augmented the genes of jewel wasps using CRISPR technology and successfully turned their eyes red. Photo by Akbari/UCR

April 19 (UPI) -- If you see red-eyed jewel wasps buzzing about Southern California, don't be alarmed, they're just mutant wasps created by lab scientists at the University of California, Riverside.

The wasps are the result of a proof of concept study. Scientists wanted to test CRISPR gene-slicing technology on a small insect, and they succeeded. Until now, CRISPR technology had never been used on such a small organism.

CRISPR technology allows researchers to directly inject an organism with

genetic material, like RNA or proteins, designed to seek out and rewrite specific portions of DNA coding. Researchers at UCR used the technology to disrupt genes controlling eye pigmentation.

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"We wanted to target a gene that would be obvious, and we knew from previous studies that if the gene for eye pigmentation was knocked out, they would have red eyes, so this seemed like a good target for gene disruption," Omar Akbari, an assistant professor of entomology, [said in a news release](#).

"Big beautiful red eyes are something you won't miss."

Using the gene slicing technology on such a small organism required steady hands. The jewel wasps lay their eggs inside blowfly pupa. Scientists had to peel back the pupa layers to expose the egg sac. The egg sac is roughly the size of a small bean, while each individual egg is approximately a quarter the size of a single grain of rice.

"You're essentially pulling a small egg out of a larger egg, injecting it with components to mutate the DNA and then putting it back into the bigger egg to develop," Akbari said.

Their success -- detailed [in the journal Scientific Reports](#) -- wasps are here to stay. The sliced genes are heritable, meaning future generations will likely develop red eyes.

In future experiments, Akbari and his colleagues want to target other parts of the wasp's genetic coding. Scientists are keen to understand why male jewel wasps "can somehow kill the female embryos before they hatch males," Akbari said.

Researchers hope that ultimately, an growing knowledge of insects like

wasps and mosquitos will help them better control species that destroy crops and spread disease.

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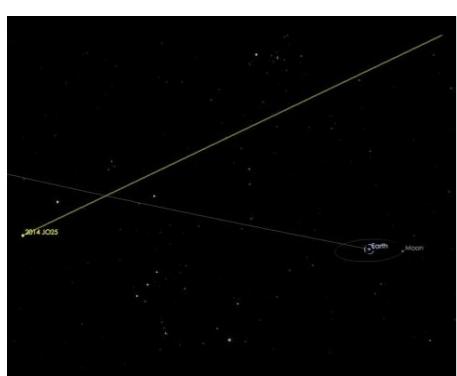


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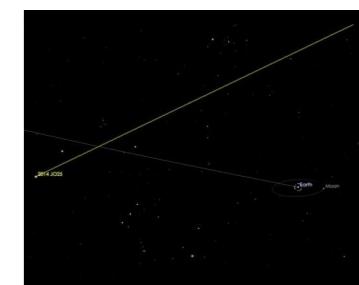
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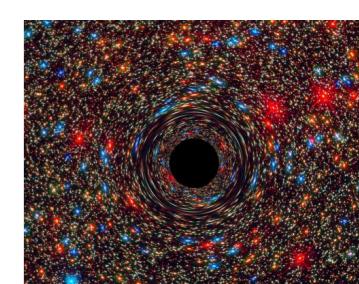


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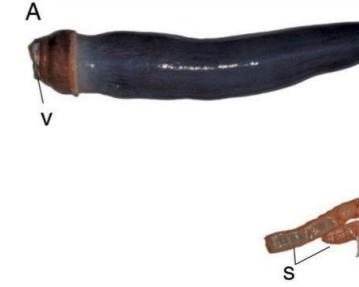


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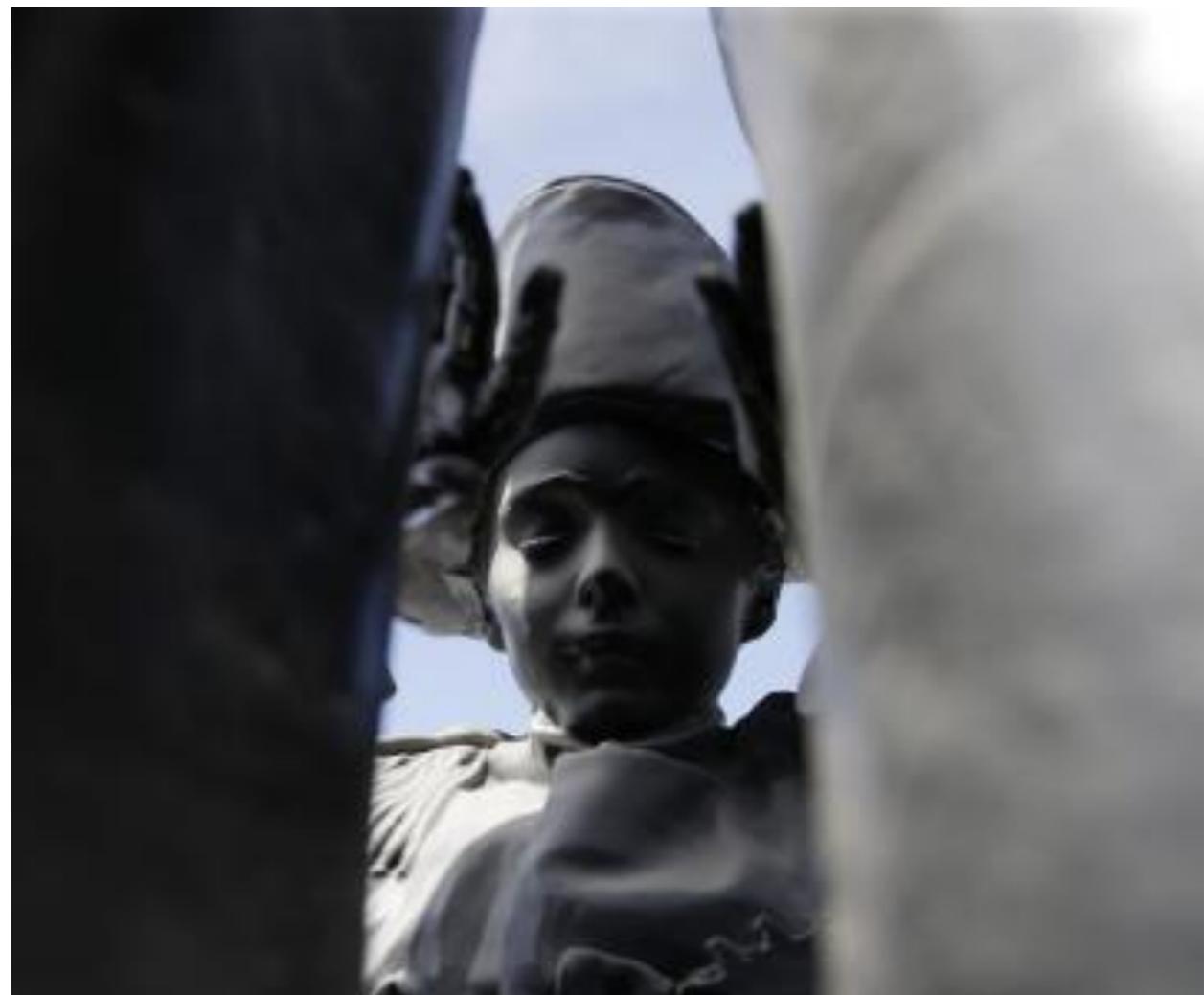
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