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Neuroscientists Peer Into The Mind's Eye

🕒 **24:28 minutes**



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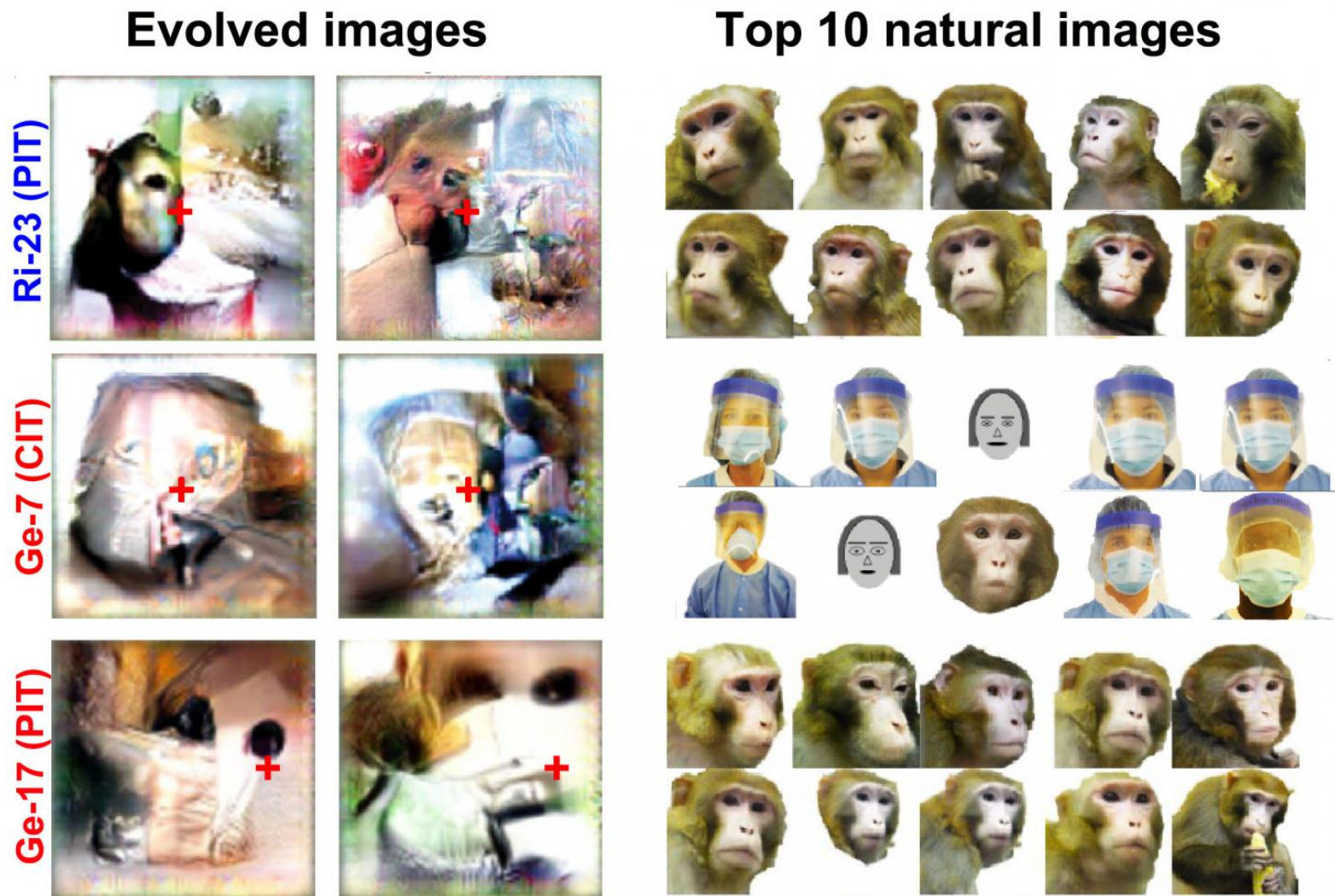
This image was evolved by a neuron in the inferotemporal cortex of a monkey using AI. Credit: Ponce, Xiao, and Schade et al./Cell

It sounds like a sci-fi plot: Hook a real brain up to artificial intelligence, and let the two talk to each other. That's the design of [a new study](#) in the journal *Cell*, in which artificial intelligence networks displayed images to monkeys, and then studied how the monkey's neurons responded to the picture. The computer network could then use that information about the brain's responses to tweak the image, displaying a new picture that might resonate more with the monkey's visual processing system.

"The first time we saw this happening we felt like we were communicating with a neuron in its own language, like we'd given the cell the ability to tell us something new," says Carlos Ponce of the Washington University School of Medicine in St. Louis.

After many iterations of this dance between brain activity and image creation, the researchers were left with a set of ghostly images, "designed" in part by the what the monkey's visual cells were encoded to respond to.

In this segment, Ponce and his collaborator Margaret Livingstone talk about what the study tells us about how the brain "sees," and how neuroscientists are now tapping into what some artists may have already discovered about perception. See more images from the research below.



This figure shows natural images (right) and images evolved by neurons in the inferotemporal cortex of a monkey (left). Credit: Ponce, Xiao, and Schade et al./Cell





This image shows the evolution of an optimum image for stimulating a visual neuron in a monkey. Credit: Ponce, Xiao, and Schade et al./Cell

Further Reading

- [Read](#) the full study published in *Cell*.
- [Read](#) a related separate paper on primates controlling neural activity using artwork from AI networks in *Science*.

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Segment Guests

Carlos Ponce

Carlos Ponce is an assistant professor in the Department of Neuroscience at the Washington University School of Medicine in St. Louis, Missouri.

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Margaret Livingstone

Margaret Livingstone is the Takeda Professor of Neurobiology at Harvard Medical School in Boston, Massachusetts.

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About Christopher Intagliata

 [@cintagliata](#)

Christopher Intagliata is Science Friday's senior producer. He once served as a prop in an optical illusion and speaks passable Ira Flatowese.

About Ira Flatow

 [@iraflatow](#)

Ira Flatow is the host and executive producer of *Science Friday*. His green thumb has revived many an office plant at death's door.

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