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SCIENCE & SPACE

Study: Brain cells 'recognize' stars

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NEW YORK (AP) — Halle Berry? Jennifer Aniston? Everybody knows them. And now a surprising study finds that even individual cells in your brain act as if they recognize them.

The work could help shed light on how the brain stores information, an expert said.

When scientists sampled brain cell activity in people who were scrutinizing dozens of pictures, they found some individual cells that reacted to a particular celebrity, landmark, an animal or object.

In one case, a single cell was activated by different photos of Berry, including some in her "Catwoman" costume, a drawing of her and even the words, "Halle Berry."

The findings appear in a part of the brain that transforms what people perceive into what they'll eventually remember, said Dr. Itzhak Fried, a senior investigator on the project.

The findings do not mean that a particular person or object is recognized and remembered by only one brain cell, Fried said. "There is not only one cell that codes for Jennifer Aniston. That would be impossible," Fried said.

Or do they mean that a given brain cell will react to only one person or object, he said, because the study participants were tested with only a relatively limited number of pictures. In fact, some cells were found to respond to more than one person, or to a person and an object.

What the study does suggest, Fried and colleagues say in Thursday's issue of the journal *Nature*, is that the brain appears to use relatively few cells to record something it sees. That's in contrast to the idea that it uses a huge network of brain cells instead.



In one case, a single brain cell was activated by a photo of actress Halle Berry in her "Catwoman" costume.

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It's surprising that an individual neuron would react so specifically to a given person, said the study's other senior investigator, Christof Koch of the California Institute of Technology. "It's much more specific than people used to think."

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Charles Connor, who studies how the brain processes visual information but who didn't participate in the new study, called the results striking.

Nobody would have predicted that conceptual information relating to Aniston, for example, would be signaled so clearly by single cells, said Connor, who works at Johns Hopkins University.

The "really dramatic finding," he said, is that a single brain cell can respond so consistently to completely different pictures of a given person. "That will surprise everybody," Connor said.

The part of the brain the researchers studied draws heavily on memory as well as signals from what the eye sees, so the results may illustrate how memory is represented in the brain and how it relates to visual signals, he said.

He noted that in one participant, one brain cell responded both to Aniston and to Lisa Kudrow, her co-star on the TV hit "Friends."

"That's a tantalizing glimpse at how neurons represent concepts like membership in the cast of Friends, and could lead to much more extensive studies of how conceptual information is organized in human memory," he said.

The researchers tested eight people with epilepsy who had electrodes placed in their brains so that doctors could track down the origins of their seizures. The electrodes monitored the activity of a small fraction of cells in a part of the brain called the medial temporal lobe.

The researchers kept track of which cells became activated as the participants looked at images of people, landmarks and objects on a laptop computer. One participant had a brain cell that reacted to different pictures of Aniston, for example, but was not strongly stimulated by other famous or non-famous faces.

Oddly, when that participant was shown photos of Aniston paired with actor Brad Pitt, from whom Aniston later separated, the brain cell didn't respond.

"I don't know if it was a prophetic thing," Fried said.

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