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Invariant visual representation by single neurons in the human brain.

Quiroga RQ, Reddy L, Kreiman G, Koch C, Fried I

Nature 2005 Jun 23 **435**(7045):1102-1107 [[abstract on PubMed](#)]

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Selected by | Mayank Mehta **NEW** / Aina Puce **NEW**

Evaluated 24 Jun 2005

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Faculty Comments

Faculty Member

Mayank Mehta

Brown University, United States of America
NEUROSCIENCE

 New Finding

Comments

The paper shows that neurons in the hippocampus and related areas in humans respond to abstract visual information in a selective fashion. Using microwires, Quiroga et al. recorded the activity of neurons from several parts of the medial temporal lobe, including the hippocampus, of epileptic patients. The hippocampus is usually associated with learning, memory and spatial representation. The authors show that neurons in the human hippocampus respond robustly to a select subset of images of famous places as well as faces in a sensory-cortical fashion. Further, these neurons seemed to encode information in a highly invariant or abstract fashion in that they responded robustly to the same face when presented in a variety of ways, including caricature and semantic representation. Such selective, yet invariant, representation of abstract information in the human hippocampus raises interesting questions about the nature of neural information processing in the hippocampus.

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Aina Puce

University of West Virginia, United States of America
NEUROSCIENCE

 Hypothesis

 New Finding

 Controversial

This fascinating study investigated abstract representation in the brains of 8 patients being investigated for potential seizure surgery. The investigators found that individual neurons in the medial temporal lobe responded selectively to the identity of famous individuals, for example Halle Berry or Jennifer Anniston, and also to other categories of object, including famous buildings, in a series of recording sessions where the responsivity of neurons to multiple visual categories were investigated. These intriguing results challenge current ideas and models of object and face recognition that posit that the output of multiple neurons typically would code the identity of an individual person or specific object.

Faculty Comments

How to cite the Faculty of 1000 evaluation(s) for this paper

1) To cite all the evaluations for this article:

Faculty of 1000: evaluations for Quiroga RQ et al *Nature* 2005 Jun 23 435 (7045) :1102-1107
<http://www.f1000biology.com/article/15973409/evaluation>

2) To cite an evaluation by a specific Faculty member:

Mayank Mehta: Faculty of 1000, 24 Jun 2005 <http://www.f1000biology.com/article/15973409/evaluation>

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