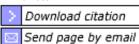
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Invariant visual representation by single neurons in the human brain.

Quiroga RQ, Reddy L, Kreiman G, Koch C, Fried I Nature 2005 Jun 23 **435**(7045):1102-1107 [abstract on PubMed] [related articles] [order article]

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Mayank Mehta

Brown University, United States of America NEUROSCIENCE



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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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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.

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