Do rats have a sense of imagination?

The Scottish philosopher David Hume said that “Men are mightily governed by the imagination.” So too is the humble rat, according to research published [November 2] in the journal Science.

Nearly a decade of work culminated in an extraordinary set of experiments in which researchers at Howard Hughes Medical Institute placed rats into a virtual reality arena that provided them with the Jedi-like power to “teleport” themselves or an object to a specific place using only their thoughts.

Authors of the paper said future studies of this kind could lead to the discovery of methods that will help to restore or enhance brain functions by understanding a person’s intentions, and perhaps could broaden our understanding of the memory-loss condition amnesia.

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The work built on previous scientific discoveries revealing that deep in the brain animals and humans have their own GPS system. Found in the hippocampus, a region that plays a major role in memory and imagination, this internal GPS system translates places and events into patterns of neurons firing, a sign that the brain cells are communicating. Those patterns are then stored in the brain and used to navigate the everyday world.

The specialized cells that do the work, known as place and grid cells, serve as crucial building blocks that allow us to remember the past and imagine the future.

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