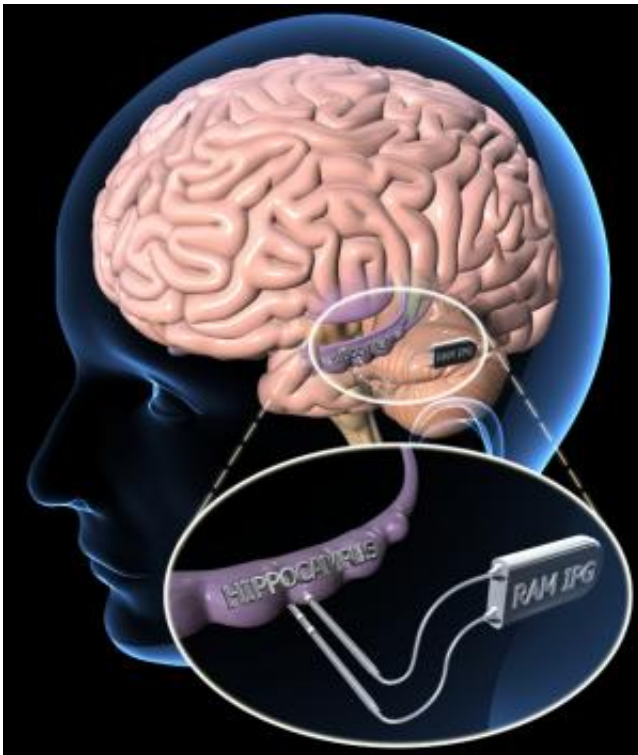


US military awards \$40 million toward memory implant

July 9 2014, by Kerry Sheridan



A schematic illustration of the neuromodulation device designed to restore memory to be developed by UCLA RAM team. Credit: UCLA

US military researchers announced Wednesday they have awarded \$40 million toward developing a new kind of brain implant that may help restore memories in wounded soldiers and civilians.

The work represents a major scientific leap forward, but experts said

many hurdles remain before it can be shown to work in people, the Defense Advanced Research Projects Agency (DARPA) said.

The hope is that some day, a wireless, implantable device will bridge gaps in the injured brain and make it easier to remember basic events, places, and context—known as declarative memories.

This kind of recall can be lost in traumatic brain injury, which has affected 270,000 US military service people since 2000 and touches 1.7 million US civilians each year.

"Our vision is to develop neuroprosthetics for memory recovery in patients living with brain injury and dysfunction," said Justin Sanchez, program manager of the Restoring Active Memory (RAM) program at DARPA.

"Those service members have paid the ultimate price in service of our nation, so it our great responsibility to try to come up with new and innovative—not only scientific but medical—approaches that can help repay some of that debt," said Sanchez.

DARPA said it was carefully weighing the ethics of such experiments, and is consulting with a panel of neuroscience experts about potential pitfalls associated with the research.

"It is risky, which is very typical of DARPA," said Geoffrey Ling, director of DARPA's Biological Technologies Office.

First tests on epilepsy patients

The work is part of a four-year program that supports President Barack Obama's Brain Initiative, a \$100 million effort.

The latest DARPA awards give up to \$22.5 million to a team of scientists at the University of Pennsylvania, up to \$15 million the University of California, Los Angeles, and \$2.5 million to Lawrence Livermore National Laboratory.

Medtronic, the medical device technology company, was to contribute with a "cost-sharing effort," said Sanchez, but details on that were not immediately available.

Any new neuroprosthetic device will be first tested on patients with epilepsy who have also suffered memory loss as a result of their condition and who are already implanted with electrodes as part of their treatment, researchers said.

If it works for those patients, "then we will have gained extremely valuable information on how to restore normal memory function in patients with traumatic brain injury or Alzheimer's disease," said Michael Kahana, director of Penn's Computational Memory lab.

A statement from UCLA said scientists will be looking at how to "intervene with sophisticated electrical stimulation to help restore memory function."

As an example of the kind of memory that researchers aim to restore, Sanchez cited a simple trip to the store, for which a person would need to remember the name of the store, where it is located, perhaps the phone number or the name of the owner.

Such facts can be difficult to recall when a person has a traumatic brain injury.

"Ultimately, at the end of the day we would like to find solutions for the emotional, social and economic aspects of those injuries," said Sanchez.

"This concept and this vision? Easier said than done," he added.

"There are huge technological challenges and scientific challenges that must be overcome to deliver these kinds of therapies back to our injured military personnel."

In response to concerns that the US military might be seeking to alter or remove the recall of soldiers in combat, Sanchez said DARPA is not doing any research in the area of erasing memories.

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