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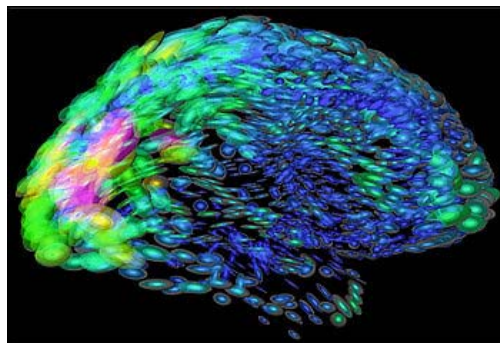
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Light therapy may help scientists detect and treat defective brain cells

Tuesday, March 9, 2010

This colorful photo illustrates some of the complexity of the brain. Recently, neuroscientists at the Massachusetts Institute of Technology began experimenting with a kind of light therapy to shut down abnormally active brain cells. Using implanted devices along with genes specially primed to react to light, the researchers deliver a jolt of light deep into the brain; doing so might allow them to control the defective cells.



(Arthur Toga/ucla School Of Medicine)

The idea is to manage the neural circuits thought to be responsible for epilepsy, Parkinson's disease and chronic pain. "In this way the brain can be programmed with different colors of light, to study and possibly correct the corrupted neural computations that lead to disease," said Brian Chow, one of the MIT researchers.

The specially primed genes, dubbed Arch and Mac by the MIT team, are key to the work. Arch is short for Archaeorhodopsin-3, which comes from one of the oldest bacteria on the planet, and Mac is short for one of the molecules from *Leptosphaeria maculans*, a common fungus. These genes convert light into electrical energy; when activated inside the brain, they prevent abnormal cells from firing, effectively disabling them. Blue light triggers Mac; yellow activates Arch. Pretty cool.

-- Charity Brown

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