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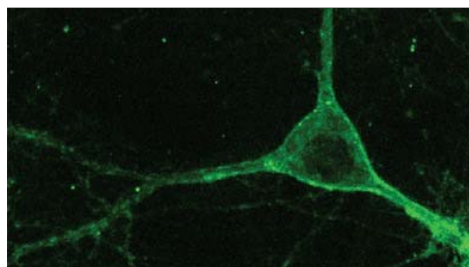
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Out Of The Labs

A Light Switch For The Brain

Jonathan Fahey, 01.06.10, 01:30 PM EST

Shutting parts of the brain off--and on again--with light.



Some of the most important advances in neuroscience have been made thanks to a pair of gruesome cases a century apart that left their victims alive, coherent and missing big portions of their brains.

In 1848 an iron spike three-and-a-half-feet long exploded through the face of a railroad worker named Phineas Gage and out the top of his head, landing 80 feet away. He lived and worked for a dozen years; the changes to his personality offered clues to how regions of the brain controlled specific functions.

In 1953, Henry Gustav Molaison, known to science as the patient H.M., lost a huge section of his brain to a lobotomy meant to treat his severe epilepsy. He quickly forgot every new thing he learned after the operation--he would have to be re-introduced to caretakers daily--and in the process taught science an extraordinary amount about memory until he passed away last month.

Here's a new tool for silencing brain regions, just a wee bit more subtle than an iron spike or a lobotomy:

Ed Boyden, a neuroscientist at the Massachusetts Institute of Technology, has developed a way to shut down parts of a brain just by shining light on them. When the light is turned off, the brain switches back on--a luxury not available to Gage or H.M.

"We can now digitally turn off regions of the brain," says Boyden. "We can alter the information in the brain in a strategically useful way."

Boyden's discovery, published in the journal *Nature* this week, is a powerful new tool for neuroscientists struggling to understand the complexity of the brain. With it, researchers will be able to probe how the circuitry of the brain works by silencing certain very specific areas or types of brain cells and studying the effects.

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