

professor in the MIT Media Lab and an associate member of the McGovern Institute for Brain Research at MIT, said in a news release.

"Using these new tools, we can look at two neural pathways and study how they compute together. These tools will help us understand how to control neural circuits, leading to new understandings and treatments for brain disorders -- some of the biggest unmet medical needs in the world," Boyden added.

He and his colleagues developed the super-silencers using two genes -- Arch and Mac -found in different organisms such as bacteria and fungi. The genes encode for lightactivated proteins that help organisms make energy. The activity of neurons engineered to express Arch and Mac can be inhibited by shining light on them. The light activates the proteins, resulting in lower voltage in the neurons, which prevents them from firing effectively, Boyden explained.

Yellow light silences Arch and blue light silences Mac.

"In this way, the brain can be programmed with different colors of light to identify and possibly correct the corrupted neural computations that lead to disease," study co-author Brian Chow, a postdoctoral associate in Boyden's lab, said in the news release.

## More information

The U.S. National Institute of Neurological Disorders and Stroke has more about neurological diagnostic tests and procedures.

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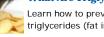
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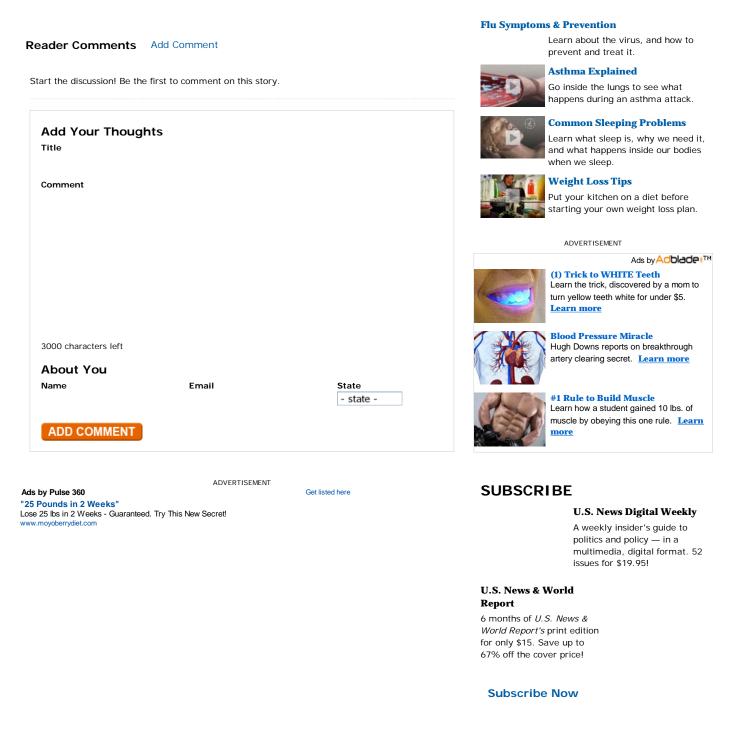
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