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Coloured lasers may offer a way to treat epilepsy

Coloured lights could be used to find treatments for brain disorders such as epilepsy, a study has suggested.

Laser lights can control cell signalling

A Massachusetts Institute of Technology team discovered a way to shut down brain activity using flashes of yellow and blue lasers.

They hope to adjust this to switch off neurons that generate an electrical impulse abnormally, causing seizures.

This could help experts understand how the brain works and, ultimately, offer treatment targets, Nature reports.

The work relies on two genes found in natural organisms like algae that need light to make energy.

Illuminating

These genes, known as Arch and Mac, contain the genetic code for light-activated proteins.

The MIT team engineered brain neurons to express Arch and Mac.

By doing this, they were able to control the brain cells of mice and monkeys using light.

> **"These tools will help us understand how to control neural circuits, leading to new treatments for brain disorders"**
>
> Ed Boyden
> Lead researcher

Light activates proteins which, in turn, lowers the voltage in the neurons and prevents them from generating an electrical signal, known as firing.

Arch responds to blue light, Mac to yellow, and both recover afterwards.

Now the researchers plan to closely examine the neural circuits of the brain in the lab to find targets that, when shut down, could treat epilepsy as well as other conditions including Parkinson's disease and chronic pain.

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