



Implantable prosthetic could help prevent epileptic seizures

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A system that could electronically detect and prevent epileptic seizures is under development at the Massachusetts Institute of Technology (MIT).

Researchers at the US university say the system will rely on an implantable prosthetic, which will detect electrical activity associated with seizures and then use light to rapidly drive or silence key neurons in order to halt the seizure.

They hope the research will identify an epilepsy treatment that will make specific neurons in the brain sensitive to being driven or silenced by light, taking advantage of 'optogenetic' modular technologies that have already been developed.

The researchers claim a wirelessly powered implant and controlled light source could be triggered externally, enabling the precise activation or silencing of specific neurons in the brain.

Prof Edward Boyden, a neuroscientist from MIT and leader of the research, said: 'Over the last several years, we've developed a suite of molecular tools that make neurons activatable or silenceable by pulses of light.

'These tools are in widespread use in science because they let you turn brain cells on or off, thus revealing what the cells do in the brain. We're eager to keep expanding this toolbox and also to help figure out clinical uses for the tools as novel therapeutics.'

The project has been funded by the Institute of Engineering and Technology (IET) since Boyden was awarded £300,000 as part of the inaugural A F Harvey Engineering Research Prize.

Nigel Fine, IET chief executive, said: 'Prof Boyden's outstanding research, into technologies that enable the electrical activity of brain cells to be controlled by light, has opened up the possibility of new kinds of treatments for otherwise untreatable brain disorders.'

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