Docket #: S10-340

Animal Model for Memory Disorders

Researchers in Prof. Karl Deisseroth's laboratory have used optogenetic tools to develop a precise, specific and inexpensive animal model of impaired memory. The inventors have used this approach to generate rodents that can be made to instantaneously transition into and out of the symptomatic state of impaired memory.

These mice were then used to identify precise neuronal circuit elements that create the disease-like state. Further, by targeting the dorsal CA1 field of the hippocampus, the inventors were able to turn fear memory recall on and off at will in real time – a potential novel approach to treating post traumatic stress disorder (PTSD). Additional applications of the technology include basic research of memory circuits or screening for interventions that enhance memory formation.

Related Optogenetics Inventions
The Deisseroth Laboratory has developed a wide variety of optogenetics tools, including opsin genes, medical devices, animal models, and screens. Additional information on these technologies can be found by clicking on the “more technologies from Karl Deisseroth” link below.

Applications

- **Research tool** - platform for studying PTSD, neurodegenerative disease, stroke and other conditions (to identify phenotypes, endophenotypes and treatment targets)
- **Screening** - to identify new targets and treatments for all forms of memory impairment
- **Therapeutic** - intervention for selective erasure or alleviation of fear memories in disorders such as PTSD

Advantages

- Vastly more **inexpensive, fast, easy, specific, reliable, and precise** than other animal models

Patents

- Published Application: 20130343998
- Published Application: 20190046554

Innovators

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