Docket #: S05-170

Temporally Precise, Genetically Targeted Optical Control of Neural Circuitry

Applications

- High-throughput cell-based screening for drugs that affect signal transduction
- Neuromodulatory therapeutics for the treatment of neurological disorders
- Drug dosing management in the context of diabetes and pain control

Advantages

- Millisecond kinetics enables a thousand-times faster voltage control
- The expression of the ChR2 channel does not affect membrane integrity and cell health
- This method does not require synthetic chemical substrates
- Allows genetic targeting so that specific neuron subclasses can be probed

Publications

- Boyden ES, Zhang F, Bamberg E, Nagel G, Deisseroth K. Millisecond-timescale, genetically targeted optical control of neural activity. *Nat Neurosci. 2005 Sep;8(9):1263-8. Epub 2005 Aug 14.*
- Published international patent application no. WO 2007/024391
- Published patent application USSN 11/459,637 no. US-2007-0053996-A1
- Published patent application USSN 11/459,638 no. US-2007-0054319-A1
- Published patent application USSN 11/459,636 no. US-2007-0261127-A1

Patents

- Published Application: 20070261127
- Published Application: WO2007024391
- Published Application: 20070053996
- Published Application: 20070054319
- Published Application: 20100234273
- Published Application: 20130184817
- Published Application: 20150165227
- Published Application: 20160096036
- Published Application: 20160252524
- Published Application: 20180328944
- Published Application: 20190049462
- Issued: 8,906,360 (USA)
- Issued: 9,278,159 (USA)
- Issued: 9,101,690 (USA)
- Issued: 10,422,803 (USA)
- Issued: 10,627,410 (USA)

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