Docket #: S08-071

Implantable Light Source with Integral Elongate Lens

Researchers in Prof. Karl Deisseroth's laboratory have developed a unique implantable device for optically stimulating light sensitive cells. Because this technology minimizes cell-damaging heat production, it provides added safety compared to previous light-generating devices (see Stanford Docket S06-068). In addition, the shape and structure of the device facilitates stereotactic implantation and fixation to bone. This technology can be used for precise spatial and temporal control of neurons and other cells for psychological therapy, muscle control, sensory functions, and other therapeutic interventions.

Related Technology
The Deisseroth lab has utilized a variety of photosensitive proteins to generate light-sensitive cells in vivo. This work is described in Stanford Dockets S05-170, S06-398, S08-105, and S08-348.

Applications

- **Medical device** - for stimulation of photosensitive cells

Advantages

- **Precise control** - optical control only stimulates the targeted, photosensitive cells (compared to electrode-based stimulation which is relatively indiscriminate with regards to the underlying physiology of the neurons stimulated)
- **Improved safety** - the device has a heat dissipation component that removes heat from the near optical transmission element to protect cells from heat damage

Patents

- Published Application: WO2009155371
- Published Application: 20110172653
- Published Application: 20130289676
- Published Application: 20160015996
- Issued: 8,956,363 (USA)
- Issued: 9,084,885 (USA)

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