Docket #: S10-339

Deep delivery of light to living tissues

Researchers in Prof. Karl Deisseroth's laboratory have developed a minimally invasive technique for delivering light to living tissue without optical fibers. This technology uses near infrared light to deliver energy into the depth of the brain where nanocrystals upconvert it to visible light. The approach provides non-invasive, acute or chronic neuromodulation for optogenetic research or therapeutics.

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

- **Optogenetics** - precisely controlled for:
  - acute or chronic neuromodulation
  - excitation or silencing of neural circuits

Advantages

- **Minimally invasive** - no optical fibers or light emitting devices implanted within the brain
- **Single step surgery** - to simultaneously inject opsin transgene and nanoparticle solution for light conversion
- **Perfect colocalization** of the light target (e.g. opsin expression) with the light source placement (e.g. nanoparticle)
- **Advantages of optogenetic studies:**

    - precise targeting of specific cells
    - fast optical interrogation

Patents

- Published Application: 20140148880
- Published Application: 20160317658
- Published Application: 20190217118

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