

## Laser Elicited Nerve Action Potentials

Opt Lett. 2005 Mar 1;30(5):504-6.

### **Optical stimulation of neural tissue in vivo.**

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For more than a century, the traditional method of stimulating neural activity has been based on electrical methods, and it remains the gold standard to date. We report a technological breakthrough in neural activation in which low-level, pulsed infrared laser light is used to elicit compound nerve and muscle potentials in mammalian peripheral nerve in vivo. Optically induced neural action potentials are spatially precise, artifact free, and damage free and are generated by use of energies well below tissue ablation threshold. Thus optical stimulation presents a simple yet novel approach to contact-free in vivo neural activation that has major implications for clinical neurosurgery, basic neurophysiology, and neuroscience.