

Opsin Biotherapeutics Awarded \$2.35 Million NIH Grant to Advance Optogenetic Neuromodulation for Chronic Pain

Non-dilutive funding supports IND-enabling development of a cell-type-selective alternative to electrical neuromodulation.

BEDFORD, TX, UNITED STATES, October 1, 2026 /EINPresswire.com/ -- [Opsin Biotherapeutics](#), a

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pioneering biomedical technology company, announced a two-year, \$2.35 million Phase II Small Business Innovation Research (SBIR) grant from the National Institutes of Health (NIH) National Institute of Neurological Disorders and Stroke (NINDS) titled “Optogenetic Neuromodulation for Chronic Pain”. It will fund the continued development of a breakthrough therapy designed to replace traditional electrical Spinal Cord Stimulation (SCS).

This non-dilutive Phase II award supports IND-enabling development of a cell-type-selective alternative to electrical neuromodulation and follows the successful completion of Opsin’s Phase I SBIR milestones, which demonstrated the

promise of utilizing light-based gene therapy to manage chronic pain without the limitations of electrical stimulation.

A Disruptive Biologically-selective Approach to Pain Management

Unlike traditional electrical stimulation, which often causes unwanted side effects and lacks cellular precision, Opsin’s proprietary platform utilizes optogenetic neuromodulation. This technology works by introducing specific DNA into targeted pain-blocking neurons, which are then activated using low-power red light to effectively modulate pain signals. Optogenetic neuromodulation confers light sensitivity on a defined neuronal population, so that activation is determined by which cells express the opsin rather than by the geometry of an electrical field.

Significantly, Opsin’s platform delivers its genetic payload without a viral vector. Instead, the company utilizes a non-viral method combining functionalized gold nanorods and low-powered near-infrared light to deliver the therapeutic DNA to the target cells. This non-viral approach is intended to avoid immunogenicity, the pre-existing-antibody exclusion criteria, and redosing

constraints that shape the development path for AAV-based therapies — and to preserve the option of repeat administration.

"This Phase II funding from NINDS reflects rigorous external review of both the science and the development plan, and serves as major validation for the potential of non-viral optogenetic neuromodulation as a disruptive new way to treat chronic pain," said Robert Benkowski, CEO of Opsin Biotherapeutics. " Our objective is not an incremental improvement on electrical stimulation. It is a fundamentally different control mechanism — one where selectivity is written into the biology rather than approximated by hardware. This award lets us advance optogenetic neuromodulation toward the clinic. "

Born from Strategic Collaboration

Opsin Biotherapeutics was formed as a joint venture combining the specialized expertise of its co-founders: Samarendra Mohanty, PhD, of [Nanoscope Technologies](#), and Robert Benkowski, MBA, of [DesignPlex Biomedical](#). The founders initially connected at a North Texas medical technology event, recognizing that a combination of Dr. Mohanty's cutting-edge mutation-agnostic gene therapy research and Mr. Benkowski's advanced medical device engineering created the perfect synergy for this novel combination therapy.

About Opsin Biotherapeutics

Opsin Biotherapeutics (OpsinBio) is a biotechnology company dedicated to developing next-generation, optogenetic therapies for the treatment of chronic and severe pain conditions. By bridging the gap between gene therapy and medical device engineering, OpsinBio aims to deliver highly targeted, device-activated biologics that improve patient outcomes and redefine the standard of care in pain management.

Robert Benkowski

Opsin Biotherapeutics

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