INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Method to Improve Neurotrophin-3 Delivery Via Specific Peptide Interactions

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OVERVIEW

A method for localized drug delivery of neurotrophin-3 to the central nervous system

- Promotes regeneration of the spinal cord, auditory nerves, and optic nerves
- An approach that is minimally invasive and which decreases uncontrolled release of NT-3

BACKGROUND

Neurotrophic factors found in the central nervous system (CNS) promote survival of developing and lesioned neurons while also enhancing nerve growth and regeneration. Clinically, regeneration of damage neurons after injury or disease can be accelerated via introduction of a biologic or small molecule therapy. Methods for delivery of these therapies typically rely on bolus injection which utilizes high does and results in the agent being widely dispersed. With the lack of localized, sustained, and bioactive delivery of nerve regeneration therapies, a need exists for new drug delivery methodologies to treat CNS related injuries and diseases.

INNOVATION

Researchers have discovered a system that serves as a method for localized drug-delivery of neurotrophin-3 (NT-3) to the central nervous system via high-affinity NT-3 ligands mounted to solid polymer scaffolds. The system can be used to deliver NT3 to the spinal cord, auditory nerves, and optic nerves for treatment of neurodegenerative diseases. This approach is minimally invasive and decreases the uncontrolled bulk release of NT-3. Furthermore, the enrichment tool provides prolonged NT-3 bioactivity. In addition to its defined role for the

treatment of neurodegenerative disorders, the NT-3 enrichment methodology can create a laboratory approach for investigations of NT-3 behavior in single cells.