Researchers at the University of South Florida have invented a novel non-invasive method for direct delivery of therapeutics to the spinal cord in the treatment of spinal cord pathology.

Systemic intravenous administration of therapeutics provides limited cell or drug distribution within the spinal cord leading to diminished efficacy. Furthermore, systemic administration results in increased costs and risk of system toxicity due to the higher dosage amounts required. Current treatment of motor neuron disorders such as Amyotrophic Lateral Sclerosis, spinal cord injury, spinal cord stroke, or spinal ischemia is ineffective due to the non-selective, systemic, and often indirect nature of cell or drug delivery.

USF inventors have developed a novel technique that allows selective, safe and effective, non-invasive approach to treating specific spinal cord disorders.

This method enables selective distribution of therapeutics within the spinal cord directly to the target area of interest. This will allow the delivery of wide range of potentially therapeutic agents such as pharmacologics, cells, gene therapy etc. Direct delivery of therapeutics into discrete regions of the spinal cord will achieve improved motor function outcomes in patients, as well as circumvent deleterious side effects associated with administered agents entering into extra-spinal cord organs. Localized delivery of therapeutics will also allow lower doses of therapeutics for effective treatment.

ADVANTAGES:

- Less brain or systemic exposure
- Multiple application in the treatment of neurodegenerative disorders
- Improves delivery and enhances efficacy

Highly Specific Delivery of Therapeutics to the Spinal Cord

Selective delivery of Evans Blue (EB) dye in cross-section of rabbit cervical spinal cord.
Our minimally-invasive method achieved direct EB dye delivery to distinct spinal cord area. In cervical 2 segment, EB (red) is clearly visible within capillaries on left side of spinal cord.

Tech ID # 15B171