**Novel Composition and Method for Treating Spinal Cord Injuries**

This technology has demonstrated proof of concept in rat models of spinal cord injury and offers early promise for developing a human therapeutic of spinal cord injury.

**Background**

Contusions are the most common spinal cord injury (SCI) in humans and often result in partial damage or complete lesion of the corticospinal tract (CST). NG2 belongs to the family of chondroitin sulfate proteoglycans that are upregulated after spinal cord injury (SCI) and are major inhibitory factors restricting the growth of fibers after SCI. Recently, monoclonal antibodies have been developed that specifically neutralize the inhibitory properties of the NG2 proteoglycan, leading to axonal regrowth into the non-permissive environment of the glial. Gene therapy with the neutralizing antibodies against NG2 using adeno-associated virus as gene delivery vector is a promising approach for SCI and other neurodegenerative injuries.

**Technology**

Dr. Levine, Professor at Stony Brook University and Director of Multiple Sclerosis Collaborative Research Center, in collaboration with his colleagues at Northport VA Medical Center and Penn State, have developed a novel single chain antibody against the NG2 proteoglycan and created an adeno-associated virus, AAV-rh10, expressing this antibody. AAV-rh10 has high tropism for both neuronal and glial cells and carries a promising potential as gene therapy vector for SCI and other neurodegenerative injuries.

**Patent number/Publication:**
- Patent pending

**Advantages**
- Animal data showing recovery of function
- High transduction efficacy in glial and neuronal cells
- No changes in inflammatory response
- Safe

**Applications**
- Brain injury
- Spinal cord injury
- Neurodegenerative injuries

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