Neural Stem Cell Relays for Severe Spinal Cord Injury

Grant Type: Quest - Discovery Stage Research Projects
Grant Number: DISC2-10665
Project Objective: Completion of preclinical proof of concept activities for a human H9-scNSC therapeutic candidate for the treatment of spinal cord injury.

Investigator:
Name: Mark Tuszynski
Institution: University of California, San Diego
Type: PI

Disease Focus: Neurological Disorders, Spinal Cord Injury
Human Stem Cell Use: Embryonic Stem Cell
Award Value: $1,905,173
Status: Active
Application Title: Neural Stem Cell Relays for Severe Spinal Cord Injury
Public Abstract:
We propose to utilize human neural stem cells to form neuronal relays across sites of severe SCI, restoring function across the site of spinal cord injury.

Impact
We will develop a specific type of neural stem cell that is best suited for repairing the injured spinal cord.

Major Proposed Activities
- In Vitro Assessment of GMP-compatible H9-scNSC Batches.
- In Vivo Assessment of GMP-compatible H9-scNSC Batches.
- In Vivo Assessment of Disease Modifying Activity over time, Model 1: T10 moderate contusion.
- In Vivo Assessment of Disease Modifying Activity over time, Model 2: T3 severe compression.
- In Vivo Assessment of Disease Modifying Activity over time, Model 1: C5 moderate contusion.
- FDA Pre-pre IND Meeting.
Statement of Benefit to California: Spinal cord injury (SCI) affects approximately 300,000 people in the U.S. with more than 11,000 new injuries per year. This research plan will examine a novel therapeutic strategy for SCI. Neural stem cells will be generated from human embryonic stem cells and grafted into animal models of SCI. We predict neuronal relays will form across a SCI lesion site that will mediate behavioral recovery. These studies will form the basis for clinical translation for the treatment of spinal cord injury.