### Research Theme
Neuroscience and Mental Health

### Research Project Title
Enhancing Nerve Regeneration after Spinal Cord Injuries by Scaffold Design and Sustained Non-viral Gene Silencing

### Principal Investigator
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### Project Description
Spinal cord injuries (SCI) result in tremendous healthcare burden due to early loss of function in patients. Associated with such traumatic nerve injuries are nerve degeneration and demyelination. Unfortunately, currently available clinical approaches do not directly tackle these issues but rely mainly on preserving and preventing further deterioration of the injured nerve. The overall objective of this project is to develop a scaffold-mediated gene silencing approach to direct remyelination and nerve regeneration in traumatic nerve injuries after SCI. We will focus on controlling remyelination, nerve regeneration and functional recovery in an injured spinal cord using RNA interference via microRNA delivery.

The scope of the project includes:

   a. Establish a robust method to incorporate microRNAs (miRNAs) into scaffolds using electrospinning.
   b. Characterize the physical properties of miRNA-incorporated scaffolds in terms of fiber diameter; drug distribution; release kinetics and bioactivity.
   c. Understand cellular interactions with gene-silencing scaffolds by evaluating cell phenotypic changes in vitro (proliferation, apoptosis, morphology, differentiation, gene and protein expression changes).

### Contact Us
If you have questions regarding this project, please email the Principal Investigator.
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