Researchers at the University of South Florida have developed a new treatment for traumatic brain injuries utilizing long noncoding RNAs (IncRNAs) from adipocyte derived stem cells.

In the United States, an estimated 2 million Americans suffer from traumatic brain injury (TBI), accounting for 30% of all injury-related deaths. TBI survivors exhibit motor and cognitive symptoms from the primary injury that can become aggravated over time due to secondary cell death.

An attractive cell therapy for regenerative medicine and wound healing is the use of mesenchymal stem cells derived from adipose tissue and their secretome. These have the potential to proliferate, differentiate into different cell lineages, secrete an extensive secretome containing growth factors, cytokines, chemokines, microRNAs, and long noncoding RNA.

Our researchers have shown that IncRNAs secreted from adipocyte derived stem cells (ADSC) can improve certain motor, cognitive, and histological deficits related to TBI and other related diseases. Rats with induced TBI improved their performance in a number of tests including cognitive and motor oriented challenges.

This approach provides for numerous new treatment modalities for TBI and related diseases. Furthermore, it can also be used for diagnosing TBI through the use of IncRNAs as biomarkers.

**ADVANTAGES:**
- Improved cognitive performance
- Improved motor skills
- Prevents cortical and hippocampal damage

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**Innovative New Therapy**

**CA3 neuronal loss in mice treated with conditioned media (CM) and human adipose derived stem cells (hADSC) containing or express IncRNAs respectively**

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