

**Luther Jerrelle Bishop**

Undergraduate

LSU Baton Rouge

Dr. Alison Smith

LSUHSC, Department of surgery, University Medical Center

**“Comparison of Cell Growth Between Healthy and Damaged Adipose-Derived Stem Cells in a Bioreactor”**

Background: Every year over 11 million people in the world are affected by Burn derived injuries with 180,000 succumbing to their wounds. The American Burn association found that 450,000 people in the U.S. alone are injured due to burns and are in medically treated. Burn wounds are common and with a lot of major infrastructure in America revolving around corrosive and highly explosive materials that can cause burns. Stem cells help in wound healing when burn traumas happen as when a burn happens those cells that were killed must be replaced and stem cells are the one to replace those damaged or dead cells healing the area.

Objective: test how effective in growth (ADSC) adipose derived stem cells both healthy and damaged in an environment that mimics the human body when injured by a burn.

Methods: ADSC were cultivated in a static flask for a week to build up 100 thousand for the reactor, once incubated for the time the cell were then transferred to a RCCS4D bioreactor system in a 10ml (about 0.34 oz) HARV to be suspended in an in vitro setting that will mimic in vivo. The cells were incubated in 5% media to simulate a lacking condition as 10% media is standard in cell cultivation.

Results: the experimental group from damaged adipose tissue grew exponentially from the initial 100 thousand to 3.6 million ADSC's int eh span of 5 days in the bioreactor.

Conclusion: ADSC's from damaged tissue a quite capable of reproducing and even in a unfavorable environment are still quite capable of stimulating cell growth for repairs.