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Cell therapy for muscle injuries

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Abstract

Skeletal muscle injuries are a major cause of disability, loss of mobility and quality of life. Current treatments for severe muscle dysfunctions are insufficient and cell therapy using adult muscle precursor cells (MPCs) provides a novel therapeutic approach. Recent preclinical and clinical data on MPC therapy show little to no effect on muscle function recovery. Using a rat model of muscle injury, we have demonstrated the ability of MPCs to survive, proliferate, differentiate and integrate with host myofibers and tissue of young animals. Despite the continued presence of the cells, little functional improvement was detected. However, differential effects of MPC therapy were detected between young and older animals, and male and female animals, with and without cell therapy. This data demonstrates that age- and gender-dependent differences in muscle regeneration must be considered when designing cell therapy approaches.

Biography

Criswell is a junior faculty member at the Wake Forest Institute for Regenerative Medicine and the Wake Forest Sticht Center on Aging. Dr. Criswell is a cell and molecular biologist with vast experience in growth factor research and cell signaling pathways, in regards to skeletal muscle biology, physiology and regeneration. Dr. Criswell's specific interests are in exploring the cellular and micro-environmental "cues" that regulate skeletal muscle regeneration after injury and are differentially expressed due to age and gender, in order to develop novel therapies for the restoration of muscle function in the aged population.