

COMPOUNDS THAT PROMOTE AND REJUVENATE ADULT TISSUE REGENERATION

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,214,725	02/26/2019	2013-040

BRIEF DESCRIPTION

Muscle mass and the ability to repair after injury and exercise, severely declines with age, beginning in the late 20s and precipitously plummeting at 40-50 years of age. A major cause if this decline is the inability of old muscle stem cells to become activated and for muscle progenitor cells to proliferate and regenerate muscle fibers, as a result of increases in inhibitory signaling cues to the resident stem cells, and decreases in activating cues. A complex mixture of hESC-secreted proteins has the ability to enhance muscle progenitor cell (myoblast) proliferation, but when the heparin binding proteins are depleted, the remaining proteins no longer have regenerative effects.

Scientists at UC Berkeley have identified the factors and developed methods for heparin-based enrichment of the pro-regenerative proteins and reported the effect of these proteins on tissue repair. Furthermore, they have shown that a cocktail of TGF- β and other components increased old muscle regeneration after injury, which forms another defined composition of pro-regenerative factors.

The heparin-binding proteins and factors, as well as a cocktail of TGF- β can be further developed therapeutically to enhance and maintain muscle regeneration in the old, and also to enhance muscle repair after excessive exercise or injury. Additionally, these factors can be tested and used for the enhancement of neurogenesis in the old brain. Broad positive effects of these factors on the maintenance and repair of other adult and old tissues (skin, bone, liver) are also anticipated.

SUGGESTED USES

- » Therapy for degenerative diseases like alzheimer's, sarcopenia, muscle wasting, dystrophies.
- » Booster for tissue regeneration following surgical reconstruction or healing
- » Adjuvant for stem cell therapies
- » Supplemental to enhance in vitro culture of stem cells

ADVANTAGES

- » Potentially rejuvenate old muscle cells and progenitor cells
- » Specifically affect the pathways accounting for age-specific decline in tissue repair.
- » Can act via systemic delivery
- » More effective, safer and lesser side effects

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OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
- » Health
- » Proteomics
- » **Medical**
- » Disease: Autoimmune and Inflammation
- » Disease: Musculoskeletal Disorders
- » Rehabilitation
- » Stem Cell
- » Therapeutics

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