

Vigilant Cells

Researchers at the University of South Florida have developed a novel system that utilizes vigilant cells with stable vectors to prevent or reverse tissue damage caused by disease.

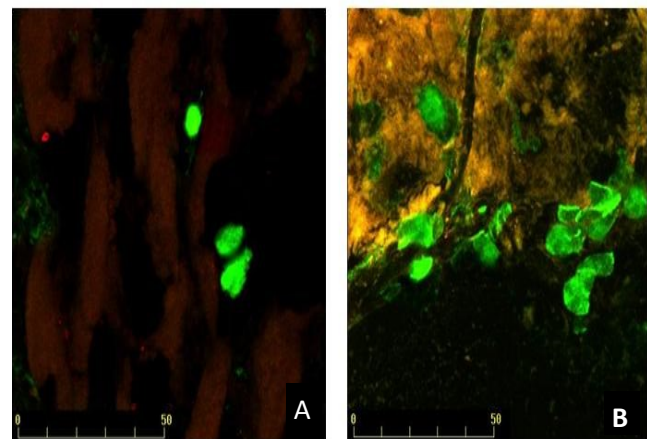
Stem cell-based therapies are being explored for the treatment of several disease states characterized by damaged tissue. Although stem cells injected into damaged tissue have been shown to at least partially regenerate the tissue, the delivered cells and/or regenerated tissue are typically destroyed by the underlying cause of the disease. The development of methods for enhancing the survival of transplanted stem cells and/or regenerated tissue would be ideal in the successful implementation of stem cell regenerative therapy.

Researchers at USF have developed methods to modify a tissue by delivering vigilant cells engineered to express protective or therapeutic genes. Integrated within the vigilant cells are stable vectors containing a gene switch/biosensor, and a gene amplification system to prevent or reverse tissue damage caused by disease. Grafted vigilant cells modified in this manner may more efficiently supplement the function of weakened regenerated tissue compared to non-vigilant cells. This novel method may be used in a number of different applications including treatment methods for diseases such as diabetes, cancer, stroke, pulmonary fibrosis, arthritis, atherosclerosis, inflammation and hypoxia in cardiac tissue.

ADVANTAGES:

- Tissue-specific
- Can be applied to a number of diseases
- Prevents cell death in treated tissues
- Allows the use of naturally occurring transgenes

Vigilant Stem Cells to Prevent or Reverse Tissue Damage Caused by Disease



Apoptosis in Vigilant Stem Cells Group (A) versus Mesenchymal Stem Cells (MSCs) Group (B)

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