THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

Biologic Therapeutics

carolina blue™ opportunity

Transfection of Immune Cells for Targeted Treatment of Disorders and Diseases

Transfected macrophages facilitate genetic material transfer, allowing for successful treatment of genetic diseases. This technology can be specified with transfected anti-inflammatory macrophages facilitating gene transfer to diseased muscle tissues for treatment of various muscular diseases.

Benefits

Immune cells used in gene delivery allow the immune cells to infiltrate tissues and deliver genes, mRNA, or a drug to the diseased host tissue. This allows for active targeting of the drug, protein, or gene transport to the disease sites; gene preservation in the blood stream; prolonged drug half-lives; and time-controlled drug release.

For More Information

If you would like more information about this technology or UNC - Chapel Hill's technology transfer program, please contact:

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The Technology

Research has indicated that macrophages transfer not only expressed protein to the target cells, but also genetic material (pDNA and/or mRNA) thus transfecting neurons. Immune cells are involved in the inflammation, repair and regeneration following tissue injury or infection. By transfecting immune cells with plasmid DNA encoding therapeutic genes, the immune cells can be administered to deliver the therapeutic proteins to diseased tissues.

Non-ionic polymers are, so far, not recognized as having ability to transfect immune cells. These polymers do not interact with DNA resulting in an inability to change the structural characteristics of supercoiled plasmid DNA. Transfecting immune cells with plasmid DNA encoding therapeutic genes allows for delivery to diseased tissue to aid in repair and regeneration.

Cell-mediated active gene delivery improves the therapeutic outcomes in treatments of disorders and diseases, such as neurodegenerative disorders - Alzheimer's and Parkinson's - as well as muscular diseases like myopathies, neuromuscular dysfunctions, and soft tissue sarcoma inflammation and infection.

Opportunity

UNC's Office of Technology Development seeks to stimulate development and commercial use of UNC-developed technologies. UNC is flexible in its agreements, and opportunities exist for joint development, academic or commercial licensing (exclusive, non-exclusive, and field-of-use), publishing, or other mutually beneficial relationships.

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