BIO-05-002 - RHEUMATOID ARTHRITIS - Treatment of Rheumatoid Arthritis Using RNA Interference

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Technology description

Description

This invention concerns a new approach to the treatment of rheumatoid arthritis (RA) by "tolerogenic vaccination" with small interfering RNA (siRNA) technology. This method represents a preferred embodiment of our intellectual property for methods of manipulating immune system using siRNA. The inventors have demonstrated that manipulating antigen-presenting cells, such as dendritic cells, with siRNA can lead to potent immune modulation in vitro and in vivo. Using the murine model of RA, collagen II-induced arthritis (CIA), our scientists have demonstrated that the progression of RA can be blocked through the administration of dendritic cells treated with siRNA specific to IL-12, as observed by a decreased pathological score, inhibited inflammatory infiltrate, and suppressed T cell and B cell responses. This study serves to demonstrate that "tolerogenic vaccination" could prove to be a powerful new approach to the treatment of RA and other autoimmune diseases.
Rheumatoid arthritis effects nearly 1% of the world population. Within the United States, 2% of the population or approximately 2.5 million individuals suffer from rheumatoid arthritis. Existing therapies have offered symptomatic relief from inflammation associated with rheumatoid arthritis but have not addressed the root causes of the disease. The current market for rheumatoid arthritis drugs is estimated to be worth more than $8 billion in the United States. This market is expected to continue to increase as more individuals are prescribed disease modifying agents. The most highly prescribed products have reported sales in excess of $500 million per year.

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