



TECHNOLOGY

Targeted Therapeutic Vaccination

OVERVIEW

Background

Immunotherapy is a growing field within the health care industry, which focuses on the idea of selectively stimulating or suppressing aspects of a patient's immune system to enhance or regulate the immune system's response during a specific disease. Numerous new cancer treatments have come to market that are based on immunotherapy. However, most of these treatments involve antibodies that are costly to manufacture and only target a small portion of the patient population. These antibody treatments work by selectively binding to the cancer cells, marking the cells for attack by the immune system.

Therapeutic vaccines are an exciting developing area of immunotherapy. Therapeutic vaccines function similar to preventative vaccines by modifying the patient's immune system to combat the disease of interest. For cancer, therapeutic vaccines guide the patient's immune system to destroy the cancer cells. For autoimmune disease, therapeutic vaccines dampen the immune systems excessive response to the patient's cells. Unfortunately, therapeutic vaccines have not had the success that antibody treatments have had in clinical trials, and few are currently on the market.

Innovative Technology

Researchers at the University of Maryland have developed a biomaterials platform to dramatically increase the efficiency and specificity of therapeutic vaccines. This platform technology allows efficient targeting of vaccine to lymph nodes using new delivery methods. Additionally, the dose, delivery kinetics, and combinations of immune signals or immunomodulatory agents in the vaccine can be tuned for target applications. This increased efficiency and specificity could help realize the potential of therapeutic vaccines and allow this new class of immunotherapies to move into clinical trials for patients with cancer or autoimmune disease.

Examples of achievements obtained with this platform include rapid generation of antigen-specific immune memory that is being exploited for cancer vaccination, and elimination of neurological symptoms in mouse models of autoimmune disease following mid or late-stage treatment.

APPLICATIONS

- Therapeutic treatment of autoimmune diseases
- Therapeutic vaccination against pediatric and adult cancers

ADVANTAGES

- Potential to promote long-lasting, specific tumor immunity that combats cancer relapse
- Selective suppression of abhorrent autoimmune reactions and inflammation without broad suppression of appropriate immune functions
- Lower, less frequent dosing which limit side effects and minimize patient burden

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Additional Information

INSTITUTION

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PATENT STATUS

Pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Biologics
- Biomaterials
- Drug delivery devices
- Vaccines

EXTERNAL RESOURCES

- [US Patent 9,610,349](#)
- [US Patent 10,071,145](#)

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