



TECHNOLOGY

A Nanomaterial Platform For Auto-immune Disease Therapy

OVERVIEW

Background

The immune system protects the body from foreign pathogens. However, errors in the immune system can cause attacks on and elimination of the body's own cells - called autoimmune reactions - the primary cause behind multiple sclerosis, rheumatoid arthritis, certain types of allergies, and asthma. Such reactions are also relevant during organ and limb transplants. Autoimmune reactions, once triggered, often target either specific organs/cell types or the entire body resulting in chronic, debilitating, and eventually life-threatening disease. Current therapies for such conditions employ immunosuppressants for life that often leave the patient immunocompromised for opportunistic infections. A targeted therapy directed at specific antigens responsible for the disease condition would preclude the need for non-specific immunosuppressant therapies and vastly improve the patient quality of life.

Innovative Technology

Researchers at the University of Maryland have developed a novel combination-nanomaterial platform for the treatment of autoimmune disorders. The platform involves the use of microneedle arrays coated with biological macromolecule layers to trigger the activation of regulatory immune cells, as opposed to inflammatory immune cells, ultimately alleviating autoimmune disease severity.

Advantages

- Disease specific treatments targeted toward specific antigens
- Control over the immune signals and context where the antigen is presented
- Circumvents biomaterial-derived inflammatory responses

Applications

- Targeted therapies to autoimmune disease

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Additional Information

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PATENT STATUS

Pending

LICENSE STATUS

Contact OTC for licensing information

EXTERNAL RESOURCES

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