



TECHNOLOGY

Application A: Novel Strategy to Regulate Inflammation; Application B: Novel Strategy to Facilitate Intracellular Delivery of Drugs Regardless of the Drug or Drug Carrier Geometry.

OVERVIEW

For Application A: Novel Strategy to Regulate Inflammation

Executive Summary

Background

Inflammation involves migration of white blood cells or leukocytes from the circulation into tissues across a thin cell layer of cells (endothelial cells) that covers the inner wall of blood vessels. There are two recognized pathways that allow said migration of leukocytes across the endothelium, namely migration between adjacent endothelial cells or migration across the body of an endothelial cell. Currently, some of the key regulatory mechanisms of endothelial cells involved in migration of leukocytes remain unknown.

Innovative Technology

Researchers at the University of Maryland, College Park have identified new regulatory clues by which endothelial cells contribute to migration of leukocytes from the circulation to tissues and have designed a novel strategy to modulate and, hence, intervene in inflammation.

Advantages

- 1) This strategy does not aim to block interaction of leukocytes with the endothelium or inactivate leukocytes, which impairs the immune system
- 2) This strategy provides control over the route of migration of leukocytes.

Applications

- 1) Model to examine transmigration of WBCs across the endothelium
- 2) New Strategy to regulate migration of leukocytes across the endothelium
- 3) Development of products to control and modulate inflammation and diseases associated to inflammation, such as acute lung injury, atherosclerosis, diabetes, hypertension, autoimmune diseases, and others.

IP status: Patent Pending

For Application B: Novel Strategy to Facilitate Intracellular Drug Delivery Regardless of the Drug or Drug Carrier Geometry

Executive Summary

Background

Successful therapeutic interventions often require effective and safe delivery of drugs within cells in tissues affected by disease. However, many drugs cannot access the interior of cells by themselves. Also, this goal remains a challenge for many drug delivery carriers that are designed to modulate drug solubility, circulation, and other parameters of drug delivery. In many cases limitations are imposed by the chemistry, as well as the size and shape of drugs and/or their carriers, which are not amenable for internalization within cells.

Innovative Technology

Researchers at the University of Maryland, College Park have developed a novel strategy to facilitate internalization of drugs and/or their carriers into cells regardless of their chemistry and geometry.

Advantages

- 1) Biocompatible - natural means of transporting drugs and / or carriers into cells.
- 2) Broad platform applicable to a variety of drugs and pharmacological/clinical applications.
- 3) It can be combined with other strategies of drug targeting to cell markers and/or drug loading into/onto carriers.

Applications

- 1) Transport of therapeutics and/or their carriers in the body, supporting multiple basic, research and translational applications
- 2) Applicable to delivery of therapeutic and imaging agents with application in cardiovascular, hemotological, pulmonary, metabolic, oncological, genetic diseases, and others.

IP status: Patent Pending

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

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EXTERNAL RESOURCES

- [US Patent 9,901,625](#)

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