



TECHNOLOGY

Engineered quantum dots as therapeutic vehicles and research reagents

OVERVIEW

Background

Quantum dots(QDs) are ultra-small colloidal nanoparticles that have unique properties for in vivo imaging, diagnostics, and delivery of drugs and therapeutics. Prior research has employed quantum dots for in vivo targeting and imaging in cancer and the central nervous system. Rational surface modification of quantum dots with bio-molecules could support novel strategies for more effective and specific treatments during disease.

Innovative technology

Researchers at the University of Maryland have developed a unique approach to combining immunology and quantum dots to promote antigen-specific tolerance during autoimmunity. The researchers demonstrate significant reversal of symptoms in a mouse model of multiple sclerosis relative to control animals, by using myelin-antigen tagged quantum dots.

Advantages

- 1) No existing autoimmune treatment options provide antigen-specific tolerance
- 2) Ultra-small QDs promote highly efficient lymphatic drainage
- 3) Modular modification technology allows tunable control over the density of ligands coated onto QDs to direct inflammatory and regulatory immune functions
- 4) Modified QDs allow simultaneous therapy and tracking to immune tissues owing to intrinsic fluorescent properties

Applications

Targeted therapy of autoimmune diseases; research reagent for studying and tracking immune cell functioning and trafficking

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Pending

EXTERNAL RESOURCES

LS-2016-036