

# Nanoparticles for Drug Delivery, Tissue Targeting and Imaging Analysis

Tech ID: 24124 / UC Case 2010-279-0

### ABSTRACT

Nanoparticles made of lipoproteins, lipids, and telodendrimers for *in vivo* drug delivery, tissue/cancer targeting, and imaging analysis.

### **FULL DESCRIPTION**

Nanolipoprotein particles (NLPs) are nanoscale patches of lipid bilayer stabilized by peripheral scaffold. NLPs have distinct advantages over currently used membrane systems in terms of particle size and consistency. Currently, the greatest use of NLPs has been the stabilization and characterization of membrane proteins.

Researchers at the University of California, Davis have developed a novel nanoparticle. When used to synthesize NLPs, these nanoparticles allow for NLPs to be used in in vivo drug delivery, tissue/cancer targeting, and imaging analysis. Additionally this technology also provides important information about the structure and function of membrane-bound proteins in water soluble particles that mimic the hydrophobic cell membrane. The combination of lipoprotein, lipids, and telodendrimers creates highly homogenous nanoparticles throughout the NLP, which has not been achieved by other means.

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#### **APPLICATIONS**

Supporting membrane proteins, small molecules, hydrophobic drugs and other moieties for

targeting specific tissues and tumors for drug treatment and drug development

- Rapid design and production of *in vivo* targeting, imaging and therapeutic delivery of
- biologically active molecules though direct surface conjugation to the telodendrimers
- ▶ Effective drug delivery system that can further increase drug efficacy

### **FEATURES/BENEFITS**

- Nanoparticle synthesis does not require pre-purification of reagents or detergent
- solubilization of components
- Allows for the production of membrane proteins that can be captured as isolated as soluble entities
- Utilizes entirely cell-free processes and technologies

## CONTACT

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### INVENTORS

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### OTHER INFORMATION

#### **CATEGORIZED AS**

- Biotechnology
  - Health
- Medical
  - Delivery Systems
  - ► Therapeutics

RELATED CASES

2010-279-0

Telo-NLP nanoparticles can execute site specific attachment/immobilization though telodendrimer-based chemistry, which means that no antibodies or fusion protein tags are required to immobilize the nanoparticles on any desired surface

▶ Telo-NLP nanoparticles use non-antigenic material

▶ The final size and monodispersity of the nanoparticles can be selected for by varying the

ratio of telodendrimer-to-lipid concentrations, or varying the telodendrimers themselves

Multiple types of telodendrimers can be used in synthesis to allow for multifaceted

functions, including tumor targeting or drug delivery

Novel size and stable compound

### **PATENT STATUS**

Country	Туре	Number	Dated	Case
United States Of America	Issued Patent	11,053,322	07/06/2021	2010-279

Additional Patent Pending

### **ADDITIONAL TECHNOLOGIES BY THESE INVENTORS**

- Novel Solid Tumor Chemodrug LLS2
- Affinity Peptides for Diagnosis and Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 and Zika Virus Infections
- Conjugates That Combine HDAC Inhibitors and Retinoids into Disease Preventatives/Treatments
- Artificial Intelligence-Based Evaluation Of Drug Efficacy
- ▶ A Novel RGD-Containing Cyclic Peptide for use in Cancer Imaging and as a Targeted-Therapy Ligand
- Site-Specific Ligation and Compound Conjugation to Existing Antibodies
- Ligands for Alpha-4-Beta-1 Integrin
- Functional Illumination in Living Cells
- Multifunctional Porphyrin-Based Nanomedicine Platform
- Engineered Biomaterial to Prevent Endothelial Inflammation
- ▶ PVA Nanocarrier System for Controlled Drug Delivery
- Systems and Methods of Single-Cell Segmentation and Spatial Multiomics Analyses

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