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Modified Nano-delivery System and Method for Enhanced In vivo Medical and Preclinical Imaging
Patent Pending

Novel Nano-Delivery System for Medical Imaging and Preclinical Imaging

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Key Features:

- Novel modified nano-carriers for delivery
- Enhances diagnostic and therapy for better pre-clinical / clinical outcome
- Can incorporate more than one diagnostic molecules and produce a variety of release/delivery profiles

Field:

Preclinical Imaging

Technology:

Novel Nano-Delivery System for Medical Imaging and Preclinical Imaging

Stage of Development:

Pre-clinical development

Status:

Seeking further research & development support and/or licensing partner.

Patent Status:
Pending

Background:

Imaging techniques have been used in medical practice and clinical trial for non-invasive diagnosis of disease and progression of treatments. Medical imaging is the technique and process used to create images of the human body (or parts and function thereof) for clinical purposes (medical procedures seeking to reveal, diagnose or examine disease) or medical science (including the study of normal anatomy and physiology).

Statement of Problem:

Despite the foregoing advancements, the outcome or utility of these techniques is limited for one or more reasons, as has been made apparent. Accordingly, what is needed is a delivery system of active biomedical/pharmaceutical agent(s) used for in vivo (whole body, organ, or tissue-specific) medical and preclinical imaging for intravenous, intraperitoneal, or inhalation route in such a fashion that it allows incorporation of the multiple systems in such manner that hurdles of individual techniques may be overcome. However, in view of the art considered as a whole at the time the present invention was made, it was not obvious to those of ordinary skill in the field of this invention how the shortcomings of the prior art could be overcome. To date, no study has been reported on the use of modified nanoparticle for in vivo (whole body, organ or tissue-specific) imaging comprising one or more active biomedical/pharmaceutical agents.

Potential Solution:

The present invention relates to a method of delivery of modified nanostructures of active biomedical and pharmaceutical agent(s) for longer sustained bioluminescent, fluorescent, or contrast signals and increased signal flux at specific sites of interest on the body.

Commercialization Status:

This technology is developed and tested for pre-clinical use of diagnostic bioluminescent and fluorescent system for (Luciferin and Xenolight DiR) in the pre-clinical cancer (lung, breast) models (xenograft, orthotopic, metastatic) by intravenous, intraperitoneal and subcutaneous delivery system. R&D was funded at FAMU by the NIH- MBRS-SC1 program (Grant # SC1 GM092779-01) Already, the development of the nano-carriers (Nano-Luc and Nano-LucDiR) was carried out and evaluated for in-vivo performance (pharmacokinetics, toxicity and diagnostic potential). We are seeking collaborative partners or licensees in the Biotechnology and/or Pharmaceutical Industries to take these developments into commercialization.