May 8th, 12:30 PM - 1:30 PM

Glyconanoparticle Uptake Profile in Lung Carcinoma Cells

Kalana W. Jayawardana

University of Massachusetts Lowell

Let us know how access to this document benefits you.

Follow this and additional works at: https://escholarship.umassmed.edu/cts_retreat

Part of the Biochemistry Commons, Cancer Biology Commons, Chemistry Commons, Nanoscience and Nanotechnology Commons, Neoplasms Commons, and the Translational Medical Research Commons


Creative Commons License

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License.
This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in UMass Center for Clinical and Translational Science Research Retreat by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
ABSTRACT: Non-small cell lung carcinoma (NSCLC) is responsible for nearly 85% of lung cancer, and early diagnosis and treatment of lung cancer can circumvent possible death. We focus on glyconanoparticles with a magnetic or a fluorescent core that act as multivalent glyco-scaffold to study cell surface interaction and internalization. The glyconanoparticles were synthesized by conjugating various carbohydrates on magnetic nanoparticles and fluorescent silica nanoparticles by a photocoupling technique developed in our laboratory. The size of nanoparticles used varies from 6 nm to 60 nm. The resulting glyconanoparticles were treated with human adenocarcinoma non-small lung epithelial cells (A549) and the primary small airway epithelial cells (PCS-301-010). The cellular uptake was studied and quantified by confocal fluorescence microscopy, flow cytometry, thin section TEM, and prussian blue staining. We found that the extent of cellular uptake was dependent on the type of carbohydrate ligands and the nature of the nanoparticles used. Experiments were conducted to investigate the mechanism of the uptake, and results will be discussed.