Washington University in St. Louis
Office of Technology Management

COMPOSITIONS FOR TARGETING PATHOLOGIC CELLS AND TISSUES

Achilefu, Samuel, Liang, Kexian, Shen, Duanwen, Tang, Rui, Xu, Baogang

Markiewicz, Gregory

T-015230

Background:

Almost 1.7 million new cancer cases are diagnosed in the US each year. Pancreatic cancer is particularly lethal, with an estimated 38,000 deaths in 2013 alone and a 5-year survival rate of 5%. Despite advances in noninvasive imaging modalities, the current gold standard consisting of computed tomography (CT) or contrast-enhanced magnetic resonance imaging (MRI) relies on computing late stage structural changes in the pancreas to aid diagnosis. As a result, a significant number of patients are exposed to the excess morbidity associated with futile surgery and delays in appropriate treatment of their unidentified advanced disease. Therefore, methods that can detect tumor and distinguish them from normal tissues will improve patient stratification, eliminate morbidity associated with futile surgery, and prevent treatment delays.

Technology Description:

Dr. Samuel Achilefu and researchers at Washington University have developed a novel imaging agent, LS838, that detects various pancreatic cancer lesions with high accuracy. They also developed a new uptake mechanism facilitated by the energy needs of metabolically active cells followed by intracellular trapping. They have successfully applied LS838 to distinguish various kinds of pancreatic cancers. The agent can serve as an imaging agent, treatment monitoring agent, a potential photosensitizer for treating tumors or other diseases upon exposure to light, a radiosensitizers to enhance radiation therapy, detection of circulating tumor cells, and a drug delivery agent to selectively deliver cytotoxic materials to cancer.

Key Advantages:

- Detects microscopic lesions
- Allows noninvasive nuclear imaging methods by radiolabeling at a tyrosine residue
- Selectively target tumor with minimal off-target effect on healthy pancreatic or blood cells
- Remains in diverse tumors without significant loss of fluorescence

Inventor Bio