Wake Forest University

Office of Technology Asset Management

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Featured Technology

NOVEL AGENTS FOR SPECIFIC TARGETING AND DELIVERY TO CANCER CELLS

INVENTORS: Dr. Waldemar Debinski, Hetal Pandya, Denise Gibo

Researchers at Wake Forest University Health Sciences (WFUHS) have developed novel recombinant delivery proteins, derived from the interleukin-13 (IL-13) protein scaffold, which specifically target the IL-13Rα2 receptor over-expressed in various cancers, such as glioblastoma multiforme, head and neck, pancreatic, ovarian and prostate cancers. The recombinant proteins provide a **novel platform for developing highly targeted cancer therapeutics**.

Unique Mechanism of action

The recombinant proteins consist of three major domains:

1) A ligand that specifically binds to the cancer-associated receptor IL-13Rα2 and provides specificity to cancer cells over-expressing this cancer biomarker.
2) An endosomal translocation domain, which ensures intra-cytosolic delivery.
3) An intra-cellular compartment localization signal sequence that ensures efficient transport to intracellular organelles such as mitochondria or the cell nucleus.

Technology Highlights

- The recombinant proteins have been conjugated to a fluorescent label and were shown to specifically deliver the label to the nucleus of IL-13Rα2 over-expressing GBM cells.
- The recombinant protein module can be attached to various chemotherapeutic agents such as cytotoxins, radiopharmaceuticals or photochemicals, enabling specific targeting of cancer therapeutics and improved efficacy of these agents as they are delivered to their site(s) of action.
- The delivery proteins are single-chain proteins giving ease of synthesis and cost-effective production.

Additional information:

Additional information is available upon request by contacting Camilla P. Hansen, Office of Technology Asset Management at Wake Forest University Health Sciences.

Status: Patent Pending

MISSION

To maximize the value of Wake Forest University's intellectual assets through the creation of novel and effective models for commercializing technology.

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