Columbia Technology Ventures

Tumor suppressing protein for cancer therapy

Technology #2708

PTEN is a critical tumor suppressor and its mutation or loss is implicated in many types of cancers, including prostate, breast, endometrium, skin, kidney, and lung cancers. This technology identifies a novel variant of PTEN called PTEN-long that can be expressed and secreted by transfected cells or administered directly to solid tumors. PTEN-long has been shown to induce regression of a variety of tumors both in vitro and in vivo. This new peptide provides a means for restoring a functional tumor suppressor to tumor cells and may have therapeutic potential against a wide range of cancers.

PTEN-long induces tumor regression in a variety of cancers

PTEN is one of the most frequently mutated tumor suppressor genes in human cancers. Loss of PTEN leads to deregulation of normal cell growth, proliferation, and survival, and is associated with developmental defects and tumorigenesis. PTEN-long is a membrane-permeable analog of PTEN that can be secreted from and taken up by cells, where it can subsequently affect signaling and suppress tumor growth. Due to difficulties associated with designing anti-cancer therapeutics directed at loss of tumor suppressors, most other therapies targeting PTEN-deficient cancers primarily aim to inhibit downstream signaling effects. In contrast, this technology uniquely allows the direct restoration of PTEN function in tumor cells.

In vivo administration of PTEN-long has been shown to successfully induce tumor regression in xenograft models of human brain, breast, and colon cancer.

Lead Inventor:

Ramon Parsons, M.D., Ph.D.

Applications:

• Protein or peptide-based anti-cancer therapeutics
• Cell-based anti-cancer therapeutics
• Gene therapy for restoration of tumor suppressor function
• Protein, cell, or gene products for cancer research
Advantages:

• Can potentially be used to treat a wide range of different cancers
• Biocompatible analog to wild-type PTEN
• Can be produced and secreted by cells
• Membrane-permeable

Patent Information:

Patent Issued (US 9,017,981)

Tech Ventures Reference: 2708

Related Publications:


Inventors

Ramon Parsons MD, PhD