Novel Leukemia Stem Cell-Targeting Peptides and Nanotherapeutics for Human Leukemia Treatment

Tech ID: 22461 / UC Case 2011-518-0

ABSTRACT

Researchers at the University of California, Davis have developed peptides and nanotherapeutics that target leukemia stem cells.

FULL DESCRIPTION

Cancer stem cells that renew and regenerate additional cancer cells are a common feature of both hematological and solid malignancies. Many previous therapeutic approaches to treat and prevent cancer have demonstrated reduced efficacy because cancer stem cells exhibit higher chemoresistance compared to their progeny cancer cells. Thus, more-effective cancer therapies – including those for leukemia – need to target cancer stem cells.

Researchers at UC Davis have identified high-affinity peptides that bind preferentially to acute myeloid leukemia stems cells (LSCs). Peptide-coated nanoparticles can be used for transporting high doses of daunorubicin to LSCs in order to eradicate both the LSCs and additional leukemia cells throughout the body. Using nanoparticles to deliver the drug also allows for much higher dosages of chemotherapeutic agents without the toxicity side effects commonly associated with less targeted chemotherapy protocols.

APPLICATIONS

- Targeting leukemia-specific stem cells in patients with acute myeloid leukemia (AML)

FEATURES/BENEFITS

- Peptides can be linked to a detectable label – which enables diagnostic imaging to detect LSCs
- Allows greater chemotherapy doses without associated toxicity side effects
- Ligands can be conjugated directly to toxins or drugs for more-targeted chemotherapy

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,100,083	10/16/2018	2011-518
United States Of America	Issued Patent	9,334,306	05/10/2016	2011-518

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Multifunctional Porphyrin-Based Nanomedicine Platform

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OTHER INFORMATION

KEYWORDS

Cancer stem cell, Chemoresistance, CLL1, Acute myeloid leukemia, Leukemia, Nanomicelle, Nano-therapeutics

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Materials & Chemicals**
  - Nanomaterials
- **Medical**
  - Delivery Systems
  - Disease: Cancer
  - Imaging
  - Therapeutics
- **Nanotechnology**
  - NanoBio

RELATED CASES

2011-518-0

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