Ligands for Improved Angiogenesis and Endothelialization of Blood Contacting Devices

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ABSTRACT

Researchers at the University of California, Davis have discovered novel targeting ligands that can specifically bind and capture endothelial cells and endothelial progenitors for improved endothelialization and angiogenesis of medical devices and scaffolds.

FULL DESCRIPTION

Thrombus formation is a common cause of failure for blood-contacting medical devices. In most cases, RGD-based short peptide ligands have been used to reduce protein adhesion and enhance endothelial cell (EC) and endothelial progenitor (EPC) recruitment. These ligands, however, are non-specific and strongly bind platelets. Therefore there is a need for alternative ligands that can specifically target and promote endothelial function while resisting thrombosis and blood coagulation.

Researchers at the University of California, Davis have discovered novel endothelial targeting ligands that can specifically bind and capture ECs and EPCs for improved endothelialization and angiogenesis of medical devices and scaffolds. These ligands bind specifically to ECs and EPCs derived from native blood vessels and circulation. They are structurally stable and easy to chemically modify without compromising binding affinity to targeted cell surface molecules. These ligands offer novel therapeutic potential for vascular, intravascular, blood contacting and tissue engineering applications.

APPLICATIONS

- EC/EPC related biomedical applications
- Cell delivery
- Cell culture
- Blood-contacting medical devices
- Scaffolds used in tissue engineering

FEATURES/BENEFITS

- EC and EPC binding specificity
- Does not bind monocytes or platelets
- Structural stability
- Easily used for chemical modification without compromising binding affinity to targeted cell surface molecules

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,246,961	02/15/2022	2016-375
United States Of America	Published Application	20220313867	10/06/2022	2016-375

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OTHER INFORMATION

KEYWORDS

endothelial cells, endothelial progenitor cells, vascular graft surface modification, endothelialization, angiogenesis

CATEGORIZED AS

- **Biotechnology**
  - Other
- **Materials & Chemicals**
  - Biological
- **Medical**
  - Delivery Systems
  - Devices
  - Diagnostics
  - Other
  - Therapeutics
- **Research Tools**
  - Other
- **Engineering**
  - Other

RELATED CASES

2016-375-0

- Novel Solid Tumor Chemodrug LLS2
- Affinity Peptides for Diagnosis and Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 and Zika Virus Infections
- Nanoparticles for Drug Delivery, Tissue Targeting and Imaging Analysis
- Conjugates That Combine HDAC Inhibitors and Retinoids into Disease Preventatives/Treatments
- A Novel RGD-Containing Cyclic Peptide for use in Cancer Imaging and as a Targeted-Therapy Ligand
- Site-Specific Ligation and Compound Conjugation to Existing Antibodies
- Exosome-Mimicking Nanovesicles
- Functional Illumination in Living Cells
- Multifunctional Porphyrin-Based Nanomedicine Platform
- A Two-step Drug Delivery System Based on Click Chemistry
- Transformable Smart Peptides as Cancer Therapeutics
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