Proteoglycan Mimetics For Enhanced Wound Healing Angiogenesis And Vascular Repair

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CONTACT
Raj Gururajan
rgururajan@ucdavis.edu
tel: 530-754-7637.



ABSTRACT

Researchers at the University of California, Davis We have developed proteoglycan mimetics that alters the extracellular environment to promote local vascular repair and wound healing.

FULL DESCRIPTION

Current therapies for treating wounds and ischemia often use growth factors, such as vascular endothelial growth factor (VEGF) and stents promote revascularization and blood vessel growth and prevent closure of a blood vessel. The clinical success of such growth factor therapies for wounds, however, have been limited dude to overexpression of matrix metalloproteases (MMPs) after injury which can degrade and inactivate the growth factors. Additionally, while stents provide structural support and are effective in preventing artery closure short term, they are ineffective in preventing restenosis (even with the introduction of drug-eluting stents (DESs)) long term.

Researchers at the University of California, Davis We have developed proteoglycan mimetics that alter the extracellular environment to promote local vascular repair and wound healing without the use of stents. This method utilizes a combination of collagen-binding and integrin-binding peptides and a glycan to target and enhance endothelial cell and endothelial progenitor cell capture. The pro-angiogenic scaffold supports tissue regeneration while limiting systemic exposure to VEGF, suppressing platelet binding and inflammation while promoting reendothelialization. These mimetics can potentially prevent rapid collagen matrix degradation and accelerate ischemic wound healing while preventing long-term complications including thrombosis, scaring and a foreign body response. removing the need for stents.

APPLICATIONS

- Tissue regeneration
- Atherosclerotic conditions
- Enhanced wound healing and vascular repair

FEATURES/BENEFITS

- Pro-angiogenic scaffold
- Accelerates ischemic wound healing
- Prevents rapid collagen matrix degradation
- Limits systematic exposure to VEGF
- Can be delivered via catheter post balloon angioplasty

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,485,182	12/02/2025	2018-492
United States Of America	Issued Patent	11,612,663	03/28/2023	2018-492
United States Of America	Published Application	20260083852	03/26/2026	2018-492

INVENTORS

- Lam, Kit S.
- Liu, Ruiwu
- Wang, Aijun

OTHER INFORMATION

KEYWORDS

collagen-binding, integrin-binding, peptidoglycans, proteoglycan mimetics, matrix metalloproteases, MMPs, restenosis, stent, drug-eluting stents, DES, pro-angiogenic scaffold, tissue regeneration, VEGF, reendothelialization, endothelial cell, endothelial progenitor, cell capture, collagen matrix degradation, wound healing, ischemic

CATEGORIZED AS

- **Medical**
  - Devices
  - Disease: Cardiovascular and Circulatory System
  - Other
  - Therapeutics

RELATED CASES

2018-492-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- 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
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- Functional Illumination in Living Cells
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University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel: 530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax: 530.754.7620

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