

Macrophage Targeting Peptides - Peptide Sequences that are Specific to M1 And M2 Macrophages for Application in Molecular Imaging and Therapy

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ABSTRACT

Researchers at the University of California, Davis have developed isolated peptides that selectively bind M1 and M2 macrophages to enable precise diagnosis and targeted treatment of macrophage-associated diseases, including cancer.

FULL DESCRIPTION

This technology provides peptides that specifically bind to macrophages, including pro-inflammatory M1 and anti-inflammatory M2 subsets, which are key players in disease processes such as tumor progression. These peptides can be conjugated with diagnostic labels or therapeutic agents, including radionuclides and cytotoxic drugs, to detect and treat diseases. The peptides exhibit sequence specificity and versatility in conjugation, enabling their use in imaging, targeted drug delivery, and modulation of macrophage activity within the tumor microenvironment or other diseased tissues.

APPLICATIONS

- ▶ Cancer diagnostics and therapeutics, specifically targeting tumor-associated macrophages (TAMs).
- ▶ Inflammatory and autoimmune disease monitoring and treatment.
- ▶ Peptide receptor radionuclide therapy (PRRT) development.
- ▶ Imaging agents for detection of macrophage infiltration in tissues.
- ▶ Drug delivery platforms for macrophage-targeted chemotherapies or immunotherapies.
- ▶ Research tools for studying macrophage functions and their roles in disease progression.
- ▶ Kits combining peptides and instructions for clinical diagnostic and therapeutic use.

FEATURES/BENEFITS

- ▶ Selectively targets M1 and/or M2 macrophages for precise diagnosis and intervention.
- ▶ Enables versatile conjugation with imaging agents, therapeutics, or chemical modifiers.
- ▶ Facilitates combined diagnosis and treatment through theranostic approaches.
- ▶ Enables detection of macrophage presence in tissues and organs non-invasively.
- ▶ Potential to enhance outcomes in cancer and inflammatory diseases by modulating macrophage activity.
- ▶ Applies to a wide range of diseases involving macrophage dysfunction.
- ▶ Supports advanced treatment modalities, including peptide receptor radionuclide therapy.

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OTHER INFORMATION

KEYWORDS

antibody, cancer,
diagnostics, imaging
agent, macrophage,
peptide conjugate,
radionuclide therapy,
tumor microenvironment,
therapeutic agent

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Health
- ▶ **Imaging**
 - ▶ Medical
- ▶ **Medical**
 - ▶ Delivery Systems
 - ▶ Diagnostics
 - ▶ Disease: Cancer
 - ▶ Therapeutics

RELATED CASES

- ▶ Addresses the challenge of specifically identifying macrophage subsets (M1/M2) in disease contexts.
- ▶ Expands the ability to target macrophages for therapeutic intervention within tumors and inflamed tissues.
- ▶ Increases precision in imaging and treating macrophage-mediated pathologies.
- ▶ Overcomes the immunosuppressive tumor microenvironment that reduces the effectiveness of conventional therapies.
- ▶ Fills the gap of modular tools for integrated diagnosis and treatment (theranostics) targeting macrophages.

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PATENT STATUS

Patent Pending

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