Better Living Through Peptides; Improved Approach to HIV Therapy

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WARF: P08414US03

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a newer pharmaceutical approach for stable peptide drugs and HIV therapeutics.

OVERVIEW

Human immunodeficiency virus (HIV) affects over 1.2 million Americans each year, with approximately 50,000 new infections per year. Current treatment includes HIV combination regimens comprising reverse transcriptase, protease and fusion inhibitors, among others.

While fusion inhibitors like enfuvirtide interrupt HIV binding to proteins on cell surfaces and prevent entry, such drugs are limited because they rely on constituent alpha amino acids, which deteriorate quickly in the face of proteolysis (protein degradation). As a result, the drug wears off and must be re-administered by injection under the skin. This leads to lowered compliance among patients and increases injection site reactions. Resistance to enfuvirtide is also an ongoing challenge as viruses adapt to repeating alpha peptide residues.

THE INVENTION

UW–Madison researchers have developed a new method to fabricate combination alpha and beta peptides for the treatment of HIV and other disorders.

Because beta amino acids are non-natural, they are resistant to proteolysis. Substituting beta amino acids for some of the alpha amino acids in fusion inhibitors increases resistance to proteolysis with little effect on efficacy. The resulting α/β-peptide combination lasts longer and is less likely to cause drug resistance, leading to improved outcomes for HIV patients. This technique is also applicable to other peptide-based therapeutics.

THE WARF ADVANTAGE

WARF: A Leader in Technology Transfer Since 1925

Since its founding as a private, nonprofit affiliate of the University of Wisconsin–Madison, WARF has provided patent and licensing services to UW–Madison and worked with commercial partners to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.

The University of Wisconsin and WARF – A Single Location to Accelerate Translational Development of New Drugs

UW–Madison has the integrative capabilities to complete many key components of the drug development cycle, from discovery through clinical trials. As one of the top research universities in the world, and one of the two best-funded universities for research in the country, UW–Madison offers state-of-the-art facilities unmatched by most public universities.

These include the Small Molecule Screening Facility at the UW Comprehensive Cancer Center; the Zeeh Pharmaceutical Experiment Station, which provides consulting and laboratory services for developing formulations and studying solubility, stability and more; the Waisman Clinical Biomanufacturing Facility; the Wisconsin Institute for Medical Research, which provides UW–Madison with a complete translational research facility; and the innovative, interdisciplinary Wisconsin Institutes for Discovery, home to the private, nonprofit Morgridge Institute for Research and its public twin, WID, part of the university's graduate school. The highly qualified experts at these facilities are ready to work with you to create a library of candidates for drug development.

APPLICATIONS

- HIV/AIDS therapeutics
- Drug targeting of protein-protein interactions

KEY BENEFITS

- Resists proteolysis
- Lasts longer than conventional fusion inhibitors
- May reduce injection site reactions
- Expected to increase patient compliance

ADDITIONAL INFORMATION

Related Technologies

For more information about non-natural peptides and their applications in disease management, see WARF reference numbers:
P140148US02
P130310US02

Publications

Johnson L. M. and Gellman S. H. 2013. α-Helix Mimicry with α/β-Peptides. In A. E. Keating (Ed.), Methods of Enzymology (pp. 407-429). San Diego, CA: Elsevier.

Johnson et al. 2012. Enhancement of Alpha-Helix Mimicry by an Alpha/Beta-Peptide Foldamer via Incorporation of a Dense Ionic Side-Chain Array. J. Am. Chem. Soc. 134, 7317-7320.

Horne W. S., Johnson L. M., Ketas T. J., Klasse P. J., Lu M., Moore J. P. and Gellman S. H. 2009. Structural and Biological Mimicry of Protein Surface Recognition by Alpha/Beta-Peptide Foldamers. PNAS. 106, 14751-14756.

Tech Fields

Drug Discovery - Drug production & design
Pharmaceuticals & Vitamin D - Antivirals

CONTACT INFORMATION

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