



Novel HIV-1 Protease Inhibitors

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US Patent pending

Background

The emergence of multi-drug resistant (MDR) mutants poses a great challenge to the efficacy of HIV-1 protease inhibitors (PIs). Although HIV-1 PIs are the most potent drugs currently available for treating HIV patients, current PIs are designed to inhibit a single variant of HIV-1 protease which can evolve to tolerate extensive mutations conferring drug resistance. The development of next-generation HIV-1 PIs active against MDR virus has been the focus of intense research efforts.

Technology

UMass Medical school investigator Dr. Celia Schiffer and colleagues have designed a new class of PIs that are more potent and may be less likely to induce drug resistance than inhibitors currently available. Dr. Schiffer and colleagues have designed competitive inhibitors based on a detailed understanding of the structure of the protease active site when complexed with its cognate substrate (*Ali et al (2006) J Med Chem 49:7342, Reddy et al (2007) J Med Chem 50:4316 and Chellappan et al (2007) Chem Biol Drug Des 69:298*). The inhibitors mimic the structural features of the substrates by binding in the center of the active site making the same or fewer interactions and contacts to the protease. Consequently, it may be more difficult for mutations to evolve that block inhibitor binding yet maintain substrate recognition.

Application

● HIV-1 therapeutic agents Competitive Advantages

- **Novel HIV-1 protease inhibitors:** Designed based on detailed analysis of the molecular interactions essential for substrate recognition and cleaving the protease.
- **Potent activity:** More potent inhibitors than those currently available with robust activity against protease resistant HIV-1 isolates.
- **High affinity binding:** Bind with high affinity to a wide variety of HIV-1 protease variants that are resistant to most of the FDA approved drugs
- **Ideal drug-like property:** Calculated cLogP's compare favorably with FDA-approved HIV-1 PIs.

Business Opportunity

UMass OTM is seeking statements of interest from parties interested in licensing and/ or sponsoring collaborative research to commercialize this technology.

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