HIV-1 Integrase. Mechanism and Inhibitor Design. Wiley Series in Drug Discovery and Development

Description: Provides the Foundation Needed to Design Effective HIV-1 Integrase Inhibitors

Around the world, scientists have been working for years with the goal of designing effective HIV-1 integrase inhibitors in the battle against AIDS. This book reviews all their latest research findings on both inhibitor design and the mechanisms of action of HIV-1 integrase. Chapters have been contributed by leading pioneers in the field from North America, Europe, and Asia. These contributions represent not only a thorough review of the current literature, but also the authors' firsthand experience in drug development and design. Coverage includes such topics as:

Integrase mechanism, structure, and function
HIV-1 integrase DNA interaction
Host factors affecting provirus stability and silencing
Role of metals in HIV-1 integrase inhibitor design
Historic perspectives, challenges, and future opportunities

As the first publication to comprehensively examine HIV-1 integrase, this book is essential reading for anyone involved in inhibitor drug discovery.

Integrates chemical, biochemical, and biological approaches, enabling readers to take full advantage of a promising target enzyme for combating HIV and retroviruses

Illustrates rational drug design for a complex drug target with plenty of step-by-step examples

Addresses drug design issues from a variety of perspectives to help readers understand both the challenges and opportunities of developing a successful HIV-1 integrase inhibitor

This book fills an important gap in the review literature, offering a valuable introduction to the field for scientists who need to collaborate with researchers in several disciplines in order to design drugs that effectively target HIV-1 integrase.

Contents:

Chapter 1. HIV life cycle: Targets for anti-HIV agents (Erik De Clercq (Rega Institute)).
Chapter 2. PP32 is hot (Duane P. Grandgenett (SLU)).
Chapter 3. Integrase mechanism and function (Robert Craigie (NIDDK, NIH)).
Chapter 4. Structural studies of retroviral integrases (Mariusz Jaskolski, Jerry N. Alexandratos, Grzegorz Bujacz and Alexander Wlodawer (NIDDK, NCI, NIH)).
Chapter 5. Retroviral integration target site selection (Angela Ciuffi and Frederick Bushman (U. Penn)).
Chapter 6. The pleiotropic nature of human immunodeficiency virus type 1 integrase mutations (Alan Engelman (Harvard)).
Chapter 7. Insights into HIV-1 integrase-DNA interaction (Allison Johnson, Christopse Marchand, and Yves Pommier (NCI, NIH)).
Chapter 8. Functional interaction between human immunodeficiency virus type 1 reverse transcriptase and
integrase (Thomas Wilkinson and Samson A. Chow (UCLA)).

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Chapter 12. Assays for the evaluation of HIV–1 integrase enzymatic activity, DNA–binding and co–factor interaction (Frauke Christ, Katrien Busschots, Jelle Hendrix, Melissa McNeely, Yves Engelborghs, Zeger Debyser (KU Leuven, Belgium)).

Chapter 13. HIV–1 integrase inhibitor design: Overview and historical perspectives (Nouri Neamati (USC)).

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Chapter 30. Resistance to integrase inhibitors (Leen Hombrouck, Zeger Debyser and Myriam Witvrouw (KU Leuven, Belgium)).

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