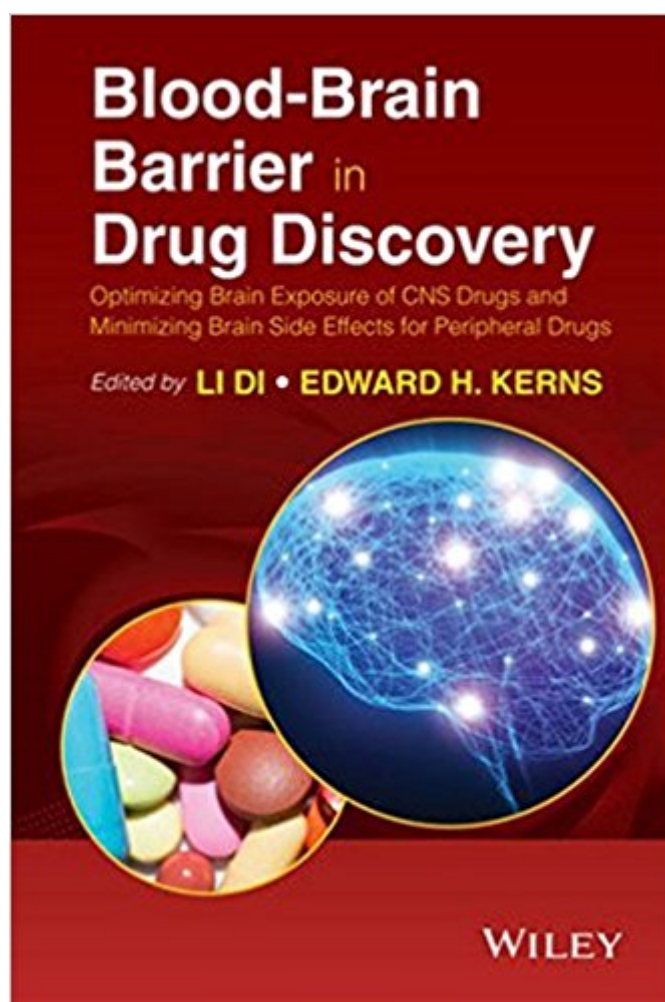


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# Blood-Brain Barrier In Drug Discovery: Optimizing Brain Exposure Of CNS Drugs And Minimizing Brain Side Effects For Peripheral Drugs





## Synopsis

Focused on central nervous system (CNS) drug discovery efforts, this book educates drug researchers about the blood-brain barrier (BBB) so they can affect important improvements in one of the most significant and most challenging areas of drug discovery.

- Written by world experts to provide practical solutions to increase brain penetration or minimize CNS side-effects
- Reviews state-of-the-art in silico, in vitro, and in vivo tools to assess brain penetration and advanced CNS drug delivery strategies
- Covers BBB physiology, medicinal chemistry design principles, free drug hypothesis for the BBB, and transport mechanisms including passive diffusion, uptake/efflux transporters, and receptor-mediated processes
- Highlights the advances in modelling BBB pharmacokinetics and dynamics relationships (PK/PD) and physiologically-based pharmacokinetics (PBPK)
- Discusses case studies of successful CNS and non-CNS drugs, lessons learned and paths to the market

## Book Information

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## Customer Reviews

Central nervous system (CNS) drugs are a leading pharmaceutical area, since many CNS diseases remain untreated or without optimum drugs. Unfortunately, the blood-brain barrier (BBB) restricts access of drug molecules circulating in the blood stream to penetrate into the brain cells and that is where this important book steps in. With practical and proven solutions for CNS drug discovery efforts, this book educates drug researchers about the BBB so they can affect important improvements in one of the most significant and most challenging areas of

drug discovery. The chapters are written by world-class scientists actively engaged in CNS research from both academia and industry, applying this to more quickly discover and develop better drugs. Among the topics they review are state-of-the-art in silico, in vitro, and in vivo tools for assessing the BBB and advanced delivery technologies. Coverage includes fundamental knowledge about the BBB, implications of these restrictions on free drug exposure at the target in brain, pharmacokinetics (PK) and pharmacodynamics (PD) relationships (PK/PD), physiologically-based pharmacokinetic (PBPK) brain models, medicinal chemistry design principles, and case studies from successful CNS drug discovery. These case studies examine how the integration of data and design strategies advanced successful new drugs to market. A unique and valuable reference resource for practicing medicinal chemists, this book:

- Focuses on practical solutions of brain exposure problems faced by drug researchers
- Helps readers understand, control and measure the exposure of the drug candidates to the CNS
- Covers BBB physiology; medicinal chemistry design principles; free drug hypothesis for the BBB; and transport mechanisms including passive diffusion, uptake/efflux transporters and receptor-mediated processes
- Discusses case studies of successful CNS and non-CNS drugs, lessons learned and paths to the market

Li Di is an associate research fellow in the Pharmacokinetics, Dynamics, and Drug Metabolism Department at Pfizer Global Research and Development and has extensive experience in the pharmaceutical industry. She has over 100 publications, presented over 70 invited lectures, and teaches an American Chemical Society short course on drug-like properties. Edward Kerns worked in pharmaceutical research and development for over 30 years, was associate director at Wyeth and Bristol-Myers Squibb, then was at the NIH-National Center for Advancing Translational Sciences. He published over 90 journal papers or book chapters and 3 books, and teaches an American Chemical Society short course on drug-like properties.

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