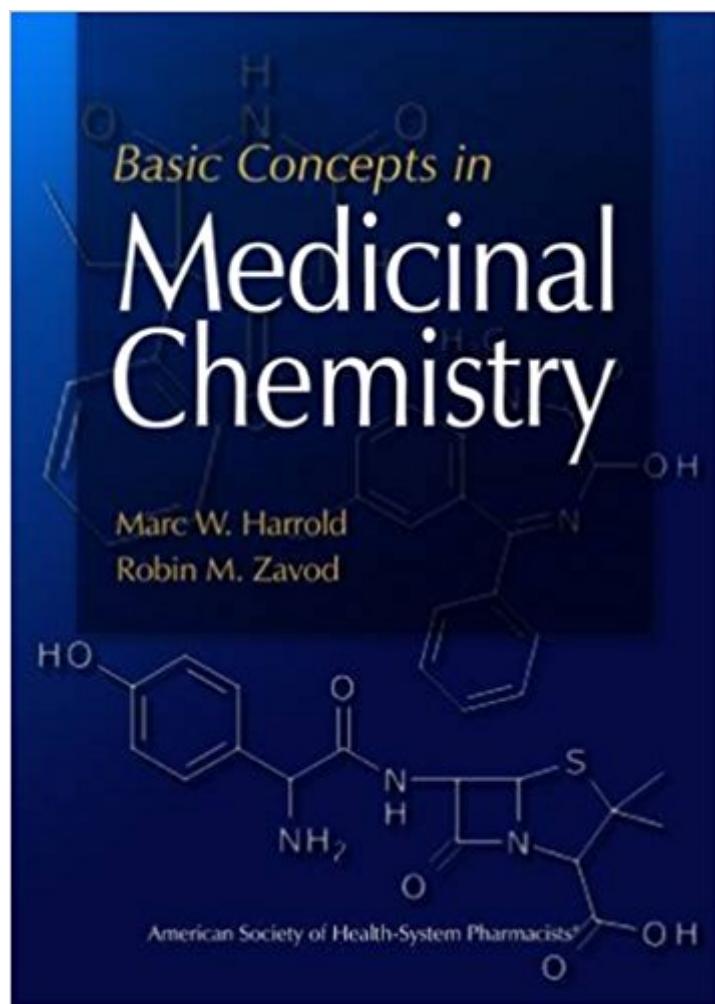


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# Basic Concepts In Medicinal Chemistry



## Synopsis

Medicinal chemistry is a complex topic. Written in an easy to follow and conversational style, Basic Concepts in Medicinal Chemistry focuses on the fundamental concepts that govern the discipline of medicinal chemistry as well as how and why these concepts are essential to therapeutic decisions. The book emphasizes functional group analysis and the basics of drug structure evaluation. In a systematic fashion, learn how to identify and evaluate the functional groups that comprise the structure of a drug molecule and their influences on solubility, absorption, acid/base character, binding interactions, and stereochemical orientation. Relevant Phase I and Phase II metabolic transformations are also discussed for each functional group. Key features include:

- Discussions on the roles and characteristics of organic functional groups, including the identification of acidic and basic functional groups.
- How to solve problems involving pH, pKa, and ionization; salts and solubility; drug binding interactions; stereochemistry; and drug metabolism.
- Numerous examples and expanded discussions for complex concepts.
- Therapeutic examples that link the importance of medicinal chemistry to pharmacy and healthcare practice.
- An overview of structure activity relationships (SARs) and concepts that govern drug design.
- Review questions and practice problems at the end of each chapter that allow readers to test their understanding, with the answers provided in an appendix.

Whether you are just starting your education toward a career in a healthcare field or need to brush up on your organic chemistry concepts, this book is here to help you navigate medicinal chemistry.

**About the Authors**

Marc W. Harrold, BS, Pharm, PhD, is Professor of Medicinal Chemistry at the Mylan School of Pharmacy, Duquesne University, Pittsburgh, PA. Professor Harrold is the 2011 winner of the Omicron Delta Kappa "Teacher of the Year" award at Duquesne University. He is also the two-time winner of the "TOPS" (Teacher of the Pharmacy School) award at the Mylan School of Pharmacy.

Robin M. Zavod, PhD, is Associate Professor for Pharmaceutical Sciences at the Chicago College of Pharmacy, Midwestern University, Downers Grove, IL, where she was awarded the 2012 Outstanding Faculty of the Year award. Professor Zavod also serves on the adjunct faculty for Elmhurst College and the Illinois Institute of Technology. She currently serves as Editor-in-Chief of the journal *Currents in Pharmacy Teaching and Learning*.

## Book Information

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## Customer Reviews

Basic Concepts of Medicinal Chemistry By Marc W. Harrold and Robin M. Zavod  
Pharmaceutical Journal, Volume 290, Page 343, March 23, 2013

Reviewer: Laurence A Goldberg is a pharmaceutical consultant from Bury, Lancashire  
All you need to know about medicinal chemistry. This book focuses solely on the basic, fundamental concepts governing the discipline of medicinal chemistry. Every drug is a chemical structure that contains numerous functional groups arranged in a specific manner. These functional groups determine the interactions of the drug molecule with its biological target, its pharmacological action, the route by which it is administered, the extent to which it is metabolized and the presence or absence of specific adverse reactions or drug interactions. The chapters in this book have been carefully organized to allow the reader to gain knowledge progressively about the chemistry of drug molecules, with each chapter building on the previous one. The first chapter reviews the numbering of alicyclic and heterocyclic rings, the designation of aromatic ring positions and steroid nomenclature, while the second chapter focuses on the chemical characteristics of functional groups and the roles they play in drug action. The following chapters identify those functional groups that are acidic or basic, review a strategy to calculate the extent to which they are ionised in a given environment and then examine how these characteristics contribute to the overall solubility of the drug molecule. Subsequent chapters discuss the types of binding interactions that can occur between a drug molecule and its biological target and how stereochemistry of the molecule can also affect its interaction with biological targets. Emphasis is placed on the pharmacological and therapeutic differences that can occur between enantiomers. A chapter is devoted to exploring the metabolism of drug molecules by various enzymes. It identifies the functional groups that are susceptible to each type of metabolic transformation, enabling the reader to become more proficient in predicting the possible metabolic transformations for a given drug molecule. In the final chapter,

the concept of structure-activity relationships is introduced along with the concepts of molecular modification to design new drugs and analogues of existing drugs. This book is extremely well structured and easy to follow. It navigates through medicinal chemistry in a way that makes the subject easy to understand. It will be a great asset to students embarking upon a healthcare career or to practitioners who need to brush up on medicinal chemistry. (Laurence A. Goldberg  
Pharmaceutical Journal 2013-03-23) null (Thomas L. Lemke, PhD Pharmacy Teaching and Learning 2013-04-04)

Marc W. Harrold, BS, Pharm, PhD, is Professor of Medicinal Chemistry at the Mylan School of Pharmacy, Duquesne University, Pittsburgh, PA. Professor Harrold is the 2011 winner of the Omicron Delta Kappa "Teacher of the Year" award at Duquesne University. He is also a multi-year recipient of the "TOPS" (Teacher of the Pharmacy School) award at the Mylan School of Pharmacy. Robin M. Zavod, PhD, is Associate Professor for Pharmaceutical Sciences at the Chicago College of Pharmacy, Midwestern University, Downers Grove, IL, where she was awarded the 2012 Outstanding Faculty of the Year award. Professor Zavod also serves on the adjunct faculty for Elmhurst College and the Illinois Institute of Technology. She currently serves as Editor-in-Chief of the journal Currents in Pharmacy Teaching and Learning.

Just received this book today, and had a chance to thumb through it. It is a very valuable resource if you have an interest in pharmacology, drug synthesis, drug discovery, or natural product chemistry (botanical medicines). Special thanks to Dr. Harrold and Dr. Zavod for putting so much time into the course development. My book arrived in excellent condition, and no problems with the pages. The book starts with some basic concepts from organic chem - just nomenclatures and functional groups. Then it digs deeper into what the various functional groups do ... for medicinal interactions. There is a lot of attention given to acid/base, water and lipid solubility, and drug binding interactions. Finally, the book dives into the topics of stereochemistry and drug metabolism. These are topics that could be intimidating, but the authors manage to keep the work very readable and interesting.

Highly recommended.

This book makes Medicinal Chemistry make sense. It's laid out in easy to digest chapters with lots of examples and practice problems. Other books I've read on the subject aren't written for someone with not a lot of background in Chemistry, so they were difficult and muddy. Harrold and Zavod did a great job providing a breakdown of the fundamental pieces of Medicinal Chemistry. I honestly

enjoyed reading this book and understand so much more of the foundational pieces I need for my continuing years in Pharmacy School. I would highly recommend everyone that's looking for a place to start or to solidify their skills to read this book. It's the one book I will definitely use over again.

Decent review of functional groups and their properties as it relates to pharmaceutics. I didn't need to crack open my organic chem book thanks to this handy guide

This book has a lot of structures and examples that really helps tie all of the concepts together. Explanations are easy to follow even if you haven't had a chemistry class in years. Overall, a great review book for what different functional groups provide to the structure and function of a drug.

Pretty good textbook. Review questions are helpful. The pictures and organization of the book are also easy to use/read.

Very thorough book. Great at explaining things and breaking them down. Even my medicinal chemistry teacher recommends the book and he doesn't like most books on the market.

Honestly, this book is an essential book for a person studying drug discovery and drug development courses. It also explains the basic concepts in a simple way, which makes you digest the subject very easily.

I think the book makes medicinal chemistry overview as interesting as it can be. It is surprisingly comprehensive because it is only roughly 480 pages long. Overall decent read if you need to brush up on chemistry basics.

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