

CONTENTS

Preface	ix
Contributors	xi
PART I DRUG DISCOVERY AND DEVELOPMENT	1
1 The Role of Chemical Biology in Drug Discovery	3
<i>Andrew J. Pope</i>	
2 Computational Approaches to Drug Discovery and Development	23
<i>Honglin Li, Mingyue Zheng, Xiaomin Luo, Weiliang Zhu, and Hualiang Jiang</i>	
3 Design and Selection of Small Molecule Inhibitors	41
<i>Jianwei Che, Yi Liu, and Nathanael S. Gray</i>	
4 Lead Optimization in Drug Discovery	65
<i>Craig W. Lindsley, David Weaver, Thomas M. Bridges, and J. Phillip Kennedy</i>	
5 Pharmacokinetics of Drug Candidates	83
<i>Ronald E. White</i>	

6	ADME Properties of Drugs	101
	<i>Li Di and Edward H. Kerns</i>	
7	Drug Transport in Living Systems	115
	<i>Yael Elbaz and Shimon Schuldiner</i>	
8	Blood-Brain Barrier: Considerations in Drug Development and Delivery	133
	<i>David S. Miller and Brian T. Hawkins</i>	
9	Pharmacokinetic Considerations: Methods and Systems of Controlled Drug Delivery	147
	<i>Zhong Zuo and Vincent H. L. Lee</i>	
10	Pharmaceuticals: Natural Products and Natural Product Models	165
	<i>Sheo B. Singh</i>	
PART II CHEMICAL BIOLOGY TO UNDERSTAND AND TARGET DISEASE		203
11	The Role of Chemical Biology in Understanding and Treating Disease—Are Small Molecule “Correctors” the Way of the Future?	205
	<i>David Selwood</i>	
12	Anxiety Disorders	215
	<i>Miklos Toth</i>	
13	Chronic Obstructive Pulmonary Disease (COPD)	245
	<i>Peter J. Barnes</i>	
14	Depression	267
	<i>Glen B. Baker and Nicholas D. Mitchell</i>	
15	Osteoarthritis	293
	<i>Marjolaine Gosset, Jérémie Sellam, Claire Jacques, and Francis Berenbaum</i>	
16	Human Immunodeficiency Virus (HIV)	331
	<i>Joseph P. Vacca</i>	

17 Allergy and Asthma	341
<i>Garry M. Walsh</i>	
18 Schizophrenia	357
<i>Ferenc Martenyi</i>	
19 Protein Misfolding and Disease	379
<i>Johanna C. Scheinost, Grant E. Boldt, and Paul Wentworth</i>	
20 Protein Trafficking Diseases	401
<i>Heidi M. Sampson and David Y. Thomas</i>	
21 Metabolic Diseases	419
<i>Cynthia M. Arbeeny</i>	
22 Mitochondrial Medicine	445
<i>Richard J. T. Rodenburg and Jan A. M. Smeitink</i>	
23 Lysosomal Disorders	461
<i>Doug A. Brooks and Maria Fuller</i>	
Index	483