

Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>
1 QSAR Methods..... <i>Giuseppina Gini</i>	1
PART I MODELING A PHARMACEUTICAL IN THE BODY	
2 PBPK Modeling to Simulate the Fate of Compounds in Living Organisms <i>Frédéric Y. Bois, Cleo Tebby, and Céline Brochot</i>	29
3 Pharmacokinetic Tools and Applications <i>Judith C. Madden and Courtney V. Thompson</i>	57
4 In Silico Tools and Software to Predict ADMET of New Drug Candidates..... <i>Supratik Kar, Kunal Roy, and Jerzy Leszczynski</i>	85
PART II EXPLOITING TOXICITY DATA FOR MODELING PURPOSES	
5 Development of In Silico Methods for Toxicity Prediction in Collaboration Between Academia and the Pharmaceutical Industry <i>Manuel Pastor, Ferran Sanz, and Frank Bringezu</i>	119
6 Emerging Bioinformatics Methods and Resources in Drug Toxicology <i>Karine Audouze and Olivier Taboureau</i>	133
PART III THE USE OF IN SILICO MODELS FOR THE SPECIFIC ENDPOINTS	
7 In Silico Prediction of Chemically Induced Mutagenicity: A Weight of Evidence Approach Integrating Information from QSAR Models and Read-Across Predictions <i>Enrico Mombelli, Giuseppa Raitano, and Emilio Benfenati</i>	149
8 In Silico Methods for Chromosome Damage..... <i>Diego Baderna, Ilse Van Overmeire, Giovanna J. Lavado, Domenico Gadaleta, and Birgit Mertens</i>	185
9 In Silico Methods for Carcinogenicity Assessment <i>Azadi Golbamaki, Emilio Benfenati, and Alessandra Roncaglioni</i>	201
10 In Silico Models for Developmental Toxicity <i>Marco Marzo, Alessandra Roncaglioni, Sunil Kulkarni, Tara S. Barton-Maclaren, and Emilio Benfenati</i>	217
11 In Silico Models for Repeated-Dose Toxicity (RDT): Prediction of the No Observed Adverse Effect Level (NOAEL) and Lowest Observed Adverse Effect Level (LOAEL) for Drugs..... <i>Fabiola Pizzo, Domenico Gadaleta, and Emilio Benfenati</i>	241

12	In Silico Models for Predicting Acute Systemic Toxicity	259
	<i>Ivanka Tsakovska, Antonia Diukendjieva, and Andrew P. Worth</i>	
13	In Silico Models for Skin Sensitization and Irritation	291
	<i>Gianluca Selvestrel, Federica Robino, and Matteo Zanotti Russo</i>	
14	In Silico Models for Hepatotoxicity	355
	<i>Claire Ellison, Mark Hewitt, and Katarzyna Przybylak</i>	
15	Machine Learning Models for Predicting Liver Toxicity	393
	<i>Jie Liu, Wenjing Guo, Sugunadevi Sakkiyah, Zuowei Ji Gokhan Yavas, Wen Zou, Minjun Chen, Weida Tong Tucker A. Patterson, and Huixiao Hong</i>	

PART IV PLATFORMS FOR EVALUATING PHARMACEUTICALS

16	Implementation of In Silico Toxicology Protocols in Leadscape	419
	<i>Kevin Cross, Candice Johnson, and Glenn J. Myatt</i>	
17	Use of Lhasa Limited Products for the In Silico Prediction of Drug Toxicity	435
	<i>David J. Ponting, Michael J. Burns, Robert S. Foster, Rachel Hemingway, Grace Kocks, Donna S. MacMillan, Andrew L. Shannon-Little, Rachael E. Tennant, Jessica R. Tidmarsh, and David J. Yeo</i>	
18	Using VEGAHUB Within a Weight-of-Evidence Strategy	479
	<i>Serena Manganelli, Alessio Gamba, Erika Colombo, and Emilio Benfenati</i>	
19	MultiCASE Platform for In Silico Toxicology	497
	<i>Suman K. Chakravarti and Roustem D. Saiakhov</i>	

PART V THE SCIENTIFIC AND SOCIETY CHALLENGES

20	Adverse Outcome Pathways as Versatile Tools in Liver Toxicity Testing	521
	<i>Emma Arnesdotter, Eva Gijbels, Bruna dos Santos Rodrigues, Vânia Vilas-Boas, and Mathieu Vinken</i>	
21	Use of In Silico Methods for Regulatory Toxicological Assessment of Pharmaceutical Impurities	537
	<i>Simona Kovarich and Claudia Ileana Cappelli</i>	
22	Computational Modeling of Mixture Toxicity	561
	<i>Mainak Chatterjee and Kunal Roy</i>	
23	In Silico Methods for Environmental Risk Assessment: Principles, Tiered Approaches, Applications, and Future Perspectives	589
	<i>Maria Chiara Astuto, Matteo R. Di Nicola, José V. Tarazona, A. Rortais, Yann Devos, A. K. Djien Liem, George E. N. Kass, Maria Bastaki, Reinhilde Schoonjans, Angelo Maggiore, Sppandrine Charles, Aude Ratier, Christelle Lopes, Ophelia Gestin, Tobin Robinson, Antony Williams, Nynke Kramer, Edoardo Carnesecchi, and Jean-Lou C. M. Dorne</i>	

24	Increasing the Value of Data Within a Large Pharmaceutical Company Through In Silico Models	637
	<i>Alessandro Brigo, Doha Naga, and Wolfgang Muster</i>	
	<i>Index</i>	675