

Contents

Part I Background

The Challenges and Opportunities	3
David Borsook, Edward Bullmore, Lino Becerra, and Richard Hargreaves	
Imaging of CNS Systems: Importance for Drug Development	11
Hong I. Wan, Mitchel A. Kling, Mark Day, Juan Chavez, Giora Feuerstein, Orest Hurko, and Menelas N. Pangalos	

Part II Imaging Approaches

Anatomical Imaging: Volumetric Analysis	31
Natalie L. Voets	
Diffusion Tensor Imaging and Drug Development	47
Dominique L. Jennings and A. Gregory Sorensen	
Functional Magnetic Resonance Imaging in Drug Development	67
Jaymin Upadhyay, David Borsook, and Lino Becerra	
Magnetic Resonance Imaging of Pharmacological Systems	91
Hanbing Lu, Thomas J. Ross, and Elliot A. Stein	
Molecular Imaging: Basic Approaches	105
Elisenda Rodriguez and John W. Chen	
Chemical Imaging: Magnetic Resonance Spectroscopy: The Basics	121
Andrew P. Prescott and Perry F. Renshaw	

Part III Imaging CNS Drug Action

Animal Imaging	137
Donald Williams, Alexandre Coimbra, and Fuqiang Zhao	
Incorporating Functional MRI into Clinical Pharmacology Trials	153
Ajay Verma, Ruben Declercq, Alexandre Coimbra, and Eric Achten	
Imaging Placebo Responses in the Brain	163
Luana Colloca and Fabrizio Benedetti	
Structural Imaging of Drug Actions in Neurodegenerative Diseases	177
Susanne G. Mueller	
Molecular Imaging of the CNS: Drug Actions	191
Thomas Mueggler and Markus Rudin	

Part IV Imaging CNS Disease States

Translational MRI in CNS Drug Discovery	215
Markus von Kienlin and Céline Risterucci	
In Vivo Mouse Imaging and Spectroscopy in Drug Discovery	229
Nicolau Beckmann, Catherine Cannet, Martin Rausch, Rainer Kneuer, and Hans-Ulrich Gremlich	
Neuroimaging in Understanding Chronic Pain Mechanisms and the Development of New Therapies	251
Karolina Wartolowska and Irene Tracey	
Neuroimaging Human Drug Addiction	263
P.A. Woicik, N. Alia-Klein, N.D. Volkow, and R.Z. Goldstein	
Anxiety: Uncover Roles of Stress Related Genes by Imaging Genetics	291
David Goldman and Zhifeng Zhou	
Imaging CNS Disease States: Alzheimer's Disease	303
Bradford C. Dickerson	
Brain Development and CNS Plasticity	319
Damien A. Fair and Bradley L. Schlaggar	
Imaging in CNS Disease States: PTSD	339
J. Douglas Bremner	

Part V Integrative Processes

Integrative Processes: Neuroscience Clinical Imaging Biomarkers	363
Igor D. Grachev and Richard J. Hargreaves	
Reasons to Believe: The Potential of Imaging in CNS	
Drug Development	381
Richard Hargreaves, Edward Bullmore, Lino R. Becerra, and David Borsook	
Index.....	387

<http://www.springer.com/978-1-4419-0133-0>

Imaging in CNS Drug Discovery and Development

Implications for Disease and Therapy

Borsook, D.; Beccera, L.R.; Bullmore, E.; Hargreaves, R.J.

(Eds.)

2009, XVIII, 396 p., Hardcover

ISBN: 978-1-4419-0133-0