# Contents

**Series Preface** ....................................................... v  
**Preface** .............................................................. vii  
**Series Contributors** ................................................ xi  
1. An Overview of Drug Delivery to the CNS. ................................. 1  
   *Kewal K. Jain*  
2. Receptor-Mediated Transport of Drugs Across the BBB .................. 15  
   *Ji-Ming Feng, Philip C.W. Lui, and Jian Yi Li*  
3. Disruption of Blood–Brain Barrier by Focused Ultrasound for Targeted Drug Delivery to the Brain. ........................................ 35  
   *Natalia Vykhodtseva*  
4. Prediction of Blood–Brain Barrier Penetration by Drugs ................ 63  
   *Kiril Lanevskij, Pranas Japertas, Remigijus Didziapetris and Alanas Petrauskas*  
5. Intraparenchymal Delivery and Its Discontents. ......................... 85  
   *Raghu Raghavan*  
6. Intrathecal Drug Delivery by Implanted Pumps ............................ 137  
   *Shawn Belverud, Alon Mogilner, and Michael Schulder*  
7. Intracarotid Drug Delivery: Revisiting the Past or Looking into the Future .............................................................. 155  
   *Shailendra Joshi*  
8. Vesicular Systems for Intranasal Drug Delivery. ........................... 175  
   *Ibrahim A. Alsarra, Amel Y. Hamed, Fars K. Alanazi and Gamal M. El Maghraby*  
9. Convection-Enhanced Drug Delivery and Monitoring in a Rat Model. ........ 205  
   *Yael Mardor and Zvi Ram*  
10. Intrathecal Delivery of Stem Cells to the Spinal Cord. ................... 219  
    *Birgit Neuhuber and Itzhak Fischer*  
11. CNS Delivery of Peptides Across the BBB Using the Dual-Artery In Situ Brain Perfusion Model .................................................. 233  
    *Ken A. Witt, Patrick T. Ronaldson, Karin E. Sandoval and Thomas P. Davis*  
12. An Engineered Peptide Compound Platform Technology Incorporating Angiopep for Crossing the BBB ........................................ 249  
    *Reinhard Gabathuler*  
13. Adeno-Associated Virus Mediated Gene Therapy in Ischemic Stroke .... 261  
    *Yongting Wang, Falei Yuan, and Guo-Yuan Yang*  
14. Use of Mesenchymal Stem Cells for Gene Delivery to Intracranial Glioma .............................................................. 277  
    *Sin-Soo Jeun, Seong Muk Kim, Jung Teon Lim, and Chung Heon Ryu*