Contents

Part I  Stem Cells

1  Stroke: Cytoprotection, Repair and Regeneration—The Continuum of Patient Care ................................................................. 3
   Paul A. Lapchak

2  Interdisciplinary Advances Towards Understanding and Enhancing the Therapeutic Potential of Stem Cell-Based Therapies for Ischaemic Stroke ............................................................ 21
   Pascal Gervois, Yörg Dillen, Tim Vangansewinkel, Petra Hilkens, Ronald B. Driesen, Greet Merckx, Melissa Lo Monaco, Jessica Ratajczak, Annelies Bronckaers, Ivo Lambrichts, and Esther Wolfs

3  Stem Cell Transplants in the Aged Stroke Brain: Microenvironment Factors ................................................................................. 47
   Aurel Popa-Wagner and Mario Di Napoli

4  Modulating Endogenous Adult Neural Stem Cells to Improve Regeneration in Stroke Brain ............................................................... 73
   Fucheng Luo and Yu Luo

5  Mobilization of Endogenous Neural Stem Cells to Promote Regeneration After Stroke ................................................................. 101
   Monika Rabenstein and Maria Adele Rueger

6  Transcriptional and Genomic Advances on the Pathophysiology of Stem Cell Repairment After Intracerebral Hemorrhage .............. 113
   Sheng Zhang, Yongjie Zhou, and Yujie Chen

7  Modulation of Post-Stroke Plasticity and Regeneration by Stem Cell Therapy and Exogenic Factors ........................................... 129
   Lukas Andereggen, Raluca Reitmeir, Stefano Di Santo, Raphael Guzman, Hans R. Widmer, Serge Marbacher, and Robert H. Andres
8 Stem Cell-Paved Biobridge: A Merger of Exogenous and Endogenous Stem Cells Toward Regenerative Medicine in Stroke

Hung Nguyen, M. Grant Liska, Marci G. Crowley, and Cesario V. Borlongan

9 Bone-Marrow-Derived Cell Therapies in Stroke: Immunomodulatory Effects

Laith Maali and David C. Hess

10 The Combination of Stem Cell Factor (SCF) and Granulocyte-Colony Stimulating Factor (G-CSF) in Repairing the Brain Post-acute Stroke

Li-Ru Zhao, Suning Ping, and Fei Hao

11 Mesenchymal Stromal Cell Therapy of Stroke

Yi Shen, Poornima Venkat, Michael Chopp, and Jieli Chen

12 Combination Treatment of Mesenchymal Stem Cells (MSCs) and Angelica sinensis’ Active Ingredients for Ischemic Stroke

Qian Zhang and Yonghua Zhao

13 Gene Therapy for Cognitive Recovering After Ischemic Stroke

Johanna Gutierrez-Vargas, Rafael Posada-Duque, and Gloria Patricia Cardona-Gómez

14 SB623 Preclinical and Clinical Trial Experience

Eric S. Sussman and Gary K. Steinberg

15 Preparing for Future Stem Cell Clinical Trials

Keith W. Muir

Part II Exosomes-miRNA

16 Extra-Cellular Vesicles: A Promising Approach for Translating Cell-Based Therapy

Benjamin Buller, Michael Chopp, and Zheng Gang Zhang

17 Exosome and MiRNA in Stroke

Ji Bihl, Jinju Wang, Xiaotang Ma, Yi Yang, Bin Zhao, and Yanfang Chen

Part III Neuronal Environment, Plasticity and Repair Mechanisms

18 Integrating Molecular, Cellular, and Systems Approaches to Repairing the Brain After Stroke

Max O. Krucoff, Stephen C. Harward, Shervin Rahimpour, Keith Dombrowski, Erik F. Hauck, Shivanand P. Lad, and Dennis A. Turner
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Neural Network Regeneration After Stroke</td>
<td>Norihito Shimamura, Takeshi Katagai, Masato Naraoka, and Hiroki Ohkuma</td>
<td>383</td>
</tr>
<tr>
<td>20</td>
<td>The Role of Matricellular Proteins in Experimental Subarachnoid Hemorrhage-Induced Early Brain Injury</td>
<td>Lei Liu and Hidenori Suzuki</td>
<td>397</td>
</tr>
<tr>
<td>21</td>
<td>Chemokines and Proteolysis: Implications for Stem Cell Dynamics in Ischemic Stroke</td>
<td>Umadevi V. Wesley and Robert J. Dempsey</td>
<td>409</td>
</tr>
<tr>
<td>22</td>
<td>The NLRP3 Inflammasome: A Possible Therapeutic Target for Treatment of Stroke</td>
<td>Tauheed Ishrat and Sanaz Nasoohi</td>
<td>427</td>
</tr>
<tr>
<td>24</td>
<td>The Role of T Cells in Post-stroke Regeneration</td>
<td>Julia V. Cramer and Arthur Liesz</td>
<td>491</td>
</tr>
<tr>
<td>25</td>
<td>The Inflammatory Response and Its Effect on Rehabilitation-Induced Repair Processes After Stroke</td>
<td>Ali Alawieh, Farris Langley, and Stephen Tomlinson</td>
<td>509</td>
</tr>
<tr>
<td>26</td>
<td>Complement C3a: Shaping the Plasticity of the Post-stroke Brain</td>
<td>Anna Stokowska and Marcela Pekna</td>
<td>521</td>
</tr>
</tbody>
</table>
Cellular and Molecular Approaches to Regeneration and Repair
Lapchak, P.A.; Zhang, J.H. (Eds.)
2018, VII, 541 p. 46 illus., 45 illus. in color., Hardcover
ISBN: 978-3-319-66678-5