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Brain Repair: Advances in Experimental Medicine and Biology, Vol. 557

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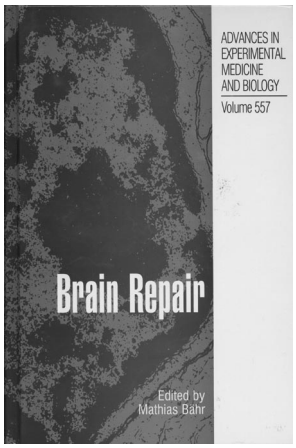
BOOK REVIEW

Brain Repair: Advances in Experimental Medicine and Biology, Vol. 557

M. Bähr, ed. New York: Springer; 2005, 252 pages, 63 illustrations, $159.

One of the most exciting topics in the area of neuroscience is the study of brain injury and repair. Recent discoveries have enhanced our understanding of the mechanisms underlying cell death, as well as the testing of novel strategies to promote recovery of function. Thus, this publication is timely in that it provides up-to-date information regarding this topic. This contribution is the work of an impressive group of investigators in the area of central nervous system (CNS) injury. The publication is unique in that it touches on multiple aspects of brain injury and repair and includes 13 chapters. More than 35 contributors have provided state-of-the-art reviews on specific topics related to this important subject. The text is thoughtfully organized and easy to read. As will be discussed, this publication touches on cell death mechanisms, molecular aspects of injury and treatments, axonal regrowth and repair, as well as stem cell transplantation procedures. In the early chapters, emphasis is placed on cell death mechanisms. The authors then discuss other important consequences of CNS injury including formation of the glial scar. Pathomechanisms underlying cell death and glial scar formation also include specific therapeutic interventions. The final chapters relate to stem cells, including the endogenous stem cell response to injury as well as cellular transplantation strategies. Thus a strength of the publication is that it includes many facets of CNS injury.



The initial chapters cover an interesting discussion concerning cell death mechanisms, including programmed cell death. Other chapters relate to potential therapeutic strategies targeting cell death and repair. One chapter on neuroprotection by cyclic adenosine monophosphate explains cell-signaling pathways and possible interventions. Several chapters also discuss the glial and inflammatory response to injury. These areas of research are currently very important in terms of axonal growth and regeneration. Chapters comment on the neurobiology of P2 receptors and adenosine triphosphate–dependent cell-signaling cascades. These discussions give important information regarding molecular and cellular events underlying cell death as well as axonal growth and guidance. Strategies targeting the collagenous basement membrane formation and enhanced axonal growth are also discussed. Subsequent chapters cover the potential role of neural stem cells and recovery of function after CNS injury. Potential for endogenous neurogenesis to contribute to recovery is a major focus of one chapter. An interesting discussion also describes the potential of neurogenesis in abnormal neurologic additions, such as depression, bipolar disorders, and schizophrenia. Finally, transplantation strategies targeting Parkinson's disease are summarized from a historic perspective. The factors important to transplantation including graft materials, the need for immunosuppression, and novel imaging approaches are reviewed. This important discussion includes the different types of cell or grafts that may be potentially used in these studies. Similar types of reviews/comments are important for all the various neurologic diseases that may be considered for transplantation procedures. The figures and images throughout the book are satisfactory, and legends are appropriately descriptive. The references are comprehensive, current for a scholarly publication such as this.

Overall, the book is an excellent and important contribution to the area of CNS injury and repair and is relevant to the neuroradiology audience. MR imaging will allow quantitative assessment of neuroprotective strategies in patients. Neuroimaging will also play a major role in determining sites of injury as well as the exact location for cellular transplantation strategies. It may be possible in future years to visualize scar tissues and again monitor treatments directed at these consequences of injury. This book is recommended to students, predoctoral fellows, and postdoctoral fellows in training. Additionally, investigators actively pursuing CNS injury and repair research would benefit from this very nice collection of chapters and discussions by leaders in the field of CNS injury and repair.

BOOK REVIEW

Magnetic Resonance Imaging: Methods and Biologic Applications, Vol. 124

P.V. Prasad, ed. Totowa, NJ: Humana Press; 2006, 447 pages, 148 illustrations, $135.

This book fills a niche in the current MR imaging literature by providing a collection of the most powerful MR imaging techniques being used currently. It also succeeds in conveying the variety of state-of-the-art MR imaging biologic applications in such a way that a person without extensive knowledge in MR imaging can make sense of this complex field of study. Because of the important topics that this book covers from functional/metabolic studies to molecular imaging, it is a great tool to introduce someone to the sensitivity and effectiveness of MR imaging.

The organization of the book is straightforward and easy to follow, with a structure of 5 distinct sections. The chapters within each section were appropriately selected to facilitate the reader's comprehension of these complex topics. These sections include "Introduction," "Anatomy," "Physiology," "Pathophysiology," and "Novel Contrast Agents and Mechanisms." The introduction contains a chapter that qualitatively covers the fundamentals of MR imaging and MR spectroscopy and a chapter discussing the basics and challenges of MR mi-