

NEURO-OPHTHALMOLOGY. NEURONAL CONTROL OF EYE MOVEMENTS. 2007. Edited by Andreas Straube, Ulrich Büttner. Published by Karger. 198 pages. Price C\$190.

This 198-page book is volume 40 of the series 'Development in Ophthalmology'. It contains 10 chapters, each a comprehensive and extensively referenced review of work in one selected area of eye movement research, written by one or more respected experts on that topic. The book concentrates more on the basic science of eye movements and less on their clinical aspects, compared to other volumes such as the standard in the field, Leigh and Zee's 'The Neurology of Eye Movements'.

All chapters are concise and pleasant to read. The first few chapters deal with fundamentals of eye movements, including anatomy, methods of eye movement recordings, vestibulo-ocular reflex, and the neural control of saccadic eye movement, smooth pursuit and optokinetic nystagmus. Each of these chapters provides an excellent overview for the novice, but will not provide much that is new to an ocular motor researcher. After these introductory chapters there is a short and nice review of literature of the last 15 years on dysconjugate eye movements, which is followed by an excellent article on the eyelid and its often neglected role in eye movements. Following this is a chapter by Demer on orbital mechanics and the most intriguing development of the last decade – the orbital pulley system. This discusses the fact that extraocular muscles do not follow straight-line paths from their origins to their scleral insertions but rather are pulled away by connective tissue at discrete points in the anterior orbit leading to inflections in eccentric gaze. The current literature and implications of this pulley hypothesis is discussed. Next is an overview of models of the ocular motor system, starting with biomechanical models of the 'eye plant', moving to models of neural velocity-to-position integrators, and ending with models of the various types of eye movements and their neural control. Finally the book ends with a synopsis of pharmacological therapies of ocular motility disorders, which suffers a little in that other treatment strategies are somewhat neglected.

Whereas the last chapter is oriented almost exclusively to clinical problems, the preceding chapters contain only occasional clinical references, and are not comprehensive – and in fact are somewhat arbitrary – in their discussion of such clinical aspects. However, it is clear that this slim book was never meant to be a resource for patient care in neuro-ophthalmology, but rather a review of the science behind the clinic.

Considering the price, the book is slim and contains only 3 tables and 39 grey-scale illustrations, which, though few, are rich in content, easy to understand, and nicely drawn. Despite its modest size, the book does provide an excellent review of basic aspects of eye movement control, with chapters that can be read as independent units to update any neurologist on ocular motor systems of interest to them.

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STROKE RECOVERY WITH CELLULAR THERAPIES. 2008. Edited by Sean I. Savitz, Daniel M. Rosenbaum. Published by Humana Press. 166 pages. Price C\$100.

Stroke Recovery with Cellular Therapies by Savitz and Rosenbaum covers many aspects of cellular therapies with a predominant focus on stem cell research. The book explores the ability of stem cells to become activated, expand, and migrate to the site of injury (potentially having to cross the blood brain barrier). In addition, the capacity of cells to differentiate into incorporated functional neurons, be able to survive for a prolonged period of time, and translate into measurable functional recovery is also examined.

The first chapter gives an overview and reviews basic definitions regarding stem cells. It also discusses the use of cell transplants in human patients and provides information regarding the limited human clinical trials that have been performed to date. Issues identified in human trials include patient selection, timing of surgery, number of cells required, implant location, and the need for immunosuppression.

A large portion of the book focuses on stem cell research in the animal model. The use of bone marrow stromal cells, cord blood cells, and adipose derived stem cells are all analyzed with respect to efficacy and availability. The possible transdifferentiation of these cells types into appropriate neural, glial, and endothelial cells is mentioned. The potential mechanisms of action including the cells' abilities to secrete growth or trophic factors, stabilize the micro environment, modulate the immune system, as well as exert anti-inflammatory effects are explored. There is also an analysis of routes of administration including intravenous, intraventricular, and intraparenchymal methods including their risks and benefits. Adverse events, including the potential for immune responses and tumour growth, as well as outcomes involving these therapies are also identified.

There is a chapter dedicated to intracerebral hemorrhage. Although many of the techniques used in ischemic stroke are also being tested in hemorrhagic stroke, there are unique treatments that need to be considered in the latter. This chapter looks at potential therapies aimed at reducing hematoma expansion, brain edema, inflammation, excitotoxicity, apoptosis, and oxidative stress. The role of matrix metalloproteinases is also discussed.

The chapter on novel imaging modalities is comprehensive. Although it is a difficult read for those without a significant basic science/diagnostic imaging/physics background, it outlines the contrast agents and cell labelling techniques that can be used with a variety of modalities including MRI and PET scanning. In addition, other techniques in animal models are identified including the stains and immunofluorescent agents that can be utilized on histology. These methods are used to determine how many cells migrate, differentiate, integrate, survive, and for how long. There are illustrations of these techniques both in colour and in black and white.

The bioethics portion is very well done. For a clinician, it is an easy read compared to the remainder of the book, and comprehensively covers this controversial topic. In addition, it is very current and even outlines the scandals that recently occurred in Korea. For the most part, this chapter is objective and only at the very end does the author state her position on the issue.

The strengths of this book include its comprehensive and cursory nature. Although many of the topics are not covered in great depth,