

cells, while none of the control patients did. Moreover, control patients showed no inducible-nitric oxide synthase (i-NOS), while patients with motor neuron disease, including ALS, show immunoreactive i-NOS. The article by Uyama and Hirano comparing the neuropathology of human familial ALS with the transgenic mouse model is intriguing. Many of the pathological features are similar, but some are distinctly different. The chapter by Kato et al shows that not only neurons, but also glial cells show structural abnormalities in one family with familial ALS with a mutation in CuZnSOD. Shibata et al demonstrated that SOD1 immunoreactivity was present in all of the Lewy body-like hyaline inclusions (LBHIs), but in only a few of the Lewy bodies, and not in the Mallory bodies.

In another chapter, Kondo presents a nice summary of the epidemiological aspects of motor neuron disease. The next chapter by Yanagihara summarizes the epidemiological evidence for a cohort effect reminiscent of trace element deficiency syndromes that depend on local geology. The role of excitatory amino acid (glutamate)-mediated motor neuron degeneration is discussed in an excellent article by Nagano and Rothstein. The chapter by Abe et al is very interesting because it suggests an aberrant function for mutant SOD1: tyrosine residue nitration. The book contains many excellent chapters on the genetics of CuZnSOD in ALS. There are also several excellent chapters on animal models for ALS, including transgenic mutant SOD1 mice. Finally, a chapter on future potential therapies is most interesting.

These are just some of the highlights of the book, with much more included. This is an excellent book for those (both clinicians and researchers) wanting to know the latest in research in this area. It is not a book for the uninitiated. Some prior knowledge of the subject matter is necessary to understand the book. I recommend this book highly.

LARRY W. OBERLEY, PhD

Atlas of the Human Brainstem. *George Paxinos and Xu-Feng Huang.* Academic Press, 1995.

This remarkable work is based on the study of brainstem in a middle-aged man. Some 64 large-format black and white plates representing low magnification micrographs of complete serial sections taken at 1 mm intervals through the entire length of the brainstem are included. Each plate level is referenced by its distance from the box. On the facing page, also in a large format, each plate is accompanied by a labeled line drawing of various tracts and nuclei.

The entire atlas is based on study of freshly frozen sections obtained in a plain perpendicular to the long axis of medulla and pons. Alternating plates represent frozen sections stained with cresyl violet or histochemical stain

reacted with acetylcholinesterase. The frozen section preparations are excellent and the photomicrography is superb. Much effort has been placed on accurate detailed labeling of nuclei and fiber tracts. The nomenclature used and the spelling are refreshingly up-to-date. The method of abbreviations employed is systematic and easy to follow. The introductory section is well written and useful. Overall, this unique atlas provides a superior quality of detailed and up-to-date serial sections of brainstem. It will be an invaluable reference for all who have interest in the structure of the nervous system. It is recommended to neuroanatomists, neuropathologists, neurophysiologists, and neurochemists. In neuroanatomy labs, medical students will find this atlas a stimulating resource for developing insight into the complexity of brainstem structure and organization.

SHAHRIAR SALAMAT, MD, PhD

Protocols for Neural Cell Culture, 2nd ed. *Sergey Fedoroff and Arleen Richardson, eds.* Humana Press, Totowa, NJ, 1997, 278 pp.

This is an update, put together by editors who have been in the business of devising methods (and running courses) for maintaining cells isolated from the nervous system for many years (you might say even before there was cell culture!). In addition to detailed protocols and pointers to the best commercial sources, there are useful tips, though only the bravest of hearts might slavishly follow the advice that antibiotics are no substitute for sterile technique.

The tried and true methods for deriving primary cultures of neurons and glia from the CNS and periphery are there, as well as how to rid these of contaminating cells, the means of quantification, and of cell-type identification through immunocytochemistry and morphology. Illustrations are sparse, which is a pity, as those setting up cultures of specific cells for the first time are reassured by morphological comparisons. Indeed, the chapter on immunocytochemistry contains not a single image!

It is truly a second edition in that the contents somewhat reflect developments since the first. There are chapters for those concerned with preserving organizational structure (slice cultures) and interested in cell-cell interactions (aggregating cultures, sometimes irreverently referred to as "brain balls"). The generation of progenitor cells is described for those interested in multipotentiality, as is transfection of cells with foreign DNA.

However, there are omissions that a new edition might have been used to correct. The nervous system comprises not just neurons and glia. A section on cerebral vessel-derived cells, and on ependymal and choroid plexus cells would have been welcome. Too much space is taken up