this information. This book will likely become a standard reference on PET and can be recommended for this purpose.

ROBERT W. BURT
Indiana University
School of Medicine
Department of Radiology
Indianapolis, IN 46223

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NEUROCHEMICAL TECHNIQUES IN INSECT RESEARCH

edited by H. Breer and T. A. Miller, 324 pp., Springer-Verlag, New York, 1985, $59.50, hardcover.

The refinement of neurochemical technology in recent years has had a major impact on studies of insect neurochemistry. This volume of the *Springer Series in Experimental Entomology* explores many of the neurochemical techniques that can be applied to insects and other invertebrate species. There are 12 chapters describing methods developed prior to 1984 to assay neurotransmitters, neurohormones and metabolic changes associated with synaptic transmission including neurochemical structure determination, synthesis, catabolism, release from neurons, action on receptors and uptake into cells. Unique problems and benefits encountered in attempting to conduct research in insect neurochemistry are highlighted. The advantages of using insects include a relatively simple nervous system, large neuron size, availability of a large volume of genetic knowledge for certain species and application to insecticide toxicology studies. In spite of the relatively small size of the insect's nervous system which requires microanalytical techniques for study, insects have proven quite useful for probing certain biological questions that are solvable using chemical analysis, synaptosome and membrane preparations, ion flux measurements, cyclic nucleotide studies, neuronal tissue culture, radioimmunoassay, immunocytochemistry, monoclonal antibodies and energy metabolism studies. All of those methods are described in the volume.

One of the recent major advances in the insect neurochemical field has been the chemical characterization of a several neuropeptides such as adipokinetic hormone and myoactive peptides. As those and other peptides become more available for physiological and biochemical studies, the rate of progress in insect neurochemical research will accelerate. Also clues for the discovery of a new generation of insect control agents that disrupt the action of newly discovered neurochemicals should be forthcoming. This book will facilitate those advances.

Though my reaction to the book is quite favorable because it has such a broad approach to the topic of insect neurochemistry, I do note several topics that received somewhat cursory coverage. They are enzymes of the nervous system, chemical reactivity of neurochemicals and metabolites as related to functionality and the use of the insect nervous system to study insecticide mode of action. The interfacing of electrophysiology and neurochemistry is also not addressed adequately perhaps because some coverage was given in another series volume published six years earlier. The lack of an author index which is useful for locating literature and data is also a drawback of the volume. In spite of these deficiencies, the book will serve as a valuable reference work for experimentalists and academics. For scientists working in the field, it offers a picture of where the

field is and how to get to where it is going. For students, the book provides a readily understandable introduction to research problems associated with insect neurochemistry.

KARL J. KRAMER
U.S. Grain Marketing Research Laboratory
Agricultural Research Service,
U.S. Department of Agriculture
Manhattan, KS 66502

NEUROGENETICS: PRINCIPLES AND PRACTICE

by Roger N. Rosenberg, 324 pp., Raven Press, New York, 1986, $49.50, hardcover.

This is a book about the rapidly growing field of neurogenetics—the application of modern molecular biology to the understanding of inherited disorders and differences in the human nervous system. As is true for other areas of the neurosciences, neurogenetics is necessarily an interdisciplinary enterprise. One of the authors' goals is to cover in a didactic way the interdisciplinary foundations of neurogenetics, including classical Mendelian genetics, population genetics, molecular genetics, clinical genetics and basic studies in neurogenesis—the mechanisms of early brain development, especially neuronal and glial differentiation. The book is intended for "neurologists, geneticists, pediatricians, internists and neuroscientists." The level of presentation is sufficiently technical that beginning students in these fields, as well as interested scientists and practitioners in other fields (e.g., neuropsychology, psychiatry), will likely find the book difficult to read.

A second major goal of the book is to convey the excitement and power of the application of recombinant DNA techniques to the understanding of inherited neurological diseases and the exponential progress that will occur in this area by the end of the century. As the author points out, the use of DNA polymorphisms, also known as RFLPs (restriction fragment length polymorphisms), will likely permit the complete mapping of human genome in this time frame. In the last few years, linkage analyses using RFLPs have honed in on the location of the genes responsible for Huntington's Disease (short arm of chromosome 4), Duchenes's muscular dystrophy (short arm of the chromosome), and Lesch-Nyhan syndrome (long arm of the X chromosome). For some of these conditions, these discoveries have already permitted the individual diagnosis of patients carrying the defective gene. Thus the stage is set for much more powerful preventive measures to help eliminate these severe neurological disorders. In the coming years, linkages for other neurological disorders attributable to a major gene will very likely be discovered. Thus, neurofriborratosis, tuberous sclerosis, and familial parkinsonism, as well as milder disorders such as Gilles De La Tounette syndrome, stuttering and dyslexia will likely come to be understood at a molecular genetic level. The same may prove true for some major psychiatric disorders, including schizophrenia, although the precise mechanisms of genetic transmission in these disorders are currently less clear.

This is an exciting prospect indeed, not only for neurologists and geneticists, but for anyone concerned with normal and abnormal behavioral development. As the author discusses, genetic diversity within human populations is much greater than previously supposed. An inevitable corollary is that human neurogenetic diversity is likewise considerable, and this diversity may contribute not only to the severe developmental pathologies catalogued in this book, but also to the whole range of individual behavioral differences. The author hints at this implication in a brief section on neuroethology.

Primarily, this is a book for clinicians. Two thirds of the book is a catalogue of most known neurogenetic disorders, divided into conceptually useful subcategories (e.g., progressive dementias, basal ganglia diseases, neurocutaneous syndromes, various metabolic disorders, peripheral neuropathies, and chromosomal abnormalities). A description, usually brief, of what is known about the genetics, clinical features, pathology and therapy is given for each disease. This section will be a useful overview reference for clinicians, but, for some diseases, this book will only provide the first step, since the coverage is necessarily brief. For instance, the coverage of the fairly prevalent