

## BOOK REVIEW

**Current Communications in Molecular Biology-The Molecular Biology of Alzheimer's Disease.** C. E. Finch and P. Davies (Eds.) 1988. Cold Spring Harbor Publications. 197 pp. \$25.00 paper.

This book reports on work presented at a Banbury Conference held at Cold Spring Harbor in 1988. Each paper is a brief description of the ongoing work in a number of laboratories currently active in establishing the correlates, primarily molecular, of Alzheimer's Disease. The presentations can be grouped in several general categories—the characteristics of Alzheimer's Disease-sensitive cells in the brain, immune involvement in Alzheimer's Disease, the molecular biology of the amyloid precursor protein, models of Alzheimer's Disease, the biochemical characterization of neurofibrillary tangle proteins and familial studies.

The written papers are short and concise, almost like lengthy abstracts in some cases. This format makes this quite a readable book, since it can be picked up and one or several chapters read in a short time. The research reported is very timely and the book provides the best current bibliography on the molecular biology of Alzheimer's Disease. One problem with this format, however, is that many of the chapters summarize the same published papers. This repetition, although good for consolidation of the material, does subtract from detailed description of more recent experimental data, especially in the shorter chapters. The book finishes with a summarization of the major findings of each group of presentations, which is helpful, given the amount of detail in the book as a whole.

In spite of their shortness, only a few of the papers are overly-generalized. Instead, most of them provide a quick survey of recent experimental work from each laboratory, giving a sense of immediacy to the reports as a whole. Even negative findings are discussed, something which is seldom done in print. The reader is left with an impression of the conferees actively discussing their data with the intent of moving the whole group forward. Several of the papers discuss interesting aspects of the vulnerability of the human brain to Alzheimer's Disease. Rapoport's idea that it has been acquired as a cost of the rapid evolution of the associative capacity of the human brain is particularly intriguing. The difficulty of assessing the specific genetic component(s) of a disease in which onset is late and few large, multigenerational pedigrees exist is well-described in the chapter by St. George-Hyslop et al.

With the introduction of the techniques of molecular biology, important advances in the basic pathology of Alzheimer's Disease have occurred at a rapid pace. The number of chapters in this book devoted to this particular topic conveys the excitement in this area of research. One major finding is that the amyloid protein, which

accumulates within senile plaques in Alzheimer's Disease, is made as a much larger precursor protein, which itself has several forms. The basic characterization of these proteins is now well established and future developments are likely to be in more functional aspects of the biology of this family of proteins. Clearly, these investigators are moving toward the answers of important questions, including determination of the specific precursor form which gives rise to the amyloid protein and the processing mechanisms by which this occurs. The papers presented in this book give a clear idea of the power of molecular techniques in the determination of structural features and expression of the amyloid-related proteins and an optimism about future findings with regard to processes that underlie the pathology of Alzheimer's Disease.

An unanswered question concerns the structural composition and pathology of neurofibrillary tangles. Much confusion has existed about which proteins actually comprise the tangles *per se* and which are contaminants. The paper of Wischik et al. demonstrates the beginning application of molecular biology to the characterization of these structures and suggests a future expansion of knowledge in this area will also be forthcoming.

This book contains little information on the involvement of acetylcholine in Alzheimer's Disease, although the loss of the cholinergic cells of the nucleus basalis is one of the principal alterations seen in Alzheimer's Disease and certainly the most related to disruption of memory processes. Although this book does contain two chapters on the nerve growth factor (NGF)-dependence of the cholinergic cells of the nucleus basalis which degenerate in Alzheimer's Disease, the functional significance of this important relationship is not emphasized. This is somewhat surprising, given the obvious therapeutic potential of this observation. With the more recent demonstration that the expression of the amyloid precursor protein is responsive to NGF, this probably will not be true of future research reports.

The value of the book lies in the summarization it provides of a rapidly-evolving area of research. It conveys the rising sense that understanding of the basic pathology and etiology of Alzheimer's Disease is imminent. Certainly, at this point in time, it is clear that application of molecular biology to this neurological disease is not only possible, but has greatly speeded the accumulation of knowledge on the amyloid protein. Whether this knowledge can then be translated into interventions that prevent or slow the progression of the disease is for future research to decide.

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## BOOK REVIEW

**Molecular Endocrinology.** Franklyn F. Bolander. 1989. Academic Press, San Diego. 318 p. \$39.50 hardcover.

This book may appear to be rather small physically, comprising as it does, 318 pages in 16 × 23.5 cm format. However, its importance as a text and research resource looms large and will continue to increase as investigative activity in the area of endocrine physiology concentrates more heavily on the molecular mediation of hormonal control. The problem which Dr. Bolander poses in the preface, of being unable to find time in an introductory endocrinology course to adequately treat the details of molecular endocrinology, is one that for the past fifteen years has frustrated those of us involved with teaching in the discipline. This book will help solve the problem by serving as a supplementary text for an introductory course or as a primary text for an advanced academic offering. I fully plan to use it in the latter application with upper level undergraduates and beginning graduate students.

The 16 chapters of material in *Molecular Endocrinology* are subdivided into 5 parts: Introduction and General Endocrinology, Receptors, Transduction, Gene Regulation by Hormones, and Special Topics. Individual chapters are relatively short, but the information within each is pertinent, timely and well-referenced (chapter reference sections contain from 3 to 24 General References and from 3 to 87 Cited References). The book is also well-indexed and contains an appended list of abbreviations used in the text, the latter an obligate necessity for the reader only peripherally familiar with either endocrine physiology or molecular biology. Thus, the book has been organized to function as a source of research information as well as a classroom text. Indeed, *Molecular Endocrinology* brings together in one small, affordable

volume a great deal of material from a large number of current sources.

As with all specialized works, there are things which this book is not and things which it could do better. For example, this is not a general endocrinology text, and perhaps the Introduction and General Endocrinology section is the weakest aspect of the volume. In the author's defense, he has not meant this to constitute one's first exposure to endocrine physiology, and has referred to excellent general texts by Gorbman et al., by Martin, by Norman and Litwack, and by Wilson and Foster. Additionally, the book is somewhat under-illustrated. However, those figures and tables that are included are generally of importance (the reviewer found particularly helpful the flow chart figures, such as those describing the functions of insulin and of catabolic hormones, and tables which drew together information from diverse areas, such as that listing basic properties of cytoskeletal intermediate fibers). On the other hand, one would not be particularly enlightened about the anatomical relationship of the hypothalamus and pituitary if the line drawing in Chapter 2 were the only source of information, and some figures (like that describing the polyphosphoinositide pathway) with a multitude of arrows, pluses, and minuses become rather confusing. These minor drawbacks are outweighed entirely by the positive contributions of this book.

I am pleased to be able to add *Molecular Endocrinology* to my personal library and anticipate its use in both research and classroom applications.

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