Book Reviews

Neurobiology

Neuroimmunology. JEREMY BROCKES, Ed. Plenum, New York, 1982. xvi, 256 pp., illus. $29.50. Current Topics in Neurobiology.

The application of immunological techniques to produce specific probes for a wide variety of proteins and complex lipids in the nervous system is currently an area of intense activity in neurobiology. Conventional antisera to purified or highly antigenic components have become useful reagents for identifying and localizing elements in the cytoskeleton, in myelin, and on the cell surface. With the arrival of the monoclonal antibody revolution in serology, a dazzling vision has taken over, of high-affinity antibody reagents, truly monospecific, well and permanently characterized, and available in virtually unlimited quantities. As Barnstable puts it in a review in this volume: "The cause for excitement is that the membrane resistances, capacitances and pumps beloved of biophysicists; the intramembranous particles of anatomists; and the 'lock and key' molecules of developmental biologists can all be named, isolated and studied as real molecules." Though such molecules are what we seek, the birds in hand are considerably more modest. In this volume there are eight reviews of the accomplishments of several of the laboratories concentrating on the use of immunological techniques in neurobiology.

In one of the outstanding reviews, Kelly and Hall describe the current immunological probes for presynaptic, cleft, and postsynaptic components of the neuromuscular junction. The difficulties that have developed with conventional antibodies, such as those to choline acetyltransferase, are briefly explained. Progress in this field is rapid, and, though the new monoclonal antibodies to this enzyme are not included, the review should serve as an adequate background for an informed evaluation of the newest developments. The authors describe the use of antibodies to the acetylcholine receptor to provide information that cannot be gotten with α-bungarotoxin binding. The contribution of monoclonal antibodies to the basic knowledge of the receptor, which is clearly summarized, is exceedingly interesting and should be instructive for all those interested in using antibody probes of other channel or receptor functions.

Progress in finding monoclonal antibodies to other muscle membrane proteins and extracellular matrix components is reported by Fambrough *et al.*, and Matthew *et al.* review in considerable detail one monoclonal antibody to a synaptic vesicle protein. This work illustrates well the range of techniques now available for characterization of the new reagents.

Barnstable reviews his rather beautiful localization of several monoclonal antibodies binding to photoreceptor or Müller cells in the retina. The paper includes a very thoughtful comparison of what we want with what we are getting, which should be required reading for all grant applicants hoping to work with monoclonal antibodies. Two of the major laboratories in the field are represented by contributions by Mirsky and Schachner. The former reviews the progress in defining neuronal and glial cells in cultures from the central and peripheral nervous system and the use of such markers in studies of development and differentiation and describes their monoclonal reagents. Schachner writes about the mouse cerebellum, her use of antibodies to filament antigens, oligodendroglial surface antigens, and toxins that bind to neurons. Stressing the changes that occur in development, she has combined studies of mouse mutants, cells in culture, and localization in tissue sections.

Most of these reviews have been carefully written and avoid including too much detail. However, few of them attempt to have full citations of work from other laboratories, and it is strange that the whole subject of neuropeptide transmitters is excluded. The neurologist seeking information about autoimmune or viral diseases affecting the nervous system, or animal models of them, will have to look elsewhere. In this volume there is only a short review of immunopathologic disease of the central nervous system, and it focuses on the role of immune complexes. On the other hand, though myasthenia gravis is not itself reviewed at length, basic aspects of the pathophysiology of antireceptor antibodies are well integrated into the review of the neuromuscular junction. Graduate students contemplating a search for monoclonal treasure in any field would do well to try to extract ideas about strategy and selective assays from these examples. As an alternative to reading the collected papers from the individual laboratories, and as a guide to the contents of those papers, these reviews are adequate up to 1980 or '81. Most of them include some results that were then unpublished.

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Social Behavior of Cells

Cell Behaviour. A Tribute to Michael Abercrombie. RUTH BELLAIRS, ADAM CURTIS, and GRAHAM DUNN, Eds. Cambridge University Press, New York, 1982. viii, 616 pp., illus. $89.50.

Michael Abercrombie pioneered the rigorous investigation of cell social behavior, which has since flourished as an exciting field of research. To commemorate what would have been his 70th birthday, many of his students and colleagues were asked to write reviews of their own research, all of which reflects to some degree the interests and intellectual influence of Abercrombie. Most of these papers were later presented at the Abercrombie Memorial Conference on Cell Behaviour in London in April 1982.

Since the authors were chosen primarily because of their professional relationship with Abercrombie, most aspects of cell motility and contact behavior are covered completely. Unfortunately, the selection process has also resulted in a good deal of repetition. For example, there are three reviews of epithelial sheet movement (Heath; Middleton; Edwards and Parkinson), three papers on neuron motility (Wessells; Ebendal; Bray), and three on the relationship of substratum adhesions to the cytoskeleton (Heaysman and Pegrum; Heath; Vasiliev). Each paper on a topic provides a slightly different point of view, but the overlap is substantial.

Though little is left unsaid on the subjects covered, some other subjects of very active research pertaining to cell motility are not covered. Work on the structure and biochemistry of contractile